

## ABSTRACT

### Secondary Mathematics Teacher Retention: A Narrative Case Study of Experienced Teachers

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Teacher turnover is a major issue facing schools today. Mathematics has been an area negatively impacted by teacher turnover, as many schools report shortages and staffing issues within the discipline. Researchers have called for an increased focus on the factors that contribute to the retention of teachers in an effort to address the issue of teacher turnover. The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. The participants in this study were selected purposefully with the criteria of being a current, experienced secondary mathematics teacher. An experienced teacher for this study was defined as a mathematics teacher with at least 19 years of teaching experience. The researcher conducted four interviews and three observations of each participant. Two of the observations were conducted of the participants teaching in their own classroom and the third observation was focused on the participants' interactions with colleagues during a staff or departmental meeting. In addition,

participants completed a narrative writing sample by responding to a prompt created by the researcher. Evidence from the literature suggests that resilience plays an important role in teacher retention. As a result, a teaching resilience theoretical framework was used by the researcher to craft interview questions, observation protocols, and narrative writing prompts. Each participant was examined as a separate case before cross-case analysis was conducted to reveal common themes.

Results from this study revealed administrative support and the success of former students are all contributing factors in teacher retention. Additionally, participants indicated resiliency played an important role in their retention decisions, explaining that without being resilient, they would no longer be in the classroom. Other themes that emerged related to teacher retention include managing the discipline related stressors of teaching and finding the right fit. The researcher provided implications and recommendations based on these results for school administrators, teacher preparation programs, and education policymakers. Future areas of research are also identified by the researcher.

Secondary Mathematics Teacher Retention: A Narrative  
Case Study of Experienced Teachers

by

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A Dissertation

Approved by the Department of Curriculum and Instruction

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Submitted to the Graduate Faculty of  
Baylor University in Partial Fulfillment of the  
Requirements for the Degree  
of  
Doctor of Philosophy

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August 2018

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## ACKNOWLEDGMENTS

*Praise God, from whom all blessings flow; Praise him, all creatures here below;  
Praise him above, ye heav'nly host; Praise Father, Son, and Holy Ghost.*

There are many people that deserve recognition and thanks for supporting me during this journey. Special recognition goes to Dr. Trena Wilkerson, who not only served as my dissertation chair, but as an advisor, mentor, and collaborator during my 4 years at Baylor University. It was a privilege to work with a dedicated, passionate, and respected faculty member like Dr. Wilkerson, who spent countless hours providing feedback and support during this process. I was blessed to work and learn from Dr. Wilkerson and I look forward to our work together in the future. I would also like to thank Dr. Sandi Cooper, who not only served on my dissertation committee, but acted as a mentor and advisor as well. Dr. Cooper was always there to provide an encouraging word, a listening ear when I was frustrated, and give advice when needed.

Other recognition is needed for those faculty members who also served on my dissertation committee. I would like to thank Dr. Brooke Blevins for her support and guidance during the dissertation process and while working with her in Kappa Delta Pi. Dr. Tony Talbert, who not only taught me the ins and outs of qualitative research, but always made time to listen and provide a laugh. A special thanks to Dr. Tommy Bryan from the mathematics department who served as the outside representative on my committee. Thank you for taking the time to work with me during this experience.

I have been blessed during my time at Baylor University to work with some amazing graduate students. A special thanks goes out to Elena, Ryann, Jodie, Amanda, Evan, Chris, QingQing, Brandy, and Caroline who all shared in this experience with me. You all are wonderful friends who supported and encouraged me during this process and were always willing to provide some comedic relief. I would also like to take this opportunity to thank the four teachers who were the subjects of this dissertation. Thank you for allowing me to work with you and learn from you during this experience. The lessons you taught me will help me as I continue my work preparing future teachers for the classroom. I hope that my future preservice teachers are able to find dedicated and passionate mentors like the four of you.

Without my family, this task would have been impossible. A special thanks to my sister Emily, brother-in-law Ethan, and nephew Tyler who opened their home to me during these past 4 years. These were 4 wonderful years and I cannot thank you enough for all the support that you provided me during this time. I would also like to thank my parents, Dan and Norene, who encouraged me during this process and are a wonderful blessing to me. I am so thankful to be their son. Thanks is also needed for my other siblings and their spouses, Jon and Emily, Rachel and Jeffrey, and Kim who are all part of the most amazing family. Thanks for all that you do for me.

## CHAPTER ONE

### Introduction

In order to improve student learning and performance in school, quality teachers must be in each classroom to guide and structure an effective learning environment (Adnot, Dee, Katz, & Wyckoff, 2017; Kukla-Acevedo, 2009a; Rockoff, 2004). A major issue concerning teacher quality is the lack of teachers available to fill vacant positions. Teacher turnover threatens the supply of teachers needed to fill these vacancies. According to Ingersoll (2001), “teacher turnover is a significant phenomenon and a dominant factor behind the demand for new teachers and the difficulties schools encounter adequately staffing classrooms with qualified teachers” (p. 501). In the last decade, turnover rates have averaged around 8% in the United States, which is high compared to other high-achieving countries like Finland and Singapore, where only 3-4% of teachers leave per year (Podolsky, Kini, Bishop, & Darling-Hammond, 2016). Podolsky et al. suggest that within the first 5 years of teaching, between 19% and 30% of new teachers leave the profession, and with all teachers, only one-third of teachers that leave at some point will ever return. Teachers leaving the profession have detrimental financial, academic, and organizational implications for schools.

#### *Impact of Teacher Turnover on Schools*

Teachers leaving the profession or migrating to different schools can impact districts financially, as administrators are faced with spending money to recruit and train new teachers (Alliance for Excellent Education, 2014; Boyd, Grossman, Lankford, Loeb,

& Wyckoff., 2008; Dolton & Newson, 2003; Hanushek & Rivkin, 2010; Levy, Joy, Ellis, Jablonski, & Karelitz, 2012; Ronfeldt, Loeb, & Wyckoff, 2013; Synar & Maiden, 2012).

According to the Alliance for Excellent Education (2014), teacher turnover costs the United States up to \$2.2 billion annually. Several researchers have examined the local cost of turnover for districts, including breaking the costs down for hard to fill disciplines, such as science and mathematics, suggesting turnover costs for teachers in hard to fill disciplines are substantially higher compared to other content areas (Barnes, Crowe, & Schaefer, 2007; Levy et al., 2012; Synar, 2010; Synar & Maiden, 2012). The costs associated with turnover go beyond recruiting replacements. Brill and McCartney (2008) found the strain from teacher turnover is seen in the loss of investment in professional development. The researchers explain,

As trained teachers leave their schools, a double loss occurs: money has been lost in training that will not be applied as a tool for improvement at that particular school, and more money has to be spent in the training of incoming teachers. (p. 753)

Turnover not only impacts schools financially, but academically as well. In an effort to fill teaching vacancies, some administrators are forced to hire less qualified teachers who may not be licensed in their subject area (Brill & McCartney, 2008). Teachers teaching in unlicensed areas are commonly associated with lower student achievement scores (Baines, 2017). In teaching, some argue that small amounts of turnover are beneficial to schools, as less effective teachers migrate to a different school or to a different job entirely (Hanushek & Rivkin, 2010). Ronfeldt et al. (2013), however, found teachers who remain teaching in the classroom are negatively impacted by turnover rates, as well as student achievement. Multiple researchers found that schools with high numbers of turnover have lower student academic scores (Boyd, Lankford, Loeb, &

Wyckoff, 2005; Dolton & Newson, 2003; Guin, 2004; Ronfeldt et al., 2013). For example, Ronfeldt et al. (2013) discovered students in schools with turnover rates in the fourth quartile have 2% to 4% of a standard deviation lower mathematics achievement scores compared to students with teacher turnover rates in the bottom quartile. The negative academic effects of high turnover rates also contribute to issues with school culture and staff cohesion.

Ingersoll (2001) explained that exploring teacher turnover requires understanding the conditions and cultures of the schools teachers tend to leave or in which they remain. Effective schools often report a positive sense of community, belongingness, and strong communication among teachers (Ingersoll, 2003). Teacher turnover threatens the community and belongingness schools attempt to establish among their staff and students (Guin, 2004; Park & Lee, 2016; Skaalvik & Skaalvik, 2011). Teaching is often referred to as a revolving door profession because of the high levels of turnover associated with the occupation. This revolving door phenomenon is harmful to schools as an organization, as high turnover rates may indicate problems with staff cohesion and performance (Ingersoll, 2001). High levels of teacher turnover breaks down the sense of community in schools and the team based mentality of teachers. As a result, constant staff changes due to turnover interrupts the planning and implementation of a coherent, unified school curriculum and mission (Brill & McCartney, 2008).

Teacher turnover is a critical issue facing schools today. The continuous flow of teachers in and out of a school negatively impacts the school financially, academically, and organizationally. Schools with high levels of turnover must spend money to recruit and retrain new staff members. Student achievement levels are lower in schools with high

turnover rates. High levels of teacher turnover in schools can break down the community atmosphere and staff cohesion needed to ensure an effective work environment. Teacher turnover is even more pronounced in content areas where there is a shortage in supply of teachers. Mathematics is an area often plagued with teacher shortages. The following section discusses turnover rates of mathematics teachers.

### *Mathematics Teacher Turnover*

Mathematics has been an area hit hard by teacher shortages. For the past few decades, schools in the United States have had a difficult time recruiting and retaining qualified mathematics teachers (Artzt & Curcio, 2008; Boyd et al., 2012; Podolsky et al., 2016; Scott, Milam, Stuessy, Blount, & Bentz, 2006). Between the 1980s and 2005 annual turnover rates for mathematics teachers increased by 34%, and mathematics teachers today change schools and leave teaching at higher rates than their humanities and elementary teacher counterparts (Ingersoll & May, 2012). Ingersoll and May explain that “just before, during, and just after the 2003-2004 school year, over one quarter of the entire mathematics/science public school teaching force was in job transition—into, between, or out of schools” (p. 456). Thus, it appears that mathematics teachers fit the revolving door description associated with teaching. Podolsky et al. (2016) wrote that in 2014-2015, teacher preparation programs and school districts reported considerable shortages in mathematics positions, and nearly 42 states and the District of Columbia reported specific shortages in mathematics. One of those 42 states facing mathematics teacher shortages due to teacher turnover is Texas.

Every year since 1990, the United States Department of Education (USDE) has identified mathematics as a teacher shortage area in Texas (USDE, Office of

Postsecondary Education, 2016). Fuller (2009) predicts “that the demand for secondary mathematics teachers will increase much more rapidly than will supply and will lead to an increase in the shortage of teachers” (p. 15). Bailey (2017) reports that the number of newly certified mathematics teachers only increased by 1.9% per year from 2000-2015, which was far short of the goal set by the state. Thus, the mathematics teacher shortage is not a new phenomenon in Texas, and it appears the issue will only continue to get worse in the years ahead. This is an important problem that needs further study.

#### *Statement of the Problem*

Teacher turnover is a significant problem. Every year, large numbers of teachers leave the profession entirely for reasons other than retirement (Cowan, Goldhaber, Hayes, & Theobald, 2016; Dupriez, Delvaux, & Lothaire, 2015; Ingersoll, 2001; 2003; 2011; Kukla-Acevedo, 2009b; Lloyd & Sullivan, 2012; Scherff, 2008; Struyven & Vanthournout, 2014). In Texas, the statewide teacher turnover rate was 16.5% for 2015-2016, which is higher than the national average (Texas Education Agency, 2016). In the Central Texas region, teacher turnover is even more problematic. According to the Texas Education Agency, the Central Texas region had an average turnover rate of 22.3%, which is higher than the statewide average. Furthermore, mathematics is a content area hit hard by teacher turnover. Nationally, mathematics teacher turnover rates are 13.3%, which is slightly higher than the national average of teacher turnover (Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Fuller (2009) explains that in the last decade in the state of Texas, the demand for mathematics teachers has outstripped supply and the USDE has consistently identified mathematics as a shortage area in Texas over the last 20 years. It is critical to address the mathematics teacher turnover issue in Texas, as teacher

turnover has financial, academic, and organizational implications for schools. The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Exploring the retention of experienced secondary mathematics teachers may help provide insight into thinking about ways to reduce the turnover of mathematics teachers by bringing into focus the experiences and perspectives required for teacher longevity. In the following sections, an overview of what is currently known about teacher turnover, its causes, and attempted solutions is provided. Additionally, information on teacher retention will be shared as well as the current gaps in the literature. This chapter will conclude with an overview of this study with key terms defined.

### *Current Efforts to Address Teacher Turnover*

#### *Increasing the Supply*

An increase in the number of retirements is often cited as the root cause of teacher shortages and turnover rates, and as a result, some will argue that more teachers need to be recruited to fill these retirement vacancies. Grissmer and Kirby (1997) explained that since older teachers significantly outnumber younger teachers, teacher shortages and attrition can be attributed to the rapidly “graying” teacher population. As a result, various programs and policy initiatives seek to increase the supply of teachers to fill the vacancies of these retiring teachers. Alternative certification programs, such as “Teach for America” and “troops-to-teachers,” have been created to draw individuals not initially interested or prepared to be a teacher into the teaching profession (Ingersoll, 2001). Other

efforts to recruit more teachers into the field include financial incentives that involve some type of signing bonus, loan forgiveness, housing assistance, or tuition reimbursement (Feistritzer, 1997; Koop, 1992; Hirsch, Koppich, & Knapp, 2001). In Texas, along with the incentives described above, teachers can obtain alternative certification through educational service centers, private groups, community colleges, and school districts without completing a traditional teacher preparation program at a university (Scott et al., 2006). While these programs have been designed to increase the supply of all teachers, there are several that specifically address increasing the number of mathematics teachers.

In an attempt to address the shortages in mathematics teachers, multiple efforts and programs have been launched to increase the supply of mathematics teachers. Boyd et al. (2012) described math specific recruitment efforts, such as Math for America and The New York City Teaching Fellows program, all organized to prepare highly qualified mathematics candidates who have not been trained in traditional teacher preparation programs. Scott et al. (2006) described the Math and Science Scholars (MASS) Program as a university based initiative to recruit non-education majors in mathematics to become mathematics teachers. In Texas, the number of mathematics teachers certified through these alternative programs outnumbered the number of teachers certified in traditional teacher preparation programs in 2013-2014 (Bailey, 2017). While these programs and incentives have increased the supply of mathematics teachers, they fail to address the root causes of turnover identified in the literature.

Ingersoll (2001, 2003, 2011) argues that focusing on the supply of new teachers is the wrong approach to solving the issue of teacher turnover. Ingersoll (2001) counters the

argument that retirements are driving the teacher turnover issue by acknowledging that while the number of teacher retirements has increased, “the overall amount of turnover accounted by retirement is relatively minor when compared to that associated with other factors, such as teacher job dissatisfaction and teachers pursuing better jobs or other careers” (p. 501). The solution to teacher shortages does not lie in increasing supply, but in decreasing the demand (Ingersoll, 2001). Cochran-Smith (2004) argues that based on Ingersoll and Smith’s (2004) findings, while some teaching fields may be lacking in the number of qualified teachers, there are more than enough prospective teachers produced each year in the United States to fill the demand. This same conclusion holds true in mathematics.

Efforts to increase the supply of new mathematics teachers fail to address the conclusions found by numerous researchers that report teacher attrition as the driving force behind teacher shortages, not insufficient numbers of people preparing to teach and retirements (Cochran-Smith, 2004; Ingersoll, 2001, 2003, 2011; Ingersoll & May, 2012; Ingersoll & Perda, 2010; Sutcher et al., 2016). Ingersoll and Perda (2010) found the size of the teaching force has increased at a faster rate than the size of the student population and the number of new mathematics teachers is more than enough to cover the number of teachers retiring. Ingersoll and May (2012) reported that in the last two decades, the supply of newly qualified mathematics teachers have kept pace with the increases in teacher retirements, student enrollment, and demand for mathematics courses. Despite the supply of mathematics teachers keeping pace with student enrollment, districts still report staffing difficulties in mathematics (Podolsky et al., 2016). A potential key to addressing these staffing difficulties may be understanding why teachers continue to teach while so

many of their colleagues leave the profession. In order to understand the issues driving teachers to leave the profession it may be useful to examine the factors that lead to teacher attrition.

