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Editor's Introduction

In reviewing the 2016 issue of the Texas Forum for Teacher Education I was drawn to the complexities the inner workings of education. Preparation programs, retention, mentoring, collaboration, and assessment are all interlocking cogwheels of the larger *machine,* where each component must function in tandem to ensure a continuum of movement. The articles selected for this issue illustrate these complex interactions and highlight the need to equally support research in all areas. Articles such as *Examining the Mentoring and Induction Experience of Novice Special Education Teachers: Perspective from the Field* (Pohl & Kelly), *Using Texas Principals' Perceptions of Novice and Experienced Teacher Needs to Inform Program Development* (Swain & Lewis), *A Comparison of Teachers' Years of Experience and STaR Chart Performance* (Heltenberg, Lowery-Moore, Bledsoe, & Jodi Pilgirm), and *Teachers' Recommendations for Dealing with Workplace Bulling in Schools* (Orange) explore the experiences and challenges of the novice teacher; providing insight and informing program development. While *STEM Programs in Texas Public Schools* (Madden, Zipperlen, Lowery-Moore, & Christie Bledsoe), *Classroom Mental Models and Technology Experiences* (Giles), and *Preparing Preservice Teachers: Implementing Transformational Classroom Libraries Through Teacher-Librarian Collaboration* (Baker, Wright) examine the impact of innovations and suggest potential support strategies. This issue calls upon us to engage in collective conversation to better inform the direction of teacher education.

The Forum provides a setting for initiating, expanding, and disseminating these critical conversations. The voices from the Forum provide a foundation that will guide future research designed to sustain and improve teacher education. I thoroughly enjoyed this opportunity to work with the authors who shared their inspiring work with our collective. Thank you for your continued efforts as we look forward to the victories and challenges that await us in the future.

In closing, I would like to take this opportunity to say thank you to this year's editorial team; Dr. Joan Berry (UMHB), Dr. Sandy Labby (TAMUT), and our past managing editor, Dr. Debby Shulsky (UHCL). I cannot thank you enough for your commitment to ensuring the successful delivery of the 2016 Forum. My deepest gratitude is extended to our copy editor, Dr. Elda Martinez, for supporting our efforts and bringing The Forum to fruition.

As we turn to our next edition, authors can find the 2017 call for papers at the end of the journal. The 2017 deadline for manuscripts is **June 15, 2017**. Authors are to direct submissions to the 2017 Managing Editor, Joan Berry (mailto:jberry@umhb.edu).

If you have any comments about this edition, please email me at mailto:willis@uhcl.edu.

Respectfully,

Dr. Jana M. Willis

2016 Managing Editor
The Texas Forum of Teacher Education

A COMPARISON OF TEACHERS' YEARS OF EXPERIENCE AND STAR CHART PERFORMANCE

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Abstract

The integration of technology into the classroom has many benefits, but its use has been minimal and inconsistent. In Texas, less than 10% of schools meet the state's goal for technological integration. The purpose of this quantitative, correlational study was to determine if a relationship exists between teachers' years of experience and the level of performance on the STaR chart for 1) teaching and learning and 2) educator preparation and development. The average number of years of experience, percentage of novice teachers, and percentage of veteran teachers were variables analyzed in relation to STaR chart performance. Data analysis indicated a slight relationship for all three groups to teaching and learning and no relationship for all three groups to educator preparation and development. Effective technological integration is complicated and warrants further research.

Keywords*:* technology integration, STaR, education preparation

Teachers in today's classrooms often have access to technology tools such as interactive white boards, hand-held tablets, projectors, interactive polling devices, laptops, and computers. In 2013, schools in the United States spent nearly $4 billion on mobile devices alone. Spending for educational technology is expected to grow at a compounded annual rate of 8% through 2018 (Nagel, 2014); however, classroom technology appears to be underutilized (Groff & Mouza, 2008; Herold, 2015), as many schools still do not have access to technology resources (U.S. Department of Education, 2016).

Although many novice teachers use various types of technological resources in their daily lives and have grown up in a digital era, it appears they hesitate to utilize technology in the classroom.

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Research indicates teachers use technology more often for general housekeeping and making their own jobs easier than instruction (Fordham & Vannatta, 2004; Herold, 2015). Technology has the potential to change teaching and learning; and with the right tools, students can access resources and expertise anywhere around the world (U.S. Department of Education, 2016)

Teachers' use of technology in the classroom does not meet the standard in the state of Texas (Texas Education Agency, 2014). Even teachers who are comfortable with technology for personal use lack the knowledge, skills, and expertise to implement technology in the classroom for instructional support (Jing, 2009; Herold, 2015). In fact, less than 10% of Texas schools are at the target level for teaching and learning and educator preparation and development as defined by the School Technology and Readiness (STaR) chart (Texas Education Agency, 2014), a rubric developed by the state of Texas to indicate progress toward technology goals (Texas Education Agency, 2006).

A lack of effective technology use in schools is a waste of resources and a hindrance to achievement. Many novice teachers have a wide array of experience with technology having grown up in a world where technology is an integral part of almost every daily activity. Veteran teachers have a wide variety of access to technology but may not necessarily utilize it to its potential in the classroom. Evidence indicates that access to technology does not translate to effective technology integration, but does teaching experience reflect technology use in the classroom? This study addressed relationships between teachers' years of experience and the level of performance on the STaR chart for 1) teaching and learning and 2) educator preparation and development.

Theoretical Perspective

Technology has a new role in instruction and learning and teachers need a new skill set for effective integration. Technology integration in the classroom means using the curriculum to drive the use of technology to enhance student learning (Sousa, 2003). Integrating technology into classroom instruction is vital because it enables students to find resources in a vast sea of information, engage with learning due to higher motivation, develop computer skills through authentic learning, research information to a greater depth, and move to higher levels of thinking and problem solving (Sousa, 2003). Therefore, the Technological Pedagogical Content Knowledge model (TPACK) framed this study by providing a way to examine potential technology integration in the classroom. Drawing from Shulman's idea of Pedagogical Content Knowledge, Mishra and Koehler's TPACK framework (2006) presents three forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). In addition to the primary forms of knowledge, the framework emphasizes four additional forms of knowledge that emerge as content, pedagogical, and technological knowledge converge. The TPACK model (Figure 1) represents

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these four knowledge bases at the intersections of TPACK: Pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK). "The interaction of these bodies of knowledge, both theoretically and in practice, produces the types of flexible knowledge needed to successfully integrate technology use into teaching" (Koehler, Mishra, & Cain, 2013, p.13). TPACK provided a means to frame relationships between teachers" comfort levels with instructional technology skills and years of teacher experience.

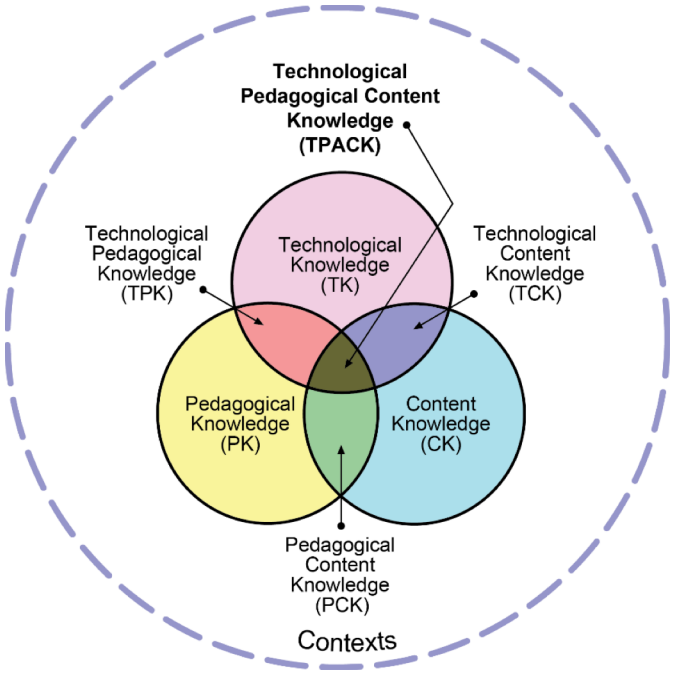

Figure 1. The TPACK model presents a framework by which to examine the overlaps in technology content knowledge, subject content knowledge, and pedagogy, Reproduced with permission of the publisher, © 2012 by tpack.org.

National and State Standards

Technology integration is both a national and state-wide effort. In December 2015, President Obama signed the Every Student Succeeds Act, a further revision of Elementary and Secondary Act of 1965 and NCLB (2002), into law. The Every Student Succeeds Act has a strong focus on career and college readiness, and states and local school districts are encouraged to transform teaching and learning through educational technology (U.S. Department of Education, 2015). In addition, the U.S. National Technology Plan, published in January 2016, sets the national vision and federal goals for technology use and integration in schools. The goal is for teachers to fully realize the benefits of and provide authentic

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learning experiences to students through the effective use of technology in the classroom (U.S. Department of Education, 2016).

In 2006 leaders at the Texas Education Agency (TEA) revised the existing long-range plan for technology in an effort to "assure that the goals and objectives of the Texas Long-Range Plan for Technology were aligned with the federal plan" (Texas Education Agency, 2006, p. iii). TEA guaranteed, "that the students of Texas would have access to and benefit from federally funded technology programs" (Texas Education Agency, 2006, p. iii). Through this effort, a revision of the Texas STaR Chart reflected the needs of 21st century learners. The purpose of the STaR chart is to "help teachers, campuses, and districts determine their progress toward meeting the goals of the Long-Range Plan for Technology" (Texas Education Agency, 2006, p. 2). The STaR Chart measures the improvement of technology implementation, identifies needs for professional development, and raises awareness of instructional goals (Texas Education Agency, 2006).

STaR

Teachers report levels of performance in four categories of the STaR chart: Teaching and Learning; Educator Preparation and Development; Leadership, Administration, and Instructional Support, and Infrastructure for Technology. The tool contains a Likert-like rubric and teachers rate themselves as Early Tech, Developing Tech, Advanced Tech, or Target Tech based on their use of technology in each of the four categories. The goal is to achieve Target Tech level in all four categories. A campus chart identifying the overall campus rating in each category is a compilation of the teacher's self-ratings (Texas Education Agency, 2006).

The data collected from the 2013-14 Campus STaR charts indicates that less than 10% of Texas campuses meet the target level for three categories of the STaR chart: Teaching and Learning; Educator Preparation and Development; and Leadership, Administration, and Instructional Support. Though more campuses are at the target level for infrastructure, it is still less than 20%. In general, schools in Texas have not yet achieved high levels of effective technology use (Texas Education Agency, 2014). The expectation is for all campuses in Texas to be at the target tech level for all four categories of the STaR chart by the year 2020, but most are at the early and developing tech levels (Texas Education Agency, 2014). The 2014-15 campus STaR charts from 40 comparison schools were the foundation for the current study.

New developments in business and industry increase expectations for students and teachers. Texas legislators have recognized the increased need and encouraged the use of technology through the

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passage of laws including House Bill 5 and House Bill 1926 (Texas Education Agency, 2014). House Bill 5 requires the development of a minimum of six courses directly related to technology applications and computer science (Texas Education Agency, 2014; Texas Legislature, 2013). House Bill 1926 enables students in grade 6 and higher to take online courses for credits through the Virtual Schools Nextwork and other approved online programs (Texas Legislature, 2013). These laws, along with increased spending on technology, reflect changes occurring in Texas, which will lead to the necessary integration of technology in the classroom.

In 2003, Texas adopted standards for all teachers that include using technological concepts to make informed decisions about technologies and applications, evaluate electronic information, use appropriate technological tools, communicate in different formats, and effectively incorporate the technology applications of Texas Essential Knowledge and Skills. Classroom teachers rarely meet these expectations (Ertmer & Ottenbreit-Leftwich, 2010).

Methodology

Purpose of the Study

The purpose of this quantitative study was to determine if a relationship exists between teachers' number of years of experience and the level of performance on the STaR chart for 1) teaching and learning and 2) educator preparation and development. The STaR chart measures district and campus progress in meeting state educational technology goals (Texas Education Agency, 2006). The chart consists of four sections. However, the "teaching and learning" and "educator preparation and development" sections are the two sections of the STaR chart most closely related to teacher impact in the classroom. Therefore, this study addressed these sections. Campus data is publicly available in the 2014-15 State of Texas Assessment of Academic Readiness Accountability Reports and data related to teachers' experience is available on the 2014-15 campus Texas Academic Performance Reports (TAPR) reports. The variables in this study were teachers' number of years of experience and campus STaR results. Data analysis may provide insight into the relationship between campus performance on the STaR assessment and teachers' number of years of experience in the classroom.

Data Sources

The participants of this study were practicing elementary classroom teachers representing 40 comparison campuses in Texas who completed the STaR chart for the 2014-15 school year. Comparison schools were determined by the 2015 Campus Comparison Group data provided by the Texas Education Agency. The number of teachers for each campus varied from 10 to 50 per campus with representing

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prekindergarten through fifth grade. Teachers' years of experience data were collected from an online database of public information. The 2015 TAPR for each campus provided information including the years of experience of teachers and the number of veteran and novice teachers.

While the STaR survey is a requirement, not all schools had a report available. Of the 4,031 Texas elementary schools, only 2,544 had the 2014-15 STaR chart report available for study (Texas Education Agency, 2015). For accountability purposes, Texas officials assign each campus a unique comparison group of 40 other schools in the state. Comparison schools are designated by the grades served, total number of students, percentage of economically disadvantaged students, percentage of English language learners, and campus mobility rate (Texas Education Agency, 2015). Forty schools from one comparison group is the focus of this study. Data from the 2014-15 campus STaR charts, 2014 Comparison Group report, and 2014-15 Campus TAPR reports were used for this study to determine if a correlation exists between teachers' years of experience and the levels of performance on the STaR chart.

The independent variable was teachers' years of experience reported as a campus average. Two categories of years of experience were measured: novice teachers and veteran teachers. Novice teachers are teachers with five or fewer years of experience. Veteran teachers have 20 or more years of experience. Using two independent variables determined if there is a difference between novice and veteran teachers. The dependent variables are the STaR chart categories: 1) teaching and learning and 2) educator preparation and development. The dependent variables are the two areas of the STaR chart that provide information that directly relates to classroom use of technology. The reporting of variables represented campus averages.

The two documents for data collection for this study were the 2014-15 TAPR reports for each comparison campus and the 2014-15 STaR charts for each comparison campus. The 2014-15 TAPR provided information specific to each campus including the campus accountability rating and information specific to each identified student group. This report also provided teacher information including the number and percentage of teachers based on years of experience (Texas Education Agency, 2015).

The Texas Teacher STaR chart (Appendix A) is an online survey designed to assist teachers in a self-assessment of technology integration efforts. The survey includes the teachers' perceptions of effectiveness in assessing needs and setting goals for the use of technology in the classroom to support student achievement. Additional survey questions ask teachers to identify needs for ongoing professional development. Based on the survey, responses can indicate one of four levels of progress: early tech,

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developing tech, advanced tech, and target tech, with the ultimate goal being target tech. The STaR chart helps teachers answer the following critical questioned defined by the Texas Education Agency:

- What is my current educational technology profile in the areas of Teaching and Learning and Educator Preparation and Development?
- What is my knowledge of online learning, technology resources, instructional support, and planning on my campus?
- What evidence can be provided to demonstrate my progress in meeting the goals of the Long Range Plan for Technology and No Child Left Behind, Title II, Part D?
- In what areas can I improve my level of technology integration to ensure the best possible teaching and learning for my students?
- What are the technology standards required of all beginning teachers and recommended for all current Texas teachers? (Texas Education Agency, 2006, p. 2).

Demographic Characteristics of Comparison Schools

The schools studied are elementary schools from similar comparison groups for the 2014-15 school year. Each comparison group, identified by Texas Education Agency, included 40 campuses with similar student populations. Comparison groups vary for each school. Therefore, a campus has a comparison group of 40 schools, but the comparison group for any of the schools in the original group can differ. Three comparison groups yielded 73 unique elementary campuses with similar student demographics. Of the 73 campuses, only 41 had STaR chart data available. Of those 41 campuses, one did not have sufficient teacher experience data on the TAPR report, which resulted in an n-size of 40. The data analysis included only schools with complete STaR chart and TAPR data for the 2014-15 school year. A chart with demographics for campuses included in the study is in Appendix B.

The schools in this study consisted of campuses with early education (EE) through fifth grade programs with similar student populations. Table 1 is a frequency distribution of the grade spans for the campuses. The majority (n=16) of campuses contained prekindergarten through fifth grade (PK-5). Some campuses used in the data included fewer grade levels. Table 2 shows a summary of campus demographics including the enrollment, percentage of economically disadvantaged students, percentage of English language learners, and mobility rate of the campuses. The average enrollment is 408.60 (SD=80.7284) students with a minimum enrollment of 271 and a maximum enrollment of 562 students. The average mobility rate was 15.505% with a minimum of 7.5% and a maximum of 20.8%. The schools in this study were public elementary schools that report school data to the Texas Education Agency through the Public Education Information Management System (PEIMS).

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Table 1

Grade Span Frequency Distribution

		Frequency	Percent
Valid	2-5	1	2.5
	3-5	7	17.5
	EE-5	13	32.5
	KG-5	3	7.5
	PK-5	16	40.0
	Total	40	100.0

Table 2

Campus Demographics Summary

	N	Minimum	Maximum	Mean	Std. Deviation
Enrollment	40	271.0	562.0	408.600	80.7284
Economically Disadvantaged	40	59.3	75.9	68.510	4.5285
English Language Learners	40	1.2	16.5	6.450	3.7374
Mobility Rate	40	7.5	20.8	15.505	3.0209
Valid N (listwise)	40				

Findings

Teachers' years of experience and performance on the STaR chart were the focus of this research study. The overall years of experience and percentage of novice and veteran teachers were the independent variables. Two categories of the STaR chart most closely related to teacher impact in the classroom, teaching and learning and educator preparation and development, were the dependent variables. The six research questions for this study are comparisons between the variables.

Research Question 1

For the first three research questions, the score for teaching and learning on the STaR chart was the dependent variable. The relationship between the teaching and learning score assessed by the STaR chart and average number of years of teacher experience per campus was the focus of the first research question (R1). In this question, the average number of years of experience was the independent variable; Table 3 is the summary of descriptive statistics for the average number of years of experience and the teaching and learning scores. The maximum possible score for teaching and learning was 24, and the range of scores was 6.0 to 22.0. The mean of the average number of years of experience for all 40 campuses was 12.430 (SD=3.0846).

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Table 3

Descriptive Statistics for Average Years of Experience and Teaching and Learning

	N	Minimum	Maximum	Mean	Std. Deviation
Average Years of Experience	40	5.7	18.6	12.430	3.0846
Teaching and Learning	40	6.0	22.0	14.300	2.5740
Valid N (listwise)	40				

The STaR chart assesses campus progress toward meeting educational technology goals. The goal for Texas schools is to be at the target tech level for teaching and learning by the year 2020 (Texas Education Agency, 2006). The key area of teaching and learning assesses teacher use of technology in the classroom for instructional purposes.

Table 4 contains the correlation matrix for average number of years of experience and teaching and learning. A Pearson's r value between 0.20 and 0.35 indicates only a slight relationship between variables (Creswell, 2012). In this analysis, the Pearson's r value is 0.225. Therefore, the average number of years of experience and the teaching and learning score reflects a slight relationship. Campuses with higher average number of years of experience among teachers tended to have higher STaR scores in teaching and learning. It is appropriate to reject the null hypothesis.

Table 4

Correlation Matrix for Average Years of Experience and Teaching and Learning

		Average Years of Experience	Teaching and Learning
Average Years of Experience	Pearson Correlation	1	0.225
	Sig. (2-tailed)		0.163
	N	40	40
Teaching and Learning	Pearson Correlation	0.225	1
	Sig. (2-tailed)	0.163	
	N	40	40

Research Question 2

The relationship between the teaching and learning score assessed by the STaR chart and the percent of novice teachers per campus was the focus of the second research question (R2). Novice teachers have five or less years of teaching experience. The percent of novice teachers per campus was

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the independent variable, and the score for teaching and learning was the dependent variable. Table 5 is the summary of descriptive statistics for the percent of novice teachers per campus and the teaching and learning scores. The mean of the percent of novice teachers was 31.070 (*SD=13.6105*).

Table 5

Descriptive Statistics for Percent of Novice Teachers and Teaching and Learning

	N	Minimum	Maximum	Mean	Std. Deviation
Percent Novice Teachers	40	4.1	66.8	31.070	13.6105
Teaching and Learning	40	6.0	22.0	14.300	2.5740
Valid N (listwise)	40				

The focus of R2 was the percent of novice teachers as it relates to the key area teaching and learning. Table 6 contains the correlation matrix for the percent of novice teachers and the teaching and learning score. In this analysis, the Pearson's r value of -0.219 indicates a slight negative relationship between the percent of novice teachers and the teaching and learning score. Campuses with fewer novice teachers tended to have higher STaR scores in teaching and learning. It is appropriate to reject the null hypothesis.

Table 6

Correlation Matrix for Percent of Novice Teachers and Teaching and Learning

		Average Years of Experience	Teaching and Learning
Percent Novice Teachers	Pearson Correlation	1	-0.219
	Sig. (2-tailed)		0.175
	N	40	40
Teaching and Learning	Pearson Correlation	-0.219	1
	Sig. (2-tailed)	0.175	
	N	40	40

Research Question 3

Veteran teachers have 20 or more years of teaching experience. The percent of veteran teachers per campus was the independent variable, and the score for teaching and learning was the dependent variable. Table 7 contains the summary of descriptive statistics for the percent of veteran teachers per campus and the teaching and learning scores. The mean of the percent of veteran teachers was 20.242 (SD=10.0480).

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Table 7

Descriptive Statistics for Percent of Veteran Teachers and Teaching and Learning

	N	Minimum	Maximum	Mean	Std. Deviation
Percent Veteran Teachers	40	4.0	38.8	20.242	10.0480
Teaching and Learning	40	6.0	22.0	14.300	2.5740
Valid N (listwise)	40				

The correlation matrix, reported in Table 8, contains the correlation matrix for the percent of veteran teachers and the teaching and learning score. A Pearson's r value of 0.254 indicates a slight relationship. Campuses with more veteran teachers tended to have higher STaR scores in teaching and learning.

Table 8

Correlation Matrix for Percent of Veteran Teachers and Teaching and Learning

		Average Years of Experience	Teaching and Learning
Percent Veteran Teachers	Pearson Correlation	1	0.254
	Sig. (2-tailed)		0.113
	N	40	40
Teaching and Learning	Pearson Correlation	0.254	1
	Sig. (2-tailed)	0.113	
	N	40	40

Research Question 4

For the remaining three research questions, the score for educator preparation and development on the STaR chart was the dependent variable. The relationship between the educator preparation and development score, assessed by the STaR chart and average number of years of teacher experience per campus, were the focus of the fourth research question (R4). The average number of years of experience was the independent variable. Table 9 contains the summary of descriptive statistics for the average number of years of experience and the educator preparation and development scores. The maximum possible score for educator preparation and development was 24, and the range of scores for educator preparation and development was 9.0 to 18.0. The mean of the average number of years of experience was 12.430 (SD=3.0846).

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Table 9

Descriptive Statistics for Average Years of Experience and Educator Preparation and Development

	N	Minimum	Maximum	Mean	Std. Deviation
Average Years of Experience	40	5.7	18.6	12.430	3.0846
Educator Preparation and Development	40	9.0	18.0	13.000	2.0381
Valid N (listwise)	40				

The goal for Texas schools is to be at the target tech level for educator preparation and development by the year 2020 (Texas Education Agency, 2006). The key area of educator preparation and development assesses teacher professional development experience as it relates to educational technology. The focus of R4 was teachers' average number of years of experience as it relates to the key area educator preparation and development.

Table 10 contains the correlation matrix for the average number of years of experience for all teachers on the campus and the educator preparation and development score. The Pearson's r value is -0.016 indicates no relationship between the average number of years of experience and the educator preparation and development score. Average number of years of experience had no effect on STaR scores for educator preparation and development.

Table 10

Correlation Matrix for Average Years of Experience and Educator Preparation and Development

		Average Years of Experience	Teaching and Learning
Average Years Experience	Pearson Correlation	1	-0.160
	Sig. (2-tailed)		0.920
	N	40	40
Educator Preparation and Development	Pearson Correlation	-0.016	1
	Sig. (2-tailed)	0.920	
	N	40	040

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Research Question 5

The relationship between the educator preparation and development score assessed by the STaR chart and the percent of novice teachers was the focus of the fifth research question (R5). The percent of novice teachers was the independent variable, and the score for educator preparation and development was the dependent variable. Table 11 is the summary of descriptive statistics for the percent of novice teachers and the educator preparation and development scores. The mean of the percent of novice teachers was 31.070 (SD=13.6150).