### *Why Teachers Leave*

Understanding the reasons why teachers leave can help address the issue of teacher turnover by focusing on and addressing the issues driving teachers away. There is ample literature dedicated to the reasons why teachers decide to move schools or leave the professional altogether. Many of the reasons reported in the literature for teachers' early exit decisions reveal that a combination of both personal and contextual factors influence their choice to quit. Some studies break down turnover statistics based on levels of teaching experience. Novice teachers are often the focus of attrition studies, as first-year teacher attrition rates fall between 30-50% (Darling-Hammond, 2000; Smethem, 2007; Struyven & Vanthournout, 2014). The high rates of attrition in novice teachers is not surprising, as teaching is one of the few professions that require beginners to have similar workloads as their veteran colleagues (Tait, 2008). Furthermore, new teachers are often given the more difficult workloads and challenging students (Gordon & Maxey, 2000; Tait, 2008). As a result, several studies focus their attention on the exit decisions of novice teachers (Dupriez et al., 2015; Kukla-Acevedo, 2009b; Lloyd & Sullivan, 2012; Scherff, 2008; Struyven & Vanthournout, 2014). These researchers reported novice teachers tend to leave teaching for a variety of reasons that include: poor working conditions, job satisfaction, administrative support, workload amount, paperwork, and lack of autonomy. A second category of teachers addressed in the literature on teacher attrition examines the exit decisions of experienced teachers.

The attrition level of experienced teachers is also problematic. Kukla-Acevedo (2009b) reports that it takes around 5 years of experience for teachers to become effective at improving student performance. Other researcher have documented the important role experienced teachers play in improving academic achievement in students as well as strengthening other aspects of education s (Han, Cetin, & Matteson, 2016; Ladd, 2013; Papay & Kraft, 2015). If experienced teachers are leaving the profession, it is important to understand why, especially since they play a critical role in improving student achievement. Many researchers have sought to identify the reasons reported by experienced teachers for leaving the teaching profession (Buchanan, 2009, 2012; Cieśliński & Szum, 2014; Curtis, 2011; Kersaint, Lewis, Potter, & Meisels, 2007; Tye & O'Brien, 2002). Lack of administrative support, testing and accountability, excessive paperwork, student discipline issues, and poor working conditions were all prominent reasons provided by experienced teachers for leaving teaching. The teachers in these studies were a variety of elementary and secondary level teachers in different content areas. Additional studies examining the reasons why teachers leave have looked at specific content areas of teachers who left the profession.

Several content areas have been the focus of teacher attrition studies. Cieśliński and Szum (2014) studied the exit decisions of physical education teachers and found participants reported isolation from other teachers and a feeling of low professional status compared to their colleagues in other content areas as reasons for leaving teaching. Hancock and Scherff (2010) reported the attrition of secondary English teachers is impacted by years of teaching experience and minority status. Non-minority English teachers and English teachers with less than 5 years of experience were more likely to

leave the profession compared to their minority and experienced peers. In a second study focusing on English teachers, Hahs-Vaughn & Scherrf (2008) examined factors contributing to the attrition of beginning English teachers. They shared that the male teachers in their sample were more likely to leave teaching compared to their female colleagues, and English teachers making less than \$20,000 were also more prone to leave the profession.

Several additional studies explored the reasons given by mathematics teachers for leaving the profession. Citing the high turnover rates and shortages of mathematics teachers, Curtis (2011) looked specifically at the reasons that experienced secondary mathematics teachers left teaching. Curtis found besides retirement, teachers left for a variety of reasons including: always being blamed for issues in education, accountability demands, career changes, or moving to an administrator role. Lloyd and Sullivan (2012) provide an in-depth analysis of a single novice secondary mathematics teacher, who, despite showing promise in her preparation program and teaching performance, left the profession after just 2 years on the job. The researchers reported the novice teacher “could not negotiate the tension between how she wanted to teach and how she realistically could teach” (p. 159). It is important to consider the specific content areas of teachers when studying turnover. Struyven and Vanthournout (2014) explained that many of the reported reasons teachers leave are context-specific and caution overgeneralizing the results. To complement the research on teacher attrition and exit decisions, a second focus has been to examine teacher retention and the factors contributing to teacher longevity.

### *Teacher Retention*

Understanding the reasons and circumstances behind why teachers remain in the classroom teaching may help provide valuable information when addressing teacher turnover. Ingersoll (2001, 2003, 2011) calls for an increased focus on the retention of teachers as a way to address the issue of teacher turnover. Given the complexities of teachers' exit decisions and the negative impact high levels of turnover has on education, some researchers have focused their attention on teacher longevity and retention in an attempt to address the teacher turnover problem (Cullen, 2011; Curtis, 2011; De Stercke, Goyette, & Robertson, 2015; Fisher & Royster, 2016; Gu & Day, 2007; Hancock & Scherff, 2010; Johnson, Berg, & Donaldson, 2005; Jones, 2016; Patterson, Collins, & Abbott, 2004; Podolsky et al., 2016; Robbins-LaVicka, 2007). Some studies (Johnson et al., 2005; Podolsky et al., 2016) provide a review of literature on teacher retention across disciplines and grade levels and recommend a variety of policy initiatives to increase the retention of teachers. These policy recommendations include: professional development for principals to create a quality working environments, mentoring and induction programs, and promoting greater collaboration among faculty. Brunetti (2001) reports that highly satisfied long-term high school teachers were motivated to continue teaching because of their relationship with students, passion for the subject matter, and the excitement of the classroom. Moe (2014) found teachers in urban schools report their longevity being driven by the success of their former students and being able to visit and interact with these former students when they come back to visit the school. Other factors contributing to longevity include: grit, happiness, positive working conditions, collegiality, experience, and positive school leadership (Cornella, 2010; Cullen, 2011;

Hancock & Schreff, 2010; Robertson-Kraft & Duckworth, 2014; Weiss, 1999).

Additionally, several studies attempting to address teacher retention have focused on specific content areas.

Dainty, Sandford, Su, and Belcher (2011) examined the factors influencing the retention of secondary Family and Consumer Sciences (FACS) teachers in Kansas. The researchers found FACS teachers who reported a strong commitment to using their skills from their preparation to improve student achievement and engagement were more prone to retention. In addition, FACS teachers who rated their first-year teaching experience positively and described supportive institutional factors were also more likely to remain in the classroom teaching. Cullis (2009) researched the factors contributing to the retention of science teachers in New Jersey. Science teachers in the study were more likely to remain in the classroom if their work assignment was in their field of expertise and if they worked in more affluent schools with abundant resources. Cullis used a science teaching efficacy scale in the study and found teachers who reported strong efficacy in teaching science were more likely to be retained in their current placement. In addition to these studies on the retention of FACS and science teachers, mathematics teachers have been the focus of several studies on teacher retention.

Multiple studies have focused specifically on the retention of mathematics teachers in an attempt to address shortages in this field (Curtis, 2011; Fisher & Royster, 2016; Robbins-LaVicka, 2007). The researchers found that longevity in mathematics teaching is influenced by factors such as intrinsic motivation and support, age, years of experience, perception of control, administrative support, and skill security (Curtis, 2011; Fisher & Royster, 2016; Robbins-LaVicka, 2007). Curtis (2011) reported the

mathematics teachers in her study all shared a passion for the subject of mathematics and identified this passion as one of the driving forces for them to become a teacher. The factors identified in the studies on mathematics teacher retention are very similar to those reported by other retention studies that focus on teachers of all grade levels and content areas. While some factors influencing teacher retention overlap among the content areas, multiple studies suggest there are discipline-unique factors contributing to teacher retention (Guarino, Santibanez, & Daley, 2006; Hancock & Scherff, 2010; Murname, Singer, Willet, Kemple, & Olsen, 1991). As a result, it may be necessary to study the uniqueness of the content areas taught by the teachers and the teaching skills they use in their classroom to identify these discipline specific retention factors. In addition to these content specific studies on mathematics teacher retention, there is a growing trend in the study of teacher retention in examining the relationship between teacher resilience and retention.

### *Teacher Resilience*

An emerging area of study in the discussion on teacher longevity is the role that resilience plays in the retention decisions of teachers (Bobek, 2002; Day & Gu, 2009; Doney, 2013; Gu & Day, 2007; Howard & Johnson, 2004; Mansfield, Beltman, Price, & McConney, 2012; Patterson et al., 2004; Tait, 2008). Gu and Day (2007) argue that resilience is required of teachers to manage difficult personal and situational scenarios. Resilient teachers are reflective problem solvers who are able to depersonalize stressful events and use personal values to guide their decision-making (Howard & Johnson, 2004; Patterson et al., 2004). Doney (2013) argues that resilience is a necessary skill for teacher retention and longevity. Day and Gu (2009) explain, “Teachers need resilience if they are

to sustain their commitment and effectiveness and if their pupils are to receive their best teaching” (p. 444). If resilience is a necessary skill for teacher retention, it is critical that studies exploring this phenomenon consider the role of resilience. Other researchers (Bobek, 2002; Gu & Day, 2007; Howard & Johnson, 2004; Tait, 2008) have asserted that resilience plays an important role in the retention of teachers. Resilience also provides an opportunity to examine the teaching practices of teachers. Day and Gu (2009) explain that resilience is more than just an individual trait. Resilience arises in the interactions of teaching, including the actual practice of teaching. Mansfield et al. (2012) describe resilient teachers as teachers who enjoy teaching, who demonstrate organizational and time management skills, and use effective teaching skills. The researchers explain that one domain of resilience includes profession-related aspects of teaching, which includes teacher practice and competency. Despite the opportunity to explore the teaching practices of resilient teachers, there is very little in the current literature that addresses this aspect of resilience. Also missing in the literature is an exploration of the relationship between resilience, retention, and mathematics teaching.

While previous studies have recognized the important phenomenon of mathematics teacher retention, missing in the literature, however, is the role resilience plays in the retention of mathematics teachers. As resiliency begins to play a more central role in the discussion of retention, it is important that it is included as an area of emphasis when studying mathematics teacher retention. Mansfield et al. (2012) explain that, “further research is needed to examine the process of resilience ‘in action’ and shed light on how resilience is manifested by individuals in context” (p. 366). Teaching is a complex endeavor and individual teachers react differently to the same scenarios. De

Stercke et al. (2015) explains, “it is clear that the reasons why new teachers leave the profession cannot be understood unless we are able to appreciate an individual’s point of view using methodologies that go beyond the manipulation of sociodemographic variables” (pp. 421-422). Multiple studies suggest that factors influencing the retention of teachers differ among disciplines (Guarino et al., 2006; Hancock & Scherff, 2010; Murnane et al., 1991). Recognizing that retention may be influenced by the discipline of the teacher and based on the growing acceptance of the role resilience plays in retention, it is important to focus on these areas in studies looking at the issue of teacher turnover.

The researcher, motivated by this argument and the gap in the literature concerning retention and secondary mathematics teachers, with the current study, sought to explore teacher retention in the secondary mathematics classroom and the role resilience plays in teachers’ retention decisions. The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. This researcher also details the relationship between retention, resilience, and the context-specific factors of teaching mathematics. The following section outlines the theoretical framework, research questions, purpose, significance, and limitations of this study.

### *Theoretical Framework*

The theoretical framework for the current study is grounded in examining teacher retention in secondary mathematics using Mansfield et al.’s (2012) four-dimensional framework of teacher resilience. Teacher resilience is an emerging area of interest in the study of teacher retention (Doney, 2012; Gu & Day, 2007; Mansfield et al., 2012). The

framework of teacher resilience developed by Mansfield et al. (2012), as shown in Figure 1, identifies four dimensions: the profession-related dimension, emotional dimensional, social dimension, and motivational dimension. Despite the framework specifically addressing teacher resilience, it is useful for examining teacher retention for several reasons, which the researcher will explain.

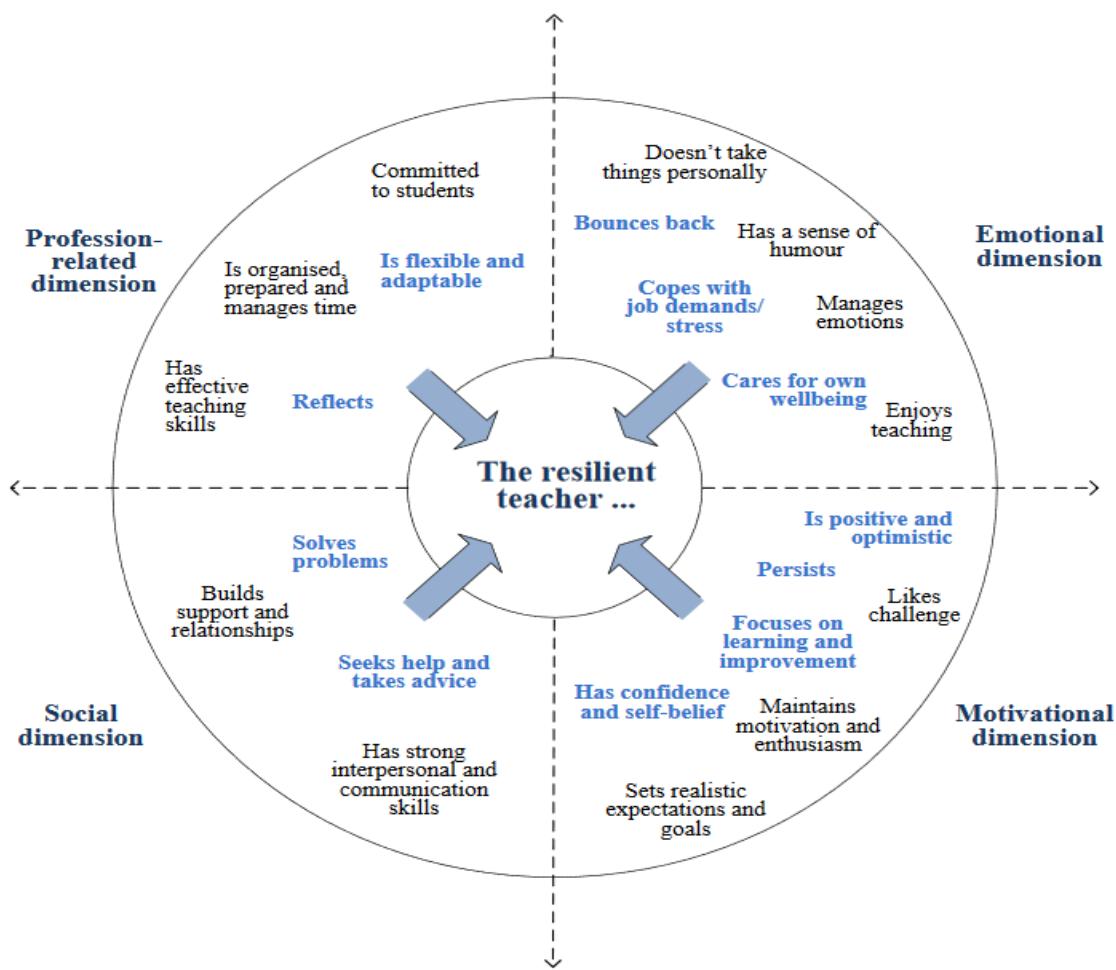


Figure 1. The four dimensional framework of teacher resilience. (Mansfield et al., 2012)

Resilience is a relatively new field of emphasis in examining teacher longevity and retention. Mansfield et al.'s (2012) framework for teacher resilience captures the

complex phenomenon of teacher resilience. They argue teacher resilience “is a complex, dynamic and multi-dimensional phenomenon which may draw on a range of likely overlapping profession-related, emotional, motivational, and social aspects, at varying levels of intensity” (Mansfield et al., 2012, p. 364). They call for further studies using their framework to examine the process of resilience in action. With the current study, the researcher sought to address this call for action by using the framework as a lens for understanding the retention and longevity of secondary mathematics teachers.

This framework is appropriate for studying retention and longevity because it encompasses four dimensions found in the literature concerning teacher retention. Prior studies on teacher retention reported retention is influenced by professional and personal factors, which are found within the four dimensions of the framework of teacher resilience (Curtis, 2011; De Stercke et al., 2015; Fisher & Royster, 2016; Gu & Day, 2007; Hancock & Scherff, 2010; Johnson et al., 2005; Jones, 2016; Patterson et al., 2004; Podolsky et al., 2016; Robbins-LaVicka, 2007). In the framework, the social, emotional, and motivational dimensions relate specifically to personal factors of the teachers. The profession-related domain speaks to the professional factors that influence teachers. Similarly, other researchers examining factors that cause teacher attrition found that those teachers who left failed to manage combinations of professional and personal factors that are common in the teaching profession (Buchanan, 2009, 2012; Cieśliński & Szum, 2014; Curtis, 2011; Kersaint et al., 2007; Tye & O’Brien, 2002). Thus, it appears that central to the issue of attrition and retention is the ability of the teacher to manage both personal and professional factors unique to teaching. Resiliency can help teachers manage these personal and professional factors and may be the key to understanding teacher retention.

Resiliency appears to play a role in teacher retention. Resilient teachers are able to manage and balance many of the factors that lead to teacher turnover. As a result, resilient teachers are more prone to retention. Lacking in the current literature, however, is the role resilience plays in the longevity of experienced secondary mathematics teachers. The resilience framework allowed the researcher to examine areas already explored in the literature and apply them to a content and grade-level specific group of teachers, which is often missing in the literature. A unique feature of the framework is that it addresses actual classroom practices of resilient teachers in the profession-related dimension. The actual practice of teachers is often neglected in the literature. Many of the studies on attrition and longevity rely on interview data and fail to include any observations of teacher practice. As a result, utilizing the four-dimensional framework enabled the researcher to examine the actual practice of experienced secondary mathematics teachers and draw connections between resilience and longevity.

#### *Purpose of the Study*

The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. This researcher explored the teaching narratives of four secondary mathematics teachers in Central Texas to gain a better understanding of mathematics teacher retention. The participants were selected purposefully with the criteria of being a current, experienced secondary mathematics teacher. An experienced teacher for this study was defined as a mathematics teacher with at least 19 years of teaching experience. Current literature is inconclusive when it comes to defining an experienced teacher. Day

and Gu (2009) described the attempt to define an experienced teacher as a *tangled web*. Aldeman (2015) reported that nationally, nearly 19.7% of public school teachers have at least 20 years of teaching experience and in Texas, that number is 18.9%. Based on this information, the researcher defined experienced teachers as those having at least 19 years of experience. Data were collected from interviews, observations of the participants' teaching, and participation in staff or department meetings, as well as a written narrative from their teaching experiences in an attempt to capture an in-depth understanding of the retention of secondary mathematics teachers.

### *Research Questions*

The research questions of this study focused on the retention factors of experienced secondary mathematics teachers.

1. Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?
2. What role does resilience play in the retention of experienced secondary mathematics teachers?
  - a. What are the profession-related characteristics of experienced secondary mathematics teachers?
  - b. What are the emotional-related characteristics of experienced secondary mathematics teachers?
  - c. What are the social-related characteristics of experienced secondary mathematics teachers?
  - d. What are the motivational-related characteristics of experienced secondary mathematics teachers?

### *Significance of the Study*

A review of the literature provided support for examining the problem of teacher turnover by looking at teacher retention. The current study was significant as the researcher addressed a content (mathematics) and grade level (secondary) specific examination of teacher retention. Many current studies on teacher retention examine teachers of all grade levels and content areas at the same time. Several studies suggest that factors influencing retention differ among the various teaching fields (Guarino et al., 2006; Hancock & Scherff, 2010; Murnane et al., 1991). This study contributes to the field of teacher retention by specifically focusing on secondary mathematics, an area hit hard by shortages and staffing difficulties.

This study is significant as it adds to the growing literature on teacher resilience. Resilience is gradually being recognized as an important characteristic in teacher retention. This researcher looked at the phenomenon of teacher retention through a theoretical framework of resilience. The four dimensional framework used in this study encompasses the factors identified in the literature that contribute to teacher retention, but in the context of resilience. Day and Gu (2014) state:

A central task for all concerned with enhancing quality and standards in schools is not only to have a better understanding of what influences teachers' resilience over the course of a career, but also the means by which the resilience necessary for these to be sustained may be nurtured and developed in the contexts in which they work and live. (p. 40)

This study was designed to address the role resilience plays in secondary mathematics teachers over the course of their career by providing an in-depth examination into the relationships between resilience and retention through construction of teacher narratives. These narratives allowed the participants to share their own experiences and influences on their decision to continue teaching. Missing in the current literature on teacher

retention is data from the actual practice of teaching. The growing research base on teacher retention recognizes the role resilience plays in retention (Bobek, 2002; Day & Gu, 2009; Doney, 2013; Gu & Day, 2007; Howard & Johnson, 2004; Mansfield et al., 2012; Patterson et al., 2004; Tait, 2008). A key component of resilience, according to Mansfield et al. (2012), includes actions from the professional domain of teaching, which includes the use of effective teaching skills and management of time and organization. In addition, the framework also includes how the teacher interacts with colleagues. The theoretical framework for this study allowed for the observation of the actual classroom practices of the experienced teacher and their interactions with colleagues. This aspect of the study addresses a gap in the current literature by using observations of classroom practice and interactions with colleagues to examine resiliency.

#### *Researcher's Perspective*

The researcher is a former secondary mathematics teacher who currently works with preservice secondary mathematics teachers. As a mathematics teacher educator, it is goal of the researcher to prepare preservice teachers adequately for a long, successful career in the mathematics classroom. Unfortunately, the researcher has witnessed many former colleagues and associates leave the profession of teaching early for a variety of reasons. It is the hope of the researcher that the findings from this study may help address the turnover of secondary mathematics teachers by highlighting the experiences and perspectives of experienced secondary mathematics teachers. These experiences and perspectives could provide useful in the preparation of future secondary mathematics teachers.

### *Significance of Methodology*

Creswell (2013) explains that qualitative research is conducted when a “complex, detailed understanding of the issue” is needed (p. 48). Case studies, a specific type of qualitative research, allows the researcher to explore a contemporary phenomenon in depth and within its real-world context (Yin, 2014). Multiple studies call for more in-depth teacher retention studies that allow for the consideration of individual teacher experiences (Hancock & Scherff, 2010; Johnson et al., 2005; Struyven & Vanthournout, 2014). These researchers call for retention studies that move beyond general surveys that superficially examine complex issues. The current narrative case study allowed for the in-depth study of mathematics teacher retention through prolonged engagement with the participants. A case study allowed for the prolonged engagement of the researcher, as multiple interviews and observations were conducted in the real-world context of the teachers’ practice in an attempt to provide insight into the issue of mathematics teacher retention. A narrative study is significant as well. Etherington and Bridges (2011) explain that narratives “seek out how people make meanings of their experiences and recognizes that meanings are multiple and context specific” (p. 12). It is the context specific nature of the participants’ teaching experiences that helped this study address the complex nature of teacher retention. Clandinin, Pushor, and Orr (2007) explain, “stories are the form in which we and other teachers and teacher educators most often represent our experiences” (p. 33). Narrative inquiry allowed the researcher to examine the stories and experiences of the participants and their relationship to teacher retention. Creswell (2013) recommends that narrative studies use a small number of participants who are accessible and willing to provide detailed information. With this study, the researcher examined the

retention of four experienced secondary mathematics teachers. These participants were accessible to the researcher and provided detailed information on the phenomenon of teacher retention. Using Creswell's (2013) recommendation for a small sample allowed the researcher to explore the issue under study in-depth, as called for by the current literature. A more detailed explanation of the methodology and sampling techniques can be found in Chapter Three.

#### *Limitations of the Study*

There are several limitations and delimitations to this study. One limitation of this study was the number of participants. Qualitative studies generally have smaller numbers of participants, as these types of studies seek to explore complex social phenomenon in their real-world context, so large numbers of participants are typically not advised. Thus, not every single experienced mathematics teacher in the area can be included in the study. A second limitation of the study was the participants are currently employed by a school district, which may affect what they share. This circumstance may cause the participants to be less willing to discuss any negative external factors present in their workplace in fear of retribution. This issue was addressed by establishing a relationship of trust between the researcher and the participants and through the use of pseudonyms in the reporting of the findings. Additionally, participants were able to review their own case profile written by the researcher to check for accuracy of the information collected. There were several delimitations for this study, which are implemented by the researcher to help define the scope and purpose of the study. One delimitation was that all the participants were currently employed as a secondary mathematics teacher. A second delimitation was the level of experience, as all participants must have had at least 19

years of teaching experience. These delimitations were necessary to focus the study and apply the appropriate theoretical framework.

### *Definitions of Terms*

An understanding of the following terms is necessary to explain and interpret the results of this study.

*Teacher Turnover*—Teacher turnover consists of two commonly studied components: attrition (teachers leaving teaching employment) and migration (teachers moving to a different school) (Boe, Cook, & Sunderland, 2008). For purposes of this study, teacher turnover includes both teachers leaving teaching employment and teachers moving to a different school. These two categories (leaving and moving) are combined because “teachers who leave for a different school have the same impact as teachers who leave the profession” (Sutcher et al., 2016, p. 40).

*Secondary Mathematics Teacher*—A teacher whose main teaching assignment is mathematics for any grade level, 6-12.

*Experienced Secondary Mathematics Teacher*—Any secondary mathematics teacher who has at least 19 years of teaching experience.

*Resilience*—“the ability to adjust to varied situations and increase one’s competence in the face of adverse conditions” (Bobek, 2002, p. 202). Resilience also “involves dynamic processes that are the result of interaction over time between a person and the environment and is evidenced by how individuals respond to challenging or adverse situations” (Mansfield et al., 2012, p. 358).

### *Conclusion*

Teaching is plagued with high levels of turnover, which negatively affect schools academically, financially, and organizationally. Mathematics is an area hit hard by teacher turnover and shortages, and many schools report difficulties in staffing positions in mathematics. In order to address the issue of mathematics teacher turnover, it is important to consider what contributes to the retention of secondary mathematics teachers. Resiliency is seen as a key feature of retention. Lacking in the current literature base are studies examining the relationship between resilience and secondary mathematics teacher retention. This study sought to address this gap in the literature by exploring the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Chapter Two provides a detailed review of the literature on teacher turnover, teacher exit decisions, retention, and resilience.

## CHAPTER TWO

### Literature Review

Teacher turnover disrupts the classroom and has negative implications for students and schools. Mathematics has been a specific area targeted by teacher recruitment programs in an attempt to address the staffing difficulties many schools face in this content area. It is critical to understand the reasons behind mathematics teachers' decisions to leave or remain in the classroom teaching. In this chapter, a description is provided to highlight the issue of teacher turnover and the implications this phenomenon has for students and schools. The reasons behind teachers' decisions to leave the classroom will be highlighted, as well as the current literature on the factors and traits that contribute to teacher retention. This chapter then connects the literature review to the need for this research study. As described in Chapter One, this researcher explored the retention of four experienced secondary mathematics teachers. Thus, the chapter provides a detailed overview of the factors contributing to teacher attrition, retention, and resilience. The chapter concludes by highlighting the limited studies concerning mathematics teacher retention and how with the present study, the researcher seeks to address the gaps in the literature.

#### *Teacher Turnover*

Teacher turnover consists of two commonly studied components: attrition (teachers leaving teaching employment) and migration (teachers moving to a different school) (Boe et al., 2008). Teacher turnover statistics are typically reported in three

categories: stayers, movers, and leavers. Statistics concerning levels of teacher turnovers are commonly pulled from the same data sources. These data sources are the Schools and Staffing Survey (SASS) and its supplement, the Teacher Follow-Up Survey (TFS), both of which are conducted by the U.S. Department of Education's National Center for Educational Statistics (NCES). The SASS and TFS are large, nationally representative data sets that include information on teacher migration, attrition, the reasons teacher give for leaving, and other information on the characteristics of elementary and secondary schools (Ingersoll, 2001). The TFS is conducted a year after the administration of the SASS in order to collect information on teachers that are stayers, movers, and leavers. The SASS and TFS were first conducted in the 1988-1989 school year and have continued in the 1991-92, 1994-95, 2000-01, 2004-05, 2008-09, and 2012-13 school years.

Ingersoll (2001, 2003, 2011), a leader in teacher turnover research, has frequently utilized data from the SASS and TFS in his analysis of teacher turnover and attrition. He argued that teaching is plagued with chronic, high turnover rates. Ingersoll reported teacher turnover rates of 15% in 1988-89, 13.2% in 1991-1992, and 14.3% from 1994-1995, which is higher than the reported average turnover rates nationally in 1994-1995, which was 11%. In many cases, the high rates of turnover and subsequent teacher shortages are attributed to the increased level of teacher retirements. Ingersoll counters this argument in his analysis. He used the 1990-1991 SASS and the 1991-1992 TFS to analyze teacher turnover and shortages rates. The sample from the TFS survey included 6,733 elementary and secondary teachers which included 3,343 stayers, 1,428 movers, and 1,962 leavers. Ingersoll reported that while teacher retirement did increase during this

period, it only accounted for a small portion of the turnover numbers (24% of leavers and only 12% of the total turnover). Ingersoll concluded that the demands for new teachers is not due to retirements or student enrollment increases but can be attributed to large numbers of preretirement turnover. Thus, increasing the supply of teachers will do little to address the turnover problem in education. Ingersoll (2003) explained,

In short, recruiting more teachers will not solve the teacher crisis if large numbers of such teachers then leave. The image that comes to mind is that of a bucket rapidly losing water because of holes in the bottom. Pouring more water into the bucket will not solve the problem if the holes are not first patched. (p. 151)

In order to address the “holes in the bucket,” Ingersoll advocated approaching the issue of teacher turnover by focusing on the retention of teachers (p. 151). Schools with recruitment issues are likely to have retention issues as well, and Ingersoll concluded by arguing that teacher recruitment programs will do little in addressing turnover if they fail to address the issues with retention.

Current reports from the SASS and TFS, which rely on data from the 2012-2013 school year, reveal updated turnover statistics compared to what Ingersoll reported in the late 1980s and 1990s. Goldring, Taie, Riddles, and Owens (2014) reported that in 2011-2012, there were nearly 3,377,900 public school teachers. Of those 3,377,900, 84% were stayers, 8% were movers, and 8% were leavers. In mathematics, of the 295,900 teachers, 83.2% were stayers, 7.1% were movers, and 9.7% were leavers, which was slightly higher than the national average of teacher leavers. Sutcher et al. (2016) explained that from 1989 and 2005, attrition rates increased by 50% and have remained at that level in the last decade. Current attrition rates hover around 7.7%, which is nearly double the attrition rate of high-achieving nations like Finland and Singapore. They explained, “If attrition rates were reduced to the levels of those nations (Finland and Singapore), the

United States would eliminate overall teacher shortages” (Sutcher et al., 2016, p. 4).

While most researchers agree that teacher turnover is a major issue facing education, there is some debate concerning the causes of turnover.

Some researchers have countered the argument that high levels of teacher attrition are causing teacher shortages. Boe et al. (2008) analyzed teacher turnover trends during a 9-year period using data from the TFS from the 1991-1992, 1994-1995, and 2000-2001 surveys. The researchers claimed the aggregated data as used by Ingersoll distorts the statistics for teacher turnover, as he counts both teachers who leave and migrate in his turnover calculations. Boe et al. (2008) reported that attrition only accounts for 30% of the teacher turnover levels, as the majority of teachers either migrate to another school or assume a nonteaching position within education. In addition, teacher attrition levels, as reported by the researchers, are not excessive compared to other occupations. However, they argued that, “in spite of enormous efforts to improve public education during the past 2 decades, teacher attrition has increased. Given this, it is unrealistic to expect a level of sustained national commitment of sufficient scope that will improve retention” (Boe et al., 2008, p. 25). Harris and Adams (2007) compared teacher turnover trends using data from the Current Population Survey with three other professions similar to teaching: nursing, social work, and accounting. Harris and Adams acknowledged that teacher turnover is an important issue in education, but argued teacher retirement levels play a much larger role in turnover than previously suggested by Ingersoll (2001). The researchers found teacher turnover rates are comparable to the nursing, social work, and accounting fields (Harris & Adams, 2007). While teachers have the highest probability of leaving the labor force of the four professions, many of the leavers are older teachers,

who tend to retire earlier than their nursing, social work, and accounting counterparts.

Harris and Adams (2007) concluded pension and retirement options for teachers are major factors in the early retirement rates of older teachers, which account for a large number of the leavers in the profession.

Sutcher et al. (2016) however, countered the arguments made by Boe et al. (2008) and Harris and Adams (2007) that teacher retirements drive attrition levels, not teacher dissatisfaction. Based on data from the 2012-2013 TFS, only one third of teachers who left the profession cited retirement as the reason behind their decision. Thus, nearly 70% of teachers who left the profession did so for reasons other than retirement, indicating teacher attrition is being driven much more by reasons of job dissatisfaction, personal reasons, and pursuing other occupations. The state of Texas, much like the national trend, has also reported high levels of teacher turnover driving teacher shortages.

In the state of Texas, teacher turnover rates are problematic. Bailey (2017) explained teacher preparation providers are unable to produce enough new teachers to fill the demand as a result of teacher turnover and retirements. Using data from the Texas Education Agency (TEA), Burridge, Lowrey, and Horn (2016) reported retention rates have dropped as a result of attrition over the past 5 years in Texas. The researchers followed a cohort of 24,000 first time teachers in Texas and found after 5 years, only 63% of the cohort remained in the classroom teaching. Burridge et al. warned that addressing teacher turnover and improving the retention of teachers “is one of the most serious public workforce issues” facing Texas (p. 1). In 2015-2016, TEA (2016) reported a statewide teacher turnover rate of 16.5%, which is higher than the national average of 7.7%. In the Central Texas region, TEA reports turnover rates of 22.3% in 2015-2016,

which is higher than both the statewide and national averages. The reasons provided by teachers for their decisions to leave the profession will be explained in a later section of this chapter.