Table 11

Descriptive Statistics for the Percent of Novice Teachers and Educator Preparation and Development

	N	Minimum	Maximum	Mean	Std. Deviation
Percent Novice Teachers	40	4.1	66.8	31.070	13.6105
Educator Preparation and Development	40	9.0	18.0	13.000	2.0381
Valid N (listwise)	40				

Table 12 contains the correlation matrix for the percent of novice teachers and the educator preparation and development score. There is no relationship between the percent of novice teachers and the educator preparation and development score. The number of novice teachers had no effect on STaR scores for educator preparation and development.

Table 12

Correlation Matrix for the Percent of Novice Teachers and Educator Preparation and Development

		Percent Novice Teachers	Educator Preparation and Development
Percent Novice Teachers	Pearson Correlation	1	-0.093
	Sig. (2-tailed)		0.569
	N	40	40
Educator Preparation and Development	Pearson Correlation	-0.093	1
	Sig. (2-tailed)	0.569	
	N	40	40

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Research Question 6

The percent of veteran teachers was the independent variable, and the score for educator preparation and development was the dependent variable. Table 13 is the summary of descriptive statistics for the percent of veteran teachers and the educator preparation and development scores. The mean of the percent of veteran teachers was 20.242 (SD=10.0480). Since Pearson's r value was 0.011 (See Table 14), there was no relationship between the percent of veteran teachers and the educator preparation and development score.

Table 13

Descriptive Statistics for the Percent of Veteran Teachers and Educator Preparation and Development

	N	Minimum	Maximum	Mean	Std. Deviation
Percent Veteran Teachers	40	4.0	38.8	20.242	10.0480
Educator Preparation and Development	40	9.0	18.0	13.000	2.0381
Valid N (listwise)	40				

Table 14

Correlation Matrix for the Percent of Veteran Teachers and Educator Preparation and Development

		Percent Veteran Teachers	Educator Preparation and Development
Percent Veteran Teachers	Pearson Correlation	1	0.011
	Sig. (2-tailed)		0.948
	N	40	40
Educator Preparation and Development	Pearson Correlation	0.011	1
	Sig. (2-tailed)	0.948	
	N	40	40

Conclusions

Number of years of experience had a slight correlation to the teaching and learning score. The average number of years of experience and the percent of veteran teachers on the campuses had a positive relationship, while the percent of novice teachers had a negative relationship. These findings indicate that veteran teachers are more likely to use technology for teaching and learning, while novice teachers are less likely to use technology for teaching and learning. Other researchers indicated contradictory results in which veteran teachers were resistant to using technology in the classroom (Garner & Bonds-Raacke,

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2013). However, the findings about novice teachers seem to support the results of Bennett, Maton, and Kervin (2008) with novice teachers who were hesitant to use technology in the classroom. Even though the results of this study do not indicate cause, the relationships discovered can lead to recommendations for educational stakeholders. Educational stakeholders including leaders, teachers, policymakers, and researchers must commit to working together to use technology to improve education (U.S. Department of Education, 2016).

There was a slight relationship *r(*0.225) between number of years of experience and the teaching and learning score. A higher average of teachers' years of experience on a campus appears to correlate positively to technological implementation. There was also a slight relationship *r*(0.219) between the percent of novice teachers and the teaching and learning score. A higher percentage of novice teachers appear to have a negative correlation to technological implementation. The results of this research were consistent with current findings that novice teachers are hesitant to use technology. Novice teachers may lack the skills to be adept with technology (Bennett, et al., 2008). There was a slight relationship *r*(0.254) between the percent of veteran teachers and the teaching and learning score. A higher percentage of veteran teachers appear to have a positive correlation to technological implementation, which is a contrast to other findings that indicated veteran teachers are resistant to using technology for instructional purposes (Garner & Bonds-Raacke, 2013).

The average number of years of experience did not correlate to educator preparation and development. This finding supports current research that indicates teachers do not receive proper support in the use of technology (Martinez-Pons & Rosenfeld, 2005), and traditional professional development may not be effective at meeting the needs of students and curriculum integration (Parker, Bianchi, & Cheah, 2008). Additionally, the percent of novice teachers appears to have no correlation to educator preparation and development. This finding supports current research that indicates novice teachers may need different professional development activities to aide in technological integration (Plair, 2008). There was no relationship between the percent of veteran teachers and the educator preparation and development score, $R^2 = 0.011$. The percent of veteran teachers appears to have no correlation to educator preparation and development. Similarly, other researchers found veteran teachers might need different professional development activities to aide in technological integration (Plair, 2008)

Success on the STaR chart requires a balance between content knowledge, pedagogy, and technological knowledge as described in the TPACK framework. As teachers advance toward the goal of target tech for each category of the STaR chart, they progress through stages with the ultimate goal of seamless integration of technology to solve real-world problems (Texas Education Agency, 2006).

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Teachers can use these models to determine the intersection of curriculum standards, sound pedagogy, and digital tool selection that meet the needs of students (Prensky, 2009).

It may seem reasonable that novice teachers, from a technology age would score higher on the teaching and learning category of the STaR chart, the findings show the opposite. Veteran teachers scored higher than novice teachers did. Veteran teachers may be more comfortable with pedagogy and content. Therefore, they may be more willing to integrate new technology. As the TPACK framework indicates, pedagogy, technology, and content are factors of successful technological integration.

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Appendix A

Teacher STaR Chart Rubrics for Teaching and Learning and Educator Preparation and Development

The Texas Teacher School Technology and Readiness (STaR) Chart

KEY AREA:	TEACHING & LEARNING					
Focus Area: / Levels of Progress:	TL 1	TL 2	TL 3	TL 4	TL 5	TL 6
	Patterns of Classroom Use	Frequency/ Design of Instructional Setting Using Digital Content	Content Area Connections	Technology Applications (TA) TEKS Implementation (TAC Chapter 126)	Student Mastery of Technology Applications (TA) TEKS	Online Learning
Early Tech	I occasionally use technology to supplement instruction, streamline management functions, and present teacher-centered lectures My students use software for skill reinforcement	I occasionally use technology to supplement or reinforce instruction in my classroom, library, or lab	I use technology for basic skills with little or no connections with content objectives	I am aware that there are Technology Applications (TA) TEKS for Grades K-12 and adopted Technology Applications instructional materials	Up to 25% of my students have mastered Technology Applications TEKS	I have used a few web-based learning activities with my students
Developing Tech	I use technology to direct instruction, improve productivity, model technology skills, and direct students in the use of applications for technology integration My students use technology to communicate and present information	I have regular weekly access and use of technology and digital resources for curriculum activities in my classroom, library, or lab	I use technology to support content objectives	I am aware of the TA TEKS that are appropriate for content area TEKS and occasionally include technology skills in planning and implementing instruction I use adopted TA instructional materials to assist in instruction (where applicable)	26-50% of my students have mastered Technology Applications TEKS	I have customized several web-based lessons which include online TEKS-based content, resources, and learning activities that support learning objectives
Advanced Tech	I use technology in teacher-led as well as some student-centered learning experiences to develop higher order thinking skills and provide opportunities for collaboration with content experts, peers, parents, and community My students evaluate information, analyze data and content to solve problems	I have regular weekly access and use of technology and digital resources in various instructional settings such as in my classroom, library, lab, or through mobile technology	I use technology as a collaborative tool and integrate technology in subject area TEKS, to support development of higher-order thinking skills	I am knowledgeable of and consistently use Technology Applications (TA) TEKS as appropriate for content area and grade level	51 to 85% of my students have mastered Technology Applications TEKS	I have created many web-based lessons which include online TEKS-based content, resources, learning activities, and interactive communications that support learning objectives
Target Tech	My classroom is a student-centered learning environment where technology is seamlessly integrated to solve real world problems in collaboration with business, industry, and higher education Learning is transformed as my students propose, assess, and implement solutions to problems	My students and I have on-demand access to all appropriate technology and digital resources anytime/anywhere for technology integrated curriculum activities on the campus, in the district, at home, or key locations in the community	My students and I seamlessly apply technology across all subject areas to provide learning opportunities beyond the classroom that are not possible without the technology	I seamlessly integrate Technology Applications (TA) TEKS in collaborative, cross-curricular units of instruction	86 to 100% of my students have mastered Technology Applications TEKS	I have created and integrated web-based lessons which include online TEKS-based content, resources, learning activities, and interactive communications that support learning objectives throughout the curriculum
Campus STaR Chart Correlation	Patterns of Classroom Use	Frequency/ Design of Instructional Setting Using Digital Content	Content Area Connections	Technology Applications (TA) TEKS Implementation (TAC Chapter 126)	Student Mastery of Technology Applications (TA) TEKS	Online Learning

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The Texas Teacher School Technology and Readiness (STaR) Chart

EDUCATOR PREPARATION & DEVELOPMENT					
EP 1	**EP 2**	**EP 3**	**EP 4**	**EP 5**	**EP 6**
Professional Development Experiences	**Models of Professional Development**	**Capabilities of Educators**	**Technology Professional Development Participation**	**Levels of Understanding and Patterns of Use**	**Capabilities of Educators with Online Learning**
I have received professional development on basic technology literacy skills and district information systems	I participate in large group professional development sessions to acquire basic technology skills	I am aware of the State Board of Educator Certification (SBEC) Technology Applications Standards (I-V) and meet at least one of these standards	I participate in less than 9 hours of technology professional development per year	I understand technology basics and how to use teacher productivity tools	I have participated in professional development on the use of web-based/online learning
I have received professional development on integrating technology into content area activities for students as well as to streamline productivity and management tasks	I participate in large group professional development sessions that focus on increasing teacher productivity and building capacity to integrate technology effectively into content areas with follow-up that facilitates implementation	I meet 2 to 3 of the SBEC Technology Applications Standards	I participate in 9 to 18 hours of technology professional development per year	I adapt technology knowledge and skills for content area instruction	I have participated in professional development on the customization of web-based/online learning content for my subject area or student courses
I have received professional development on technology integration into the curriculum through the creation of new lessons and activities that promote higher order thinking skills and collaboration with experts, peers, and parents	I actively engage in on-going professional development, including training, observation/ assessment, study groups, and mentoring	I meet 4 of the SBEC Technology Applications Standards	I participate in 19 to 29 hours of technology professional development per year	I use technology as a tool in and across content areas to enhance higher order thinking skills	I have participated in professional development to create web-based lessons or to teach online
I collaborate with other professionals in the development of new learning environments which empowers students to think critically to solve real-world problems and communicate with experts across business, industry and higher education	I actively participate in multiple professional development opportunities that support anytime, anywhere learning available through delivery systems including individually guided activities, inquiry/action research, and involvement in a developmental/ improvement process	I meet all 5 of the SBEC Technology Applications Standards	I participate in 30 or more hours of technology professional development per year	I create new, interactive, collaborative, and customized learning environments	I have participated in professional development to create and integrate web-based lessons or to teach content units or courses online
Content of Professional Development	**Models of Professional Development**	**Capabilities of Educators**	**Access to Professional Development**	**Levels of Understanding and Patterns of Use**	**Capabilities of Educators with Online Learning**

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Appendix B

Comparison School Demographics

Campus	Grade Span	Enrollment	% Econ Disadvantaged	%ELL	Mobility Rate
1	KG-5	405	68.4	9.2	16.9
2	PK-5	355	68.7	1.4	13.3
3	EE-5	405	68.6	16.5	14.9
4	PK-5	481	64.4	3.1	12.6
5	PK-5	301	67.4	8.0	14.6
6	KG-5	323	61.9	2.8	19.3
7	3-5	352	73.3	11.6	11.3
8	EE-5	397	65.2	5.8	14.4
9	PK-5	383	66.6	3.9	17.9
10	EE-5	542	69.0	4.4	18.0
11	PK-5	416	74.0	4.8	12.4
12	PK-5	326	60.7	4.6	16.2
13	PK-5	276	73.2	1.8	16.1
14	EE-5	527	67.7	10.1	18.5
15	PK-5	518	63.1	11.2	11.4
16	EE-5	331	69.2	3.3	17.9
17	PK-5	338	60.4	2.7	15.6
18	3-5	466	63.1	3.6	12.2
19	EE-5	424	72.6	11.6	17.6
20	2-5	322	73.0	5.9	20.2
21	3-5	271	71.2	3.3	17.2
22	EE-5	440	74.1	2.0	18.9
23	EE-5	385	70.9	8.6	20.8
24	EE-5	562	72.4	11.7	12.6
25	PK-5	431	74.9	5.6	19.8
26	PK-5	446	70.2	9.2	14.3
27	EE-5	381	59.3	3.1	10.1
28	3-5	509	72.7	11.2	17.5
29	3-5	524	66.7	5.0	13.7
30	PK-5	309	65.4	6.5	17.7
31	3-5	349	75.1	8.0	14.3
32	EE-5	486	61.7	7.2	13.0
33	3-5	402	75.9	13.4	14.9
34	PK-5	362	72.7	5.0	16.4
35	PK-5	311	69.1	3.5	13.9
36	KG-5	500	64.2	1.2	13.6
37	EE-5	361	68.1	9.4	19.2
38	EE-5	546	64.8	2.6	14.9
39	PK-5	436	68.6	6.7	7.5
40	PK-5	445	71.9	8.5	18.6

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CLASSROOM MENTAL MODELS AND TECHNOLOGY EXPERIENCES

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Abstract

This study explored teacher candidates' self-created images depicting their teaching and future classroom. Associations between early technology experiences were also explored. The study used survey data related to early technology experiences and a modified version of the Draw a Science Teacher Teaching-Checklist (DASTT-C). Survey results from participants' early technology experiences showed that participants reported far more experience using technology as elementary students than secondary students. Findings also suggested that there was not a statistically significant mean difference between the pre and post self-created images. However, mean scores from pre- to post-scores do suggest that following course participation the preservice teacher candidates seemed to transition from a traditional teacher-centered classroom towards a more student-centered environment with the integration of technology.

Keywords: mental models, DASTT-C, preconceived beliefs, technology

Teacher candidates come to their education program with preconceived beliefs about the role of educational technology; beliefs which were established during their experience as EC-12 students (Ertmer, 2005). Sinclair, Szabo, Redmond-Sanogo, and Sennette (2013) suggest that some preservice teachers entered the education field because they had wonderful teachers who made learning fun while others entered because they had negative experiences and wanted to make a positive change for students. Ertmer (2005) points out that teachers' early experiences with technology, "can shape teacher subsequent encounters for years to come, despite great efforts to persuade them differently" (p. 30). Honest self-evaluation of one's mental images helps to determine the reasoning behind what one teaches, how one teaches, and why one teaches (Schlechty, 2009; Moore, & Whitfield, 2008). In order for teacher educators to better understand teacher candidates' beliefs about technology integration, there is a need to investigate the mental models of teaching and learning that candidates bring to their teacher training (Kearney & Hyle, 2004). If teacher candidates themselves do not recognize and examine their beliefs about teaching with technology, they may perpetuate the teacher-centered methods they experienced as students (Ertmer, 2005).

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Research suggests that teachers who do perpetuate these traditional, teacher-centered methods use technology for low-level activities; those teachers with constructivist beliefs tend to use technology to support higher-level, student-centered learning (Judson, 2006; Roehrig, Kruse, & Kern, 2007). Park and Ertmer (2007) concluded that in order to change teacher technology integration practices, it is important that teachers embrace a more student-centered pedagogy. Although studies have been conducted to understand the impact of effective technology integration and teacher beliefs (Anderson & Maninger, 2007; Rehmat & Bailey, 2014), there is much less research on specific technology-integrated pedagogical strategies such as an educational technology course and the potential of the educational technology course to help teacher candidates shift from a traditional instructional approach to a more constructivist, student-centered approach. The following questions guided this study:

1. Is there a statistically significant mean difference between how teachers perceive their classroom prior to taking an educational technology course and how they perceive their classroom following course participation?
2. What were participants' prior experiences with technology during their EC-12 experience?

Literature Review

Research supports the view that teacher candidates enter their education programs with preconceived beliefs about their role as a teacher as well as the behaviors of their future students. They often possess mental images of their future classrooms that are limited to their own personal experiences (Thomas & Pedersen, 2003). Altering, adapting, or expanding these beliefs is a challenge faced by education programs (Chiodo & Brown, 2007). Modeling appropriate teaching and learning environments with opportunities to reflect on their own perceptions can be an effective means for helping teacher candidates address the gaps in their beliefs and the practices that are included in their education programs (Ambusaidi & Al-Balushi, 2012).

Mental Models

According to Thomas, Pedersen, and Finson (2001) "perceptions of ability and capability depend heavily on one's prior conceptualizations about oneself" (p. 296). These perceptions form internal, mental models of interaction (Norman, 1983). According to Norman (1983), mental models provide the following: (1) a belief system, reflecting beliefs acquired through observation, instruction, or inference; (2) observability, providing correspondence between the mental model and the physical world; and (3) predictability, allowing a person to understand and anticipate the behavior of a physical system. Drawings can be used as a good source of information when used to represent one's mental models. Yilmaz, Turkmen, Pedersen, and Cavas (2007) reported, "preservice teachers' personal theories and

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experiences were most influential in how they represented (through drawings) their perception of science teaching" (p. 11). Furthermore, the preservice teachers stated, "their images of science teaching are what they think science teaching should be, shaped by experiences throughout their life" (Yilmaz, et al., p. 11). Minogue (2010) states "drawings allow one to consider the setting, the arrangement of objects in physical space, and interactions in their depiction of a mental image" (p. 769). Furthermore, drawings represent vivid images of interior understandings that can be captured rather quickly (Hancock & Gallard, 2004).

Preservice Teacher Beliefs about Teaching and Learning

Beliefs can be defined in many ways. According to Pajares (1992) and Tobin, Tippins, and Gallard (1994), beliefs include attitudes, confidence, motivation, self-concept, and self-esteem. Clark (1988) identifies teachers' beliefs as preconceptions and implicit theories. Clark noted that these beliefs seemed to be "eclectic aggregations of cause-effect propositions from many sources, rules of thumb, generalizations drawn from personal experience, beliefs, values, biases, and prejudices" (p. 5). For the purpose of this study, belief will be defined by Hancock and Gallard's (2004) definition as "an understanding held by an individual that guides that individual's intensions for action" (p. 281).

Research has found that teacher education programs play an important role in the development of preservice teachers' beliefs regarding teaching and learning (Hancock & Gallard, 2004; Northfield, 1998). Research has also found that methods courses have been shown to be effective in the development of beliefs (Osisioma & Moscovivi, 2008) as those courses are designed to influence beliefs and teaching practices during preservice training (Connor & Scharmann, 1996). Tobin's (1993) research on science teachers' beliefs in various settings concluded "learning about teaching science is best accomplished by direct experience of the teacher-learner in conjunction with opportunities to reflect critically on experience and emergent problems" (p. 242). Hancock and Gallard's (2004) study seeking to understand the impact of field experiences on beliefs developed by preservice science teachers found field experiences both reinforced and challenged beliefs held by preservice science teachers. Ucar (2012) found that beliefs of preservice teachers changed over the duration of an elementary science teacher-training program.

Draw a Science Teacher Test Checklist (DASTT-C)

The Draw a Science Teacher Test Checklist (DASTT-C) can be traced back to the Draw-a-Man Test (Goodenough, 1926), a measure of intelligence, the Draw-A-Scientist-Test (Chambers, 1983), an open-ended projective test to provide information regarding children's illustrations of scientists, the Draw-A-Scientist-Test Checklist (Finson, Beaver, & Cramond, 1995), and the Draw-A-Science-Teacher-

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Test Checklist (Thomas et al., 2001). The DASTT-C instrument directs a preservice teacher to "draw a picture of yourself as a science teacher at work" and write a brief explanation of the drawing. The prompts are intended for participants to explain and clarify their drawn images. "The drawings are scored according to a 13-item dichotomous checklist (present or not present) that focuses on three aspects of the teaching-learning process: the teacher, the student, and the learning environment" (Thomas & Pedersen, 2003, p. 319).

Thomas, Pedersen, and Finson (2001) conducted a study to investigate what mental image's elementary preservice students had of themselves as science teachers as well as validate a revised version of the DASTT-C instrument. The purpose of the study was to determine if participation in a science methods course had an effect on preservice teachers' images of themselves as science teachers (Thomas et al., 2001). Twenty-seven elementary education majors participated in the study. The DASTT-C was administered to the preservice teachers during the first meeting of their science methods course. Three different aspects of the teaching-learning process were looked at: the teacher, the student, and the environment. In addition, this study also included a narrative data component and participant interviews. The researchers found that participation in a science methods course had an effect on preservice teachers' images of themselves as science teachers, with changes representing a shift from teacher-centered instruction to more student-centered inquiry-based instruction (Thomas et al., 2001).

To extend Thomas, Pedersen, and Finson's 2001 study, Thomas and Pederson (2003) conducted an additional mixed methods study to determine what images preservice teachers have of themselves as elementary science teachers, what defines the learning experiences of these preservice teachers, and how preservice teachers modify their ideas about themselves as science teachers by the end of a methods course semester. One hundred fifty elementary preservice teachers enrolled in a beginning elementary science methods course participated in the study. The DASTT-C was administered to the preservice teachers on the first day of class of their science methods course. Participants were also asked to fill out a brief, personal history form designed to elicit information about science courses completed and evaluative comments related to prior science learning experiences (Thomas & Pedersen, 2003). Six of the 150 participants completed the DASTT-C a second time at the end of the semester. Additionally, these six participants recorded interviews discussing and comparing their pre-course and post-course drawings. Results indicated that teachers entered methods courses with a fixed image of themselves as science teachers (Thomas & Pedersen, 2003). The majority of these preservice teachers had a teacher-centered view of science teaching at the beginning of the science methods course. However, preservice teacher images were reinforced and modified during the methods course.

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In a study conducted by Markic, Valanides, and Eilks (2005) science student teachers' view of a typical situation in a science classroom were evaluated by using a modified version of the DASTT-C. The purpose of the study was to evaluate science student teachers' ideas and beliefs about science teaching and to investigate the potential of the modified version of the DASTT-C to distinguish among different groups of freshman students concerning their beliefs and images. One hundred and four freshmen science student teachers participated in the study. Each participant was asked to draw a picture of themselves while teaching science and answer questions on some component of the students' and the teachers' activities as well as the learning environment. Researchers found that chemistry and physics secondary student teachers have a quiet teacher-centered and conventional view on science teaching and learning, whereas biology and primary science student teachers have a more open, student-centered and constructivist view (Markic et al., 2005).

Minogue (2010) conducted a quasi-replication study of Thomas and Pederson's (2003) study to document the use of the Draw-a-Science-Teacher-Test (DASTT-C) as a diagnostic tool for both preservice teacher beliefs about science teaching and science methods course effectiveness. Fifty preservice elementary education teachers participated in the study. Participants were asked to complete the DASTT-C instrument during the first and last meeting of a semester-long science methods course. As in the previous studies three different aspects of the teaching-learning process were examined. Results indicated that there were statistically significant shifts in participants' mental models of science teaching and learning (Minogue, 2010). These changes represented a shift from teacher-centered instruction to more student-centered inquiry-based instruction. As in the previous study conducted by Thomas and Pedersen (2003), the researchers attributed the shift from a teacher-centered to a student-centered instructional approach to participation in the science methods course. This study improved upon Thomas and Pedersen's (2003) study by "employing a non-parametric test of statistical significance that allowed for the direct comparison of categorical data that resulted from the scoring of the teachers' pre-course post-course drawings" (Minoque, 2010, p. 770).

Similarly, Ucar (2012) conducted a cross-sectional study using the Draw a Scientist Test (DAST), Draw a Science Teacher Test (DASTT), and Student Views about Science (SVAS) instruments. The purpose of the study was to document preservice teachers' views on science, scientists, and science teaching. In addition, the relationship between these views and the courses offered over several years in an elementary science teacher-training program were documented. One hundred forty-five preservice elementary science teachers wanting to teach general science in grades six through eight participated in the study. Results indicated that the elementary science teacher training program influenced preservice science teachers' views about science, scientists, and science teaching, with participants' views of science

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teaching changing from teacher-centered to student-centered (Ucar, 2012). The researchers attributed the shift in views to the elementary science teacher-training program. This finding is consistent with previous studies. However, it should be noted that previous studies investigated the change after semester-long method courses, whereas this particular study investigated changes during a four-year training program.

Tatar, Feyzioglu, Buldur, and Akpinar (2012) conducted a study using the DASTT-C instrument to explore preservice science teachers' mental models of science teaching. Additionally, the study investigated whether there is a significant correlation between preservice science teachers' gender and grade levels in terms of mental models. Three hundred preservice science teachers from Turkey participated in the study. Results indicated that the majority of preservice teachers' mental models of science teaching predominately fell into a conceptual teaching style (Tatar et al., 2012). The researchers found no significant difference between male and female participants. However, it should be noted that there was a significant difference between grade levels with regards to the preservice teachers' mental models of science teaching.

Methods

Participants

A random selection from a convenience sample was selected to participate in the study. Participants consisted of undergraduate preservice teacher candidates (n = 50) enrolled in four sections of an educational technology course at a public university in the southeast United States. The same instructor taught all four sections. Participants ranged in age from 18 to 54 with the majority of them being female (90%).