### *Teacher Turnover by Categories*

Other studies analyzing teacher turnover trends break down the data into categories of experience level and content taught. Novice teachers leave the profession at much higher rates than their more experienced counterparts (Poldosky et al., 2016; Sutcher et al., 2016). Sutcher et al. (2016) estimated that within 5 years, between 19% and 30% of new teachers will leave the profession. Guarino et al. (2006) conducted a literature review of teacher recruitment and retention. In their review, the researchers confirm the findings reported by other studies (Poldosky et al., 2016; Sutcher et al., 2016) that novice teachers leave the profession at a much higher rate than their more experienced peers. Guarino et al. (2006) reported studies which showed 16% of novice teachers leave teaching within the first year of teaching and 26% leave within 2 years.

Boyd et al. (2008) analyzed reported data from 1998-2005 on New York City teachers and found school-level attrition rates for second year teachers are almost the same as attrition levels for first-year teachers (17% vs. 20%). The researchers reported that nearly half of the leavers during their first year of teaching transfer to another school within New York City. Of the remaining first year teacher leavers, a third leave teaching altogether and 15% transfer to a school outside the city limits. They also concluded that a large number of teachers leave their initial placements within the first 2 years of the job, particularly in schools with a large population of low performing students.

Mathematics teacher turnover and supply levels have been reported in multiple studies. Ingersoll and Perda (2010), citing policy initiatives to increase the supply of mathematics and science teachers to combat turnover, analyzed the supply levels of mathematics and sciences teachers. Utilizing data sets from the 1999-2000 SASS/TFS, the Integrated Postsecondary Educational Data System, and the Baccalaureate and Beyond Survey (B&B), Ingersoll and Perda concluded that the size of the teaching force has increased at a faster rate than the size of the student population. However, despite this supply, 74% of secondary school districts reported it was *somewhat difficult* to fill teaching openings. This is especially true in mathematics, where graduation requirements changed necessitating students to take more mathematics courses. However, despite the increase in demand for mathematics teachers, the supply of new mathematics teachers was more than enough to fill all these vacancies. Ingersoll and Perda reported,

The 7,969 new mathematics teachers produced by the pipeline at the end of the 1999-2000 year was about twice the number of mathematics teachers who retired (3,915) but was much smaller than the number of all mathematics teachers who left classroom teaching that year (13,750). (p. 581)

It appears that the number of new mathematics teachers is more than enough to cover the number of teachers retiring. The greater issue, the researchers concluded, is the turnover rates of mathematics teachers (Ingersoll & Perda, 2010). Today, mathematics teacher attrition levels are around 13.3%, which ranks behind only ESL and Special Education teachers as the area with the highest turnover rates (Sutcher et al., 2016). Increasing the supply of mathematics teachers, a common policy initiative, will not address the staffing issues caused by teacher turnover. Mathematics teaching is of particular concern to the researchers, as it does “not have the same large ‘cushion’ of new supply enjoyed by fields such as English” (p. 590). Thus, if the new supply of mathematics teachers is sufficient,

as the researchers argue, it is necessary to look closer at levels and causes of turnover for mathematics teachers.

Often it is reported that mathematics teachers leave teaching at higher rates because they have more options for occupations outside of teaching with their mathematical training. Ingersoll and May (2012) challenged this assumption by examining the levels of turnover among mathematics and sciences teachers and where they ended up. The researchers analyzed data from 5,189 mathematics and science teachers using the SASS and TFU surveys. Ingersoll and May reported that even though annual turnover rates for mathematics teachers increased by 34% from the late 1980s to 2005, the mathematics teachers were no more likely to pursue non-educational jobs compared to their colleagues in other content areas, but do tend to have higher rates of cross-school and cross-district mobility levels. In general, teachers were more likely to leave for nonteaching jobs within education than pursue occupations outside the field. In Texas, the turnover rates of mathematics teachers are also a major issue, driving statewide teaching shortages.

Fuller (2009) examined the turnover and shortage rates of mathematics teachers in Texas. Fuller argued Texas suffers from an “acute shortage” of mathematics teachers (p. 3). In Texas, nearly 95% of surveyed districts report difficulties in staffing mathematics teaching positions. Using data from the Texas Educator Certification Records and TEA, Fuller reported from 1999-2006, 3-year attrition rates for secondary mathematics teachers averaged 21.79%. Ingersoll and Perda’s (2010) findings complement those reported by Fuller (2009), that teacher attrition is driving the high rates of mathematics teacher turnover in Texas, not retirements. Supporting these findings from Fuller is data from the

United States Department of Education, which has identified mathematics as a shortage area in Texas for the past 20 years. Increasing the supply of mathematics teachers, thus, will do very little to address the current and predicted shortage that Texas will face. These turnover rates not only drive teacher shortages, but they also have negative academic and financial implications for schools.

### *Implications of Teacher Turnover*

Turnover in any profession is a common and sometimes beneficial process. Ingersoll (2001) explained that from an organizational perspective, a small number of turnover is normal and often beneficial, as lack of turnover can lead to stagnation in productivity due to the presence of low-performing employees. Hanushek and Ravkin (2010) found teachers who are stayers tend to outperform the leavers, suggesting turnover in teaching helps weed out the less effective teachers. Boyd et al. (2008) similarly found that less-effective teachers leave their initial placement at a much higher rate than effective teachers and are more likely to transfer to a different school. Often, these less-effective teachers that transfer to different schools are relatively less effective in their new schools, confirming the premise that stayers outperform leavers. Too much turnover, however, whether from attrition or teachers moving schools, can have damaging financial, academic, and organizational implications for schools.

National estimates place annual teacher turnover costs for the United States ranging from \$2.2 billion to \$3 billion (Alliance for Excellent Education, 2014; Sutcher et al., 2016). A decade ago, replacement costs for teacher turnover averaged around \$4,400 in rural communities to nearly \$18,000 per teacher in a large urban district (Sutcher et al., 2016). Several models have been developed in an attempt to document

financial implications of teacher turnover. Synar and Maiden (2012) looked at the costs of teacher turnover in a large urban school district that had 1,804 elementary school teachers, 568 middle school teachers, and 664 high school teachers that served a student population of 39,449. Using the terminated teacher database provided by the schools and interviews with district staff, Synar and Maiden predicted an average cost for the school district of \$14,508.86 per leaver. The researchers found training costs for replacement teachers account for 48.15% of the total turnover costs and the performance productivity averaged 40.92% of the turnover costs. Synar and Maiden concluded, “the financial costs of teacher turnover presented in this study should be unacceptable to any school district watching their financial bottom line and providing the best teaching workforce for their students” (p. 141).

Levy et al. (2012) also estimated turnover costs by looking at a specific school district. Using case study methodology, the researchers examined two middle and two high schools in the Boston School District to help develop a Cost of Turnover (COT) to help other districts report their own turnover costs. The researchers argued that teacher turnover costs are substantial and drain already limited school resources. Turnover rates in the Boston Schools fluctuated from a low of 7% to a high of 13% during the course of the study. Results indicated an annual teacher turnover cost of over \$12 million for the Boston School District, which is about 2% of district’s annual budget. This cost averages out to just over \$19,000 per leaver, which is higher than the rate reported by Synar and Maiden (2012). Levy et al. (2012) also looked at costs associated with the hard-to-fill discipline of science and found each science teacher leaver cost the district double, or about \$39,710. While this conclusion relates specifically to science, the researchers

explained that other hard-to-fill disciplines, such as mathematics, would also cost school districts substantially more as compared to other content areas that are easier to replace.

Barnes et al. (2007), working in conjunction with the National Commission on Teaching and America's Future, developed a teacher turnover cost calculator by studying the costs of turnover in five school districts in Chicago, Milwaukee, Granville, and Jemez Valley. The schools in these districts represent a range of large and small, urban and rural communities. In this study, the researchers included teachers who left the profession altogether and those who moved to different schools in their cost calculations. Using information from each district's financial databases for the 2002-2003 and 2003-2004 school year, the researchers were able to determine turnover costs for each district. For the small school districts, turnover costs averaged between \$4,366-\$10,000 per leaver. In the larger urban district of Chicago, Barnes et al. reported each leaver cost \$17,872, resulting in a total annual turnover cost of \$86 million in Chicago alone. The researchers recommended districts invest in new teacher support and development and improve retention in an effort to address the costly impact of teacher turnover. Teacher turnover is not only costly for schools financially, but academically as well.

Dolton and Newson (2003) researched the relationship between teacher turnover and school performance in the United Kingdom by looking at 316 primary schools in six London boroughs. Using teacher turnover rates as a dependent variable, the researchers used multiple regressions to approximate the relationship between turnover and scores on the English and math Standard Attainment Tests (SATS) exam. Dolton and Newson found that increased teacher turnover rates have negative consequences for students' scores on the SATS. Based on the analysis, they found a 10% increase in turnover rates

will cause a 2% decline in English and 2.5% decline in math scores on the SATS. In other words, “this can be expressed, in terms of descriptive statistics, as the upper quartile of schools with the highest teacher turnover achieving, on average, SATS results between 10 and 11% lower than other schools” (Dolton & Newson, 2003, p. 137).

A more recent study looking at the academic implications of teacher turnover focused on 850,000 fourth and fifth grade students over a course of eight years in New York City. Ronfeldt et al. (2013) linked test scores in mathematics and English language arts (ELA) to student, class, school, and teacher characteristics. Like Dolton and Newson (2003), Ronfeldt et al. (2013) found turnover has a harmful effect on students across all kinds of schools. Students with turnover rates in the fourth quartile have 2% to 4% of a standard deviation lower mathematics achievement compared to students with teacher turnover rates in the bottom quartile. Contrary to Hanushek and Ravkin’s (2010) conclusion that stayers outperform leavers, Ronfeldt et al. (2013) found stayers are negatively impacted by turnover rates and prior effectiveness of a teacher is not the main factor of the negative effects of turnover on student achievement. The researchers concluded, “turnover must have an impact beyond simply whether incoming teachers are better than those they replaced—even the teachers outside of this redistribution are somehow harmed by it” (Ronfeldt, 2013, p. 31). They recommended policies that promote retention and keeping grade-level teams intact to help combat the negative effect of turnover.

An unexpected consequence of teacher turnover is the loss of experienced teachers in the classroom. Ladd (2013) explained that in the late 1980s, over 83% of teachers had at least 5 years of teaching experience, but in 2008, that number had

dropped to 72%. In 2015, the number of teachers with at least 5 years of teaching experience has increased slightly to 76% (Aldeman, 2015). Huberman (1993) identified a “danger zone” for experienced teachers between 7-15 years of experience, “in which teachers in his sample were most likely to consider leaving teaching” (p. 138). Ladd (2013) explained that the drop in the experience level of teachers is problematic as experienced teachers are on average more effective in raising student achievement than less experienced teachers. Ladd reported as teachers gain experience, they become better at other areas of teaching, including, “reducing student absences and encouraging students to read for recreational purposes outside of the classroom. More experienced teachers often mentor young teachers and help to create and maintain a strong school community” (para. 5). Han et al. (2016) also reported that experienced teachers have access to greater pedagogical content knowledge and a better understanding of their students and the ability to build on their prior knowledge. Papay and Kraft (2015) studied the relationship between teacher experience and student achievement using data from nearly 200,000 students and 3,500 teachers over a period of 9 years. The researchers found teachers were able to improve student scores throughout their tenure. Papay and Kraft reported, “We consistently find evidence for later-career productivity improvements across nearly all models, particularly in mathematics” (p. 115). This has important implications for the teaching of mathematics. If teaching experience can improve the academic achievement of students, then it is critical that the issue of teacher turnover be addressed. Teacher turnover can be harmful to the culture of the school as well.

Park and Lee (2016) explained teacher turnover is disruptive to the relationships between teachers and students. As teachers leave, morale among the remaining teachers may decline which can affect students as well. Park and Lee administered a questionnaire to 225 early childhood teachers in Korea to examine the relationship between school culture, teacher burnout, and turnover. Using correlation and regression analysis, the researchers found organizational culture functioned as a strong predictor of teacher turnover. Schools with strong bonds among faculty and students were less likely to have large issues with turnover and burnout. Park and Lee recommended teachers be encouraged to interact and cooperate with one another in an effort to build a family-like atmosphere. Turnover threatens this atmosphere, so it is critical that schools create environments where teachers can interact and bond to encourage teacher retention.

Seeking to examine the relationship between teacher turnover, school context, and feelings of belonging, Skaalvik and Skaalvik (2011) administered a questionnaire to 2,569 elementary and middle school teachers in Norway. The researchers explained that prior to conducting their research, they expected to find feelings of belonging among teachers was positively related to teacher job satisfaction. Skaalvik and Skaalvik used structural equation modeling when they analyzed the questionnaires. The researchers found positive relationships among staff contributed to a sense of belongingness among the participants. Skaalvik and Skaalvik reported, “this indicates the importance of creating an atmosphere of mutual trust and respect among all groups and interested parties in a school” (p. 1036). Additionally, a feeling of belongingness was found to be negatively correlated to participants’ motivation to leave teaching. Teacher turnover

threatens the atmosphere of trust and respect within a school, and as a result, may decrease a sense of belongingness among the staff.

High levels of teacher turnover can negatively impact the climate of a school. Guin (2004) studied the effects of chronic teacher turnover on the climate of elementary schools in a large urban school district in the United States. Using mixed-method methodology, Guin analyzed results from the School Climate Survey, completed by 95% of the teachers in the district and qualitative data from interviews conducted at five of the schools in the larger study. Guin interviewed the principals and two to four teachers from each of the five schools in the study. Guin found the elementary schools with the highest levels of teacher turnover reported high levels of teacher burnout. Teachers who remained at these schools described how they felt drained and disheartened as a result of the high levels of turnover. Principals at the high turnover schools reported difficulties in program planning and implementation as a result of the high levels of turnover. Guin found this is in stark contrast to the schools in his study that reported low levels of teacher turnover. Teachers and principals at these schools reported a strong sense of teamwork and collaboration among staff, which allowed for cohesive planning and implementation of school policies. Guin called for school districts to recognize the negative impact teacher turnover has on school climate and teacher morale and to reexamine policies that might help address the issue of teacher turnover.

### *Summary*

Teacher turnover is a major issue impacting education. Whether it is teachers moving from one school to another or leaving the profession altogether, turnover has financial, academic, and organizational implications for schools. While there are

disagreements in the literature regarding the scope of teacher turnover rates, most researchers would agree that high rates of turnover are not ideal and do have negative consequences. Turnover impacts schools financially, as administrators are tasked with recruiting and retraining new teachers, while attempting to recoup their losses in training and professional development from the teachers who left. Academically, higher rates of teacher turnover are correlated with lower tests scores and impacts the teachers who do not move as well. Turnover also negatively impacts the climate of schools, as higher turnover rates are associated with teacher burnout, decreased morale, and lack of belongingness among staff. While the turnover rates of mathematics teachers do not appear to be much different than other content areas, they are still an important area of focus. Despite the sufficient supply of mathematics teachers, staffing difficulties still exist. Student scores in mathematics suffer as a result of high rates of turnover. Therefore, it is necessary to look at retaining effective mathematics teachers to help reverse the negative impact of turnover. Before addressing the retention of teachers, however, it is important to look closely at the reasons why teachers move schools or change professions.

### *Why Teachers Leave*

Teacher turnover is a complex phenomenon. One method in understanding this phenomenon is to consider the reasons why teachers decide to leave. Leaving includes both teachers who leave for different schools and teachers who leave the profession altogether. Both types of turnover, leaving and staying, can have negative impacts on schools and student achievement (Dolton & Newson, 2003; Ronfeldt et al., 2013; Synar & Maiden, 2012). In a meta-analysis on teacher attrition, Macdonald (1999) reported the

literature revealed several common themes in teachers' exit decisions. School conditions, socio-economic factors, salary, autonomy, student discipline issues, and family issues are all common reasons given by teachers who either quit teaching altogether or leave for a different school. Macdonald found these issues are not unique to the United States. The increase of administrative tasks and paperwork have been reported as reasons for teaching dissatisfaction all over the globe by Buchanan (2009, 2012). Other research on why teachers leave tends to focus on novice teachers, as they are more likely to leave the profession compared to more experienced teachers (Boyd et al., 2008; Kukla-Acevedo, 2009b). The remaining literature is divided between experienced teachers who left and predictors of teacher attrition. In the next section, the researcher will look at the reported reasons why novice teachers change schools or quit. In the remaining sections, the researcher will examine the exit and transfer decisions of other teachers and predictors of teacher turnover.

### *Novice Teachers*

Citing high turnover and departure rates of novice teachers, Dupriez et al. (2015) studied the attrition rates of beginning teachers in Belgium. Their analysis consisted of four cohorts of teachers from 2006-2011 that included between 9,618 and 19,196 teachers for each cohort. The researchers found novice teachers in secondary schools were more likely to leave the profession than primary school teachers. Novice teachers reported poor job conditions in their first year of teaching as a contributing factor to their decision to quit teaching. The researchers categorized the participants based on preparation and found beginning teachers with no formal preparation have a five times greater risk of leaving than their peers who were certified through a traditional teacher preparation

program. If the novice teachers had an advanced degree as well, such as a master's degree, they were also more likely to leave.