Instrumentation

Participants completed a survey assessing past experiences with technology during their EC-12 education. This survey was based on the CDW-G 21st-Century Classroom Assessment Tool (2010). Survey questions included the participants' use of technology and how that technology was used in their schools. Participants were also administered a modified version of the Draw a Science Teacher Teaching-Checklist (DASTT-C) instrument which asks participants to "Draw a picture of your future classroom including teacher and students" and is followed by the prompt "What is the teacher doing? What are the students doing?" The prompts are intended for participants to explain and clarify their drawn images. "The drawings are scored according to a 13-item dichotomous checklist (present or not present) that focuses on three aspects of the teaching-learning process: the teacher, the student, and the learning

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environment" (Thomas & Pedersen, 2003, p. 319). Total checklist scores can range from 0 to 13 (the higher the score, the more teacher-centered the image).

Data Collection and Analysis

Data were collected during a 15-week educational technology course. During the first week of the course, participants were asked to complete an online survey in Survey Monkey. The survey was open for a two-week period of time for participants to take in order to assess participants' prior experiences with technology during their EC-12 education. The early technology experiences survey was included to determine the source of participants' images of technology or how they perceived their own EC-12 technology experiences. The survey is based on the CDW-G 21st-Century Classroom Assessment Tool (2010).

Participants were asked to complete the Draw-A-Teacher activity during the third week of the educational technology course and then again during the last week of the course. The Draw-A-Teacher activity is an assignment, which asks participants to "Draw a picture of your future classroom including teacher and students" and is followed by the prompt "What is the teacher doing? What are the students doing?". The prompts are intended for participants to explain and clarify their drawn images.

The pre- and post-course self-created images were scored using the modified version of the DASTT-C. The survey data and DASTT-C checklist data was imported into SPSS 22.0 from an Excel document for further analysis. Data were analyzed using descriptive statistics and two-tailed paired t-tests to assess the differences in pre and post participant self-created images in regards to their future classroom.

Results

In the first unit of study for the course, participants completed a survey assessing past experiences with educational technology in their elementary and secondary education as well as demographic data. This survey was based on the CDW-G 21st-Century Classroom Assessment Tool (2010). The following demographic information was collected: gender, ethnicity, age, certification level, and certification content area. The participants were self-designated and consisted of five (10%) males and forty-five (90%) females. In regards to ethnicity, the participants fell into five groups. Eighteen (36%) identified as white, twenty-four (48%) identified as Hispanic, four (8%) identified as Asian or Pacific Islander, three (6%) identified as African American, and one (2%) preferred not to answer. Participants ranged in age from 18-55 years of age, with thirty-two (64%) of the fifty participants ranging in age from 18-24, fourteen ranging in age from 25-34 (28%), two ranging in age from 35-44 (4%), and two ranging in age

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from 45-55 (4%). In regards to participants' certification level, three (6%) were not education majors, thirty-one (62%) were seeking an EC-6th certification level, four (8%) were seeking a 4th-8th certification level, and twelve (24%) were seeking an 8th-12th certification level. In regards to the certification content area being sought, one (2%) was not an education major, twenty-seven (54%) were seeking certification as a generalist, two (4%) were seeking bilingual certification, five (10%) were seeking an ESL certification, three (6%) were seeking math certification, two (4%) were seeking science certification, three (6%) were seeking social studies certification, four (8%) were seeking language arts certification, two (4%) were seeking art certification, and one (2%) was seeking early childhood, non-certification.

Survey results regarding questions of participants' use of technology and how that technology was used during their elementary education showed that participants reported far more experience using technology as elementary students than secondary students (Table 1). Thirty-seven (74%) participants reported yes to being encouraged to use technology every day as an elementary student, nine (18%) reported no to being encouraged to use technology every day as an elementary student, and four (8%) reported not knowing if they were encouraged to use technology every day as an elementary student.

Forty-one (82%) participants reported technology was used in nearly every class during elementary school, six (12%) reported technology was not used in nearly every class during elementary school, and three (6%) reported not knowing if technology was used in nearly every class during elementary school. Thirty-seven (74%) participants reported teachers regularly used technology to teach during elementary school, twelve (24%) reported teachers did not regularly use technology to teach during elementary school, and one (2%) reported not knowing if teachers regularly used technology to teach during elementary school. Forty-six (92%) participants reported teachers regularly assigned class work and/or homework that required the use of technology during elementary school, two (4%) reported teachers did not regularly assign class work and/or homework that required the use of technology during elementary school, and two (4%) reported not knowing if teachers regularly assigned class work and/or homework that required the use of technology during elementary school. Twenty-eight (56%) participants reported having the opportunity to learn new technology applications during elementary school, fifteen (30%) reported not having the opportunity to learn new technology applications during elementary school, and seven (14%) reported not knowing if they had the opportunity to learn new technology applications during elementary school.

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Table 1

Survey Results Regarding Questions of Participants' Use of Technology and how it was Used During Elementary School

	Frequency (*n*)	Percentage (%)
Encouraged to Use Technology		
Yes	37	74.0
No	9	18.0
I Don't Know	4	8.0
Technology Use in Class		
Was Used	41	82.0
Was Not Used	6	12.0
Don't Know	3	6.0
Teachers Regularly Used Technology To Teach		
Did	37	74.0
Did Not	12	24.0
Don't Know	1	2.0
Classwork and/or Homework Required Technology Use		
Yes	46	92.0
No	2	4.0
I Don't Know	2	4.0
Opportunity to Learn New Technology Applications		
Yes	28	56.0
No	15	30.0
I Don't Know	7	14.0

Survey results regarding questions of participants' use of technology and how that technology was used during their secondary education showed that participants reported far less experience using technology as secondary students than elementary students (Table 2). Twenty-three (46%) participants reported yes to being encouraged to use technology every day as a secondary student, twenty-five (50%) reported no to being encouraged to use technology every day as a secondary student, and two (4%) reported not knowing if they were encouraged to use technology every day as a secondary student.

Twenty-three (46%) participants reported technology was used in nearly every class during secondary school, twenty-five (50%) reported technology was not used in nearly every class during secondary school, and two (4%) reported not knowing if technology was used in nearly every class during secondary school. Sixteen (32%) participants reported teachers regularly used technology to teach during secondary school, thirty-three (66%) reported teachers did not regularly use technology to teach during

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secondary school, and one (2%) reported not knowing if teachers regularly used technology to teach during secondary school. Twenty (40%) participants reported teachers regularly assigned class work and/or homework that required the use of technology during secondary school, twenty-seven (54%) reported teachers did not regularly assign class work and/or homework that required the use of technology during secondary school, and three (6%) reported not knowing if teachers regularly assigned class work and/or homework that required the use of technology during secondary school. Fourteen (28%) participants reported having the opportunity to learn new technology applications during secondary school, 34 (68%) reported not having the opportunity to learn new technology applications during secondary school, and two (4%) reported not knowing if they had the opportunity to learn new technology applications during secondary school.

Table 2

Survey Results Regarding Questions of Participants' Use of Technology and how it was Used During Secondary School

	Frequency (*n*)	Percentage (%)
Encouraged to Use Technology		
Yes	23	46.0
No	25	50.0
I Don't Know	2	4.0
Technology Use in Class		
Was Used	23	46.0
Was Not Used	25	50.0
Don't Know	2	4.0
Teachers Regularly Used Technology To Teach		
Did	16	32.0
Did Not	33	66.0
Don't Know	1	2.0
Classwork and/or Homework Required Technology Use		
Yes	20	40.0
No	27	54.0
I Don't Know	3	6.0
Opportunity to Learn New Technology Applications		
Yes	14	28.0
No	34	68.0
I Don't Know	2	4.0

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Participants were asked to draw pre and post pictures depicting their future classroom, including the teacher and students, using a drawing tool such as Microsoft Paint or Paint.net. To assess whether there was a statistically significant mean difference between the pre and post self-created images of the participants in regards to their future classroom, a two-tailed paired t-test was conducted. Table 3 provides the numerical results. Findings suggested that there was not a statistically significant mean difference between the pre and post self-created image scores, $t(49) = 1.620$, $p = .112$. However, mean scores from pre- to post-scores do suggest that following course participation the preservice teacher candidates seemed to transition from a traditional teacher centered classroom towards a more student-centered environment with the integration of technology.

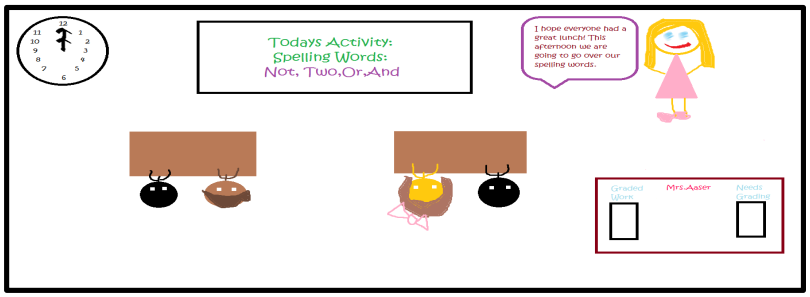
Table 3

Paired t-test Results for Draw-A-Teacher Activity

	Mean	Standard Deviation	Mean Difference	*t*-value	df	*p*-value
Pre-Scores	8.34	2.30	0.60	1.620	49	.112
Post-Scores	7.74	2.28				

Each drawing was scored in categories according to a scale that ranged from teacher-centered to mix to student-centered. The ratings of the participants' pre-course drawings depicted 30% teacher-centered, 62% mixed, and 8% student-centered. Figure 1 is a typical example of the teacher-centered classroom. The teacher is standing at the front of the classroom using the whiteboard to display information to her students.

Figure 1. Teacher-Centered Classroom



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Post-course drawings depicted a slight change with post-course ratings of 24% teacher-centered, 56% mixed, and 20% student-centered. Figure 2 is a typical example of a mixed teacher- and student-centered classroom. The teacher is still standing in the front of the classroom giving instructions. However, the students are working in collaborative groups.

Figure 2. Mixed Teacher- and Student-Centered Classroom

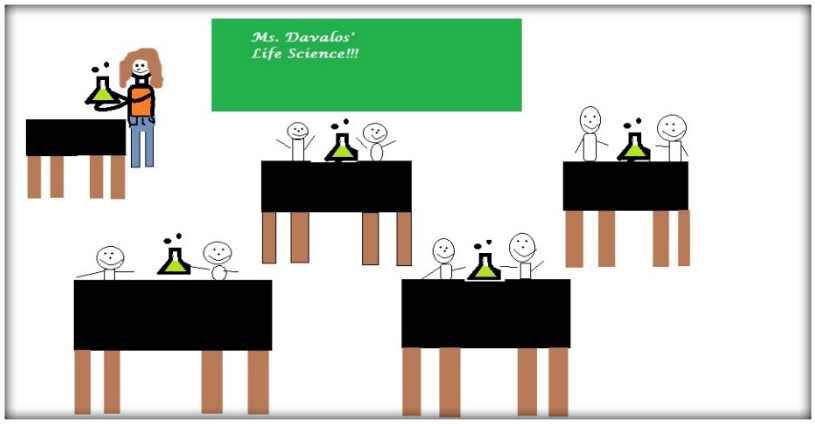

Figure 3. Student-Centered Classroom

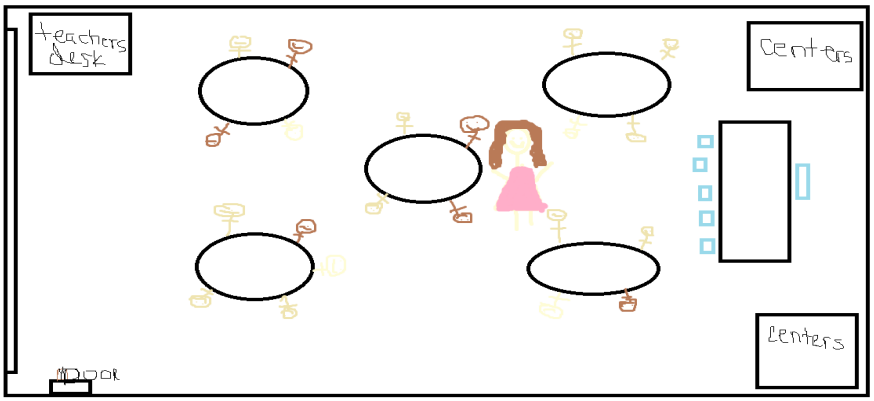

Figure 3. A typical example of a student-centered classroom. The teacher is standing in the middle of the room while students are receiving information from the teacher and working in collaborative groups.

Discussion

The intention of this research was to explore teacher candidates' self-created images depicting their teaching and future classroom and associations between early technology experiences at a public university in the southeast United States. Previous experiences with technology in elementary and

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secondary education influence participants' mental models of their future classroom and those experiences play a critical role in their future classroom and technology integration. Modeling appropriate teaching and learning environments with opportunities to reflect on teachers' own perceptions can be an effective means for helping teacher candidates address the gaps in their beliefs and the practices that are included in their education programs (Ambusaidi & Al-Balushi, 2012.

Results of this study showed that participants reported far more experience using technology as elementary students than secondary students. In addition, results of this study suggest that there was not a statistically significant mean difference between the pre and post self-created image scores. However, following course participation the preservice teacher candidates seemed to transition from a traditional teacher-centered classroom towards a more student-centered environment as suggested by the mean scores. These findings are consistent with previous research that participation in methods courses has an effect on preservice teachers' image of themselves as teachers, with changes representing a shift from teacher-centered instruction to student-centered instruction (Thomas et al., 2001; Markic et al., 2005; Minogue, 2010; Ucar, 2012).

Conclusion

Based on the findings of this study the following conclusions are offered. As indicated in this study there was not a statistically significant mean difference between the pre and post self-created image scores. However, mean scores from pre- to post-scores do suggest that following course participation the preservice teacher candidates seemed to transition from a traditional teacher-centered classroom towards a more student-centered environment with the integration of technology. It is apparent from the literature that participation in methods courses has an effect on preservice teachers' image of themselves as teachers, with changes representing a shift from teacher-centered instruction to student-centered instruction (Thomas et al., 2001; Markic et al., 2005; Minogue, 2005; Ucar, 2012). However, research about teacher beliefs and mental models of preservice teachers has been limited largely to science teaching. Few studies have been conducted to examine preservice teachers' beliefs and ideas with regard to the role of technology in teaching and learning. Based on these findings it is concluded participation in a student-centered educational technology course had an effect on participants' images of themselves as teachers and it should be noted that these findings are consistent with earlier studies (Thomas et al., 2001; Markic et al., 2005).

As part of this study, participants were asked questions regarding participants' use of technology and how that technology was used during their elementary and secondary education. The data analysis revealed that participants reported far more experience using technology as elementary students than

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secondary students. Based on these findings it is concluded that participants of the study possessed mental images of their future classrooms that were limited to their own personal experiences during their elementary and secondary education in pre-course images and these findings are also consistent with prior research. Research supports the view that teacher candidates enter their education programs with preconceived beliefs about their role as a teacher as well as preconceived beliefs about the behaviors of their future students. Teacher candidates often possess mental images of their future classrooms that are limited to their own personal experiences (Thomas & Pedersen, 2003). Altering, adapting, or expanding these beliefs is a challenge faced by education programs (Chiodo & Brown, 2007).

Limitations and Recommendations

There were several limitations that may have affected the study. One of the limitations to the study was a small sample size, which may not be a good representation of the actual preservice teacher candidate population. The current research study was also limited by a sample that represented only one university. It would be useful to determine if other preservice teacher candidates throughout other universities share similar experiences. Another limiting factor to the current study was its limitation of the sample to solely those preservice teacher candidates who were currently enrolled in face-to-face course sections. The study may have yielded different results had the study included preservice teacher candidates enrolled in both online and face-to-face course sections.

Recommendations for future research include the need for additional studies that are comprised of both preservice teacher candidates who are enrolled in both online and face-to-face course sections as it could yield richer data comparing and contrasting their perceptions. Future research could include a longitudinal study to examine use of the DASTT-C to gain sense of the perceptions preservice teachers have of themselves teaching with technology after methods courses and student teaching. In conclusion, this study suggests that preservice teacher candidates' drawings can serve several purposes. Uncovering the images of teachers, students, and technology that preservice teacher candidates hold can be a step toward helping them acknowledge and reconsider their beliefs (Dolloff, 1999). It can also give preservice teacher educators an opportunity to realize, challenge and assess those beliefs and why it is important for studies such as these to continue.

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EXAMINING THE MENTORING AND INDUCTION EXPERIENCE OF NOVICE SPECIAL EDUCATION TEACHERS: PERSPECTIVES FROM THE FIELD

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Abstract

This study examines the mentoring and induction experiences of first-year teachers in special education. We attempted to understand what these novice teachers encountered by using their personal narratives. Participants had the chance to openly discuss what support they had and the roadblocks they had to face during their initial teaching experience in terms of mentoring. Our goal is to explore the voices of the novice teacher in the field of special education, hoping to start a frank and honest conversation in the area of first-year mentoring and induction, which, to our surprise, is lacking research and academic attention.

Keywords: Induction, Special Education, Narrative, Mentoring

There is a problem in special education: school districts, across the nation, are facing chronic shortages and high attrition rates of special education teachers (Amos, 2005; Donne & Lin, 2013). To solve this problem, many districts have implemented induction and mentoring support programs (Donne & Lin, 2013; Irinaga-Bistolas, Schalock, Marvin, & Beck, 2007). Nevertheless, these programs tend to yield mixed results, and the problem continues to be unresolved (Amos, 2005).

This study explores the perspective of five novice teachers in special education during their induction years (one-five years of experience). Most specifically, this study explores what novice teachers value most during their induction years. Although research is available in the induction and mentoring process of novice teachers in special education (Correa & Wagner, 2011; DeMik, 2008; Donne & Lin, 2013), research about the experience of these educators appears to be numerical and statistical in nature (Pohl, 2013). For the most part, there seems to be a lack of narrative that explores these experiences in depth, especially from the teacher's perspective, which we believe ~~it~~ is important because a

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narrative can provide a valuable window into the emotional realities that novice teachers experience (Boyer, 2005; Schlichte, Yssel, & Merbler, 2005).

Teaching in Special Education

Today, approximately six million students receive special education services in the United States. 450,000 teachers service these students. Currently, the teacher-student ratio in special education is about 7 teachers for every one hundred students (Donne & Lin, 2013), which is considered a high ratio for special education. This creates, undoubtedly, serious problems for the education of students with special needs and the professionals who provide these services. Furthermore, there is a high turnover rate of teachers that provide special services, which has created inadequate and deficient results in the proper training and support of new teachers due to the non-predictive nature of the field.

One of the most serious and chronic problem facing special education is the attrition and shortage of teachers (Boe, Cook, & Sunderland, 2008; DeMik, 2008; Thornton, Peltier, & Medina, 2007). In special education, up to 13% of beginning teachers do not return to teach for a second year (Williams & Dikes, 2015). In addition, thirty out of one hundred teachers will leave the profession after their third year of teaching (Thornton et al., 2007); even more, 40% percent of special education teachers leave the profession before or by the end of their fifth year of teaching (Whitaker, 2000; Williams & Warren, 2007). To make matters worse, research shows a permanent job vacancy of 27%—unfilled positions—in districts across the nation in the area of special education (Donne & Lin, 2013). Moreover, up to 30% of special education teaching positions are filled by teachers and substitutes not certified in special education (Billingsley, 2004; Pohl, 2013).

There are many reasons for the chronic shortage of teachers in special education. Lack of administrative support had been cited as one of the main explanations for the high level of attrition in this profession (Boe et al., 2008; Fall & Billingsley, 2011; Whitaker, 2000). Overwhelming administrative duties and excessive demands are also mentioned as top contributors to the high number of teachers who stopped servicing special need students (Billingsley, 2004). In addition to the reasons mentioned, there are other causes that motivate teachers in this field to quit their job: professional isolation, lack of preparation and opportunities for professional development, low salaries, poor working conditions, shortage of teaching and classroom resources, minimal administrative support for behavioral and discipline issues, and inadequate training and support for assigned duties (Pohl, 2013; Thornton et al., 2007).

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In recent years, however, research has indicated that proper mentoring and induction support of novice and first-year teachers are crucial for the retention of these educators (Dempsey, Arthu-Kelly, & Carty, 2009). In her study, Boyer (2005) mentioned that lack of professional support and incentives were important reasons why novice teachers left the profession. Moreover, Boyer (2005) also stated that the high level of attrition among novice teachers was also due to lack of mentoring.

In the past, research has pointed out that professional isolation and absence of support were very acute among novice educators servicing special need students (Schlichte et al., 2005). This tends to occur even when it is widely accepted that proper mentoring programs are crucial for the successful retention of beginning teachers in special education (Amos, 2005; Donne & Lin, 2013). Studies, such as the one conducted by Amos (2005), have shown that the retention of new teachers in special education increases dramatically when they are provided with proper and positive mentoring and induction experiences. Furthermore, good mentoring also significantly influences special education teachers' positive satisfaction about their job, which increases the likelihood that beginning teachers will stay in their job after their first year of teaching (Whitaker, 2000). Even more, studies have demonstrated that special educators are more likely to stay in the profession if they experience more positive social interactions with other colleagues and administrators (Schlichte et al., 2005).

Literature about Induction and Special Education

Literature regarding teacher attrition tends to emphasize the learning environment, school atmosphere, administrator's attitude, and teacher's effectiveness to deliver the curriculum (Boyer, 2005; Williams & Dikes, 2015). This literature often differentiates between urban, suburban, and rural settings, citing the different components that are particular to each venue. Some of the findings from these studies cite inadequate supports during the first-year induction process as another major component influencing the high incidence of teacher attrition in general and special education (Boyer, 2005; Donne & Lin, 2013; Irinaga-Bistolas et al., 2007; Whitaker, 2000).

Despite studies showing the benefits of good and positive mentoring and induction programs for beginning teachers (Ingersoll, 2012; Marshall et al., 2013), when compared to general education, the number of research and publications studying the mentoring programs for novice teachers in special education is minimal (Gehrke & McCoy, 2012). Furthermore, most of the data and studies available are numerical and statistical in nature (Barber & Turner, 2007; Cancio, Albrecht, & Johns, 2013; Donne & Lin, 2013; Irinaga-Bistolas et al., 2007; Marshall, Karvonen, Yell, Lowrey, Drasgow, & Seaman, 2013; Williams & Dikes, 2015), exploring only the technical components of induction in relation to special education teachers, such as job retention and statistical analysis of job satisfaction. Empirical research is

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negligible for in-depth narratives in this area that explores the feeling and experiences of novice teachers (Sindelar, Brownell, & Billingsley, 2010). Moreover, when using academic databases such as ERIC, Academic Search Complete, JSTOR, Education Full Text, and Professional Development Collection, only two published studies were found that specifically explore the narratives of mentoring and induction experiences of novice teachers in special education (DeMik, 2008; Schlichte et al., 2005), confirming the need for more studies that explore the narrative of teachers in special education (Valentine, 2007).

Methodology

Letters were sent introducing the research study to the special education director of three schools at a school district in a southern metropolitan city in the United States. The special education directors sent copies of the letter to novice special education teachers in their school, who were in their first or second year of teaching. Interested teachers were invited to contact the researcher if they wished to participate in the study. Five special education teachers in their novice years volunteered for the research. They were interviewed individually, using a semi-structured script. The teachers responded to open-ended questions about their beginning teaching experience and the development of any mentoring relationships. Interview questions included the following:

- What type of mentoring has occurred (i.e., professional development workshops, assigned mentor, informal mentors, other forms)?
    - Have any informal mentoring relationships developed?
    - How are formal and informal mentoring relationships different?
    - Which relationship offers the most useful support?
- Has mentoring been effective? If so, how? If not, in what ways was/is it lacking?
- How often is cohort support sought?
- Ideally, what could be done to best support transition as a new teacher in this school?
- Discuss your greatest source of support in your position.
- Discuss your greatest source of support in your school.
- Discuss your greatest source of support outside your school.
- What sources of support do you wish were always available to you? Explain.
- Name three things you wish your teacher education program had taught you, but did not.

Data was audiotaped, transcribed and edited for clarity, and analyzed for emerging themes. Data was then integrated with analyses and subject comments to construct vignettes that emerged from these interviews.

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Case Studies with Analytic Commentary

Tracy: Relationships are Important

"Right now, in my new school, my relationship with my new partner, who is also my assigned mentor, is cordial, professional, friendly; but that's it. It's not like we go out to dinner or happy hour or anything like that." As Tracy sits in a coffee shop during her interview, she reflects on her first two years of teaching. When asked what it is that she feels that she needs the most, Tracy said, "The friendships and relationships that I had in my first school are not present in my assigned school. That is what I miss the most. I can go to anyone for a technical question about IEPs (Individual Education Plans), a classroom situation, and other stuff. However, teaching special ed is a very emotional job, and the support is not there in the new school." The fact that Tracy finished her second year with high remarks and a good evaluation does not ease her feelings that good, close mentoring relationships with co-workers are vital to a teacher's success.