Struyven and Vanthournout (2014) conducted a second study in Belgium looking at the motives for teacher attrition for teachers who entered the profession and left within 5 years and for teachers who graduated from teacher preparation programs but never entered the field. The researchers surveyed 154 teachers who left within the first 5 years and 81 teachers who never entered the profession. A factor analysis revealed five common themes in the surveyed teachers' exit decisions: job satisfaction/relations with students, school management and support, workload, future prospects, and relations with parents. The researchers also found male teachers leave teaching at higher rates than female teachers and reported secondary teachers are more likely to leave teaching compared to middle school and primary school teachers. This is similar to Dupriez et al.'s (2015) findings. Struyven and Vanthournout (2014), however, explained that many of the reported reasons are context-specific and caution overgeneralizing the results. The researchers recommended more qualitative interviews to supplement the survey data.

Recognizing the impact that workplace conditions have on teacher mobility factors, Kukla-Acevedo (2009b) explored three specific workplace conditions identified in the literature (classroom autonomy, administrative support, and behavioral climate) and how they influenced teachers' mobility decisions. Using data from the 1999-2000 SASS and the 2000-2001 TFS, which included a sample of 3,505 teachers, the researcher found novice teachers were more likely to leave than their more experienced peers. Most of the turnover in the data came from teachers moving schools and administrative support being statistically significant in their decision to move or leave. Novice teachers were

more inclined to leave or move as a result of student behavior. First year teachers in the study were 16 times more likely to leave teaching per each standard deviation increase in behavioral problems. Kukla-Acevedo (2009b) concluded workplace conditions have a much greater influence on a novice teacher's decision to leave compared to their more experienced colleagues.

Several studies take a qualitative approach when analyzing the reasons novice teachers leave the profession. Scherff (2008) used a narrative case study to describe the circumstances behind two novice secondary English teachers' decision to leave the profession. The two teachers were part of a master's degree cohort, which consisted of 12 teachers (3 who left teaching and several considering leaving), that documented their thoughts and reflections on a listserv maintained by the researcher. Luke, one of the teachers studied, left teaching because of issues with student apathy and the political and bureaucratic issues at the school. Paperwork and administrative support also contributed to his decision to leave. Toni, the second teacher studied, reported indifferent colleagues and feelings of isolation as factors causing her to leave teaching. Working conditions were factors in both of these teachers' decisions to leave. Toni explained to Scherff, "Teaching is just not worth the constant stress and pain that crushed my very soul and being" (p. 1327).

Workplace conditions, student behavior, and increased additional administrative tasks are common themes regarding factors that novice teachers provide for leaving the profession or changing schools. However, Wayne's (2000) analysis of teacher turnover counters the impact that these conditions have on teachers' decisions to leave. Using data on 4,500 teachers across the United States from the National Center for Education

Statistics in 1993-1994, Wayne argued that the number of novice teachers who leave as a result of job dissatisfaction is very small. Wayne reported only 8% of novice teachers leave as a result of job dissatisfaction, while an additional 17% leave to pursue other work or higher salaries. Most beginning teachers, 44%, leave as a result of personal and family reasons. This appears to contradict prior research on novice teacher attrition, which attributes workplace conditions as a major factor in deciding to leave or move.

Novice teachers are more likely to quit teaching compared to their more experienced colleagues. However, this does not imply that more experienced teachers do not leave the profession as a result of factors beyond their control. The following sections will look at more experienced teachers' exit decisions and predictors of teacher turnover.

### *Experienced Teachers*

Kersaint et al. (2007) analyzed a group of 898 stayers and 901 leavers in two large Florida school districts from 2002-2005. The researchers used a factor analysis and ANOVA to compare how six categories, administrative support, financial benefits, paperwork/assessment, family responsibilities, joy of teaching, and time with family, impact leavers and stayers. The desire to spend more time with family emerged as the highest importance for leavers, but of low importance to stayers. Interestingly, the joy of teaching was rated as low importance for both groups. Open-ended responses by leavers revealed themes of discontent coming from a lack of administrative support and student discipline. Stayers reported that issues of pay and benefits, testing and accountability, and excessive paperwork were areas that may cause them to consider leaving the profession. The researchers called for more qualitative studies on the themes identified by the stayers

and leavers in order to gain a better understanding of how individual teachers manage these issues.

Buchanan (2009, 2012) interviewed 22 former teachers in Australia to document the reasons the teachers left and where they are currently working. The interviewees had teaching experiences from several months to 20 years. Buchanan found there was no incentive that would lure these former teachers back into the profession. School culture emerged as a dominant theme for reasons of departure. The former teachers also reported classroom management and overwhelming workloads as factors contributing to leaving teaching. Salary was inconclusive, as several interviewees reported earning less in their new jobs than when they taught. Multiple participants shared issues with the low salary of teaching, attributing it to the low status that teaching hold in society. Buchanan reported that some of the interviewees commented on the workload burden required outside of the workplace that teaching requires, and found they are happier in their new jobs with increased autonomy and support. Buchanan (2012) concluded, “Ironically, these ex-teachers’ enthusiastic, idealistic, star-crossed love of teaching might have been the root of their downfall. And yet, such characteristics are commonly celebrated as teaching’s best” (p. 214). It appears the situational factors associated with teaching took its toll on these teachers who decided to leave the profession.

Looking specifically at experienced teachers, Tye and O’Brien (2002) sent a questionnaire to 4,534 Chapman University teacher education graduates from 1990-1995. Of the 4,534 questionnaires sent out, 114 teachers returned the questionnaires and their responses were sorted by teachers who left teaching and those who would consider leaving. The authors reported the response rate was too low to generalize any of the

results, but felt the responses shared by the participants were worth including since they matched similar findings in the literature on teacher turnover. Both groups cited increased paperwork and accountability as the main reasons for leaving or considering leaving. The researchers ranked the reported reasons provided by teachers based on the categories of teachers who left and teachers who would consider leaving. Table 1 contains the rankings for reported reasons for leaving by both groups in order of most important to least important.

Table 1  
*Rankings of Reasons for Leaving*

| Teachers Who Left              | Teachers Who Would Consider Leaving |
|--------------------------------|-------------------------------------|
| 1. Accountability              | 1. Salary Considerations            |
| 2. Increased Paperwork         | 2. Increased Paperwork              |
| 3. Student Attitudes           | 3. Accountability                   |
| 4. No Parent Support           | 4. Low Status of Profession         |
| 5. Unresponsive Administration | 5. Unresponsive Administration      |
| 6. Low Status of Profession    | 6. Student Attitudes                |
| 7. Salary Considerations       | 7. No Parent Support                |

*Note.* Tye & O'Brien, 2002, p. 26.

While the reported reasons given by teachers who left and who would consider leaving share some common rankings, salary is an area of stark contrast (Tye & O'Brien, 2002). Teachers who left reported salary as the least important reasons for leaving while teachers who are considering leaving reported salary is the biggest reason they would consider leaving. Administrative support ranks fifth for both groups, which is contrary to

much of the previously reported research on reasons many novice teacher give for leaving. The studies described are just a few of the many focusing on the reasons experienced teachers provide for leaving the profession. The previously described studies highlight many of the themes reported in the literature on the attrition of experienced teachers (Buchanan 2009; 2012; Kersaint et al., 2007; Tye & O'Brien, 2002).

### *Content Specific*

Some attrition studies are content specific. Cieśliński and Szum (2014) studied the exit decisions of physical education teachers in Poland. The researchers interviewed 80 former physical education teachers using a Quality of Life poll. The physical education teachers that left teaching pointed to low salaries as a significant reason for leaving the profession. The researchers also reported that working conditions negatively influence the psychophysical state, professional self-evaluation, and dispositions of the departed teachers. Teachers also explained that the increased workload and lack of career mobility options as reasons contributing to departing teaching. The participants in the study also reported several content specific reasons for leaving. Teachers reported physical isolation from other teachers as a reason contributing to leaving, as most physical education classes take place in the gym, outside, or in other areas of the schools. The former PE teachers also revealed low professional status among their colleagues in other content areas as reasons for leaving, as they often felt excluded from major school decisions and experiences as a result of being a PE teacher. The researchers concluded these PE teachers left for multiple reasons and not one decisive one. This study highlights the content-specificity issues with teacher turnover. It is critical to look at content specific groups to analyze the uniqueness of challenges that confront each content area in schools.

Hahs-Vaughn and Scherff (2008) examined the attrition and mobility rates of beginning English teachers. Using the data from the 1999-2000 SASS survey and the 2000-2001 TFS, the researchers analyzed data from over 11,139 schools for the SASS survey and 8,400 teachers for the TFS. Hahs-Vaughn and Scherff found male English teachers and those making less than \$20, 000 were more likely to leave teaching than their female and higher paid counterparts. Male novice English teachers were eight times more likely to leave teaching compared to female novice English teachers. The researchers also reported that mentoring had little impact on the decisions of novice English teachers' decisions to leave the profession or switch schools. Hahs-Vaughn and Scherff called for additional studies to examine teacher turnover by content areas because of the demands placed on certain content areas as a result of high-stakes assessments and accountability measures.

Lloyd and Sullivan (2012) provided an in-depth analysis of a novice secondary mathematics teacher, who, despite showing promise in her preparation program and teaching performance, left the profession after just 2 years on the job. The researchers followed this teacher for 3 years, which included her last year in teacher preparation program and her first 2 years on the job. Despite being highly successful at translating the methods taught in her teacher preparation program into practice, interviews and classroom observations revealed how frustrations with students and colleagues, and additional paperwork and administrative tasks ultimately led to this novice teacher's decision to leave the field of teaching. The researchers explained, "Sarah (the novice teacher) could not negotiate the tension between how she wanted to teach and how she realistically could teach" (p. 159). The additional administrative tasks and responsibilities

ultimately took their toll on the novice teacher, who concluded that she could no longer maintain a healthy lifestyle and rise to the high expectations of quality teaching.

In her mixed-methods dissertation, Curtis (2011) examined the factors influencing the attrition of middle school and high school mathematics teachers. Curtis surveyed 1,500 middle and secondary mathematics teachers and conducted interviews with 32 teachers from the survey sample. In the quantitative section of her study, Curtis reported that gender did not play a role in teacher attrition. Teachers with less than 6 years of experience and minority teachers were more likely to leave the classroom. Additionally, Curtis found no significant difference between the retention rates of middle and secondary mathematics teachers, concluding the attrition rate is similar for these two groups of mathematics teachers. The qualitative interviews revealed middle and secondary mathematics teachers reported student discipline and lack of administrative support as leading causes for attrition. Also, teachers in this study who were considering leaving the profession reported they were frustrated with being blamed for many of the issues in education and the high pressures associated with the accountability movement. Curtis concluded that based on the results from her study, teachers report a growing feeling of being devalued.

### *Predictors of Teacher Attrition*

Other studies have looked at predictive factors that might influence teacher movement between schools or out of the profession. Using data from over 75,000 teachers in a 2006 statewide survey in North Carolina, Ladd (2011) found using a factor and regression analysis that the probability of a teacher leaving is related to the perceived quality of school leadership. This was true in all three areas of schooling: elementary,

middle, and secondary. Ladd also found that perceived working conditions were predictive of teacher turnover, even when controlling for a large set of variables. Expanded roles for teachers at the secondary level helped decrease turnover, while increased planning time and collaboration opportunities guarded against turnover at the elementary and middle school levels. Ladd revealed different areas of teaching (elementary, middle, secondary) share some common turnover predictors, but also have predictors unique to their own grade levels.

Loeb, Darling-Hammond, and Luczak (2005) examined how teaching conditions affected turnover in California. Using data from 1,071 California teachers in 2002, the researchers conducted random, representative interviews. Similar to other reported studies, Loeb et al. found that strong predictors of turnover stem from the reported working conditions of the schools by the teachers. Other areas of concern were student motivation and discipline and lack of administrative support. Salary was a less prominent factor reported. Larger schools, schools with multi-track schedules, and larger class sizes were other turnover issues reported by the participants. Some of these areas are unique to California, again demonstrating the context specific nature of the turnover issue. Student demographics were also a predictor of turnover, but this factor was lessened when school conditions are controlled for.

### *Summary*

The literature on why teachers leave their schools for others or quit altogether shares some common themes. Workplace conditions impact a teacher's decision to leave across the spectrum. Other common themes included overwhelming workload, increased administrative paperwork, personal reasons, quality of leadership, student discipline

issues, autonomy, and salaries. These factors, however, tend to influence teachers differently depending on their experience level. Beginning teachers are more likely to leave as a result of student behavior issues compared to their more experienced colleagues. The salary issue seems inconclusive, as it appears to be a factor in some decisions to leave, but not a prevailing or dominant one. Conflicts and contradictions in the literature emerge when looking at specific areas, whether it be content specific, grade level specific, or those who left or are considering leaving. While the quantitative research can aid in making turnover predictions, the qualitative literature helps expand and elaborate on the context-specific issues related to teachers' decisions to remain in the field. The literature has demonstrated the impact turnover has on students and schools and has shed light on the reasons teachers quit or change schools. Understanding the reasons why teachers leave the field or switch schools may be useful when attempting to resolve the issue of teacher turnover. Addressing the reasons why teachers leave and improving these conditions may help in promoting the retention of teachers. The next section provides a discussion related to teacher retention and research on teachers that stay in the field.

### *Teacher Retention and Longevity*

Examining the reasons why teachers leave the profession provides an important perspective on the issues of turnover and attrition. Often, a sole focus on the reasons why teachers leave lead to policy proposals to boost the recruitment and supply of teachers. A focus on attrition and recruitment, however, neglects a key aspect of this issue: teacher retention. Ingersoll (2011) concluded, "Thus, if significant numbers of those recently recruited leave in a few years, the investment is lost, the problem is not solved, and we

will have a perennial need to create more recruitment initiatives” (p. 41). Exploring the longevity of teachers adds another dimension to the issues of teacher attrition and turnover. Understanding the reasons teachers leave, along with the reasons why they remain, provides a better overview of a complicated issue. In the next sections, the researcher details current research on teacher longevity and retention.

### *Complexities of Retention*

Several national policy proposals and research studies examine the factors of teacher retention and longevity in a general sense, looking at teachers in all grade levels and content areas at the same time. Johnson et al. (2005) compiled a review of literature on teacher retention in conjunction with The Project on the Next Generation of Teachers at the Harvard Graduate School of Education. In the review, Johnson et al. considered research that could provide insight into problems of teacher shortage and turnover, offer a comprehensive explanation for why some able teachers leave the classroom prematurely, and suggest current strategies for increasing retention rates. The researchers discussed the complexities in looking at teacher retention in such a broad manner, explaining, “Far too many surveys about teacher retention brush superficially across the surface of many topics, rather than exploring any depth, or they neglect to include answer choices that truly represent respondents’ opinions” (Johnson et al., 2005, p. 103). These superficial analyses neglect to capture the complexities of teacher retention, as often, different sub groups within education (gender, race, content areas, grade levels, and regions) respond differently to different situations. The researchers called for more in-depth qualitative studies to examine these issues, which may later inform larger quantitative studies. Hancock and Scherff (2010) also noted the difficulties with examining teacher retention

and longevity in general terms. As a result, Hancock and Scherff focused their retention research specifically on secondary English teachers, as “Obviously, science, music, and English teachers face different and unique challenges innate to their disciplines that may mitigate the results of teachers en masse” (p. 329). Other studies (De Stercke et al., 2015; Gu & Day, 2007; Jones, 2016), which are described in the upcoming sections of this chapter, note the complexities of teacher retention and call for more detailed, in-depth investigations of specific individuals, content areas, and certification levels. A discussion about specific factors related to retention is outlined in the subsequent sections.

### *Teacher Preparation*

Zhang and Zeller (2016) conducted a longitudinal study of 60 teachers in North Carolina examining teacher preparation and teacher retention. The researchers’ interests were if the type of teacher preparation affected teacher retention in North Carolina. Zhang and Zeller compared teachers from three different preparation pathways, traditional, alternative, and lateral entry (a certification program that allows qualified individuals to obtain a teaching position and teach immediately while obtaining a professional license). Using mixed method methodology, the researchers found teachers in traditional preparation and the North Carolina (NC) Teach alternative programs were more likely to be retained than their counterparts in lateral programs. Zhang and Zeller found 25% of retention likelihood can be explained by the type of teacher preparation program and in the long-term, alternatively certified teachers’ retention rates declined compared to their traditionally certified colleagues. The researchers concluded, “It is evident that teacher preparation has a significant impact on retention; that is, teacher retention likelihood partially depends on the type of preparation teachers receive” (p. 85).

Zhang and Zeller called for additional research on different factors of teacher retention due to the complex nature of the issue.

Shen (2003) also looked at the relationship between teacher retention and teacher preparation. Using data from 1,702 teachers in the Baccalaureate and Beyond Study, Shen found that of those teachers in the sample, 34% had left the profession within 5 years. Looking at the preparation of each teacher in the sample, Shen concluded teachers with pedagogical training were more likely to be retained than those without. Teachers without any pedagogical training were 3 1/3 times more likely to leave teaching, leading Shen to conclude that pedagogical training helps improve retention in teachers. Other researchers compared teacher preparation and teacher retention (Fisk, Prowda, & Beaudin, 2001; Shen, 1997). Both studies' results showed fully certified teachers who were traditionally trained had higher retention rates than teachers with incomplete, emergency, or alternative certifications. Shen (1997) also reported teachers who were traditionally certified were more likely to view teaching as a long-term career compared to teachers with alternative certification. These studies suggest teacher preparation does have some influence on the retention rates of teachers. Teacher preparation, however, is just one part of the retention issue and other areas, like workplace conditions, should be considered.

### *Workplace Conditions*

In a policy study highlighting the role workplace conditions play in teacher retention from the mid-2000s, Johnson et al. (2005) cited several studies suggesting inadequate resources, facilities, and conditions affect teachers' decisions to remain teaching. Buckley, Schneider, and Shang (2004) found in a survey of K-12 teachers that

there is a statistically significant relationship between the grade teachers give their facilities and their retention decision. The researchers reported, “As the perceived quality of the school facility improves, [other things equal], the probability of retention increases” (p. 7).

Teaching assignments is another aspect of workplace conditions that also affects retention. Johnson et al. (2005) explained that new teachers are often given the most difficult teaching assignments, compounding the stress they are already experiencing with the demands of teaching. Johnson and Birkeland (2003) and Luekens, Lyter, Fox, and Chandler (2004) found a heavy teaching workload and teaching assignments outside the expertise of the teacher negatively affect teacher retention. Luekens et al. (2004) examined results from 2000-01 TFS to identify reasons behind the exit or migration decisions of teachers. Analyzing data from 8,400 teachers, Luekens et al. found nearly 40% of teachers who migrated to a different school did so to obtain better teaching assignments. Johnson and Birkeland (2003) conducted a longitudinal interview study of 50 new teachers in Massachusetts to discover the reasons behind the participants’ decision to remain in their current school, move schools, or leave teaching altogether. Data collection consisted of one lengthy face-to-face interview and a shorter follow-up interview one year later. The researchers found that many of the participants who left teaching, “were overwhelmed by inappropriate teaching assignments or excessive teaching loads” (Johnson & Birkeland, 2003, p. 595). Additionally, several leavers indicated being placed in teaching assignments outside their expertise contributed to their reasons for leaving the profession. Similarly, Curtis (2011), in her dissertation on factors affecting the retention of middle and secondary mathematics teachers cited and discussed

previously, recommends that fewer preparations and smaller class sizes can help improve working conditions for new teachers and their retention.

In a more recent policy study, Podolsky et al. (2016) cited four factors in working conditions that influence the retention of teachers. These include school leadership and administrative support, opportunities for professional collaboration and shared decision-making, accountability systems, and resources for teaching and learning. In order to improve the factors outlined above to promote the retention of teachers, the researchers recommended the following policy initiatives: investing in the development of high-quality principals who work to include teachers in decision making, surveying teachers to assess the quality of the teaching and learning environment, and developing professional development strategies, along with the redesign of schools to promote greater collaboration.

Recognizing the role school leadership plays in teacher retention, Cornella (2010) explored the practices used by principals at schools with high teacher retention rates. In her qualitative case study dissertation, Cornella interviewed, observed, and conducted focus groups with nine principals employed at different elementary, middle, and secondary schools in Florida. The principals in this study revealed the important role a positive school culture and sense of belongingness plays in retaining teachers. Cornella reported the principals in her study sought to create positive workplace conditions by supporting and valuing faculty and including teachers in the decision making process. The study participants accomplished this by being visible and approachable, and exercising fairness and equity when dealing with issues among the faculty and students.

These results confirm the important role workplace conditions play in the retention of teachers.

Weiss (1999) analyzed data using regression models from 2,676 first year teachers in 1987-88 and 2,412 teachers in 1993-94 to determine whether new teachers' perceived workplace conditions predicted morale, commitment to career, and plans to stay in the field. The findings suggested new teachers' views of their workplace conditions are related to their morale, career choice commitment, and planned retention. Weiss explained, "Perceived school leadership and culture along with autonomy and discretion were the strongest variables associated with first year teachers' feelings that it is worthwhile to exert their best effort commitment to career path, and intentions to stay in teaching" (p. 865). She concluded that how new teachers perceive workplace conditions is often as important as the workplace conditions themselves. Outside factors, like workplace conditions, are not the only influences on teacher retention. Job satisfaction and personal traits of teachers can also influence teacher retention.

### *Job Satisfaction and Personal Traits*

Teaching is a demanding profession. If teachers are not happy or satisfied in their work, retention will become an issue. De Stercke et al. (2015) recommended looking at happiness in the classroom as a means in understanding the retention and development of teachers in the classroom. De Strecke et al (2015) explained, "Happiness—more commonly referred to as "well-being" in the field of positive psychology is key to keeping new teachers in the workplace for the simple reason that its pursuit informs everyone's existence, universally" (p. 422). As a result, the researchers called for more

in-depth, narrative investigations to examine the complex phenomenon of teacher retention and the interplay of personal and situational factors.

Several qualitative studies have utilized narrative investigations to examine teacher retention. Cullen (2011) explored teacher retention in a high school in New Jersey using a narrative qualitative research design. His dissertation specifically focused on 20 high school teachers with at least 5 years of experience who were teaching at an urban high school that had a high rate of teacher turnover. Cullen interviewed each participant three different times in an attempt to understand why he or she remained at this particular urban school when so many of their colleagues had left. His analysis revealed several emerging themes of teacher retention related to job satisfaction. Participants in Cullen's study loved their jobs as teachers. The participants shared that working with students and having the opportunity to improve their lives made their job worthwhile, in spite of poor working conditions and conflicts with administration.

Brunetti (2001) examined the role of happiness and job satisfaction in long-term high school teachers as he sought to answer the question: "Why do they teach?" Brunetti observed while looking at the current research on teacher attrition, that many of the researchers failed to examine "large numbers of experienced public school teachers who are fundamentally satisfied with their jobs, who maintain a strong professional orientation, a continuing commitment to their students, and often a high degree of enthusiasm for their work" (p. 50). Using data from the Experienced Teacher Survey to identify experienced teachers and interviews from 28 high school teachers of different content areas, Brunetti found that these teachers expressed deep satisfaction in their work. Motivation to remain in the classroom was driven by positive relationships with students

and working with students. Participants also expressed joy in watching their former students succeed and visiting with former students who came back after graduation. These results were also found in Moe's (2014) work with experienced urban teachers. Brunetti (2001) also reported that these teachers cited passion for the subject, excitement of the classroom, autonomy, and collegiality as reasons for their retention and satisfaction in teaching. Along with job satisfaction, the presence of certain personal traits in teachers appears to promote retention.

Jones (2016), citing the abundance of research on school and district conditions that promote retention, sought to examine person-level factors, like perfectionism, and its relationship with retention. In this study, 118 graduates of a competitive teacher preparation program completed the Almost Perfect Scale-Revised Survey to measure levels of perfectionism. Jones found some personality variables play a role in teacher retention. It is difficult, however, to apply these findings or make these changes in teachers systematically. He pointed out, "Rather, this suggestion simply acknowledges that teachers are individuals with their own preferences and styles, not robots that will perform in a standardize way in every circumstance" (p. 445). Thus, despite the slow pace that often accompanies policy initiatives to promote retention, helping individual teachers make small changes at the personal level may aid in their retention. Similarly, Moe (2014) in her dissertation on the retention of urban teachers, sought to identify the *X-Factor* personal factor that influences urban teachers' decisions to remain in the classroom. Through a qualitative, narrative analysis, Moe did not find one specific personal factor that influenced retention the most. Instead, she discovered the veteran teachers in her study shared a combination of personal traits, like perseverance, problem

solving, and flexibility that helped keep them in the classroom. Identifying these factors in teacher candidates, Moe argued, may help improve retention rates of teachers in urban schools.

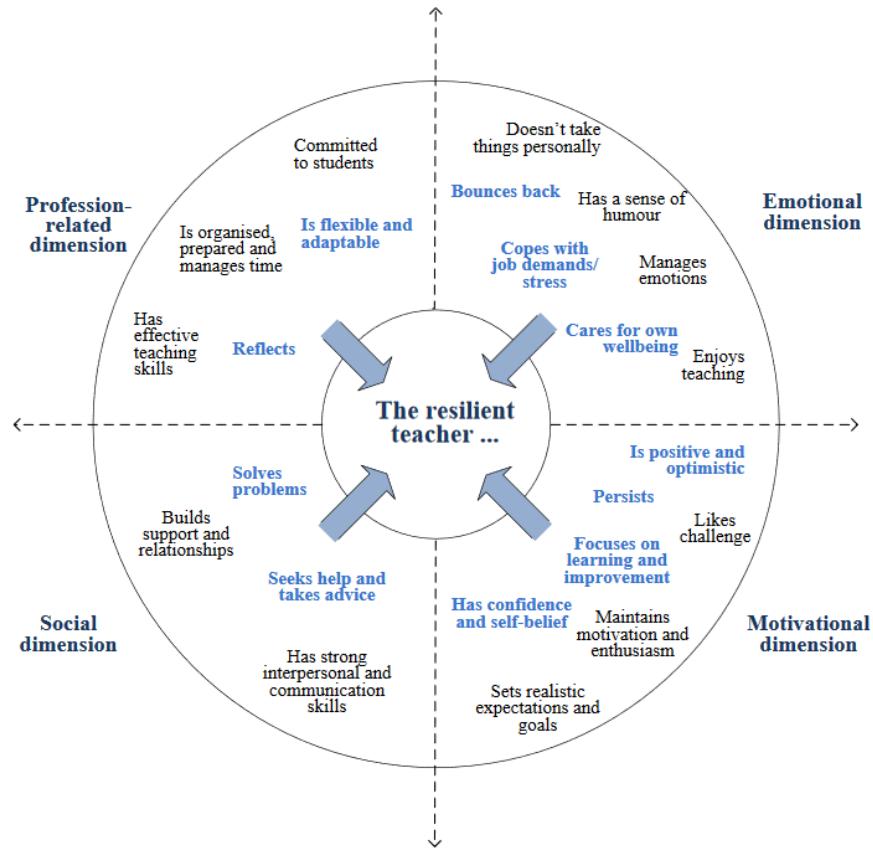
Grit and perseverance are two additional personal traits that help improve retention. Robertson-Kraft and Duckworth (2014) analyzed the grit of novice teachers at the time of their hiring and the impact it had on retention. Using resumes to code for grit, the researchers looked at 154 novice teachers and found teachers who were retained for the school year had higher grit ratings than teachers who quit during the year. Grit was the only statistically significant difference between the stayers and leavers. The researchers concluded, “grit, defined as passion and perseverance for long-term goals, predicts both teacher retention and effectiveness” (p. 22).

### *Resilience*

Resilience is an emerging area of research when examining teacher retention. Gu and Day (2007) describe resilience as a social dimension of teaching, one that “recognizes the interactive impact of personal, professional and situated factors on teachers’ work and lives and contextualizes teachers’ endeavor to sustain their professional commitment” (p. 1305). Bobek (2002) argued teacher resiliency, “the ability to adjust to varied situations and increase one’s competence in the face of adverse conditions, is a critical element in classroom success and teacher retention” (p. 202). According to Bobek, personal ownership, life-long learning, humor, a sense of accomplishment, and significant relationships can all help develop resiliency in teachers, and as a result, improve retention. Several studies have analyzed the relationship between resiliency and retention.

Gu and Day (2007) studied the role teacher resiliency plays in teacher effectiveness by examining career long variations in teachers' commitment and effectiveness in England. The researchers found, when analyzing the 300 teachers in this study, that teachers' capacities to manage self-efficacy, professional and personal identities, and the interactions between these and different scenarios is a sophisticated process. Gu and Day explained teachers need resilience as they experience and manage different personal and situational scenarios if they are to remain in the classroom.

Building on the complex nature of resilience, Mansfield et al. (2012) examined how 200 graduating and early career teachers perceived resilient teachers. They argued that resilience for teachers requires a very different range of skills than other comparable professions. The researchers asked the participants to describe the traits and qualities of resilient teachers. The descriptions provided by the participants were analyzed for emergent themes, which were then organized into 23 categories. Further coding of the categories revealed 11 aspects of resilient teachers, which they organized into a framework with four dimensions: profession-related, emotional, motivational, and social. These dimensions highlight the researchers' argument that resilience is a multi-dimensional phenomenon encompassing a range of overlapping professional, social, motivational, and emotional aspects of teaching. The overlapping potential of the framework highlights the researchers' conclusion, "Resilience therefore may be in part enhanced through the interaction and dynamic processes between aspects in particular contexts" (p. 365). This framework, shown in Figure 1, served as the theoretical framework for the current study.



*Figure 1: The four dimensional framework of teacher resilience. (Mansfield et al., 2012)*

The framework provides a holistic overview of teacher resilience, as it includes both professional and personal factors. Teachers must balance unique professional and personal factors in their lives. Multiple studies on teacher turnover have concluded teachers who leave the profession often do so because they were unable to balance the professional and personal factors highlighted in this framework (Buchanan, 2009, 2012; Cieśliński & Szum, 2014; Curtis, 2011; Kersaint et al., 2007; Tye & O'Brien, 2002). Mansfield et al. (2012) explained that their framework highlights the perceived personal qualities of resilient teachers, the strategies they use in difficult situations, and their ability to bounce back after setbacks. Also, unique to Mansfield et al.'s study was the professional and social-related dimensions involve several observable teaching elements.

The profession related dimension includes the use of effective teaching skills and effective organization and time management. The social dimension considers how teachers interact with their colleagues and how they seek or provide advice. The researchers recommend further studies examining resilience *in action* and the ways different individuals manifest resilience in different contexts. They further noted these studies should address all aspects of the resilience framework which includes the observation of the characteristics found in the profession-related and social domain.

Doney (2013) argued resilience is a necessary skill for teacher retention. In her 2 year qualitative study, Doney examined the resilience building process of four novice secondary science teachers. Based on her analysis, Doney argued interactions between stressors and protective factors of the participants were the driving force in the development of resilience. She explained, “the four participants encountered personal, contextual, and professional stressors that changed between their first and second year of teaching” (p. 660). Critical to the retention of these four science teachers was their ability to use protective factors to address changing stressors, a key component of resilience. Doney concluded, “Building their resilience and relational connections were key components in their decision to remain in the profession” (p. 661). Thus resilience proved effective in helping the novice teachers in the study cope with stress and burnout issues.

Resilience has been shown to help teachers resist stress and burnout. Howard and Johnson (2004) found when studying resilient teachers in stressful situations at disadvantaged schools, participants overwhelming shared a strong sense of agency. These resilient teachers were reflective in their actions, shared different ways they were trained to depersonalize stressful events, and described the important role strong support groups

played in their professional lives. These traits of resilience helped these teachers survive and thrive in teaching conditions that cause many people to leave or quit. Patterson et al. (2004) also studied teacher resilience in disadvantaged schools when they interviewed eight teachers in urban schools. The teacher participants in these schools were able to remain in the classroom because of their resilient characteristics. These resilient characteristics identified by the researchers described teachers that have a set of personal values that guide their decision-making. The resilient teachers in this study placed a high value on professional development and provided mentoring to others. The researchers concluded that most importantly, “Resilient teachers are not victims. They solve problems that are barriers to student learning, including creating solutions to school district bureaucracy” (p. 9). Building on the connection between resiliency and retention, Tait (2008) argues, “resilient attitudes and responses to teaching challenges could conceivably be valuable predictors of success in a commitment to a teaching career” (p. 71). Personal traits like resilience and grit can help promote the retention of teachers. Teaching, however, is a complex process with each grade level and content area providing its own unique challenges (Hancock & Scherff, 2010). It is important to consider how the different content areas and grade levels taught might influence retention.

### *Content Specific Retention*

Few researchers have examined the concept of teacher retention by discipline. Hancock and Scherff (2010) noted these gaps in the literature and developed a study attempting to predict the retention of secondary English teachers. Using the SASS data from 4,520 full-time English teachers for 2003-2004, five variables emerged as

statistically significant predictors of secondary English teachers' likelihood of being classified as low or high attrition risk: status as a minority teacher, years of teaching experience, recognized teacher apathy, perceived peer support and reported administrative support. Hancock and Schreff found that for every 5 years of teaching experience, the likelihood of an English teacher being classified as high attrition risk decreased 23%. In other words, the researchers found each year of experience increases the likelihood of retention. Interestingly, the researcher found nothing content specific that relates to retention, which may be explained by the quantitative nature of the study and the lack of questions addressing this area.