What does it take to keep a special education teacher in the field? In the case of Tracy, a veteran teacher assistant in the contained settings with more than 20 years of experience, who decided to become a teacher of record herself, it was the proper relationship with colleagues and mentors that kept her going during her first year of teaching. "Right now, I am assigned to two inclusive classes, for which I am the special services co-teacher. Then, I manage ten academic cases. In the afternoons, I have a two-hours class that is contained for discipline management. You add meetings, parent phone calls, diaper changes, meals, hall duty, and other issues, and this becomes pretty stressful."

It is a proven fact that surviving the novice years in teaching requires the trusted relationships that develop between the novice teachers and veteran teachers (Williams & Warren, 2007). Most importantly, these relationships must be based on trust, and it must be close enough so that the novice teachers do not fear the new teaching environment. According to Tracy, "Mentors need to be there when you need them. It should be a person you fully trust. He or she should be able to tell it to you like it is."

Tracy's assigned mentor in her new school only speaks to her on few occasions and when it is needed, according to her. "It's not like I see her every day. It's not like it was before with Amy—who was my first assigned mentor," she said. Tracy remarks that her relationship with her old mentor was different: they had lunch together every day; they held weekly meetings to analyze her progress and teaching; and they did their lesson planning together. With her new mentor, Tracy said that she goes to her when she needs help or "something like that," including guidance, but she emphasized the professional formality of the relationship with this new mentor.

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Research has indicated that the mere presence of a mentor is not enough (Schlichte et al., 2005). Novice teachers should be comfortable enough with their mentors, including the ability to properly build close relationships and trust. In addition, it is agreed that mentorship in teaching is a support system that must act formally and informally (Dempsey et al., 2009). Novice teachers look for more than a mere formal appraiser in their mentors; they search for individuals with whom they can confide, laugh, and even cry; for some, mentorship needs to be more than a formal professional relationship (Schlichte et al., 2005). Often, when mentoring relationships are formal, it is when teachers experience loneliness, alienation, and despair. In the case of Tracy, proximity was also a factor. According to her, in her first school, her mentor was also her neighbor. She candidly recalled how she always opened the curtain after school. In her new school, Tracy's new mentor is on the other side of the building, and this does make a difference to her. As she stated, "I do feel lonely sometimes. In the new school, I have a bigger load. I don't have teacher assistant for every period. And the emotional support is missing. I cannot just open the curtain when school is over, and rant, and scream, and laugh about stuff like I used to do last year with Amy."

Michael: The Importance of Instructional Support

"I am the typical teacher that half of his family members are teachers. My mom is a teacher. My dad is a high school coach. My grandma and several aunts of mine were teachers. My sister is a teacher…etc..etc..etc." Michael just finished his second year of teaching in special education. He works as an inclusion, co-teaching specialist in social studies. He serves 40 students in the regular setting, and he is the academic case manager for 12 students. He does not find his situation overwhelming. And for the most part, he expressed a high level of satisfaction with his new job, but he expressed doubts about the curricular support from the administration. "I love my students and my colleagues. I enjoy coming to work every day. This is a great place to work. If we could only have more instructional support from the main office, that would make a difference."

Michael's story is not new or unique. Emphasis on the lack of administrative support is a key factor in the high attrition rate of special education teachers. Problematic interactions between teachers and administrators have been well documented, which has been cited as a problem that is critical for the success of novice teachers (DeMik, 2008; Schlichte et al., 2005); however, it continues to be a problem that has not been adequately addressed in public education (Cancio, Albrecht, & Johns, 2013). In addition to the relationship between teachers and principals, another important aspect is the instructional support that novice teachers receive (Al-Bataneh, Anderson, Toledo, & Wellinski, 2008), which can also make a difference in the professional life of a beginning educators.

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"Here is the thing," Michael continued, "I started to teach at another state. During my first year of teaching, I attended all kind of workshops and training. From classroom management to reading strategies, you name it, I did it. I probably did over 70 hours of professional development during my first year. I did not teach my first year in this state; I did my first year of teaching somewhere else. When I came back to this state, and I started to work in this district, I had to learn the computer system myself, and so many other things on my own and without any help. I didn't have any kind of orientation for new teachers. I had to also figure out on my own how to write the IEPs (individualized Education Plan) and do the paperwork for this district. In addition, during our only curriculum day, we just spent the entire day going over data and numbers for testing. There wasn't one single workshop about reading, writing, classroom management, or anything like that. I have yet to see a math, reading, or literacy coach in this school, much less an instructional specialist for SPED from the main office." Michael, who became a teacher straight out of college when he was 23 years old, feels that the administration does not consider instructional support as important as other aspects of the school setting. According to him, there is a lot of emphasis on compliance, testing, and paperwork, but he feels that the administration does not care about the learning process itself.

Instructional support is also cited as another reason for teacher attrition (Boyer, 2005). Breakdowns between the administration and teachers are not unique; it can also lead to an unhealthy environment within a school. Lack of administrative support can take many shapes. In the case of Michael, it is the lack of instructional support from the main district office. Despite that, Michael is very positive about his current job. He expressed that his colleagues and the administration within the school are very supportive, and that makes all the difference for him.

Brian: What I Didn't Learn in College.

"I have to be honest. I love it where I am. Everyone is so supportive here. From day one, it felt like I was part of an awesome family." Brian, who is 25 years old, also started teaching after he graduated from college. He earned a teaching degree from a very reputable state university, which is considered a public ivy-league school. His classroom is bare and not well decorated; this is because he is a Life-Skills teacher in special education. During our interview, he sat in the middle of the room. In his face, the radiant satisfaction with his job was evident. "Everyone in my team is really helpful. I could go to anyone and ask for help. I don't have a mentor; I have mentors." he said. In addition, Brian appeared to have established a good support network. He added, "I have a very good formal and informal relationship with my mentor. She also teaches Life Skills; therefore, I can go and talk to her, and she knows exactly what I am talking about." Brian also mentioned that he had a good network of informal

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mentors throughout the school, including teachers from other departments, who have guided him about teaching in general.

Brian is a good example that good, supportive mentoring works. Research has pointed to the attributes that contribute to the success of the novice years in teaching (Gehrke & McCoy, 2012). A positive outlook, emotional support, resources, and proper communication with colleagues and staff are critical for beginning teachers during their first years (Schlichte et al., 2005). Brian's story indicates that his school has developed that critical positive culture and emotional support that new teachers need during their early years in the profession. Brian stated that he is very lucky to be working in this particular school.

In the case of Brian, it appears that he has found the relationship with his mentor to be very valuable for another reasons. His satisfaction with his job is opposite to his dissatisfaction with his college education. In our interview, Brian expressed the fact that he did not feel that he learned much about "teaching" in college. He said, "I am very blessed about my mentor and this place. I learned a lot here. I don't feel that I learned anything practical about teaching and what I could use in the classroom during college. I mean, there was a lot of theory, but nothing useful that I could actually use in a real setting. I did not have a good mentor teacher or field supervisor during my internship. I had to start from scratch and learn everything when I arrived here. It was like starting all over again."

Learning the proper skills is important for teachers (Phillips, Allred, & Brulle, 1990). Unfortunately, Brian did mention a contentious point in teacher education programs, which is whether or not teacher preparation programs are properly training our teachers for the real settings (Boe, Sujie Shin, & Cook, 2007). In the case of Brian, it appears that his mentor filled the important gap between what he learned, or better said what he did not learn, in college, and what he needed to know in order to survive the real classroom.

Sarah: The Importance of Formal Mentoring and Cohort

In her mid 30s, Sarah is a second career seeker. She earned a degree in finances, and she worked in the finance sector as a manager for stock-portfolios for many years. Few years ago, she decided to switch careers to become a teacher. "Don't ask me why I did it," she said laughing. "When it comes to mentoring, I really like my mentor. She is incredibly supportive, but she is not in special education," she remarked, "If I have a question about what to do in the special education classroom, I cannot go to her. To be honest, I don't why she was assigned to me as a mentor." Although Sarah spoke very fondly of her mentor during our interview, stating what a wonderful person she was, she did express her frustration

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with the fact that she had a mentor who did not teach special education. For her, this was a clear disadvantage.

In the case of Sarah, who does like her mentor, with whom she maintains a very good relationship, she did find the technical support in other colleagues from the special education department. "Lucky for me, if I have a specific question about special ed, I do feel like I can go to anyone in my department and ask," she said. In addition, Sarah was assigned to a cohort of new teachers in the school where she works. "I really like the cohort; it is very helpful to me," she added. The cohort is made of all the new and novice teachers in Sarah's school. According to her, they hold regular meetings after school, attend workshops, and regularly meet with a master teacher. In her interview, this was very important for her, because it appears that it is from the cohort and the informal mentors where Sarah obtained her practical knowledge. "I also have been able to maintain contact with professors and college friends," she said, "And that helps."

In the case of Sarah, it appears that having a good mentor in the subject that one teaches was important for her. "Don't get me wrong. I love my mentor, and she is the person I go if I need a good listener; however, if I have a question about an IEP or a special ed issue, I cannot ask her," she stated. In the end, Sarah stated that districts and schools needed to be more sensitive in assigning mentors. "It's ok to have a good friend, but you also need someone who can guide you with the practical and technical stuff that you need to know," she said as she ended the interview.

Ashley: The Need for Better Resources

"I love the people where I work, but we are in dire need of resources," Ashley said, a first-year special education teacher at the age of 28. In her interview, she advised all teachers to research carefully the place where one wants to work "because it can be a place where resources are very scarce. It is hard to even get pencils around here. We are not even allowed to make photocopies by ourselves. For every set of photocopies, every single set, I have to fill a form and put a request. Moreover, I don't even have a set of textbooks. This is becoming very frustrating for me, right now."

Ashley's story is not unique. The proper access to resources and teaching materials has been vital to the success of new teachers (Dillon, 1994; Luft, Bang, & Roehrig, 2007). She identified the lack of resources as the source of her stress during her first-year of teaching. She did have a mentor during her first-year, and it appear that they had relationship; however, it seemed that the lack of access to materials for teaching did become a more important and central issue for Ashley. "It is a stressful situation," she added.

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In our interview, Ashley expressed her desire to continue teaching after her first-year, but she had some reservation. "The year ended in a positive note; the students accomplished a lot; but this is not good, and there has been times when I had doubts. For example, I had to spend over $1,000 of my own money to buy supplies and materials for the kids. This is a high poverty area, and many of them come to school without a pencil and notebook. This is very frustrating for me. It appears like I can never catch up in this school. There are a lot of good people working here. Don't get me wrong; however, we are all struggling to support the basic needs of these students the best we can. I never thought that I was going to going to be spending so much of my own money to buy classroom supplies."

The Analysis of the Narrative

We can all agree that narratives are important in the case of teachers' experience. Collectively, there are many samples of narrative about the experiences of teachers in the classroom. However, little has been done to explore the narrated experience of novice teachers during the process of induction, most importantly in special education. Therefore, and for that reason, it could be important to take a closer look at what was found in the stories of Tracy, Michael, Brian, Sarah, and Ashley.

In the case of these novice teachers, everyone will continue to be a teacher. However, we do see some points of contentions in their careers. Although each case was very different, and each teacher's experiences were unique, we did see a couple of emerging themes. In all cases, we were able to witness a significant amount of emotional attachment to their jobs. One of the main purposes of this study was to explore what each candidate value most during their induction and novice years. As such, we discover three main themes emerging: 1) the importance of mentorship, 2) the value of proper training, and 3) the significance of the working environment.

Mentorship

In our study, we clearly see two cases where mentorship is important: Tracy and Sarah. In the case of Tracy, a personal relationship with a mentor was very important for her. She valued having someone to ask questions; however, this was not as important as having a true leaning shoulder and the emotional support when she needed it. In her case, not having the support and relationship that she had with her old mentor was indeed a spiritual void that was very significant to her. At the time of our last interview, Tracy already submitted a transfer request to her first assigned school, which was granted for the coming year.

In the case of Sarah, we see that sometimes districts and school are not very sensitive to the teacher's need. In her case, her mentor did not teach special education. Although Sarah's relationship

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with her mentor was good, and they were very close friends, she felt that this arrangement did not benefit her as a teacher of special education. We saw that she did benefit tremendously from a cohort of novice teachers and her extended relationship with former professors and college friends; however, she was very critical of not having a mentor who was also a special education teacher. Despite having a very amicable relationship with her assigned mentor, she felt that this arrangement did have limitations, which for Sarah was an important observation.

Training

Our study also shows that proper training does matter, and we were able to see that very distinctively in two cases: Michael and Brian. In Michael, we saw somebody who was indeed very happy at the place where he was working as a teacher. However, we witnessed somebody who placed a lot of value on instructional support, which he was not getting at the new school where he was teaching. This bothered Michael very much, and he expressed that very vividly during his interview. He was very fond of how much professional development he obtained when he began his teaching career at another state, and he was very critical of how much instructional support he was missing at his current school. In the case of Michael, we witnessed somebody for whom pedagogical knowledge and instructional strategies were important.

In Brian, we witnessed a success story. He went as far as calling his co-workers family. He highly valued his mentor and the rest of his colleagues. However, Brian was very bitter about his college experience, and he was not shy about this fact. He did not feel that he learned something valuable for his teaching career during college. He credited his mentor for a lot of what he had learned, emphasizing the importance of benefiting from her knowledge and experience. In his teaching job, Brian was fortunate, as a novice teacher; he had everything that makes the induction years a good and successful experience: good mentor, a strong formal and informal relationship, positive school environment, and excellent support from staff and faculty in general.

Working Environment

In one case, however, we witness that other stressors can significantly affect the experience of the novice teacher, significantly reducing the importance of mentorship and other common induction experiences. A good example of this is the case of Ashley, for whom having a mentor was secondary to her struggles with the lack of resources and material in her class. She did mention that she had a mentor; however, she did not elaborate too much on the subject. In our interviews, it appears that the issue of a mentor was not important to her. In her story, we witnessed someone who was very concerned with the

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welfare of her students. She mentioned the fact that she spent a sizable amount of her money on materials for her students, and that appeared to be a source of frustration for her. The lack of resources in her school was a big issue for Ashley, and this was defining her experience during her first-year of teaching.

Limitations and Future Directions

Despite the fact that there is confidence in the soundness of this methodology, this study does have limitations. First, this study was conducted with five participants. It would be noteworthy to see if the same themes (mentorship, training, and job environment) emerge with a larger pool of candidates. In addition, it would be appealing to replicate this study in different geographic areas with more variety in the socio-economic landscape. Furthermore, it would be helpful to interview more veteran teachers to explore how experiences like the ones mentioned shaped their teaching careers in the long term. Finally, it would be worthy to explore if the initial success of induction years changes dramatically with the rotation of the administration, new teaching assignments, and transfer of schools.

Despite that each story in this study was unique, the strong emotional bond each teacher developed in their own situation remained a significant constant throughout the study. Regardless of the different experiences, each story showed these teachers had a basic spiritual need that had to be cultivated and cared. In the end, at a basic level, it appeared that these emotional needs were essential for the successful completion of the induction years.

Despite its limitations, this study did yield some interesting observations that can be helpful to administrators, professors, novice teachers, and mentors in the effort to support more successfully the induction of teachers into profession:

1. Emotional support and strong relationships seem to be important and crucial for the success of novice teachers. It is not enough to have a professional and formal relationship with your colleagues.
2. Novice teachers are in dire need of learning teaching strategies. Pedagogical and instructional supports are vital for their success of beginning teachers.
3. Mentor teachers do play a big role in teaching the practical knowledge that is often missing from college and teacher preparation programs.
4. Placing novice teachers with the right mentor teacher does matter. Districts and schools do need to be more aware of the necessities of novice teacher when assigning a mentor.
5. School administrators and district officials should be aware of the stressors that can affect the good performance of novice teachers. Often these stressors can be become overwhelming for beginning teachers, affecting how they initially perform in the classroom.

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6. The creations of informal networks, professional cohorts, and long-term relationships are important for novice teachers. Universities and districts should be encouraged to participate in the creations of networks that have the potential to create those spaces where novice teachers can find support. The creation of these supportive bonds can be important for the success of teachers during their beginning years.

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PREPARING PRESERVICE TEACHERS: COLLABORATING WITH THE SCHOOL LIBRARIAN TO DEVELOP DYNAMIC CLASSROOM LIBRARIES

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Abstract

Recent graduates of our university's School Library and Information Science program participated in an informal study of ways librarians collaborate with classroom teachers. Although the librarians' feedback provided very useful data for our program accreditation review, their feedback revealed unexpected findings. These findings from the librarians' led us to survey the knowledge and skills of preservice teachers in our teacher preparation program to determine if our teacher preparation program is embedding the knowledge and skills teachers need to establish and implement dynamic classroom libraries as resources to integrate into the curriculum. Results from both surveys produced a powerful call to action for our preservice teacher preparation program.

Keywords: Librarians, collaboration teacher preparation

The results from a routine program assessment tool given to newly practicing school librarian graduates revealed that classroom libraries were limited in the school districts in which they worked. Some teachers in their districts seemed unaware of the potential impact that a classroom library can have on children's reading habits and attitudes as readers. Teachers were also surprised by the librarian's offer to support teachers in their teaching and implementation of a dynamic classroom library.

The findings from the school library program assessment led to informal interviews among the university's undergraduate students in the teacher preparation program. It was concluded that there is a critical need to increase preservice teachers' awareness of the importance of classroom libraries and the value of teacher-librarian collaboration in the teacher preparation program. Expanding preservice teachers' awareness of the transformational power inherent in well-used classroom libraries, aligned with curriculum, may have far-reaching effects in children's reading lives in and out of school. Long-term,

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children's skills, confidence, and transformed attitudes about themselves as readers is a predictable possibility. Similarly, expanding preservice teachers' awareness of the expertise and value of the school librarian as a collaborative instructional partner could lead to teachers being proactive in developing collaborative partnerships in practice.

Literature Review

Classroom libraries have been promoted in the literature for quite some time. As early as 1879, there is evidence of classroom libraries being planned and created by the students in the classrooms with the help of public librarians (since there were no school libraries at the time) (Cummings, 1943). Helen Parkhurst argued, "a well-equipped library played an important part in carrying…curriculum" (as cited in Cummings, 1943, p. 13). "Many classroom teachers favored the room library because they felt that it did much to cultivate an appreciation for, and an interest in literature as well as to increase the quantity of reading done" (Cummings, 1943, p 14).

School libraries are now firmly established and seamlessly integrated into the school curriculum and reading activities; however, there is still a critical need for the classroom library. Research conducted by Richard Allington (2006) showed that higher achieving schools had more books in classroom library collections; students read more frequently in classrooms with a larger collection of books; and classrooms with a larger collection of books usually had students reading books they could read successfully. Classroom libraries provide teachers with an opportunity for extending learning opportunities for all students, even those students who may be struggling, unmotivated or disinterested (Allington & Gabriel, 2012; Dreher, 2003; Routman, 2003; Williams, 2016).

Setting up a classroom for the first year of teaching can be a daunting endeavor. Teachers are faced with a whirlwind of work. Setting up a classroom library can seem like an added burden so it often takes a back seat; however, the benefits far outweigh the challenges. According to Tunnell, Jacobs, Young, and Bryan (2016), "Every classroom needs its own library" (p. 237). Some teachers may think a classroom library is not necessary because there is a school library. One library does not take the place of the other, nor are they independent of each other; they complement each other when the school librarian helps to build a positive pathway between the school library and the new teacher's classroom library.

Preservice teachers need to know that, once in practice, they do not have to face the challenge of implementing a classroom library alone. A wealth of support is available for new teachers to set up their classroom libraries - the school librarian. The librarian can provide support, additional resources, and practical advice as they work together to design and maintain the new teacher's classroom library. The

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school librarian is an instructional partner who has the expertise to help teachers develop a classroom library that motivates children, meets curriculum standards, and transforms classroom experiences. Morrow and Weinstein (1982) found that a "well-designed classroom library corner significantly increased the number of kindergarten children who chose to participate in reading activities during free play period" (as cited in Fractor, Woodruff, Martinez, & Teale, 1993). Time invested working with the school librarian in the beginning of the year to set up a dynamic classroom library will pay great dividends throughout the year.

The Study

Recent graduates from a librarian certification program submitted feedback during a routine assessment of their first year in practice. Although results were positive, an unexpected finding about elementary classroom libraries was discovered. The librarians reported limited classroom libraries in their school districts and that some teachers seemed unaware of the impact a classroom library could have on their students. The librarians also reported that many teachers were surprised by the librarian's offer to support their teaching and implementation of a dynamic classroom library.

Inspired by these findings, the authors sought to verify whether classroom libraries are still relevant to elementary classrooms. A review of the literature validated that classroom libraries are still essential. The literature also showed that teacher-librarian collaborations produce powerful results with practical solutions and support for new teachers.

Method

A qualitative survey of school library program graduates after their first year in practice explored their experiences and perceptions of ways they can or did collaborate with classroom teachers. A qualitative survey of preservice teachers explored their awareness and knowledge of classroom libraries and how school librarians can support them in establishing and maintaining a classroom library.

Participants

The participants included one hundred preservice teachers enrolled in a children's literature class, and 20 graduates of the school library program. The population was representative of candidates enrolled in the education programs, which included 89% females and 10% males, ranging in age from 20-54. There were approximately 53% white, 35% Hispanic, 5% Asian, 4% two or more races, and 3% Black participants. Teacher certification areas reported were EC-6 (66%), 4th-8th (9%), 8th-12th (16%), and

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9% non-education majors. Content areas included bilingual, ESL, math, science, social studies, language arts, special education, art, and early childhood.

Instrumentation

School library graduates and preservice teachers responded to surveys and discussion forums regarding classroom libraries and teacher-librarian collaboration. School library program graduates responded to a routine assessment survey of their first year in practice. Preservice teachers responded to discussion forums and an informal survey specifically assessing their awareness of classroom libraries and the library's impact on student achievement and engagement in reading, awareness that school librarians can help teachers establish a classroom library, and that teachers can collaborate with school librarians to get help in keeping their classroom library current and relevant.

Data Collection

Newly practicing graduates of the school library program responded to questions about teacher-librarian collaboration. One open-ended question, the focus of this work, asked them to reflect upon their collaborative experiences with teachers pertaining to classroom libraries. The results fell into the following three categories.

Fully developed classroom library with help from the librarian. One of the twenty school librarians reported that two teachers at her school had asked for her help in providing suggestions for book titles to add to their classroom libraries. In particular, they both wanted informational books to support their curriculum, and books that would interest several of their boys who were struggling readers.

Fully developed classroom library with no help from the librarian. Four of the twenty school librarians reported that all teachers in their schools had well-developed classroom libraries that were maintained by the teacher. The school librarian had provided no assistance in their implementation or in its continued development.

Limited classroom library with no help from the librarian. Fifteen of the twenty school librarians reported the teachers in their schools had limited classroom libraries. Essentially, this meant the classroom libraries consisted of several baskets or shelves of fiction books for students to read when they had finished all their work assignments.

Preservice teachers responded to questions about classroom libraries and teacher-librarian collaboration. Specifically, they were asked about their awareness of classroom libraries, the impact of

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classroom libraries on student achievement and engagement in reading, the school librarian's help in developing a classroom library, and collaborating with the school librarian to keep their classroom library current and relevant. The results were as follows:

1. Classroom libraries: Fifty-two percent of the preservice teachers were not aware that classrooms have libraries.
2. The impact of classroom libraries on student achievement: Seventy-one percent of preservice teachers were not aware of the impact of classroom libraries on student achievement and reading habits and attitudes.
3. The school librarian's help in developing a classroom library: Seventy-six percent of the preservice teachers were not aware that the school librarian could help them in developing a classroom library.
4. Collaborating with the school librarian to keep classroom library current and relevant: Eighty percent of the preservice teachers were not aware that the school librarian could collaborate with teachers to keep their classroom library current and relevant.

Results

School librarians. Five school librarians reported teachers having fully developed classroom libraries. Only one of the five reported a couple of instances where teachers had asked for her help in providing suggestions for book titles to add to their classroom libraries. Fifteen of the school librarians reported limited classroom libraries in their schools. Limited classroom libraries consisted of a few baskets or shelves of nonfiction titles. The librarians reported that some teachers seemed unaware of the impact a classroom library can have on their students. The librarians also reported that many teachers were surprised by the librarian's offer to support their teaching and implementation of a dynamic classroom library.

Preservice teachers. Just over half (52%) of the responses indicated that preservice teachers were not aware of the importance of a classroom library, though many thought they were not needed if students had access to a school library. Nearly three-fourths (71%) of the preservice teachers were not aware of the impact a classroom library can have on student achievement and reading engagement. Three-fourths (76%) were also not aware that school librarians could help teachers in developing a classroom library and four-fifths (80%) were not aware the school librarian could collaborate with teachers to keep classroom libraries current and relevant.

Several questions arose for the authors from the preservice teacher responses. Did the presence of classroom libraries in their own previous experiences influence their current opinion of the value of a

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classroom library? Will their current opinion influence the kind of classroom library they will have in their future classroom? Are preservice teachers receiving the necessary instruction to design, promote and maintain an effective library? Are preservice teachers informed of the value of collaborating with the school librarian?

Designing the Classroom Library

"Students in classrooms with well-designed classroom libraries interact more with books, spend more time reading, demonstrate more positive attitudes toward reading, and exhibit higher levels of reading achievement" (National Assessment of Educational Progress Report, 2002, as cited in Scholastic, n.d.). Together the teacher and librarian can fill the library with diverse and interesting books that are rich with potential for teaching and learning. As soon as children enter the classroom, they will know that reading is valued because the classroom library is in a prominent location, easily accessible to all students. The shelves are filled with a wide range of approximately two to three hundred books that meet the needs of the learners. The librarian can help to expedite this process of selecting books by introducing teachers to online resources to locate book titles that align with the teacher's curricular needs (Freeman, 2014). The librarian can also help locate other sources for books.

> The presence of trade books in a classroom speaks volumes about their central place in the learning process. Simply by being there, shelves of real books…give evidence of the teacher's commitment to lifelong learning. If a teacher talks about the importance of reading but only a few books are visible, the message rings hollow to young ears. (Tunnell et al. 2016, p. 237)

According to Miller and Kelley (2014), a goal is about 200-300 books; however, speaking practically, it is certainly more likely that a new teacher may have a small number of books. The collection can begin small and grow over time. A well-balanced selection includes diverse, high-interest books in a variety of genres and topics that meet students' needs and interests.

The classroom library also showcases children's writings and author/illustrator displays. A bulletin board for anchor charts and book reviews written by teachers, parents, and children are highly motivating displays that encourage readers. Other resources and materials readers may need in the library include bookmarks, clipboards, sticky-notes and wish lists. Some children may also benefit from colored overlays and audiobooks. In a study of fourth graders, conducted by Pachtman and Wilson (2006), the authors found that having a classroom library which provided access to a lot of books was the single most important factor influencing the students' reading practices.

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When bookshelves or floor space are limited, teachers have shown tremendous creativity. For example, books can be placed in labeled baskets or crates, on counter tops, on wall-mounted rain gutters, or even on the floor. Regardless of the containers, books need to be labeled and arranged in a way that attracts children's attention. Book covers facing outward are far more likely to pique children's interest (Catapano, Fleming, Elias, 2009).

Maintaining and Promoting the Classroom Library

Preservice teachers need to understand the importance of students having choices in the books they read, as well as opportunities to browse, explore and try out a wide variety of books. Actual reading from books, rather than merely completing activities pertaining to books, produces skill building in reading in all areas of the curriculum. Proficient readers who are more skilled in self-selecting books are more likely to choose books they can successfully read (Kragler, 2000). Readers who are successful in reading the books they choose are more motivated to read, leading to extra reading practice that expedites their reading progress (Mohr, 2006). "When students read books of their own choosing, they are likely to be more motivated, independent readers" (p. 82).

A well-balanced collection stays fluid and dynamic as books rotate from the school library to the classroom library, providing readers with unlimited choices of books they can relate to and successfully read. Through periodic interest surveys, teachers can keep motivation high by providing books on topics of specific interests to the students. According to the findings of a study conducted by Fractor et al. (1993), access to a well-designed classroom library promotes voluntary reading and combats aliteracy - choosing not to read. Voluntarily reading for pleasure strengthens positive reading habits through having time to read and making their own choices (Hall, Hedrick, & Williams, 2014). Many agree that these are the facets of motivation. A new teacher may question where she will find time for independent reading in a classroom library, but the real question should be how she will ensure students have time to read for pleasure.

"Across the grade levels, teachers should provide daily opportunities for leisure reading" (International Reading Association, 2014, p. 2). The report also suggests that "…daily engagement with a balanced range of text genres and modes of texts in both nonfiction and fiction texts, has the potential to motivate" (International Reading Association, 2014, p. 3). When given opportunities to browse, use, and manage the classroom library, the library becomes a place where students take ownership of their library space and experience authentic reading opportunities. When books are in the hands and hearts of children, reading is transformed into a purposeful, enjoyable way for students to practice what they are learning. Surrounded with a wealth of books and time to read in a pleasant atmosphere, children make

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memories that transfer far beyond the classroom. When children associate reading at school with pleasure and success, they are far more likely to see themselves as competent readers and continue reading. Giving students these opportunities will help them develop the ability to choose appropriate texts for themselves. This, in turn, will promote the likelihood that students will choose to read outside of class. "Young people who view reading as enjoyable and read outside of class on a daily basis are much more likely to experience success as readers" (International Reading Association, 2014, p. 2). Furthermore, struggling readers who read outside of school make reading gains in reading achievement (Allington, 2009; Kamil, 2008).

Teachers benefit from working with the school librarian to keep the classroom library aligned with curriculum, as well as engaging and motivating for students. Once a trusting collaboration is established, teachers, librarians, and students can maintain a routine that keeps classroom collections fluid and relevant. Frequent brief communication with the librarian for assistance will help maintain and promote the classroom library. This two-way communication in this reciprocal relationship also informs the school librarian of the ever-changing needs of teachers and students. Some strategies for maintaining and promoting the classroom library include:

- Brief productive communiqué between the teacher, librarian, and students
- Rotating books from the school library based on curricular needs and students' interests
- Showcasing informational texts aligned to and rotating with curriculum
- Giving book talks and suggesting related books to check out from the school library
- Creating author/illustrator displays showcasing specific books
- Introducing the latest popular titles and award winning books
- Reader's logs to set reading goals and track student progress
- Building text sets by pairing fiction and nonfiction
- Provide titles that offer students a choice and entice students to read for pleasure.

These strategies for promoting the classroom library enables teachers new to practice to be more effective teachers in generating students' interests in reading (Allington, 2015; Catapano, et al., 2009, Ivey & Johnston, 2013).

Other Sources for Books

Librarians and teachers can also work together to find other sources for providing books for the classroom library. Grant writing, in collaboration with the school librarian, has been shown to be fruitful in garnering funding for trade books for the classroom library. These include donations from parents, PTAs, PTOs, and other community partners. For example, the teacher can ask community partners for

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donations during special events, such as Read Across America, Poem in Your Pocket Day, and National Readathon Day. Parents and grandparents may also wish to donate books to the classroom library for birthdays and holidays. Furthermore, the teacher can guide students in writing classroom-published books to donate to the school library, which also serves to continue the connection between the school library and the classroom library.

The Far-Reaching Impact of the Classroom Library

Overall, the potential impact of the classroom library is immeasurable. When the teacher and librarian collaborate to design, maintain, and promote the classroom library, children gain many benefits. Benefits for learners and teachers are presented below.

Benefits for Learners

Children in classrooms with libraries read 50 to 60% more than do children in classrooms without libraries (Morrow, 2003). Long-term, these benefits transfer into children's personal and social lives, as well as academic knowledge and skills. Time spent reading independently pays rich dividends and there is great return in many other areas of the curriculum. As a result, frequent use of the classroom library provides a foundation to support independent reading that increases children's knowledge and perspectives, and exponentially expands writing skills, critical thinking, and self-confidence (Miller & Kelley, 2014).

Students in classrooms with access to books, magazines, and other materials have better attitudes toward reading, reading achievement, and comprehension (Moss & Young, 2010). Having quick and easy access to books provides children with the opportunities for community conversations about books (Miller & Kelley, 2014). A classroom library well-used by a community of readers and learners give children a sense of belonging and opportunities for purposeful social interaction with lots of talk about books. The books contained within a classroom library have the potential to broaden children's global view and introduce them to new cultures.

Benefits for Teachers

Classroom libraries not only provide potential for a wealth of gained content knowledge for students, but can also provide teachers with information about students' reading habits, skills, and abilities. Observations of students using the classroom library help teachers identify "fake readers" (Miller & Kelley, 2014, p. 26). Then teachers can intercede by offering students, without judgment, strategies and opportunities for transforming students into real readers (Miller & Kelley, 2014).

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Reading logs can document students' evidence of reading. Teachers can use this information in one-on-one discussions to analyze student knowledge and comprehension of their reading. This information will enable teachers to guide students in future book choices (Miller & Kelley, 2014). Time invested in setting expectations for the classroom library and instructing students in effective ways for using and managing the library will strengthen students' ownership of the classroom library. This can lead to students' improving their leadership and management skills which, in turn, can build community in the classroom and lead to a classroom which runs more smoothly throughout the year (Iqbal, Rauf, Zeb, Rehman, Khan, Rashid, & Farman, 2012; Kwok, 2016). Giving students quick and easy access to books provides them the opportunity to become independent learners and better readers. Students' improved reading comprehension may be reflected in their scores on high-stakes testing.

Teachers will also benefit from collaboration with the librarian. The school librarian is an expert who can connect teachers with quality literature for their students, as well as the latest most popular books, books that address particular topics, and books that best support specific student learning needs. The librarian can also help teachers find books and other resources through their work with community partners and grant writing. The teacher-librarian partnership is invaluable when making an impact with classroom libraries.

Conclusions

While it may be assumed that new teachers graduate with the knowledge of the importance of classroom libraries and teacher-librarian collaboration, the results of this study indicate otherwise. Informal surveys and discussion forum responses clearly indicated a pressing need for preservice teachers to learn about the tremendous impact of classroom libraries and how to design, promote and manage them. Another important finding showed that preservice teachers are often unaware of the value of collaborating with librarians to raise student achievement and attitudes toward reading.

As educators who prepare future teachers, we must heed the call to advocate for classroom libraries and teacher/librarian collaboration. Teacher educators must equip preservice teachers with knowledge of the tremendous impact classroom libraries can have on children and the effectiveness of authentic teaching. The authors invite teacher educators to consider whether their preservice teachers graduate with an awareness of the value of teacher-librarian collaboration, and how school librarians can support teachers' efforts to design, promote, and maintain classroom libraries. School librarian certification programs must also ensure that their graduates are trained in ways to successfully and congenially partner with classroom teachers to implement effective classroom libraries that impact

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students' reading success. The potential for student and teacher success is far too great to neglect this call to action.

The need for future research is evident. This work is the beginning of the authors' formal research to assess preservice teachers' knowledge about classroom libraries and teacher-librarian collaboration and its alignment with current best practices. Specific strategies will be implemented to expand preservice teachers' skills relevant to classroom libraries and teacher-librarian collaboration before they move into their own classrooms. Books provide a means to an end to which we all strive - lifelong readers and learners. Teachers and librarians who collaborate to provide students with books, both in the school library and in the classroom library, form a strong partnership in transforming students' reading habits and attitudes. A well-worn path between the school library and the classroom library can help students read more, read more successfully, read for a lifetime, and read beyond the walls of the school.

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STEM PROGRAMS IN TEXAS PUBLIC SCHOOLS

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Abstract

School staff are challenged to meet the needs of 21st century learners. Each public school campus is charged with preparing students for postsecondary success. An expectation of the Texas Education Agency (TEA) is that students meet a minimum standard on all tested subjects of the State of Texas of Academic Achievement Readiness assessment. Texas students historically do not perform as well as their international peers in the areas of math and science (Lee, Grigg, & Dion, 2007; Mullis, 2012). This quantitative comparison study was an investigation of STEM program effectiveness comparing T-STEM Academies with non-STEM campuses as they relate to student achievement in Texas public middle schools. State math and science assessment data will be the measure of performance of the five TEA T-STEM Academies and each of the forty TEA comparison campuses. T-STEM Academies often result in a greater campus percentage rate than respective comparison groups, however this is not true in all comparisons. Campus leaders and stakeholders will be able to evaluate the effectiveness of STEM program implementation, specifically T-STEM Academies.

Keywords: STEM Education, T-STEM, T-STEM Academy, Texas Education Agency (TEA), STAAR, 21st century learner

Educators are challenged to meet the needs of 21st century learners (Fleischman, Hopstock, Pelczar, & Shelley, 2010. According to the Texas Education Code, each public school campus is charged with preparing students for postsecondary success (Texas Education Agency, Chapter 28). The Texas Education Agency expects students to meet a minimum standard on each State of Texas of Academic Achievement Readiness assessment. United States students historically fall short of their international peers in the areas of math and science (Gonzales, Williams, Jocelyn, Roey, Kastberg, & Brenwald, 2008). Schools have many options for implementing Science Technology Engineering and Math (STEM) programs to support student achievement.

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According to the U.S. Department of Education's 2010 National Education Technology Plan, education is critical to the United States' success in an inner-connected, global economy and must be a priority. The effect of STEM program implementation on student achievement is worthy of study to evaluate program effectiveness. The problem is the low student performance in the areas of math and science in secondary schools (Glod, 2007). An inadequate number of high school graduates in the United States pursue careers in STEM fields (Fleischman et al., 2010). Educational stakeholders, district and campus administrators, and teacher preparation programs may benefit from considering the effect of STEM programs on student achievement.

STEM Terminology

For the purposes of this discussion, the term STEM refers to science, technology, engineering, and math. The National Science Foundation began using SMET in the 1900s as shorthand for science, math, engineering, and technology; however, there was complaint that it was too similar to "smut" resulting in the changed acronym (Sanders, 2008). Other related terms are relevant to the discussion of STEM content and practices. *Problem-based learning (PBL)* provides a learning environment "which focuses on spontaneity, collaboration, and flexible problem-solving skills, is such an approach that engages students in problem-solving scenarios" (Hung, Hwang, Lee, Wu, Vogel, Milrad, & Johansson, 2014, p. 316). *STEM Education* includes varied experiences integrated throughout content areas allowing multiple opportunities for connections (Honey, Pearson, & Schweingruber, 2014). *STEM Literacy* is "the knowledge and understanding of scientific and mathematical concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity for all students" (National Research Council 1996, p. 2). *T-STEM Academies* are secondary schools with a focus on increasing student enrollment for STEM fields by improving instruction and student achievement in science and math (Heinrich, 2013).

Implementing STEM: The Current Approach

STEM careers are essential for technology innovation and global competitiveness. Researchers (Langdon, McKittrick, Beede, Khan, & Doms, 2011) have presented conflicting conclusions regarding the effectiveness of problem-based instructional approaches including integration of STEM subjects in academia. For example, some believe subjects should not be taught in isolation because they are integrated in the workforce (Woodruff, 2013). Kirschner, Sweller, and Clark (2006) argued integrated learning is ineffective and unsuccessful due to the claimed failure of minimal guidance. Little research exists comparing the effectiveness of STEM programs and traditional instructional approaches in middle schools, so the results of this study will address this gap in the literature.

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For approximately 60 years, educational reform has addressed the area of STEM. In 1957, a competitive interest in technology and engineering increased in the United States with the launch of Russian satellite Sputnik (Lanius, Logsdon, & Smith, 2013). Americans emerged as a leader in STEM after President Eisenhower challenged citizens:

> The Soviet Union now has – in the combined category of scientists and engineers – a greater number than the United States. And it is producing graduates in these fields at a much faster rate. We need scientists in the ten years ahead. They (the President's advisors) say we need them by thousands more than we are now presently planning to have. The Federal government can deal with only part of this difficulty, but it must and will do its part. The task is a cooperative one. Federal, state, and local governments, and our entire citizenry must all do their share (Woodruff, 2013).

In 1958, the space program National Aeronautics and Space Association (NASA) was created. A decade after Apollo, the US emerged as a leader in the production of STEM employees with the number of students graduating engineering degrees. In the 1980s over 80,000 American earned college degrees in engineering (Adams, 1982). With the support of federal funds, education reform shifted the focus from memorization to scientific process and literacy (Woodruff, 2013). The Reagan Administration's National Commission on Excellence in Education published *A Nation at Risk* to further encourage education reform (Vinovskis, 2015). Texas was a leader in developing a Long-Range Plan for Technology (LRPT), adopted in November 1988 (Pignato, 2012). The LRPT aligns with the mission of Texas public education ensuring an engaging, relevant, and future-focused system of education for young learners.

In 1996, the National Science Education Standards refocused student centered science instruction with inquiry-based learning as a core philosophy (National Research Council, 1996). Meanwhile the National Council of Teachers of Mathematics outlined K-12 standards (Grouws, 1992). Lastly, the International Technology and Engineering Educators Association (1996) designed standards for technological literacy. All of these organizations combined to support STEM education reform and anticipating an increase in student readiness for STEM careers.

Today, United States leaders aim to be a global leader in STEM fields and innovation. According to Gomez and Albrecht (2013), ongoing research by the National Academies, the National Research Council, and the National Science Foundation findings are critical in addressing educational programming to position the United States as a leading country of global economies. Billions of government dollars are allocated to STEM education. The adequate preparation of students, teachers, and practitioners in STEM fields is critical to the economic development in the United States. Approximately

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$3 billion was designated to improve educational programs in an effort to increase student participation and employees in STEM fields (Kuenzi, 2008).

In spite of the investment in STEM education, the United States struggles to maintain a competitive edge. Many students fail to meet proficiency standards in science and mathematics in standardized testing. Often teachers lack knowledge in the subject matter, and may teach courses outside of their certification areas. Student achievement and degree attainments in math and science are below peers in other countries. Comparative to other nations, United States 15-year-olds ranked 28th in math and 24th in science. Among 24-year-olds earning degrees in math or science, the United States ranked 20th (Kuenzi, 2008). Of all degrees awarded in the United States, only 17% represent STEM fields. Postsecondary degree attainment doubled from 1960 to 2000 in the United States in STEM fields; however STEM degree attainment has since remained stagnant (Kuenzi, 2008).

President Obama renewed the challenge of scientific research and innovation in his 2009 State of the Union Address:

> We will not just meet, but we will exceed the level achieved at the height of the Space Race, through policies that invest in basic and applied research, create new incentives for private innovation, promote breakthroughs in energy and medicine, and improve education in math and science. Through this commitment, American students will move… from the middle to the top of the pack in science and math over the next decade – for we know that the nation that out-educates us today will out-compete us tomorrow. (Woodruff, 2013)

In 2010, President Obama's Council of Advisors on Science and Technology (PCAST) prepared a report providing a two-pronged strategy for improving K-12 STEM education: Prepare and inspire the next generation of students (Kennedy & Odell, 2014). The National Science and Technology Council's (NSTC) Committee on Science, Technology, Engineering, and Math Education (CoSTEM), established in 2011, was an attempt to coordinate policies and establish goals across federal agencies supporting STEM education.

A New Model: T-STEM Academies

The implementation of STEM varies. One example of such programs is a STEM initiative in Texas, titled T-STEM Academy. Texas Science, Technology, Engineering, and Mathematics Academies (T-STEM) utilize the T-STEM Blueprint (Texas Education Agency, n.d.). Campus leaders apply to Texas Education Agency (TEA) to earn the distinction of a designated T-STEM campus. In Texas, 92 T-

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STEM academies and 7 T-STEM technical assistance centers have received a budget totaling approximately $120 million (Young, House, Wang, Singleton, & Klopfenstein, 2011).

Originating in 2006, T-STEM academies have guidelines, or blueprints, including procedures for enrollment. The population must consist of at least 50% economically disadvantaged students, and academic performance is not a selection criteria (Young et al., 2011). T-STEM Academies serve all students of designated campuses; however, there is a priority on underrepresented populations including economically disadvantaged, at risk, and English language learners when selecting schools (Texas Education Agency, n.d.).

The curriculum in T-STEM Academies engages secondary students in STEM education. According to Van Overschelde (2013), the T-STEM curriculum provides challenges for students through activities, projects, and problem-based learning and promotes critical thinking, creativity, innovation, and real-world problem solving . Problem based learning allows the student to solve realistic problems that reflect the decisions and challenges people face very day rather than reading about facts and concepts that define a particular field of academic study and embedded technologies of T-STEM Academies support student goals expanding investigations, data collection, and data interpretation (Van Overschelde, 2013).

The blueprint is a required road map for T-STEM academies incorporating benchmarks and program expectations. Educators on each campus complete a self-assessment to determine a growth continuum of developing, implementing, mature, or role model. The blueprint is not exclusive to T-STEM schools, so it is a resource to increase rigor and college readiness for other schools as well. The document may provide assistance with developing business and college partnerships to increase career and college rigor and provides examples of critical thinking skills and problem solving. T-STEM academies benefit from network membership, professional development, events hosted by TEA and Educate Texas, and resources with best practices. T-STEM Academies have three memorandums of understanding including partnerships with an institution of higher education, a T-STEM Center, and a business partner (Texas Education Agency, n.d.).

There are seven T-STEM Centers located at Texas education centers (Region I STEM Center of South Texas and Region XIII Transformation Central Texas STEM Center) or higher education institutions (Aggie STEM Center, Center for STEM Education and Research University of Texas Dallas, Southeast Regional STEM Center UT Galveston, Ingenuity Center UT Tyler, and Texas Tech T-STEM Center). Each of the seven centers are similar, however they also offer areas of specialization (Morgan, Capraro, Capraro, & Nite, 2015). The centers provide services to the over ninety T-STEM Academies.

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T-STEM Centers have some funding available from TEA. Each T-STEM Academy has unique characteristics. However, the core program requirements include consistency in the areas of mission-driven leadership, culture and design, student outreach and retention, strategic alliances, and advancement and sustainability. The blueprint rubric contains seven benchmark areas (Texas Education Agency, n.d.).

Research Design: Quantitative, Causal-Comparative Study

The purpose of this causal-comparative quantitative study was to investigate campus performance rates as reported by the TEA in T-STEM Academies compared with campuses without T-STEM designation. The middle school campuses implementing a T-STEM program and schools in a state-identified comparison group that have not implemented the program were the participants in this study. Each of the five T-STEM campuses has a unique comparison group of 40 similar campuses. TEA officials established a list of 40 comparable campuses assessed under the state's accountability system. The campuses have similar student enrollment and demographics as defined by TEA. Campuses in the comparison group that do not have T-STEM academies are the control group, and the experimental group will include those five campuses that are T-STEM Academies (Texas Education Agency, 2015).

Five middle school T-STEM Academies provide adequate campus performance data in each of the tested subject areas as reported in the 2015 Federal System Safeguards Status Report (Texas Education Agency, 2015). The TEA 2015 Federal System Safeguards Status Report includes STAAR performance rates of reading, mathematics, writing, science, and social studies. The campus performance rate in each tested subject area is the percent of all students meeting the standard. The second group consists of middle schools in the comparison group, as provided by TEA, of each of the five T-STEM middle schools (Texas Education Agency, 2015). The variables in this study include middle school campuses and campus performance rates reflected on state accountability system reports. The data from these schools provided the comparison. The average score from each T-STEM school defined the known value in the one sample *t*-test. The comparison schools provided the mean data for comparison to the known value.

Findings

State of Texas Assessments of Academic Readiness (STAAR) campus performance rates as reported by TEA 2015 Federal Systems Safeguards Report were the data used for this study. The data from the state assessment allows educators to analyze student and campus performance. Campus data included all tested subject areas of reading, mathematics, writing, science, and social studies. Data included all students tested in each subject.

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The type of school, T-STEM or not, is the independent variable. The dependent variables are the campus passing rates in each subject area for the T-STEM schools and TEA comparable schools. It is appropriate to use a one-sample *t*-test to compare a known value to the means of dependent variables (Creswell, 2011; Huck, 2012). The average score from each T-STEM school defined the known value in the one sample *t*-test. The comparison schools provided the mean data for comparison to the known value. Used in this study was T-STEM schools (nominal data) and state assessment data (ratio data). A one-sample *t*-test compared nominal and ratio data. For each T-STEM campus, a one sample *t*-test was conducted for each subject area. This analysis occurred separately for each T-STEM school.

Math

Texas students in 6th, 7th, and 8th grade test in the area of mathematics. T-STEM Academies consistently had a higher percentage of students meeting standards on STAAR mathematics than campuses without T-STEM designation. Table 1 contains the results of the one sample *t*-test of STAAR mathematics campus performance rates between T-STEM Academies and campuses without T-STEM designation. T-STEM Academies had higher scores of 6% to 17% above campuses without T-STEM designation; however, in comparison group 2 the T-STEM Academy score was 11% less. The T-STEM Academy in comparison group 2 had the lowest passing rate (52%) of all the T-STEM Academies.

Table 1

One Sample t-Tests for STAAR Math

	Test Value	T	Df	Sig. (2-tailed)	Mean Difference
CG1	61	-5.336	39	0.000	-10.275
CG2	52	8.197	39	0.000	11.775
CG3	73	-6.422	39	0.000	-9.550
CG4	77	-4.045	39	0.000	-6.800
CG5	80	-8.928	39	0.000	-17.925

Science

Students in 8th grade tested in the area of STAAR science. Displayed in Table 2 are the results of the one sample *t*-test of science campus performance rates. There is a difference in campus performance rates on STAAR science between T-STEM Academies and campuses without T-STEM designation. The T-STEM Academy demonstrated 13% more students meeting the satisfactory standard in comparison to group five.