Dainty et al. (2011) sought to identify the factors contributing to the retention of secondary Family and Consumer Sciences (FACS) teachers in Kansas. The researchers developed a survey instrument that covered the areas of education preparation, commitment to teaching, first year teaching experience, social integration, and institutional factors related to retention. Surveys were sent to 448 teachers in Kansas, and the researchers reported 52% of respondents completed the survey. Dainty et al. found that FACS teachers who reported confidence and commitment from their training in their teacher preparation program were more likely to stay in the classroom. In addition, participants who reported a positive first year teaching experience also indicated their desire to remain in the classroom teaching. FACS teachers in this study also described the important role administrative support played in their retention decisions. Teachers who felt supported by their administrators were more likely to remain in the classroom teaching.

Citing the difficulties schools reported in filling vacant science positions, Cullis (2009) developed a study to examine the factors influencing the retention of science teachers. Cullis administered the Science Teacher Efficacy Beliefs Instrument, the Teacher Job Satisfaction Questionnaire, and Organization Health Index to 114 middle school science teachers in New Jersey. The use of the Science Teacher Efficacy Beliefs Instrument is of note in this study, as it represents one of the few retention studies that include information on the discipline in retention analysis. Cullis found science teachers who reported teaching assignments in their area of expertise were more likely to remain in the classroom teaching. Also, teachers who scored highest on the Science Teacher Efficacy Beliefs Instrument were more likely to continue teaching. The socio-economic status (SES) of the school also had an impact on the retention of science teachers in this study. Teachers in high SES schools with abundant resources indicated they were likely to remain teaching in their current position.

The area of mathematics has received more interest in these types of studies due to the shortage of teachers in this field and the difficulties administrators report in hiring (Ingersoll & Perda, 2010). Robbins-LaVicka (2007) used Q-Methodology to study 17 persisting (5 years of experience or more) mathematics and science high school teachers in Arkansas. Three statistically significant factors emerged from the participants in this study: intrinsic motivation and external support; intrinsic motivation and skill security; and extrinsic motivation and student apathy. Curtis (2011) examined factors influencing the retention of middle school and high school mathematics teachers as part of her mixed methods dissertation described earlier in this chapter. Curtis found retention is influenced by age, years of experience, perception of classroom control, and work place conditions

such as administrative support, compensation, student behavior, and job security. She reported the most frequent response that participants gave for becoming a mathematics teacher was the participant's love of mathematics, which appears to be the only mathematics specific aspect investigated in this study. Fisher and Royster (2016) took a different approach to studying the phenomenon of mathematics teacher retention by using Maslow's hierarchy of needs. This qualitative study built off a larger explanatory research project on teacher stress and burnout. Using surveys and interviews from four secondary mathematics teachers, the researchers connected findings from their study to the levels of need in Maslow's hierarchy. For example, the first level for retention, which corresponds to Maslow's physiological *survival* stage, identified by Fisher and Royster, is subsistence. The subsistence level explains what the mathematics teachers reported as the means for survival, which include physical rest, exercise, professional development, and additional pedagogy courses in college. The researchers go on to report differing levels of retention based on immediate needs. Results from this study revealed a unique finding regarding teaching mathematics. Teachers in this study reported the desire for specialized professional development, explaining that mathematics was different from other disciplines, as the curriculum and standards tend to change more frequently compared to other content areas.

### *Summary*

There are several personal and situational factors that contribute to the retention of teachers. Working environments, where administrators create a positive atmosphere and value teacher input, promotes the retention of teachers in all grade levels and content areas. Teachers who report high job satisfaction and have opportunities for interactions

with past students are more likely to remain in the classroom. Teachers who complete traditional preparation programs, as compared to those who are trained in alternative certification programs, are also more prone to retention. Grit, perseverance, resilience, and happiness are personal factors that help promote teacher retention. Relatively few studies examine the retention of secondary mathematics teachers. Factors contributing to the retention of mathematics teachers include: intrinsic and extrinsic motivation, age, years of experience, perception of classroom control, and work place conditions. Many of these studies looking at mathematics teacher retention, however, fail to include any data on actual teaching practices of retained mathematics teachers and an overview of the teaching careers of the participants. These are key factors that have yet to be explored in the study of mathematics teacher retention. The next section outlines this call for additional research and the need for this narrative case study.

#### *The Need for this Narrative Case Study*

The review of literature and studies on teacher turnover and retention substantiate the need for this investigation. In this section, the researcher will describe the need for the current study. This narrative case study was designed to address the call for additional qualitative research on retention, the need for mathematics retention studies, and the need to explore the connection between resilience and mathematics teacher retention.

#### *Retention Qualitative Studies Needed*

The review of the literature shows there is ample research on teacher turnover and the reasons many teachers' provide for leaving the profession. Studies are often designed to describe what is going wrong in education regarding teacher turnover. Howard and

Johnson (2004) call for a different approach. They explain, “Instead of asking what’s going wrong, we asked why are some teachers able to cope successfully with the same kinds of stressors that appear to defeat others—in other words, we looked at ‘what’s going right’” (p. 399). Boe et al. (2008) concluded despite a substantial effort to improve education in the past two decades, attrition levels have increased. Therefore, it is critical to understand *what’s going right* on this topic by focusing on the teachers who remain teaching in the classroom despite the many challenges present in today’s classrooms.

Johnson et al. (2005) and Hancock and Scherff (2010) all note the complexities of teacher retention and argue for more in-depth specific studies that move beyond general surveys that address complex issues superficially. Two quantitative studies on teacher turnover, Struyven and Vanthournout (2014) and Kersaint et al. (2007), call for additional qualitative research into teacher turnover and retention. The detailed analysis that qualitative research provides can help inform and direct future studies to examine the issue of teacher retention on a much larger scale.

### *Narrative Inquiry*

Narrative inquiry is a specific type of qualitative research that focuses on understanding the experiences of individuals. Lindsay and Schwind (2016) explain that the purpose for conducting narrative inquiry is, “the desire for more holistic exploration of the chosen phenomenon: its depth and breadth” (p. 15). Johnson et al. (2005) call for case studies that increase one’s understanding of teachers’ experiences and attend to differences in the context of teachers’ work over time. Clandinin, Schaefer, and Downey (2014) explain that narrative inquiry is helpful in understanding teachers’ experiences. The researchers, in their work on the narratives of teachers who left teaching, found

“narrative inquiry, as both a view of the phenomenon and as a methodology, allowed us to study individuals’ experiences in the world and, through this study, seek ways of better understanding this experience” (p. 45). Schultz and Ravitch (2013) describe how narratives are beneficial in framing and highlighting the particular experiences of individuals. Connnelly and Clandinin (2006) remarked, “Narrative inquirers are concerned with personal conditions and, at the same time, with social conditions” (p. 480). Personal and social conditions play a large role in the decisions that teachers make regarding their choices to remain in the classroom teaching or leave teaching altogether. Utilizing narrative inquiry for the current study allowed the researcher to consider both the personal and social conditions experienced by the participants. The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Narrative inquiry allows the researcher to examine the experiences and perspectives of teachers in depth, “as it makes transparent how assumptions, values, and beliefs inform our worldview” (Lindsay & Schwind, 2016, p. 18). Using narrative inquiry helped the researcher thoroughly explore the phenomenon of secondary mathematics teacher retention by focusing on the experiences and perspectives of current experienced secondary mathematics teachers.

### *Mathematics Teacher Retention Studies Needed*

The literature is also lacking research on the retention of mathematics teachers. Many of the current studies on teacher retention take a broad look at teaching, using samples that include teachers of different content levels and grade levels. This attempts to

generalize the issue of retention by exploring factors that affect all teachers. Several researchers suggest, however, teacher retention factors vary among fields (Guarino et al., 2006; Hancock & Schreff, 2010; Murname et al., 1991). These researchers asserted teachers face unique challenges specific to their discipline. Thus, there is a need for additional studies on teacher retention that target specific content areas.

Few researchers have examined the retention of mathematics teachers. These studies argue that mathematics teachers deserve special attention as a result of the difficulties many schools face in hiring teachers in this field. Additionally, there are many recruitment initiative and incentives focused on increasing the supply of mathematics teachers. The researchers examining mathematics teacher retention tend to look at the phenomenon at a much larger scale and with varying levels of teacher experience. Curtis (2011) surveyed 1,571 middle and high school mathematics teachers on factors contributing to retention and attrition and did a follow up interview with 32 teachers, who had levels of experience ranging from 2-26 years. Robbins-LaVicka (2007) used Q-methodology to study 17 science and mathematics teachers with at least 5 years of experience. These larger scale studies fail to address the need for a more in-depth examination of the experiences of the mathematics teacher. Robbins-LaVicka called for additional research that uses more in-depth interviews to examine the persisting nature of mathematics teachers. The varying levels of teacher experience is also problematic in the current studies on mathematics teacher retention. Multiple researchers report that factors contributing to the attrition and retention of teachers varies based on experience levels (Kukla-Acevedo, 2009b; Lloyd & Sullivan, 2012; Struyven & Vanthournout, 2014). Huberman (1993) asserted that teachers with 7-15 year of experience are most likely to

consider leaving teaching, while other studies (Podolsky et al., 2016; Sutcher et al., 2016) document that novice teachers leave the profession at much higher rates than their more experienced counterparts. Therefore, retention studies need to be intentional and specific when studying teachers with different levels of experience. This narrative case study addressed the content specific gap in retention studies by exploring the experiences of four current experienced secondary mathematics teachers. The teachers in this study all had at least 19 years of teaching experience.

### *Resilience and Retention Studies Needed*

Resilience is a growing area of emphasis in many retention studies. Doney (2013) described resilience as a necessary condition for teacher retention. Gu and Day (2007) explained resilience in teachers is often an overlooked area, especially in times of change. They call for further research into the relationship between teacher resilience and retention, as it is “likely to be fruitful to examine why and how generally teachers maintain a continuing positive contribution despite the range of experiences they encounter in their work environments which challenge their commitment” (p. 1314). Mansfield et al. (2012) echo the sentiment expressed by Gu and Day (2007) and further call for additional studies transitioning from focusing on attrition to resilience and retention. Mansfield et al. (2012) developed a resilience framework, which served as the theoretical framework for the current narrative case study. The researchers called for studies that use their framework to understand the multidimensional and complex nature of resilience and retention better. One aspect of resilience that this framework addresses is the profession-related dimension. The profession-related dimension includes the use of effective teaching skills and management of time and organization. In addition, the social

dimension of the framework involves how the teacher interacts with colleagues.

Observations of classroom teaching and staff or department meetings were used in this study to explore these dimensions of resilience. Current studies on teacher resilience and retention focuses solely on teacher self-perceptions of retention through the use of interviews and surveys (Bobek, 2002; Day & Gu, 2009; Doney, 2013; Gu & Day, 2007; Howard & Johnson, 2004; Mansfield et al., 2012; Patterson et al., 2004; Tait, 2008).

Exploring resilience using observations of teaching and staff meetings provided an opportunity to add additional perspectives to the issue of retention currently not explored in the literature. With the current study, the researcher explored the role of resilience and retention in four experienced secondary mathematics teachers. In the existing limited number of mathematics teacher retention studies, the relationship between resilience and retention is not explored in-depth. This researcher sought to address this gap in the literature through the use of a narrative case study design, which allowed for an in-depth look into the teaching experiences of secondary mathematics teachers.

### *Conclusion*

The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. As the literature review demonstrated, teacher turnover is an important issue influencing education today. High levels of turnover causes teacher shortages, and in turn, financial, academic, and organizational issues for schools. Mathematics teaching has been an area hit hard by staffing shortages. It is becoming increasingly important that measures be taken to ensure mathematics teachers are

prepared to survive and thrive in the secondary classroom. Therefore, it is important to understand what contributes to the retention of secondary mathematics teachers. An in-depth examination of retention is needed, as the literature review revealed that factors contributing to retention varies based on the discipline and that individual teachers handle experiences differently. In the current study, the researcher sought to provide an in-depth examination of the lives of four experienced secondary mathematics teachers in an attempt to understand mathematics teacher retention better. In Chapter Three, the researcher provides an overview of the methodology for this study.

## CHAPTER THREE

### Methodology

The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. In the current study, the researcher explored the teaching narratives of four secondary mathematics teachers in Central Texas to gain a better understanding of teacher retention. Every teacher has his or her own unique style and experiences, shaped by their personal identity, which guides decision-making (Walkington, 2005). Other studies noted the complexities of teacher retention and called for more detailed, in-depth investigations of specific teachers (De Stercke et al., 2015; Gu & Day, 2007; Jones, 2016). The current study was designed to address the complexities of individual teachers' experiences and the factors contributing to retention by conducting a narrative, multiple case research study. All aspects of the research methodology that were used in the current study are reported in this chapter. In the next sections, the researcher details the research design and rationale, the setting, participants, data collection and analysis, and reliability and validity considerations for this study.

#### *Research Questions*

This study was designed to explore the narratives of experienced secondary mathematics teachers and the factors contributing to their retention. The research questions that provided the focus for this study were:

1. Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?
2. What role does resilience play in the retention of experienced secondary mathematics teachers?
  - a. What are the profession-related characteristics of experienced secondary mathematics teachers?
  - b. What are the emotional-related characteristics of experienced secondary mathematics teachers?
  - c. What are the social-related characteristics of experienced secondary mathematics teachers?
  - d. What are the motivational-related characteristics of experienced secondary mathematics teachers?

#### *Research Design and Rationale*

The research design selected for this study was a narrative multiple case study method. Creswell (2013) recommends using qualitative research to explore a problem or issue. Qualitative research, according to Creswell, allows the researcher to study groups and populations in an attempt to identify issues that are not easily measured. For this study, qualitative research was appropriate as it allowed the researcher to explore the issue of secondary mathematics teacher retention using the individual experiences of current secondary mathematics teachers. Understanding why secondary mathematics teachers remain in the field of teaching is a complex issue that is not easily measured using quantitative research. While quantitative data can be used to track and identify the numbers of teachers that leave the profession, understanding why teachers remain

teaching may be unique to each individual teacher, as prior research has found (Brunetti, 2001; Hancock & Scherff, 2010; Moe, 2014). Therefore, while quantitative data is useful in providing a snapshot of teacher turnover and retention statistics, it fails to note the complexities of each content area and the individual teacher's experience. Hirokawa, DeGooyer, and Valde (2000) cite qualitative research methodology as a means to conduct, "naturalistic research to expand our understanding of the factors that influence the performance of real-life groups in real-world settings" (p. 574). Qualitative research uses a naturalistic approach to examine complex phenomenon. Case study research, a type of qualitative methodology, is needed in the study of teacher retention, as it helps to "retain a holistic and real-world perspective" (Yin, 2014, p. 4). Thus, in the current study, the researcher used a case study qualitative research design.

Yin (2014) explained case studies recognize a desire to understand complex social phenomena. Merriam (1998) clarified case studies can help "gain an in-depth understanding of the situation and meaning of those involved" (p. 19). Case studies allow a researcher to explore the contemporary phenomenon in its real world context (Yin, 2014). Since the focus of this study was to examine the factors contributing to the retention of current secondary mathematics teachers, a case study methodology allowed the researcher to interact with the teachers in their *naturalistic* context, teaching mathematics, since they were current, experienced teachers. Case studies offer researchers the ability to, "take the reader into a setting with a clarity and intensity that he/she would not otherwise receive in an analytic reporting format" (Matherson, 2012, p. 38). Creswell (2013) explains, "a case study is a good approach when the inquirer has clearly identifiable cases with boundaries and seeks to provide an in-depth understanding

of the cases or a comparison of several cases” (p. 100). The current study had clearly identifiable cases with boundaries. Participants in this study were current secondary mathematics teachers with at least 19 years of teaching experience. All participants in this study were also bounded by geography as they all currently teach in the Central Texas area.

A multiple case study design was used for this study so each teacher could be studied as a case. Yin (2014) explained multiple case studies may be preferred over single-case designs because of the replication factor in multiple case studies. Evidence from multiple case studies tends to be considered more compelling and robust (Yin, 2014). A key aspect of multiple case study design is cases are selected so they predict similar results or predict contrasting results. For the current study, each teacher represented their own unique case. Multiple case study design allows the researcher to compare and contrast the cases. Since the nature of teacher experiences with retention is complex, each teacher was studied separately and then compared to one another using cross-case analysis. Through this multiple case study design, the researcher was able to study the narratives of each teacher in detail in order to understand the teachers’ own teaching experiences better and the influences contributing to their retention in the secondary mathematics classroom.