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Table 2

One Sample t-Tests for STAAR Science

	Test Value	T	Df	Sig. (2-tailed)	Mean Difference
CG1	43	1.376	39	0.177	2.750
CG2	56	1.407	39	0.167	2.250
CG3	55	1.045	39	0.303	2.125
CG4	67	-1.627	39	0.112	-3.175
CG5	69	-5.470	39	0.000	-13.800

Reading

Students enrolled in Texas public schools take the STAAR annually in multiple subjects from 3rd through 8th grades. Table 3 contains the results of the one sample *t*-test comparing the T-STEM known value and comparison group mean value of STAAR reading campus performance rates. There was a difference in campus performance rates on STAAR reading between T-STEM Academies and campuses without T-STEM for 6th, 7th, and 8th graders. In campuses without T-STEM designation, 4% to 9% more students met satisfactory standard in comparison group 1 and 3 than the T-STEM Academy. T-STEM Academies 4 and 5 had a 6% to 7% higher passing rate compared to campuses without T-STEM. Since two of the T-STEM Academies had better passing rates than the comparison groups and two had lower rates, the results were inconclusive.

Table 3

One Sample t-Tests for STAAR Reading

	Test Value	T	Df	Sig. (2-tailed)	Mean Difference
CG1	54	3.350	39	0.002	4.750
CG2	71	-1.560	39	0.127	-1.675
CG3	62	8.965	39	0.000	9.150
CG4	86	-6.311	39	0.000	-7.450
CG5	76	-4.723	39	0.000	-6.250

Writing

Texas students in 7th grade are tested in the area of writing. Table 4 contains the results of the one sample *t*-test of writing campus performance. Comparison Group 1 scored 4% less than the T-STEM Academy on the STAAR writing campus performance rate. Comparison Groups 2 and 3 scored between 5% and 10% higher than the respective T-STEM Academy. Comparison Group 4 scored 20% higher than the T-STEM Academy.

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Table 4

One Sample t-Tests for STAAR Writing

	Test Value	T	Df	Sig. (2-tailed)	Mean Difference
CG1	52	-2.581	39	0.014	-4.825
CG2	55	3.676	39	0.001	5.175
CG3	53	6.024	39	0.000	9.950
CG4	53	11.468	39	0.000	20.025
CG5	65	-1.607	39	0.116	-3.125

Social Studies

All Texas 8th grade students take the STAAR social studies assessment. Table 5 contains the results of the one sample *t*-test comparing the T-STEM known value and comparison group mean value of STAAR social studies campus performance rates. Campuses without T-STEM designation demonstrated 3% to 14% more students meeting satisfactory standard in three comparison groups than T-STEM Academies. Comparison Groups 1 and 3 scored between 3% and 6% higher than the respective T-STEM Academy. Comparison Group 4 scored 14 points higher than the T-STEM Academy.

Table 5

One Sample t-Tests for STAAR Social Studies

	Test Value	T	Df	Sig. (2-tailed)	Mean Difference
CG1	32	2.753	39	0.009	6.600
CG2	52	-1.286	39	0.206	-2.675
CG3	45	2.034	39	0.049	3.775
CG4	42	6.044	39	0.000	14.750
CG5	51	-.949	39	0.349	-2.375

Summary of All Subjects

Four of the five T-STEM Academies had a greater percentage of students meeting satisfactory standard in mathematics than the respective comparison group. In science, only one of the T-STEM Academies demonstrated a higher standard than its respective comparison group. Three of the four comparison groups had a greater percentage of students meeting standard in writing. There was an equal distribution of comparison in the area of reading. Two of the four T-STEM Academies scored higher in reading than the comparison groups. Comparison Group 1 and Comparison Group 3 scored higher in reading. No T-STEM Academies had a better student performance than the comparison groups in social studies.

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Overall, there was a difference of campus performance rates of T-STEM Academies and comparable campuses without T-STEM designation. T-STEM Academies had an increased percentage of student achievement in the areas of math and science. T-STEM Academies did not demonstrate a higher percentage of student achievement in the area of social studies.

Recommendations

Current researchers justified the need for educational reform including STEM education; however, there is little documentation evaluating the effectiveness of STEM programs on student achievement. As evidenced in the current literature, the need exists for improved instruction and student proficiency in STEM subjects. Educators need to prepare students for STEM fields in order to provide graduates with a competitive advantage in a global economy. U.S. President Barack Obama urged educational leaders and stakeholders to retain 100,000 STEM teachers over the next ten years and engage learners in STEM areas (US Department of Education, 2010). The results of this study may add to the current literature and assist educational stakeholders in making effective decisions for students and teachers.

Math

There was a difference is STAAR math rates between T-STEM Academies and campuses without T-STEM designation. Four T-STEM Academy rates had statistically significant higher passing rates than the comparison group on mathematics. In T-STEM Academies, the focus is on improving instruction and learning in the areas of math and science, and teachers at other campuses could benefit from some of the strategies. A recommendation is to involve school leaders from campuses without T-STEM in a professional learning community to share campus wide strategies that were successful in T-STEM Academies. Professional development could benefit teachers in T-STEM and non-T-STEM schools and should extend teacher instruction to integrated learning and PBL experiences. Through professional development, teacher leaders should share successful STEM education activities, including PBL lessons, which synthesize science, mathematics, engineering, and technologies and which encourage critical thinking, creativity, innovation, and relevant problem solving (Zollman, 2012). Finally, teachers and administrators at all schools should review the T-STEM blueprint as a resource that is not limited to T-STEM Academy usage.

Science

There was a difference is STAAR science scores between T-STEM Academies and campuses without T-STEM designation. All T-STEM Academies had statistically significant higher science

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passing rates than the respective comparison group. By design, T-STEM Academies focus on improving math and science achievement through effective instruction and integrated learning. Again, professional development focusing on collaboration, meaningful and relevant experiences, and problem-based inquiry is a recommendation. Another recommendation is for educators and administrators to review and utilize the T-STEM blueprint as a resource as it is not limited to T-STEM Academy usage.

Reading

There was a difference in STAAR reading rates between T-STEM Academies and campuses without T-STEM designation; however, two of the T-STEM Academies had better passing rates than the comparison groups and two had lower rates. Therefore, the results are inconclusive. Students in 8th grade must pass reading for promotion status. A recommendation is to increase vertical and horizontal alignment focused on effective implementation of Texas Essential Knowledge and Skills (TEKS), the state curriculum standards, in the area of reading. Teachers may share instructional strategies and methods within professional learning communities. District leaders may also strategically plan for the improvement of reading instruction, specifically for campuses with a focus on math and science.

Writing

There was a difference in STAAR writing rates between T-STEM Academies and campuses without T-STEM designation. Three of the comparison groups had statistically significant rates higher than their respective T-STEM Academies. A lesser emphasis on writing instruction may have been the result of increased focus on other areas such as math and science. District and campus leaders must explicitly state expectations for all TEKS, including writing. School leaders should identify teachers with instructional strengths in writing and utilize their strengths in professional development opportunities. Professional development to increase proficiency in writing and ideas for integration of writing instruction may apply in math and science instruction. Administrators should consider designing observation opportunities of teachers observing effective teachers. Another recommendation is to utilize available resources, such as T-STEM Centers, higher education partners, and business partners to increase student success in the area of writing.

Social Studies

There was a difference is STAAR social studies rates between T-STEM Academies and campuses without T-STEM designation. Three comparison group rates had statistically significant higher rates than the respective T-STEM campus. Although leaders may be eager to implement STEM programs, leaders remain accountable for state assessments in all subject areas. Math and science are

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priorities on most campuses, which may result in a lack of emphasis on social studies. A recommendation is for T-STEM leaders to collaborate for strategic planning of effective implementation of social studies TEKS. Educators in T-STEM Academies need to utilize available resources, such as T-STEM Centers, higher education partners, and business partners, to increase student success in the area of social studies.

Conclusions

Educational leaders may use this study for consideration of instructional programs. The data analysis supports T-STEM programs in the areas of math and science instruction. While educators may not implement a specific STEM education program, they could implement strategies, integrated learning, and PBL pedagogy similar to T-STEM implementation. The T-STEM blueprints are public information and available online.

Educators may benefit from programs that support STEM curriculum, teacher development, and student learning. Integrated studies are available through the support of federal government initiatives. Investments from agencies account for approximately 80% of STEM education federal funding in the President's budget request (Gonzalez & Kuenzi, 2012).

Students who experience early exposure to a STEM curriculum often follow it through high school (Thilmany, 2014). STEM pedagogy is rooted in interdisciplinary applied application of knowledge designed around a cooperative effort to provide students with comprehensive, relevant, real world applications. Sanders (2009) suggested STEM education includes approaches that explore teaching and learning among any two or more of the STEM subject areas. Merrill & Daugherty (2009) defined STEM education as a standards based, meta-discipline where all teachers teach an integrated approach to learning with content combined to a single study. STEM education supports a continuum of learning for students, educators, and business and community partners to provide learning pathways in technology driven careers. One benefit is that students can increase their knowledge of how things work through problem solving as well as enhance their technology skills. School districts nationwide select STEM courses as the framework for STEM based programs and curriculum.

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TEACHERS' RECOMMENDATIONS FOR DEALING WITH WORKPLACE BULLYING IN SCHOOLS

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Abstract

The purpose of this study was to explore teachers' recommendations for dealing with workplace mistreatment of teachers. While a limited amount of research has been conducted regarding teachers' experiences with mistreatment or bullying by their administrators, no research has addressed specific ways for teachers to deal with the mistreatment. The teachers who participated in this study offered suggestions for steps teachers could take to protect themselves if they were being bullied or mistreated by their administrator. Teachers suggested a need for educating themselves about policies and state codes of ethics; how to document the perceived mistreatment and their responses to it; and finding sources of support for themselves.

Keywords: teacher mistreatment, K-12 education, bullying in schools

Bullying is a continuing problem in education, with many schools teaching students and staff about prevention (Robers, Kemp, & Truman, 2013; Swearer, Espelage, Vaillancourt, & Hymel, 2010). However, far fewer conversations are had about the bullying of teachers in schools. Workplace bullying (sometimes referred to as "mobbing" or "mistreatment") is a pervasive issue; nearly half of all working adults have experienced bullying and mistreatment in the workplace (Namie & Lutgen-Sandvik, 2010) and 27% of U.S. workers report being bullied at any point in time (Workplace Bullying Institute, 2014). Often, this mistreatment goes unpunished. Hall (2005) stated that only 13% of workplace bullies face consequences for their actions while 87 percent of the victims eventually leave their jobs as a result of bullying.

Bullying and mistreatment are exhibited through negative communication including spreading rumors and public embarrassment (Lutgen-Sandvik & Tracy, 2012), rude and abusive language (Vega & Comer, 2005), explosive outbursts including yelling and screaming (Blasè & Blasè, 2006; Lutgen-Sandvik, Namie, & Namie, 2009). What sets bullying apart from other negative communication is the persistence (De Wet, 2010; Lutgen-Sandvik & Tracy, 2012). A single incident between two individuals of equal power is not considered bullying (Hauge, 2010).

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Prior research by Fox and Stallworth (2010) found that nearly half of teachers had been mistreated by their supervisors. With an already high rate of teacher turnover in schools (Ost & Schiman, 2015), teachers need ways to help them deal with mistreatment if they feel they are experiencing it from an administrator. If teachers can resolve the problem; they may choose to stay at their school or move to another school instead of leaving the teaching profession. The purpose of this study was to explore teachers' recommendations for dealing with mistreatment. The participants in this study are teachers who feel their administrators have mistreated them and they offer valuable insight into how they successfully dealt with the mistreatment or how they were able to leave the school where they were mistreated and move to a different school.

Literature Review

Workplace Bullying in Schools

Despite an increasing body of research related to workplace bullying, definitions of bullying vary (Georgakopoulos, Wilkin, & Kent, 2011). Einarsen, Hoel, Zapf, and Cooper (2011) define workplace bullying as:

> … harassing, offending, or socially excluding someone or negatively affecting someone's work. In order for the label bullying (or mobbing) to be applied to a particular activity, interaction or process, the bullying behaviour has to occur repeatedly and regularly (e.g. weekly) and over a period of time (e.g. about six months). Bullying is an escalating process in the course of which the person confronted ends up in an inferior position and becomes the target of systematic negative social acts. A conflict cannot be called bullying if the incident is an isolated event or if two parties of approximately equal strength are in conflict (p. 22).

Blasè, Blasè, and Du (2008) define bullying as "any behavior – verbal, nonverbal, and physical (excluding physical violence) – that, in the teacher's perception, causes psychological-emotional, physical-physiological, personal, and/or professional harm to oneself" (p. 265).

Various specific behaviors have been categorized as bullying in an education setting. School administrators who engaged in bullying of their teachers used threatening behavior, verbally abused teachers, treated teachers disrespectfully, socially isolated teachers from their peers, showed favoritism towards certain teachers, and engaged in nepotism (Blasè & Blasè, 2006; De Wet, 2014). Administrators also publicly humiliated teachers in front of their colleagues and/or students and set their teachers up to fail, tried to ruin their reputations, and unfairly criticized teachers. Administrators sometimes ignored the boundaries between teachers' personal and professional lives, setting rules about the friends they could have or the clothes they could wear (De Wet, 2014).

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While teachers may be versed in identifying and dealing with bullying in their classrooms, they often have difficulties recognizing when they are the victims of bullying. Bullying in education is more prevalent than in many other professions (Fahie & Devine, 2014). Fox and Stallworth (2010) found that 46.5% of teachers were subjected to pervasive bullying by their supervisors. Due to the loss of income incurred by teachers who leave their current employment, many suffer the abuse for longer than the 23-month average (Hall, 2005).

In education, the bullying and mistreatment of teachers may come from an administrator or fellow teachers (De Wet, 2010). According to De Wet (2014), principals were the main aggressors targeting those in positions of lesser power. The victims often lacked power and job security. Some were new teachers, and/or were pregnant. De Wet (2014) also found that sometimes the victims were those who did not fit in well socially with their colleagues in their schools.

"Bullying at work continues only when organizational cultures condone, model, or reward it" (Lutgen-Sandvik & Tracy, 2012, p. 8). Thus, to address problems with bullying, an organizational approach is necessary; concentrating on individuals may be ineffective, especially if the organizational culture supports aggression. An organization's cultural and social beliefs must also be considered when trying to advance change—if the beliefs foster aggression, organizational change will likely not occur (Lutgen-Sandvik & Tracy, 2012). Namie and Lutgen-Sandvik (2010) found that in more than 70% of the cases of workplace bullying, upper level management took no steps to address the problems or actually worsened the problem. Organizational communication may serve to silence the victims of bullying. Especially when the bully holds a position of power, other employees may be hesitant to speak out or resist. Peers may offer support or assistance to the victims of bullying, but they may also be paralyzed and do nothing, often for fear of becoming a target themselves (Lutgen-Sandvik & Tracy, 2012). Teachers may blame themselves for the abuse and are therefore less likely to discuss it with colleagues (Hall, 2005).

Often, administrators target the most competent and knowledgeable teachers; administrators who engage in these practices view these teachers as competition (Parsons, 2005). Teachers may also be targeted if they are well respected by their colleagues and parents. Administrators may feel threatened if teachers turn to another teacher for advice and guidance rather than to them (Parsons, 2005). Administrators who micro-manage may resent the loss of control if a teacher is a self-starter and works independently (Parsons, 2005). Blasè et al. (2008) found that some principals mistreat teachers because of personality issues, inability to handle stress, gender issues, faulty assumptions about power, lack of awareness about best ways to use power, and lack of awareness of the effect of administrative behavior.

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Some administrators who bully and mistreat their staff may be unaware that their behavior is offensive. Instead, they see that this behavior is what has caused them to advance in their careers, putting them in positions of authority, so they may feel a sense of superiority. In order for their behavior to change, these administrators need increased self-recognition (Parsons, 2005). In addition, teachers' lack of awareness of the grievance processes in place may perpetuate bullying in schools (De Wet, 2014). Teachers may also choose to not pursue a grievance against an administrator who has bullied them (De Wet, 2010).

Consequences

Prior research has found that the mistreatment of teachers may negatively affect teaching and learning in schools (Beale & Hoel, 2011; De Wet, 2010). Blasè et al. (2008) found that bullying negatively affected teachers' classroom behaviors. For instance, teachers reported that "they were less caring, patient, tolerant, and humorous toward students and that they were forced to use rigid, dated, and authoritarian, ineffective teaching methods with students" (Blasè et al., 2008, p. 290). Teachers reported they had difficulty concentrating at work and stated that during their preparation periods, they did not do any work as a result of being bullied (Jacobs & De Wet, 2015).

Dhar (2012) found that workplace bullying may lead to lower employee morale, increased absences from work, and lower levels of employee motivation. Teachers experienced decreased job satisfaction (De Wet, 2010) and distrust of their colleagues (Jacobs & De Wet, 2015), as a result of being bullied at their schools. Teachers expressed that, as a result of being bullied by their administrators, they experienced less loyalty to their employers, job burnout, apathy, and withdrew from professional activities (Blasè et al., 2008).

Bullying also negatively affected teachers' personal lives (Blasè & Blasè, 2002, 2004, 2006; Blasè et al., 2008; De Wet, 2010; Jacobs & De Wet, 2015). Blasè et al. (2008) found the harmful effects of bullying included: stress, resentment, depression, anger, insecurity, self-doubt, a sense of powerlessness, feelings of fear and dread, sleep disruptions, and obsessive thoughts about their administrator. Teachers who perceived they were bullied stated that they had increased blood pressure, headaches, and other health issues (Jacobs & De Wet, 2015).

Methodology

The purpose of this study was to explore teachers' experiences with and perceptions of mistreatment from their administrators. The research question that guided this study was: If teachers feel an administrator has mistreated them, what steps should they take to protect themselves? These data

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come from a larger mixed methods study designed to investigate teachers' experiences with and perceptions of mistreatment by their administrators; data were collected via surveys and interviews. This paper focuses on the interview component of the study.

Participant Selection

The researcher recruited K-12 public school teachers to participate in this study. To solicit teacher participation, a state-level teacher professional association assisted in distributing the survey link. Participants who wished to participate in an interview about their experiences provided their email address; approximately 50 teachers provided their email addresses and 26 responded to my request for an interview. Teachers determined whether they felt they had been mistreated; therefore, their perceptions of what constitutes mistreatment may vary.

Data Collection

The researcher conducted semi-structured interviews with 26 participants. Of these, two interviewees requested to respond to the interview questions in writing due to time constraints, five were conducted face-to-face at a location of the participant's choosing, and nineteen were conducted via phone or Skype. Interviews lasted between 45 minutes and two and a half hours. I asked the participants to describe their teaching experience and their experiences with mistreatment by their administrators. This paper focuses on teachers' responses to two interview questions: 1). After having these experiences with your administrator, what recommendations do you have for preventing the mistreatment of teachers by administrators? and 2). If a teacher is currently being mistreated by an administrator, how would you suggest his/herself?

Data Analysis

All interviews were audio recorded and transcribed verbatim. I read all transcripts in their entirety, then imported them into NVivo for coding. Some possible themes appeared during data collection, so I included these as codes. I also added emergent codes as I read each transcript again. Some of these codes were questions while others were more descriptive. Once I completed the first round of coding, I reread each transcript to ensure that I had captured participants' experiences with mistreatment by their administrators. After coding was complete, I created a matrix to organize the results of my analysis. One column listed my codes, another the themes, and another contained the relevant quotes to support each theme. This showed how some codes combined to create themes and allowed me to determine if the themes were well supported by the data.

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Trustworthiness and Dependability

To enhance the trustworthiness and dependability of this study, I engaged in member checking, peer debriefing, and keeping a research journal (Creswell, 2013). I provided willing participants with drafts of the preliminary results to see if they felt I adequately represented their views. I also engaged in peer debriefing with a colleague who read my reflexive journal as well as the paper. My journal served as a way for me to reflect on my biases throughout the study and to document my research process. While I do not have first-hand experience with being mistreated by my administrator, my participants' stories did affect me emotionally and the journal was an important way to acknowledge my bias and attempt to minimize it as much as possible.

Findings

According to the findings, many teachers offered suggestions for steps teachers could take to protect themselves if they were being bullied or mistreated by their administrator. Educating teachers about their rights and increasing their knowledge of how to protect themselves and their jobs was one of the most prevalent themes in the qualitative data. Their suggestions for how to educate themselves can be categorized into three areas: educating themselves on policies and state codes of ethics; learning how to document the perceived mistreatment and their responses to it; and finding sources of support for themselves.

Educating Themselves

Teachers felt that not only did they need to educate themselves on their codes of ethics and district policies, they also should be aware of how to document any mistreatment occurring. About half of the teachers placed some of the burden on themselves; while they felt administrators should not be treating them abusively, they also believed that they needed to protect themselves. One teacher said, "We need to be more knowledgeable." Another commented, "Here, the union isn't as strong as when I was in [another state]. So, it's more on us to educate ourselves and take advantage of the support our association provides." Another teacher mentioned that teachers need to be aware of discrimination policies and codes of ethics to protect themselves.

However, even when teachers were aware of the code of ethics and felt an administrator violated it, few teachers were willing to file grievances against an administrator or bring violations of the code of ethics to the attention of district-level administrators. Many teachers mentioned that they feared retaliation from their administrators and did not feel as if they would be protected if they spoke out. A former high school teacher provides her thoughts on teachers speaking out against their administrators:

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> Everybody is afraid to speak up. I think that even if there was a way for teachers to anonymously speak up, but there is not. If you speak out on your own, like, this is who I am and I am saying something about this treatment and how we are being treated and how things are going on in our school, then you have the fear of being recognized. It is kind of catch 22. There is really no good way for teachers to file complaints with that culture of fear.

One teacher, who had served as a teacher association representative, commented on the teachers who came to him regarding problems with administrators:

> Part of the problem is the teachers. And I say that because I can't tell you how many of them come to me with a serious problem which involves abuse by the principal. But as soon as you suggest they file a grievance, oh no.

He said that many of the teachers told him they feared retaliation if they spoke up about their administrator's behavior. He said teachers told him, "I don't want to put a target on my back." He said he understood the fear, but also felt it was unreasonable.

Some teachers described how they had filed grievances against administrators while others took different approaches to deal with the perceived mistreatment. However, many teachers expressed confusion over the grievance processes in place at their various districts. One teacher explained that at his district, "If the grievance was against the person who was here at level one, you went straight to level two. You didn't have to grieve to the person you were grieving." He said that he was "grateful they were able to do that".

One teacher stated, "If the behavior is tolerated, things will get worse." He said that teachers need to file grievances against their principals to stop the bullying, but acknowledges that many are scared to do so. In addition, several participants believed that in order to file a grievance against their principal or assistant principal, they had to first speak with their principal, as is the standard grievance procedure in most districts in this state. However, teachers may file a grievance against their administrator with their administrator's supervisor, sparing teachers the process of directly confronting their administrator to begin the process. Their lack of knowledge of this option suggests that greater education is needed to inform teachers of their rights and options should they feel they are being mistreated or bullied by their administrators. One teacher suggested that grievances should go directly to the school board, removing both administrators and the district office from the process.

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Documenting Teacher and Administrator Behaviors

Many teachers believed that the best way to protect themselves if they felt an administrator was bullying them was to document meetings, conversations, write ups, and other related events. Teachers documented both their own behaviors as well as their administrators'. One teacher shared the commonality she noticed with the teachers who were able to stop the mistreatment:

> It came down to the ones who were able to fight it and get it to stop, it's because they documented everything. When they had a meeting with their administrator they took in their notebook and took notes. And they would follow up with emails to just confirm that this is what they talked about and things like that.

"We also need to document everything," a teacher advised. "My evaluations had been deleted from my school email, but because I cc'd everything to my personal email, I had them still." This teacher was able to file a lawsuit against her school district because she had documented her activities as well as her principal's. She was also able to transfer from the school where she felt bullied, even though she was on a growth plan, because she had documented her principal's behaviors and the human resources director

Another teacher, who transferred from the school where she felt bullied by her administrator, believes that the reason she was able to leave is because she documented what her principal said to her. "I think, that is why the head of HR (human resources) was so kind to me," she said. She explained how she documented what happened to her, saying:

> I had a spiral notebook and my principal knew, she didn't care. I would flop it out and I was like, I am writing down every word she says and I am going to date and time it. When I emailed the head of Special Education and the coordinator for them to come watch me, I would make it in an email. It was always email so I could print it off, but I had enough documentation by the end of the year and I had been in HR so much my principal was not allowed to talk to me without an HR rep there.

Documenting conversations and actions allowed this teacher to move successfully to another school. She feels that if she had not documented events, she would either still be at that school or she would have left teaching altogether."

An elementary teacher recorded conversations between herself and her principal using her phone. She stated that it is legal in the state "as long as one person knows" the recorder is on. "At that time I felt I needed to do it for protection," she explained. She also rebutted one of her observations because the administrator did not follow proper procedures.

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Support

Several teachers wanted the teacher associations to offer assistance and education to their members. One teacher suggested a campaign to educate teachers about their rights and how to deal with problems with their administrators. He said, "It could be boiled down into a paper that personal reps at schools and active people like myself in the [teacher association] could share." He feels that teachers should "at least have somebody that is on their side, giving them information on how to fight this politely and not lose your job."

Several teachers mentioned that the power difference between themselves and their administrators contributed to their reluctance to address any problems they perceived. One teacher felt that because she was relatively young when she started teaching, she was unaware of the ways to address problems with administrators. She also thinks her age contributed to her perceptions of administrator power. She commented:

> I really felt intimidated by their authority with my relative youth, you know? There was a big intimidation factor. By having to sit down in their office with them and their big desk and me in my little chair, there was a lot of intimidation. Had these meetings happened in my classroom sitting down at two desks there would have been a whole different power play there.

She feels that if she had been more aware of how her feelings of powerlessness contributed to her lack of awareness of how to address the problems she had with her administrators. She said that if she faced the same problem now, she would deal with it by involving her union, talking to human resources, and requesting that the meetings be held in her classroom.

Some teachers also recommended that teachers join a professional association for additional support and information. A former middle school teacher suggested:

> On a teacher level, I think there needs to be a lot more education about where you can go. And I think that HR departments need to be more active in telling people that there is a safe space. I still don't know if that space is safe. I don't know if I could have gone and made this report and then stayed off of a black list of some sort. So I also am always going to push young teachers into being part of a union for question asking.

Other teachers echoed these comments and felt that the professional associations offered teachers a place to turn for information and support if they encountered problems with their administrators.

Implications and Conclusions

In sharing their suggestions for ways teachers can deal with mistreatment, participants outlined three main areas for improvement: educating themselves on policies and state codes of ethics; how to

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document the perceived mistreatment and their responses to it; and finding sources of support for themselves. By providing information on how to deal with workplace bullying to both preservice and in-service teachers, teacher educators may help reduce the instances of bullying and mistreatment of teachers.

Many people do not speak out if they feel they are being mistreated in the workplace (Lutgen-Sandvik & Tracy, 2012). For in-service teachers, knowing where to turn for support if they feel they are being mistreated is essential, according to participants. If teachers possess a better understanding of where to seek help and what avenues are available to them should they choose to take action against their administrator, they may be more likely to hold their administrators accountable for their actions or take steps to remove themselves from the situation. All of the teachers in this study who were able to leave the schools where they felt mistreated did so because they were educated on how to protect themselves. They documented both their actions and their administrators', they sought support from their professional associations and human resources, and they educated themselves about policies that offer them protection.

Prior research showed that teachers lack an awareness of the grievance process and may choose to not pursue grievances against administrators they feel has bullied them (De Wet, 2010, 2014). However, this failure to pursue a grievance may lead to a continuation of bullying in schools (De Wet, 2014). Teacher educators should consider including resources for their preservice teachers so that when they are in their own classrooms in the future, they are prepared if problems with an administrator arise. Based on these results, there is no one-size-fits all solution; however, if teachers are equipped with multiple options and if they know how to protect themselves, they are more likely to have a positive outcome if they choose to file a grievance or move to a new school.

Despite provisions in state codes of ethics banning much of the behavior teachers considered as bullying or mistreatment, teachers hesitate to speak out about mistreatment. Educators should also consider creating ways for teachers to anonymously ask questions about their particular situations so they can get advice without taking formal actions. Due to the fear about speaking out, many teachers chose to take no action against administrators they felt were mistreating them. Teachers should be able to get information about the steps they can take to deal with problems without fear of retaliation.

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Limitations and Future Research

One limitation of this research is that the results may not generalize to the greater population of teachers. The participants self-selected into this study and therefore, may have certain characteristics that differ from other teachers who have experienced mistreatment from their administrators and chose not to participate. In addition, the data were collected from teachers employed in a single state; conditions in other states may differ and these results may not be relevant.

Future research should explore the administrators' perspectives. In order to protect these participants, research with their administrators cannot be ethically conducted. However, research on what administrators view as mistreatment and bullying could shed additional light on this topic. Also, this study was conducted primarily with teachers from a single right-to-work state. Future research should explore teachers' experiences with mistreatment in other states as well as determine additional ways teachers have found to prevent mistreatment and bullying as well as ways they have fought back against their bullies, and won.

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USING TEXAS PRINCIPALS' PERCEPTIONS OF NOVICE AND EXPERIENCED TEACHER NEEDS TO INFORM PROGRAM DEVELOPMENT

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Abstract

The purpose of this mixed methods descriptive study was to examine how to enhance our initial teacher education program and graduate programs. Two hundred and sixty-five principals participated in a survey that provided insight on the areas where novice and experienced teachers needed additional knowledge and support as well as providing their ideas on the big issues or trends in Texas schools over the next five to ten years. There were unique needs as well as common areas for growth for novice and experienced teachers. Unique needs for novice teachers were not unexpected. Those included areas such as classroom management, understanding the TEKS for their grade level, and the Professional Development and Appraisal System (PDAS). Unique needs for experienced teachers included using technology effectively in teaching as well as collaborative teaching and learning strategies. Common areas where professional growth were needed was in effectively using data in planning and teaching, working with special populations such as special education, economically disadvantaged children, and ELL/Bilingual students, and working with ELL/Bilingual parents. This study indicated that educator preparation programs must work to purposefully include targeted instruction and experiences in these areas. This study also provides evidence of the need for teachers to individualize their professional development opportunities.

Keywords: novice teachers, professional development, program development

Providing the children of our nation with high quality educators is a moral imperative for educator preparation programs. For this to occur, teacher educators must constantly discern what is effective in their programs, what is missing, and what programmatic changes need to be made in order to provide schools with educators who can effectively meet the needs of all K-12 students. Determining the effectiveness of an educator preparation program requires data from a variety of sources, such as educator candidate data, state and national accreditation standards, and feedback from stakeholders. Because context is such an important component in teaching, it is critical that input from stakeholders from

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multiple contexts be garnered as educator preparation programs are assessed. One valuable group of stakeholders that can capture a variety of contexts is school principals. This mixed methods descriptive study was designed to seek the insight of Texas school principals in terms of what they perceive are the areas of growth needed for novice and experienced teachers as well as what are the most important educational trends or issues for the upcoming five to ten years. Specifically, a survey was created and distributed to principals to gather their input on areas where novice and experienced teachers needed additional knowledge and skills.

The purpose of this mixed methods descriptive study was to examine how to enhance our initial teacher education program and graduate programs. Through a survey of campus principals, we specifically sought to address the following research questions:

1. What are the perceptions of Texas principals regarding the needed knowledge and skills of beginning teachers (zero-three years' experience)?
2. What are the perceptions of Texas principals regarding the needed knowledge and skills of experienced teachers (more than three years of experience)?
3. What do Texas principals think are the most important trends in education for the next five to ten years?

Background and Review of Literature

To ensure that we prepared a survey of critical knowledge, skills, and dispositions of effective teachers that was aligned with best practices according to research and with the requirements for teaching in Texas, we examined the literature and the Texas Administrative Code. (Texas Administrative Code details all standards and curriculum that should be taught in Texas public schools. Compliance of this code is monitored by the Texas Education Agency.) We also noted that it was important to consider the differences between novice and expert teachers. Texas Administrative Code defines novice teachers as those having three or less years of experience. Experienced teachers are those with more than three years of experience in the classroom.

Teaching is often described as a messy and complex task. Not surprisingly, the way in which teachers go about teaching and addressing the problems of practice differs based upon variables such as experience, time in teaching, understanding of teaching, and even personality. What can be stated as fact is there is a difference between the knowledge, skills, and dispositions of expert and novice teachers. Researchers such as Glaser (1990), Bransford, Brown, and Cocking (2000), and Berliner (2001) have examined essential tenets regarding characteristics of novice and expert teachers. Some of these key principles noted across multiple research studies are that expert teachers are more opportunistic and

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flexible in their teaching, sensitive to the demands and social situations surrounding them when problem solving, represent problems differently, and have faster and more accurate pattern recognition capabilities (Berliner, 2001).

Clearly, gleaning what is determined to be basal in terms of novice teacher understanding is critical for initial educator preparation programs. Educator preparation programs preparing educators seeking advanced certification or programs (e.g. principal certification, reading specialists, etc.) must have an understanding of how to build programs of study that continue to move the educator to a higher level of expertise. Hence, faculty in educator preparation programs must constantly delve into research to ensure that their programs of study deliver curricula that provide the critical foundational knowledge, skills, and dispositions on which educators can grow and develop as well as meet accreditation requirements.

Determining what a highly qualified teacher is and what comprises high quality teacher education programs have been topics of discussion for teacher educators for years. Not only have those serving as stewards of the discipline worked to provide guiding tenets and characteristics of high quality teacher education programs but policy makers generate legislation and policies influencing the design and implementation of teacher education programs (Paige, 2002). Imig and Imig (2007) describe three approaches taken by the teacher education profession to determine the curricula for high quality teacher education programs. These methods include expert consensus building approach (Goodlad, 1990), research-based approach (Wilson, Floden, & Ferrini-Mundy, 2001), and a professional consensus approach (e.g. InTASC and NBPTS). The professional consensus method is frequently used by states to determine the criteria for teacher licensure (Imig & Imig, 2007).

The state of Texas uses a professional consensus approach to determine requirements for teacher licensure along with additional requirements added by the Texas legislature. With this approach, the curricular requirements for Texas initial teacher certification often leaves gaps in terms of the required preparation for teachers prepared for today's classrooms. For educator preparation programs to ensure that appropriate, high quality programs of study are being offered, insights from the professional literature on educator preparation and stakeholders from the K-12 educational system must be sought to fill those gaps. To determine major categories not sufficiently covered in the required teacher education curriculum, we researched the literature for areas that are frequently problematic for novice teachers. Our review of the literature highlighted the following areas of concern regarding the effectiveness of many novice teachers in the United States and internationally: classroom management (Christofferson & Sullivan, 2015; Eisenman, Edwards, & Cushman, 2015; Stough, Montague, Landmark, & Williams-

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Diehm, 2015), effective literacy practices (Burnett, 2011; Lycke, Hurd, & Husband, 2015; Xu & Brown, 2016), general teaching strategies (Kelly, Gningue, & Qian, 2015; Khan, Khan, & Saleem, 2015; Shoulders & Krei, 2015, and working with special diverse learners (e.g. English Learners, special needs) (Harper & deJong, 2004; Leko, Brownell, Sindelar, & Kiely, 2015; Russell, 2015; Sebald & Rude, 2015. These themes from the literature, along with the Texas required educator preparation curricula (described in the next section), formed the major components for our survey.

The state of Texas provides a legislatively mandated curriculum for educator preparation programs to use in the preparation of the state's teaching force. As defined by Texas Administrative Code (2016), the content of the state required curriculum for initial teacher preparation programs parallels the Texas Educator standards for in-service teachers along with four other components. The curriculum for candidates seeking initial teacher certification is to include:

1. Reading instruction
2. The code of ethics and standard practices for Texas educators
3. The skills and competencies captures in the Texas Educator Standards that include:
    a. Instructional planning and delivery;
    b. Knowledge of students and student learning;
    c. Content knowledge and expertise
    d. Learning environment;
    e. Data-drive practice; and
    f. Professional practices and responsibilities
4. Instruction in detection and education of students with dyslexia
5. Instruction in detection of students with mental or emotional disorders

Using the information from our review of literature and required curricula for initial teacher preparation in Texas, we designed a survey to send to Texas principals.

Methods of the Study

Survey Development

A 37-item, two-part survey along with a demographic section was created to determine what principals thought were areas where additional preparation was needed for novice and experienced teachers. The list of items was generated using the outline of the required curricula in Texas and then writing items that meet specific elements of the criteria.

For the quantitative section of the survey, 35 items were created using a Likert scale. Respondents were asked to rate the need for additional preparation for both novice (zero-three years of

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experience) and experienced teachers (>3 years of experience) on a five-point scale anchored by the terms "No Need" and "Great Need". Following completion of the first part of the survey, respondents were asked to respond to two open-ended items regarding additional items that they deemed important but that were not included in the initial part of the survey and their perception of the three most pressing issues or trends that they and their faculties will need to address in the next five to ten years. These two items comprised the qualitative data used in this study.

After creation of the survey, a validity check was conducted using a field review by a panel of eight current principals. Panel members completed the survey and gave the researchers feedback on the adequacy of the survey items to address the research questions of the study and the logistical adequacy of the survey in terms of clarity, ease of completion, and general survey format. After receiving this feedback, the researchers made final revisions and deemed the survey ready for implementation.

Participants

Participants in this study were 265 active principals of Texas public schools. A list of email addresses of all active principals in Texas was obtained from the Texas Education Agency through a paid Open Records request. In all, nearly 4,500 requests were made for principals to provide their perceptions via an email survey. The low response rate (5.8%) was disappointing; however, inspection of the demographic breakdown of the respondents revealed that the sample was fairly representative of the population of principals in Texas. Table 1 provides the demographic information for the participants along with data on Texas principals as collected by the Texas Education Agency.

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Table 1

Demographics on Participating Principals

Category	Survey Participant Data	State Data if available
Level of School	Elementary: 56%	Elementary: 48.79%
	Middle/Junior High: 21%	Middle/Junior High: 21.09%
	High: 23%	High: 26.43%
Type of School	Traditional: 88%	Non-Charter: 93%
	Charter: 4%	Charter: 7%
	Other: 8%	
Location	Urban: 26%	Urban: 31.3%
	Suburban: 40%	Suburban: 40.6%
	Rural: 34%	Rural: 28.1%
Gender	Male: 36%	Male: 37.5%
	Female: 64%	Female: 62.5%
Years of Experience	Minimum: 1 year	
	Maximum: 36 years	
	Median: 7 years	
Free/Reduced Lunch	Minimum: 1%	
	Maximum: 100%	
	Median: 64%	
Number of Students in School	Minimum: 43	
	Maximum: 3,000	
	Median: 522	

Procedure

After receiving approval from the institution's Institutional Review Board (IRB), the study commenced. In May 2015, emails were sent to all principals of Texas public schools inviting them to participate in the survey. The cover letter included a general description of the purposes of the study, logistical and contact information for the researchers and the Chair of the IRB, and a link to the survey. Upon clicking the link to the survey, respondents were asked to reaffirm their agreement to participate in the survey and then began responding to the survey items. Responses were completely anonymous. A follow-up email was sent to all participants in June 2015, to remind potential respondents of the request to participate.

Limitations and Delimitations

A major limitation in this study is the small sample size. Data were collected in May-June of 2015. Those months were a time of record rainfall over a long period of time in Texas which created tremendous disruptions in many school districts. This is likely one underlying cause of the limited

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response rate. A delimitation of the study was that principals received the email invitations to participate in this study at approximately the same time when the Texas Education Agency was sending principals required reports to complete. This was certainly a timing error on the part of the researchers and certainly could have negatively influenced the participation rate of the study. Because of the low response rate, the generalizability of the study must be viewed cautiously.

Data Analysis

Research Questions 1 & 2

This survey was designed to provide information related to Texas principals' perceptions of the needed knowledge and skills of novice teachers (research question 1) and expert teachers (research question 2). We initially planned to analyze the data for each research question independently but the results caused us to realize that presenting the results separately and then combined provided a richer view of the data.

The initial analysis involved generation of descriptive data for the first section of the survey where respondents provided their perceptions of the items in a Likert format. Mean ratings for items were then sorted from highest to lowest for perception of need for additional preparation/professional development. These data were then used to generate a list of the ten highest need areas and the ten lowest need areas for both novice and experienced teachers, and are presented in Table 2 and 3. In the case of ties, all items were included in the list.

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Table 2

10 Highest Need Areas for Novice and Experienced Teachers

Novice Teachers	Experienced Teachers
1. Using data in planning	1. Using technology in teaching
2. Using formative data	2. Using formative data
3. Working with special learners - IEP	3. Using data in planning
4. Working with special learners - 504	4. Working with EL/Bilingual students
5. Implementing student accommodations	5. Using data in instruction
6. Classroom management Using data in instruction	6. Collaborative learning strategies Working with EL/Bilingual parents Working with special learners - 504
7. Problem solving with parents	7. Project/problem based learning
8. Problem solving with students	8. Collaborative teaching strategies
9. Increasing literacy proficiency Understanding TEKS	9. Working with special learners - IEP
10. Working with EL/Bilingual students	10. Deep reflection on teaching

Table 3

10 Lowest Need Areas for Novice and Experienced Teachers

Novice Teachers	Experienced Teachers
10. STEM education Understanding school law/rules and regulations	10. College and career readiness standards
9. School culture	9. Understanding TEKS Working with families
8. Using technology in teaching Competency-based education	8. Communication skills
7. College and career readiness standards	7. Competency-based education School culture
6. School safety	6. Understanding school law/rules and regulations
5. Using flipped classroom design	5. Classroom management
4. Using technology for administrative purposes	4. Using technology for administration purposes School safety
3. PDAS	3. Hybrid teaching
2. Hybrid teaching	2. Online teaching (virtual courses)
1. Online teaching (virtual courses)	1. PDAS

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As is clear from inspection of the data, while there was some overlap in the high and low areas of need for experienced and novice teachers, there were also many differences. In the most needed categories, items related to working with special learners, using data, and working with EL/Bilingual students and/or parents were common themes. In the least needed categories, understanding school law/rules & regulations, school culture, competency-based education, college and career readiness, school safety, using administrative technology, professional development assessment system (PDAS, the Texas teacher evaluation system), and hybrid and online technology were common themes.

There were also a number of areas of need that were unique to the responses of the principals for experienced and novice teachers. In the most needed category for novice teachers, implementing student accommodations, classroom management, problem-solving with parents and students, increasing literacy proficiency, and understanding the Texas Knowledge and Skill standards (TEKS) were noted. For experienced teachers in this category, using technology in teaching, collaborative learning and teaching strategies, project- or problem-based learning, and deep reflection on teaching were noted. In the least needed category for novice teachers, STEM education, using technology and using flipped classroom design were noted. In this category for experienced teachers, understanding TEKS, working with families, communication skills, and classroom management were noted.

A second analysis was conducted in order to reduce the data to reflect underlying factors in the responses to the survey. A Principal Components Analysis (PCA) with an oblique rotation (promax) was conducted to examine the factor structure of the principals' responses on the preparation needs survey using methodology and reporting guidelines suggested by Field (2009). Initially, we conducted separate analyses for principals' responses regarding novice teachers and experienced teachers. After finding that the factor structures for the two sets of items were virtually identical, we pooled the items and repeated the analysis.

The Kaiser-Meyer-Olkin measure verified the sampling adequacy of the analysis, KMO - .929. Barlett's test of sphericity Chi-Square – 9720.064, $p < .001$, indicated that correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component of the data. Eight components had eigenvalues over Kaiser's criterion of 1 and in combination explained 69.755% of the variance. The eight components, factor loadings, and Cronbach's alphas are presented in Table 4. The factors identified in the PCA provide a good picture of the structure of the survey. They also support the construct validity of the study, as they mesh nicely with the required curriculum elements for educator preparation programs specified by the Texas Education Agency on which the survey was based.

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Table 4

Factor Structure with Variance Information

Factor	Variance (%) Accounted For	Cronbach's alpha
1. Instructional Skills for Special Learners (Children of Poverty, ELs, IEPs or 504s)	39.895	.918
2. Using Data to Inform Planning and Practice	6.941	.905
3. General Instructional Issues	5.168	.820
4. EL/Bilingual Issues	4.381	.863
5. STEM Issues	4.179	.750
6. Collaborative Teaching/Co-Teaching	3.463	.695
7. Online/Hybrid/Flipped Teaching	2.997	.795
8. T-TESS (new Texas Teacher Evaluation System)	2.731	NA
Total	69.755	

Research Question 3

Research question three was addressed through the open responses principals gave to the prompt of what are three of the biggest trends or issues that Texas schools will need to address over the next five to ten years. Nearly all of the participants provided a bulleted list of items. To analyze the data, every response was listed with repeated responses being tallied next to the response (e.g. Classroom management – listed six times). Once this list was generated, two qualitative researchers, including one that did not participate in this study, independently examined the list to determine if there was a group of overarching themes or categories that could capture the items given by the principals. The two researchers independently created categories of ideas and then listed the items that would fall within that category. At that point, the researchers listed items in multiple categories to try and capture the essence of the possible category. Once both researchers finished their lists, they came together and examined the two documents. First, there was a discussion related to the themes found by the two researchers. Initially, there were six categories. The researchers discussed the items listed for each category and then came to consensus on how to merge themes. The researchers took these common categories and then independently sorted the items to the different categories. Again, once this was done, we compared lists for each category. Where there were differences in the placements of items, the researchers examined both categories and discussed the rationale for inclusion of the item in each category. After three iterations of discussions related to the categories and how to best place the items, the researchers agreed

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upon four major categories: 1) Effectively working with diverse students and families; 2) Instructional issues; 3) School-based educational issues; and 4) State and Federal policy issues. There were a total of 71 unique items presented by principals and each was placed within a single category with no item being listed in more than one category.

In the category of Effectively Working with Diverse Students and Families, there were 18 unique items. The most frequently reported items included the following: Increase in the number of Special Education students with 504/IEPs (20), Teaching Children of Poverty (12), Adapting to Changing Student Diversity/Demographic (12), Working with English Learners (10), Student Motivation Issues (10), Family Issues (e.g. emotional, trauma, drugs, crime) (5), Family and Community Engagement (4), Parental Involvement (4), and Dysfunctional Student Behavior at School (2). Other items listed involved the success of African American students, male students, improving communication with students, colleagues, parents, and communities to improve student learning.

The Instructional Issues category was the largest category with 35 unique items. The most frequently listed items included the following: Technology Integration (29), Using Data to Inform Instruction (7), Problem/Project Based Learning (7), Classroom Management (6), Fluency/Reading/Literacy (6), Cooperative Learning (5), Differentiated Learning (4), Higher Order Thinking Skills (3), Closing the Achievement Gap (2), Changing from Traditional Pedagogy (2), Increasing Effective Instruction (2), Flipped Classrooms (2), RtI/Intervention Strategies (2), and Critical Thinking (2). Items that were listed a single time included teaching soft skills, virtual teaching, online courses, digital citizenship, social media in teaching, teaching problem solving, and student led instruction.

The Policy Issues category had 13 unique items. The most frequently mentioned items included: Decreased Funding for Schools (6), College and Career Readiness Standards (6), Increased Accountability Requirements (4), Changing TEKS (Texas State Standards) (4), and Retention of Good Teachers (4). Singly listed items included: Choice in Educational Providers (competition to public schools), Dual Credit Concerns, Fewer Quality Teacher Applicants, Dual Language Programs, and Shared Sustainable Systems with Higher Education Partners. The School-Based Educational Issues was the smallest category with 5 unique items. These included School Personnel Working Together in PLCs (3), Campus Discipline Issues (3), Campus Culture (2), Bullying (1), and Focusing on Continual Campus Improvement (1).

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Discussion and Implications of Findings

As we examined the data for the top ten areas of need for novice versus experience teachers, we noticed that in many ways, principals might be viewing novice teachers from a viewpoint of survival and being able to "just do the job" (Ngang, Kanokorn, & Prachak, 2014). When looking at these areas of needs improvement, there are clear areas where we see that experience matters (e.g. rapid use of data, working with parents, dealing with unexpected situations in classrooms.). Clearly, experience in these kinds of teaching situations does matter; yet, teacher educators can build in more scenarios and simulations where preservice students have the opportunity to practice in these situations. By providing preservice teachers experiences that relate to the effective use of data in planning and instruction, problem-solving with students and parents, and working with various special populations of students in a risk-free environment, a higher level of confidence and proficiency will be developed.

The data presented here suggest that novice and experienced teachers have both common and unique needs for additional preparation or knowledge development to be perceived as highly effective teachers. Common needs for novice and experienced teachers include knowledge and skills centered around the themes of working with special learners, using data in planning and instruction, and working with EL/Bilingual students and parents. From a higher education perspective, these data suggest that programs at the undergraduate and graduate levels should seek to strengthen their coverage of content and practice in these areas.

All of these themes are included within the state required curricula; yet, there are areas where the curricular requirements could be met without truly addressing the needs of students. For example, the Texas educator standards requirements specifically state that teachers will be able to work with "today's learners". When examining the Texas performance data (TEA, 2015), the two student groups that perform the worst on the 2015 STAAR (the state accountability test) are the largest student groups in the state. The largest student group in Texas are students who are economically disadvantaged (58.8%) and they score the lowest of all student groups. The next largest student group are Hispanic students (52.0%) and they score only higher than the economically disadvantaged students. African American students also consistently scored low on the STAAR test. This clearly shows that Texas educator preparation programs must purposefully include instruction on providing instruction and working effectively with families and communities that are economically disadvantaged, Hispanic, and African American. This was noted in the data for all three research questions and is clearly a need for undergraduate and graduate educator preparation programs to change programs of study to better meet this need.

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Unique needs of novice teachers include implementing student accommodations, classroom management, problem solving with parents and students, increasing literacy proficiency, and understanding TEKS. Educator preparation programs must strive to improve instruction in areas that are often difficult to teach when the preservice teacher does not have full control of the situation or environment. Therefore, educator preparation programs must look at other methods such as coaching through video of our students in the field and computer simulations of situations. Unique areas of need for experienced teachers (using technology in teaching, collaborative teaching and learning strategies, project- or problem- based learning) may not have covered adequately (or at all) when these teachers completed their undergraduate preparation. This finding has implications for both graduate curriculum and in-service professional development offerings.

Areas of least need for novice and experienced teachers are somewhat more difficult to interpret. In some cases, areas that are seen as most needed for novices (classroom management and understanding TEKS) are seen as least needed for experienced teachers. Other areas (STEM education, using flipped classroom design, and using technology in teaching) may reflect the coverage that these areas get in contemporary teacher education programs. Still other common areas of least need (PDAS, online/hybrid teaching, using technology for administrative purposes) may simply not be relevant at this time.

It is interesting that many of the top needs for novice and experienced teachers were also documented by Texas principals as big issues or trends for the next five to ten years. Principals documented the increase in challenging student populations (e.g. special education, EL/Bilingual students, children of poverty) and how to provide effective instruction for these students. The use of technology, collaborative learning environments, and data to prepare and teach meaningful and engaging lessons to students was noted. Again, these are all areas where undergraduate and graduate educator preparation programs can provide foundational and advanced learning for teachers.

In addition, these findings suggest that as schools, districts, and other organizations design professional development programs for teachers, a “one size fits all” approach is not the most effective approach to take. This is also noted in research on professional development that a customized approach is more effective (Desimone, 2009; Webster-Wright, 2009). Novice and experienced teachers do indeed share some preparation needs, but they also have some unique needs that must be addressed. Effective, targeted professional development activities can be a much more powerful tool than a more general approach.

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Conclusion

The results of this mixed-methods descriptive study provide educator preparation programs with insights into the perspective of Texas principals as they work in the teaching and learning environments of schools. By honoring the voices of these important stakeholders of Texas educator preparation programs, we gain a new understanding of how we can position our curricula in a context that best serves the schools in our state. This study also provides wisdom on the professional development needs of our novice and experienced teachers. We must continue Goodlad's (1990) ideal of mutually beneficial relationships between schools and educator preparation programs.

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INSTRUCTIONAL AIDES IN THE CLASSROOM

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Abstract

Due to legislative measures such as the Individuals with Disabilities Education Improvement Act and No Child Left Behind, the roles and responsibilities of instructional aides in the classroom is an issue of growing importance. This research study examined the roles and responsibilities of instructional aides based on teacher- and self-reported surveys at one intermediate sized urban 5th and 6th grade campus. It was hypothesized that teachers and instructional aides would report similar roles and responsibilities of instructional aides served in general and special education classes.

Keywords: Instructional aide, classroom teacher, instructional aide roles and responsibilities

Over the past ten years, educators have seen an increase in the number of students with disabilities in their classrooms. This was due to legislation such as the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA), which mandated that students with disabilities be educated in the least restrictive environment with their nondisabled peers. These students had modifications to the curriculum, most often through the use of extended time on assessments and the presence of an instructional aide in the general education classroom who assisted classroom teachers in meeting students' needs (Lewis, 2005; Patterson, 2006; Giangreco, 2010; Chopra, Sandoval-Lucero, & French, 2011). The role of the instructional aide has changed greatly due to new accountability standards. Previously, instructional aides only helped in special education classrooms. Now, instructional aides are required to monitor and help all students who require assistance in the general education classroom with a particular focus on their assigned special education students. With changing expectations and job related

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tasks, it was vital that research be conducted with respect to the roles instructional aides have in the general and special education classroom.

Instructional aides have served as gatekeepers to the inclusion of students with disabilities into general education classes. However, their benefit to students relied on the working relationship they had with the classroom teacher (Giangreco, 2010; Steckelberg, Vasa, Kemp, Arthaud, Asselin, Swain, & Fennick, 2007). A limited amount of research has been devoted to this topic which has included self-reporting surveys, sole interviews with teachers, and interviews with instructional aides regarding their roles and responsibilities (Jones, Ratcliff, Sheehan, & Hunt, 2011; Liston, Nevin, & Malian, 2009; Lewis, 2005; Dauman, Silla, & Stufft, 2010). Studies have included state and nationwide responses from all school levels and focused on several outcomes including professional development opportunities, advice on the supervision of instructional aides, and suggestions for supporting instructional aides (Douglas, Chapin, & Nolan, 2016). Minimal research has been conducted with respect to comparing the roles and responsibilities of instructional aides, as reported by classroom teachers or the aides themselves. Research into this topic would allow for the two personnel groups to better work together, benefitting students within the classroom and school.

This study compared the assigned roles and responsibilities of instructional aides by classroom teachers with those instructional aides reported to actually perform. Instructional aides and classroom teachers at one urban intermediate school completed similar surveys. This allowed for a comparison between the two personnel groups. Determining how instructional aides view their roles, responsibilities, and relationships with students and teachers compared with how classroom teachers view these factors, would allow for training to be developed for future school years. In order to form relationships on a yearly basis due to changes in student and school needs, trainings for both instructional aides and classroom teachers emphasizing job responsibilities and appropriate tasks should be held at the start of the school year.

Literature Review

From the literature, three common themes emerged as significant to the topic of instructional aides and classroom teachers. The first was the training, or lack of training, of both instructional aides and teachers in their roles. The second theme was the roles and responsibilities often performed by those personnel. Finally, the third theme centered on developing effective relationships between instructional aides and classroom teachers.

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Need for Additional Training

Although No Child Left Behind (NCLB) and IDEIA outlined the duties and qualifications needed by instructional aides, the importance of appropriate supervision, and the training of instructional aides, neither legislative piece detailed what that training should entail beyond earning an associate's degree and demonstrating proficiency in core academic areas through a state or local assessment (Maggin, Wehby, Moore-Partin, Robertson, & Oliver, 2009; Boudreau & Twigg, 2011; Capizzi & Da Fonte, 2012). Even though these legislative works provided a foundation for inclusion of students with disabilities into the general education classroom, the lack of specific training mandates left many instructional aides without appropriate training prior to entering the classroom. As stated in a study by Maggin et al. (2009), "How are paraeducators expected to provide quality instruction or support without sufficient training or supervision?" (p. 8). The researchers recommended that both teachers and instructional aides attend specific and continued professional development in order to work collaboratively in the classroom for optimal student engagement (Maggin et al, 2009).

According to several studies, instructional aides reported receiving little or no training prior to entering the classroom beyond on-the-job training (Carter, O'Rourke, Sisco, & Pelsu, 2009; Caprizzi & Da Fonte, 2012; Fisher & Pleasants, 2012). This led to confusion regarding responsibilities and expectations of instructional aides in the classroom, and also created an environment where "students with the most complex needs are being served by the members of the school community with the least preparation" (Maggin et al., 2009, p. 1). Further research detailed the lack of training provided to teachers in their roles as adult supervisors. While instructional aides reported receiving on-the-job training from classroom teachers, teachers reported no training during preparation programs, as well as little additional training related to supervising and working with instructional aides (Steckelberg et al., 2007; Bauman, Silla, & Stufft, 2010; Chopra et al., 2011; Caprizzi & Da Fonte, 2012). Teachers reported also utilizing on-the-job experiences to guide their supervision of the instructional aides (Giangreco, Sutter, & Doyle, 2010).

Classroom Roles and Responsibilities

A second emergent major theme was the roles and responsibilities concerning both instructional aides and classroom teachers. Instructional aides were utilized in varying capacities; their roles were as varied as their titles. Responsibilities included supporting individual students with disabilities to access the general education curriculum (Patterson, 2006; Bauman et al., 2010; Giangreco et al., 2010; McGrath, Johns, & Mathur, 2010; Jones et al., 2011), providing behavioral interventions (Hughes & Valle-Riestra, 2008) and, implementing and monitoring Response to Intervention (RTI) programs as called for in NCLB

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(Liston et al., 2009). However, while many of these responsibilities involved instruction as a primary goal, a survey by Etscheidt (2005) showed a lack in academic familiarity as reported by aides and their supervising teachers, which then translated to a negative impact on the students they were charged with helping.

Classroom teachers' primary role in regards to working with instructional aides was that of a supervisor. NCLB required instructional aides to work "under the direct supervision of a teacher and in close and frequent proximity to the teacher" (Patterson, 2006, p. 1). Research was conducted regarding teachers' roles as supervisor to instructional aides. Chopra et al. (2011) identified teacher leadership as the most important factor in the effectiveness of inclusion of students with disabilities. Common topics in the literature suggested the development of a collaborative philosophy, effective communication, and preparing the instructional aide for the expected roles and responsibilities they were to perform (Carnahan, Williamson, Clarke, & Sorensen, 2009; Douglas et al., 2016; Maggin et al., 2009).

Teacher-Instructional Aide Relationships

The final theme involved instructional aides' relationships with classroom teachers. In order to provide the richest experience for all students, it was vital that the adults in the classroom had "a cooperative relationship based on mutual understanding" (Jones et al., 2011, p. 19). Yet, studies showed that instructional aides felt marginalized, undervalued, and unsupported as team members (Giangreco et al., 2010; Fisher & Pleasants, 2012). This not only caused discord between the adults, but also hindered student learning and growth. A good working relationship between teachers and instructional aides requires that all "who either have a stake in or assist in the education" (Patterson, 2006, p. 1) of students with special needs work together towards meeting the student's unique needs and goals in the inclusive classroom setting (Giangreco et al., 2010).

Conclusion

There were several implications for future research. The three themes described should be systematically investigated as the role of the instructional aide was further defined under the legislative guidelines. In addition, the core of much research focused on instructional aides or classroom teachers in their trainings, backgrounds, and job responsibilities, or the team dynamic of the two. This often neglected how those factors influenced and were influenced by each group.

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Research Methods

This study was designed to determine the roles and responsibilities instructional aides served at one intermediate-sized urban campus using teacher- and self-reported surveys. Participants in this study were the classroom teachers and instructional aides at the campus. Currently employed by the district and campus were forty classroom teachers who taught content and elective courses such as reading, math, and physical education. Additionally, there were five teachers who worked in special services such as Life Skills, Adaptive Behavior, and Speech. The campus was composed of fifth and sixth grade classes, with teachers who worked with one or both grade levels.

Working with a number of those teachers were eight instructional aides including one author. Before beginning the school year, these aides were provided a schedule of teachers they worked with and the number of days they were in each class. This was determined based on students' Individualized Education Plan (IEP), projected need of support due to previous schoolwork, and the class size. The instructional aides worked equally between grade levels and content domains.

All teachers and aides at the campus were given the opportunity to participate in this study. Twenty-five (62%) teachers and four (50%) instructional aides responded to the survey request. The low response rate from aides could be due to time constraints during the work day or lack of computer access to complete the survey. Additionally, the author employed as an aide did not participate in the survey in order to maintain validity.

This research used a method of quantitative surveys for both teachers and instructional aides. The survey gathered data through either teacher or instructional aide input and included several Likert-type scale systems. All teachers were asked to complete an eleven-question online survey in regards to the roles and responsibilities instructional aides served in their classroom. Similarly, instructional aides were asked to complete an eleven-question online survey about the roles and responsibilities they performed. The surveys and requests were sent via school email, with an announcement at a faculty meeting the following week. Although participants were sent the request via their school email, they remained anonymous in order to ensure accurate responses. Participants had the ability to answer all, some, or none of the questions. The number who completed the online survey determined the total number of teacher and instructional aide participants. Survey responses were recorded in corresponding Google Sheet documents.

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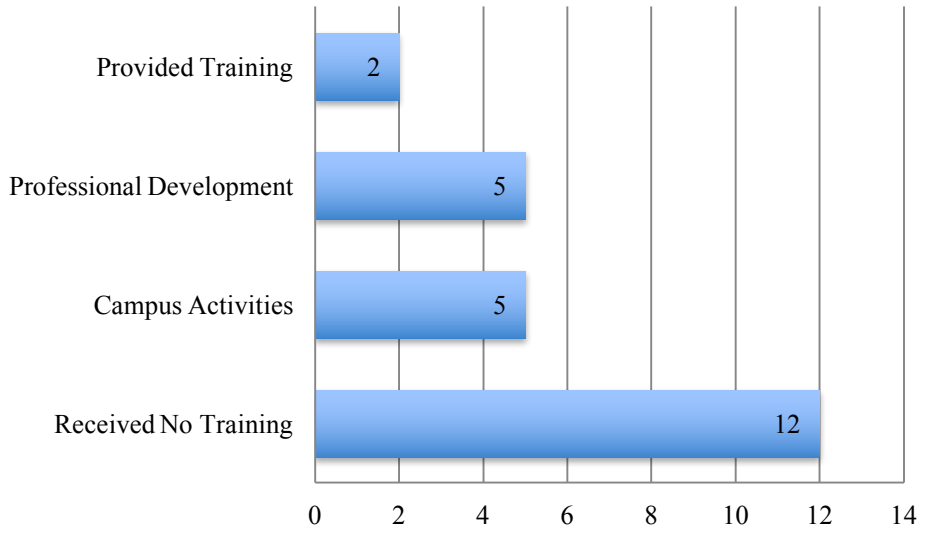
Data Analysis

This research surveyed twenty-four teachers to determine the role instructional aides had in the general and special education classroom. The goal was to compare the roles of instructional aides from teacher and self-reported survey questions about the type of work instructional aides performed, the feedback given and received, and the relationship between students and instructional aides. The data for this research was collected at the end of the second six-week grading period of the 2015-2016 school year. The data collection time frame allowed for relationships to form among aides, students, and teachers as well as for any scheduling conflicts to be clarified or changes based on beginning-of-the-year student data to occur.

Teacher Data Analysis

The twenty-four teacher participants worked in a variety of instructional settings. In addition to subject area and grade level, teachers had a diverse background of educational experiences. From former instructional aides to campus special education department heads, these backgrounds impacted how teachers worked with instructional aides. Only seven teachers received formalized training or professional development to work with instructional aides. An additional five teachers participated in campus activities with respect to working with their instructional aides. One-half, or twelve, of the teachers reported that they had no training in working with their instructional aides in their classrooms. Classroom teachers were asked what, if any, trainings they received on working with instructional aides as seen in Figure 1.

Figure 1. Teacher Training



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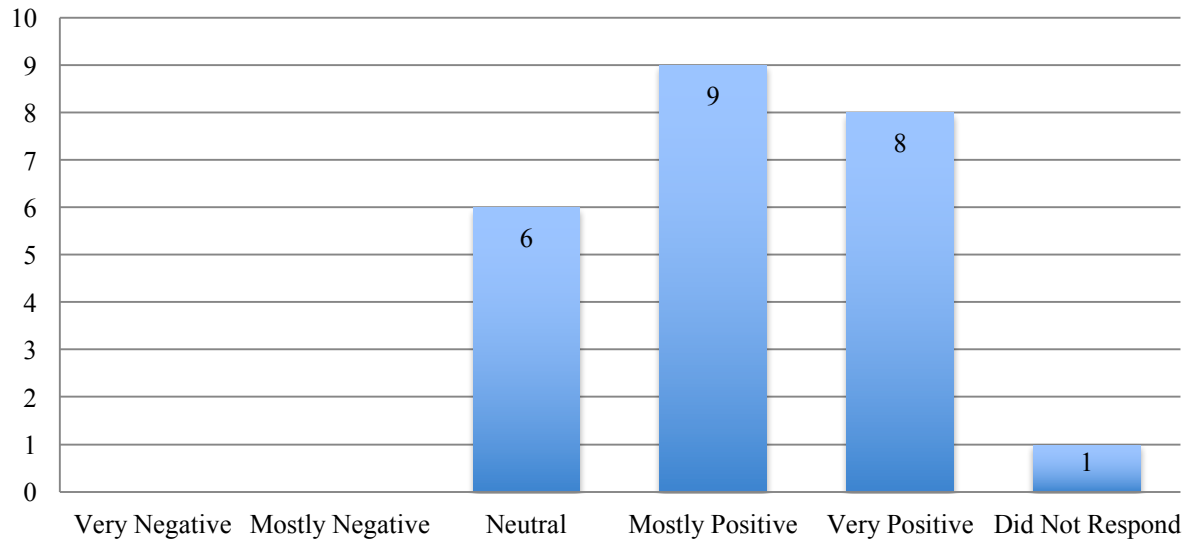
A secondary question was asked regarding teachers' interest in professional development targeting effective ways to work with instructional aides in their classroom. The majority of teachers responded with "yes" or additional comments on the dire need of it. Satisfaction in the performance of instructional aides has impacted the roles and responsibilities they were assigned by teachers. In this study, teachers reported generally positive satisfaction in aide performance in their classrooms as seen in Figure 2. Additionally, all twenty-four teachers reported taking the feedback and advice from instructional aides into consideration when making lesson and assignment decisions.

Figure 2. Teacher Satisfaction in Aide Performance



Instructional Aide Analysis

Instructional aides in this research worked in a variety of content areas, two different grade levels, and with several teachers. The range of content areas the instructional aides worked in were reported as science, mathematics, English language arts & reading, social studies, and physical education & electives (See Figure 3). Although instructional aides in this study worked in five possible content areas, all reported feeling comfortable in those content areas. In this study, instructional aides reported serving with both fifth and sixth grade students equally. However, almost all aides reported working with at least six different teachers.

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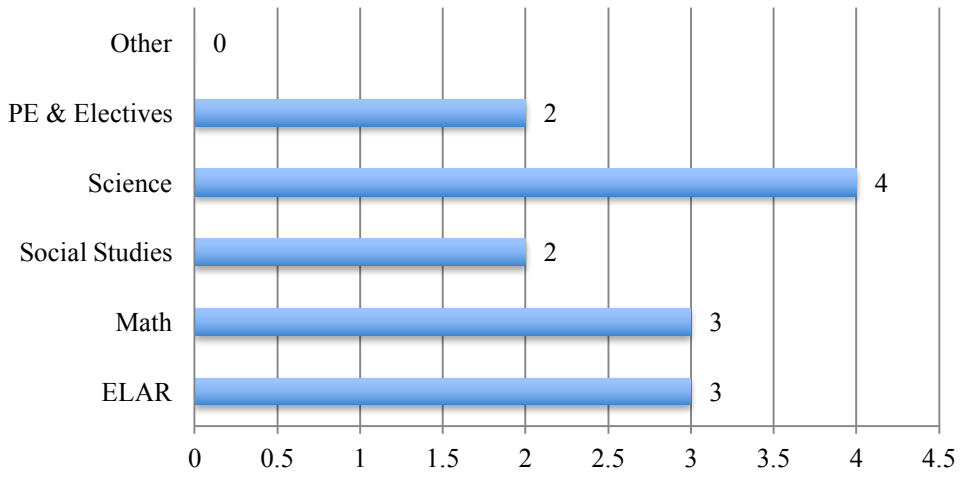
Figure 3. Content Areas in which Aides Work



Comparative Data Analysis

Teachers were asked the roles and responsibilities they assign instructional aides in their classroom. Similarly, instructional aides were asked to report the roles and responsibilities they perform throughout the day. Table 1 presents the comparative answers of this investigation while Figure 4 graphically compares the percentage of answer respondents.

Table 1

Roles and Responsibilities of Instructional Aides

	Teacher Reported	Instructional Aide Reported
Small group instruction	19	4
Assisting students with personal care or other physical needs	12	3
Assisting students to complete assignments and activities	23	4
Assessing student work while performing a task	17	4
Gathering materials	16	3
Modifying activities and assignments	8	3
Behavior management	19	4
Reading to students	22	4
Other	4	0

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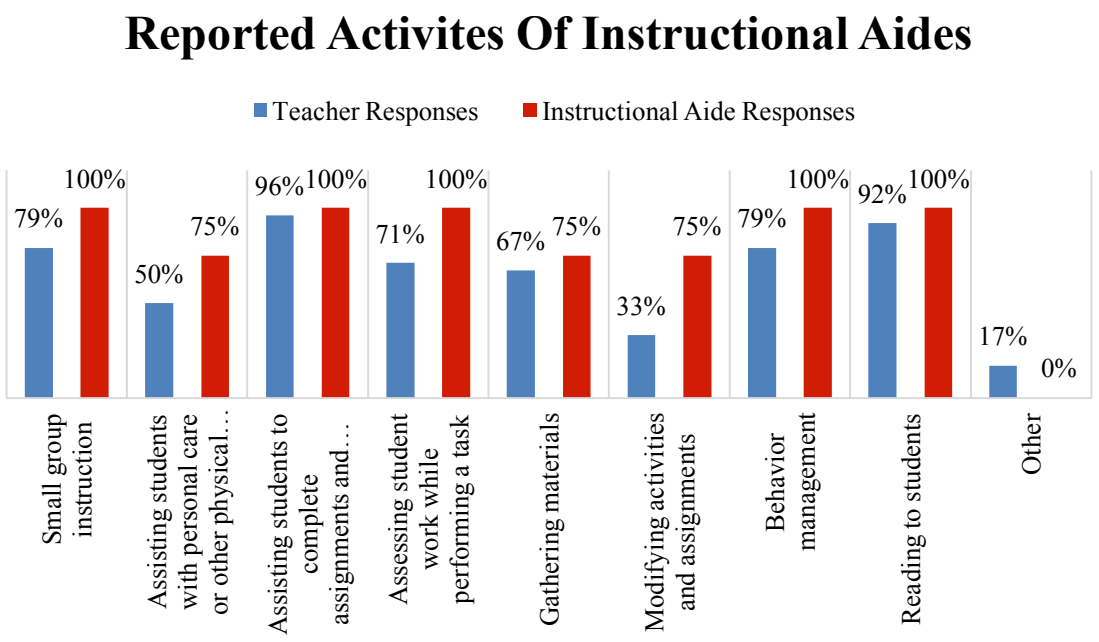
Figure 4. Reported Activities of Instructional Aides



Discussion

As more students with disabilities have been included in the general education classroom, the number of instructional aides needed to help those students be successful also increased. Although the aides were hired and assigned to help specific students, it was largely up to the classroom teachers how this assistance occurred. Therefore, a positive relationship between the instructional aide and classroom teacher was important. This study examined how instructional aides viewed their roles, responsibilities, and relationships with students and classroom teachers, and how classroom teachers from the same school viewed these same factors. It was postulated that because classroom teachers and instructional aides worked together closely, they had indicated similar answers to questions regarding these aspects on both the teacher and self-reported survey questions.

Interpretation

The research concluded that instructional aides and classroom teachers reported a similar frequency of roles and responsibilities that instructional aides performed in the classroom. One activity stood out as having a higher disparity in reporting. Only eight teachers, or 33% reported instructional aides as "Modifying activities and assignments", while three or 75% of instructional aides reported this responsibility. Consequently, this had important implications, as instructional aides were often not trained to modify student work. Instructional aides had limited access to lesson plans prior to instruction.

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Additionally, instructional aides lacked extensive knowledge of students' IEPs to know what modifications were appropriate.

Three of the reported activities had less than ten percent difference between classroom teachers and instructional aides. The first, "assisting students to complete assignments and activities," was indicated by 96% of teachers and 100% of instructional aides. This responsibility relates to the role instructional aides have had and continue to have in aiding students in the classroom. Second, 67% and 75% of classroom teachers and instructional aides, respectively, chose "gathering materials." This role raised some concerns because it detracted the aide from serving the students he or she had been assigned. Finally, "reading to students" was reported by 92% of teachers and 100% of instructional aides. This responsibility was, again, in line with aiding students who need assistance.

Several other questions were asked of respondents including the relationship instructional aides had with the students they work with. Both teachers and instructional aides reported a positive student-aide relationship. This was important since aides work closely with a smaller group of students or with individual students, a positive relationship has obviously impacted the work performed by both the student and instructional aide. Additionally, teacher respondents were asked about their satisfaction with the instructional aides they work with. In general, teachers responded with positive satisfaction.

Implications for Future Research

There are several implications for future research. First, since this study was composed of a small population, twenty-four classroom teachers and four instructional aides, results often showed a large discrepancy between survey questions when solely looking at the number of answers. Looking at the percentage of responses yielded a better interpretation. In addition, only about 50% of the campus staff population responded to the survey request. Thus, the data and interpretations may not be representative of a larger population. Since a major aspect of this research was comparing the results from the same campus, research at a larger school with more staff could offer more responses and thus a more in-depth review. Additionally, research could be expanded to a single school district, small or large, to determine the roles and responsibilities from a district's population. Finally, research in the training of instructional aides for the roles and responsibilities they perform could be of interest when comparing their reported roles and responsibilities.

One limitation to this research query is that teachers and instructional aides were asked to generalize their answers to the overall experience. Since instructional aides reported working with up to seven teachers, and teachers had up to seven class periods with instructional aides, the responses they

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provided could vary based on whom they worked with. Additional research into individual aide performance (i.e. teacher satisfaction, roles and responsibilities, and student-aide relationships) would be of interest. Responses to questions with respect to work relationships, training needed, and cooperative planning may build more collaboration between the teachers and aides. Significant research is still needed to help better define the roles and responsibilities of the instructional aide.

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