A narrative, multiple case study was appropriate for this study, as both case study and narrative research was utilized. Carless and Douglas (2017) explain that narrative inquiry, “offers rich insights into lived experience. Rather than focusing on constructs, opinions, or abstractions, narrative methods prioritize an individual’s experience of concrete events” (p. 307). This research study explored the teaching narratives of each

participant and how different events influenced their decision to remain teaching. Carless and Douglas describe how narrative research “permits consideration of development over time, revealing the consequences of events that might otherwise appear unimportant” (p. 307). Narratives help “illuminate particular experiences of individuals” (Schultz & Ravitch, 2013, p. 37). Lindsay and Schwind (2016) explain that narrative inquiry, “as a relationship, process, and phenomenon, illuminates the experience of people related to an inquiry puzzle” (p. 18). The inquiry puzzle the current study addressed was the retention decisions of secondary mathematics teachers. The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Understanding the individual experiences of the experienced teachers in this study may help provide insight into the factors and conditions necessary to improve teacher retention. The literature on teacher turnover and retention, as previously discussed in Chapter Two, revealed how both personal and social conditions affect teachers’ decisions to leave or remain in the classroom. The four-dimensional framework of teacher resilience, which served as the theoretical framework for the current study, is shaped by the personal and social factors influencing teachers daily. Narrative research is a useful tool in examining the interplay between personal and social conditions and how they influence individuals. Connelly and Clandinin (2006) explain that

narrative inquirers are concerned with personal conditions, and, at the same time, with social conditions. By personal conditions we mean the feelings, hopes, desires, aesthetic reactions, and moral dispositions of both the inquirer and participant. By social conditions we mean the existential conditions, the environment, surrounding factors and forces, people and otherwise, that form the individual’s context. (p. 480)

Through this narrative multiple case study, the researcher studied each teacher case in detail in order to understand the experiences contributing to the retention of each teacher participant fully. Since teacher retention is a complex phenomenon, the researcher utilized a narrative multiple case study to study this issue in-depth through the construction of teacher narratives.

### *Participants and Site*

A tenet of qualitative research is the ability to describe a phenomenon in depth (Gay, Mills, & Airasian, 2012). Participants in qualitative studies must be selected carefully to ensure that they are information rich and can provide detailed perspectives on a phenomenon based on their own experiences. Participants for this study were identified using purposeful sampling techniques. Purposeful sampling, according to Creswell (2013), means the researcher “selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study” (p. 156). Patton (2002) explained purposeful sampling allows for the selection of information-rich cases that help inform the issue under study. Participants should be chosen because they have experiences that are more relevant to the phenomenon (Creswell, 2013). The participants in the current sample shared similar experiences of the same phenomenon. All participants were current secondary mathematics teachers with at least 19 years of teaching experience. The teachers in this study were currently employed in the Central Texas region. In addition, participants were recruited for inclusion in this study using the strategy of maximum variation sampling. Patton (2002) explained that maximum variation sampling “aims at capturing and describing central themes that cut across a great deal of variation” (pp. 234-235). Teacher retention is a complex

phenomenon and the literature review in Chapter Two detailed the need for more in-depth studies that highlight the unique experiences of particular teachers and their retention decisions. Maximum variation sampling involves identifying in advance some criteria that differentiate the participants (Creswell, 2013; Patton, 2002). For the current study, the teacher participants were all employed at different schools. While all the participants were secondary mathematics teachers, the level of mathematics taught varied. Two junior high and two high school teachers were recruited for participation in this study. In addition, three of the participants were female while one was male. Finally, the participants came from schools in Central Texas that have different teacher turnover rates. To ensure maximum variation sampling, the schools from which participants were recruited have turnover rates at, below, and above the statewide average for Texas. Utilizing maximum variation sampling helped capture different perspectives of the same phenomenon, which Creswell (2013) describes as being a key component of qualitative research.

Participants for this study were recruited using several local resources. The researcher is involved in a local organization for mathematics teachers. Two members in this organization that matched the criteria were recruited by the researcher and agreed to participate in the study. Snowball purposeful sampling was also used to assist in participant recruitment. According to Creswell (2013), “snowball sampling identifies cases of interest from people who know people who know what cases are information rich” (p. 158). Local experts in mathematics education were contacted to assist in identifying two additional participants that matched the criteria established for participation in this study. Table 2 provides an overview of the participants in this study.

Table 2  
*Participants*

| Pseudonym | Years of Teaching Experience | Years of Mathematics Teaching Experience    | Current Grade Level Taught |
|-----------|------------------------------|---|----------------------------|
| Leslie    | 30 years                     | 26 years High School<br>4 years Junior High | High School                |
| Ann       | 27 years                     | 27 years                                    | High School                |
| Donna     | 42 years                     | 19 years Junior High<br>23 years Elementary | Junior High                |
| Ben       | 19 years                     | 14 years Junior High<br>3 years Elementary  | Junior High                |

The sampling techniques (purposeful maximum variation; purposeful snowball sampling) helped achieve the purpose of this study, which was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching.

#### *Protection of Human Subjects*

This research study used data from consenting teachers who are adults. Prior to any data collection, permission to proceed with this research study was obtained from the Institutional Review Board (IRB) at the university of the researcher. A copy of the approval is in Appendix A. Consent was sought from the teacher participants in this study as well as the school-level administrators where the participants were employed. A copy of the participant consent is in Appendix B. Pseudonyms were used to protect the identities of the teacher participants and schools in which they work or discussed in their

reflections. While observations of classroom teaching and departmental meetings were utilized in this study, the focus was solely on the teacher participants. No student data was collected or observed in this study.

### *Data Collection*

In this section, a detailed explanation of each type of data collection process is described. It is important for qualitative researchers to rely on multiple sources of evidence for data (Creswell, 2013; Patton, 2002; Yin, 2014). Using different forms of evidence is called triangulation, which involves corroborating evidence from multiple sources of data to help provide validity for the evidence (Creswell, 2013). For the current study, data were collected from multiple interviews and observations, as well as written stories from the participants.

### *Interviews*

For this study, four interviews were conducted with each participant over the course of 3 months. Each interview occurred at the school of the participant and was audio-recorded, with the participants' permission, to ensure reliability. The audio-recorded interviews were then transcribed by the researcher. The initial interview was conducted prior to any classroom observation. Two follow-up interviews occurred after the researcher conducted two classroom observations of the participants teaching. The fourth interview was conducted after the researcher observed the participants in a department or staff meeting. Each interview lasted between 45 minutes and 1 hour and 15 minutes. A majority of the data collected for this study came from interviews. Interviews are an important component of qualitative case study research (Yin, 2014). Kvale (1996)

explains that qualitative interviews attempt to “understand the world from the subjects’ points of view, to unfold the meaning of peoples’ experiences, to uncover their lived world prior to scientific explanations” (p. 1). Interviews allow the researcher to discover things that cannot be directly observed and “allows us to enter into the other person’s perspective” (Patton, 2002, p. 341). In the current study, four semi-structured, open-ended, guided interviews were used to collect information from the participants. Semi-structured, open-ended interviews offer the researcher “flexibility in probing and in determining when it is appropriate to explore certain subjects in greater depth, or even to pose questions about new areas of inquiry that were not originally anticipated” (Patton, 2002, p. 347). These interviews all occurred in the real world setting of the participants in order to make them more comfortable with the process of sharing their experiences with an outsider.

The goal of these semi-structured interviews was to construct a complete picture of the participants’ teaching experiences and the different factors influencing their decisions to remain in the classroom. These interviews allowed the participants to share why and how they got into teaching and to detail different events that influenced their teaching retention decisions. Follow-up interviews occurred with the participants after observations were conducted of their teaching and participation in departmental or staff meetings to investigate the actions of the participants further. Participants were also interviewed on their thoughts and perspectives towards the keys to secondary mathematics teacher retention based on their own experiences. Kvale (1996) stated the purpose of qualitative research interviews is to “obtain descriptions of the lived world of

the interviewees with respect to interpretations of the meaning of the described phenomenon” (p. 30).

Interview questions were developed to address the research questions for the current study and were based on the review of literature and theoretical framework. Each interview targeted the areas identified by the research questions and theoretical framework used in this study. The first interview was conducted to collect demographic information from the participants and provide insight on the first research question of this study, *Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention.* Table 3 provides an overview of the questions for Interview #1 and the connections to the literature.

The second interview was conducted after the first observation of the participants teaching. As a result, the first section of Interview #2 focused on the actions of the participants observed by the researcher. These questions relate to how the participants organize their classrooms, interact with students, and their use of teaching skills, which are key tenants of the professional and emotional dimensions outlined by the theoretical framework. The remaining questions for Interview #2 focused on teacher resilience and the emotional and motivational dimensions of the theoretical framework. These interview questions helped provide information on the second research question of this study, *What role does resilience play in the retention of experienced secondary mathematics teachers.* Table 4 provides an overview of the questions used for interview #2 and the connections to the literature and theoretical framework.

Table 3  
*Interview #1 Origins and Connections*

| Question  | Literature Review             |
|---|-------------------------------|
| How well did your undergraduate preparation prepare you for teaching mathematics?   | (Dainty et al., 2011)         |
| Describe your teaching narrative (story), from your first job to today. Where have you taught prior to your current placement? If different from your current placement, why did you leave that position? What were your teaching course loads for each position you have held? | (Etherington & Bridges, 2011) |
| Why have you remained in teaching?  | (Moe, 2014)                   |
| In what ways, if any, has your teaching style/philosophy changed over the course of your experiences?   | (Mansfield et al., 2012)      |
| Have there been times, during your teaching career, when you considered leaving the classroom? Can you tell me what your thoughts were at that the time and what ultimately happened to change your mind?   | (Brunetti, 2001)              |
| What is your approach to classroom management? In what ways, if any, has this changed over the course of your career?   | (Buchanan, 2009, 2012)        |
| How do you manage the workload of teaching? In what ways, if any, has this changed over the course of your career?  | (Bobek, 2002)                 |
| What role, if any, does salary play in your decision to teach?  | (Podolsky et al., 2016)       |
| How has your life outside of school (e.g., as a family person, a community member, a private citizen) influenced and been influenced by your work as a teacher?   | (Brunetti, 2001)              |
| What, if anything, does/did your school (current and/or any previous school you have taught at) do/did that contributes to your decision to remain in the classroom?  | (Moe, 2014)                   |

Table 4  
*Interview #2 Origins and Connections*

| Question   | Literature Review                     | Theoretical Framework Dimension |
|--|---------------------------------------|---------------------------------|
| How would you describe teacher resilience?   | (Doney, 2012)                         |                                 |
| Have you ever felt “burn out”? If so, describe this experience and what did you do to recover?                         | (Patterson, Collins, & Abbot, 2004)   | Emotional                       |
| Provide me an example when you had to face a tough professional challenge and had to be resilient.<br>What did you do? | (Patterson, Collins, and Abbot, 2004) | Emotional                       |
| What is the most stressful/difficult part about teaching? How do you manage this stress?                               | (Gu & Day, 2007)                      | Emotional                       |
| What is the most stressful/difficult part about teaching mathematics?<br>How do you manage this stress?                | (Hancock & Scherff, 2010)             | Emotional                       |
| How do you balance your professional and personal lives?   | (Moe, 2014)                           | Emotional                       |
| What do you do to take care of your own well-being?  | (Moe, 2014)                           | Emotional                       |
| What strategies do you use personally to stay positive during difficult times?   | (Patterson, Collins, & Abbot, 2004)   | Motivational                    |
| How do you manage failure in your teaching?  | (Lloyd & Sullivan, 2012)              | Motivational                    |
| Do you set goals in your teaching? If so, what are they?   | (Mansfield et al., 2012)              | Motivational                    |
| How have you maintained your motivation to continue teaching?  | (Moe, 2014)                           | Motivational                    |

The third interview was conducted after the second observation of the participants teaching. Similar to the second interview, the first section of the third interview centered on the actions of the participant observed by the researcher. The remaining questions for the third interview connected to the second research question and the profession and social dimensions of the theoretical framework. Table 5 provides an overview of the questions used for interview #3 and the connections to the literature and theoretical framework.

Table 5  
*Interview #3 Origins and Connections*

| Question   | Literature Review        | Theoretical Framework Dimension |
|--|--------------------------|---------------------------------|
| What role does reflection play in your practice? How do you reflect on your teaching? Has this changed over the course of your career?   | (Mansfield et al., 2012) | Profession                      |
| What, if any, professional development opportunities do you participate in?  | (Podolsky et al., 2016)  | Profession                      |
| Over the course of your career, what major changes have you seen in education?   | (Mansfield et al., 2012) | Profession                      |
| How do you manage changes involved in education? (e.g., statewide, districtwide, school wide)  | (Doney, 2013)            | Profession                      |
| How do you problem solve in your teaching? In other words, what do you do when you encounter an issue/problem?   | (Bobek, 2002)            | Social                          |
| There are all kinds of relationships in teaching. As teachers, we must form relationships with colleagues, administrators, parents, and students. How important are relationships in teaching? | (Bobek, 2002)            | Social                          |
| What are your main sources of support? Who do you talk to about teaching (stresses/challenges/ triumphs/advice)?   | (Howard & Johnson, 2004) | Social                          |

The fourth interview was conducted after the researcher observed the participants in a faculty or department meeting. In the case of Ben and Donna, this observation was conducted during a mathematics PLC. Leslie's observation was conducted during a schoolwide faculty meeting and Ann's was during a district STEM planning meeting. The first section of the interview focused on the actions of the participants during the meeting as observed by the researcher. These questions related to the participants' interactions with their colleagues, a key part of both the social and emotional dimensions of the theoretical framework. The remaining questions for the fourth interview were reflective questions focusing on both research questions for this study. Table 6 provides an overview of the questions used for Interview #4 and the connections to the literature.

Table 6  
*Interview #4 Origins and Connections*

| Question  | Literature Review                            |
|---|--|
| What has been your most rewarding experiences as a teacher? In looking back at your career as a teacher, in what ways, if any, have you changed since your earliest years in the classroom? How have you remained the same? | (Brunetti, 2001)<br>(Mansfield et al., 2012) |
| What will contribute to your decision to leave teaching?  | (Tye & O'Brien, 2002)                        |
| If you could do this all over again, would you still choose to become a teacher? Why or why not?  | (Buchanan, 2009, 2012)                       |
| Why do you think so many new mathematics teachers leave the profession early (prior to retirement)?   | (Curtis, 2011)                               |
| What would you do to address this issue? In other words, how would you suggest improving mathematics teacher retention?   | (Curtis, 2011)                               |
| What advice would you give an early career secondary mathematics teacher to prepare them for a long career in teaching?   | (Robbins-LaVicka, 2007)                      |
| What role do you think you play, if any, as an experienced teacher, in supporting and contributing to the retention of mathematics teachers?  | (Curtis, 2011)                               |
| Are there any other comments or suggestions that you would like to share concerning teacher retention?  | (Curtis, 2011)                               |

As part of the institutional review process, interview questions were pilot tested with a group of teachers not in this study to help refine data collection and develop relevant lines of questions (Yin, 2014). Pilot testing the interview questions allowed the researcher to ensure the questions were coherent and worded in ways that were understandable. An interview protocol was developed prior to data collection and was used during the interview process. Creswell (2013) recommends using adequate recording procedures when conducting qualitative interviews. All interviews in this study were audio-recorded with the permission and knowledge of the participants. The interview protocols can be found in Appendix C.

### *Observations*

Three observations were conducted for each participant. Two observations were the participants teaching a mathematics course and one was their participation in a department or staff meeting. These observations occurred in the schools of each participant and lasted 45 minutes each. During each observation, the researcher took field notes to document the events of the class or meeting. Creswell (2013) describes observations as a key tool for data collection in qualitative research. Since a case study should occur in the real-world setting of the case, direct observations provide an avenue for collecting data in context (Yin, 2014). In the current study, the participants were observed two times teaching mathematics in the real-world setting of their classroom. In addition, the participants were observed once during a departmental or staff meeting. The researcher took the role of a nonparticipant observer in both types of observations. Creswell (2013) describes a nonparticipant observer as an “outsider of the group under study, watching and taking field notes from a distance” (p. 167). In both cases, the

researcher was not a direct participant in the class, but remained in the back of the classroom or meeting taking detailed notes. Patton (2002) explains the strength of observations is they provide an opportunity for the researcher to combine findings from interviews with the observational data, contributing to an omnibus field strategy. A second strength of observational fieldwork identified by Patton is the opportunities provided for the researcher to discover aspects of the phenomenon that no one has really ever paid attention to. As described in Chapters One and Two, lacking in the current literature on teacher retention is the inclusion of teacher observations. The current researcher sought to address this gap in the literature by using observations of the participants teaching and their interactions with colleagues to paint a more holistic overview of experienced teachers and how they approach and carry out their teaching practices. Observations of experienced secondary mathematics teachers are a key element of the framework of teacher resilience used in the current study. The profession-related dimension of Mansfield et al.'s (2012) resilience framework describes resilient teachers as individuals who use effective teaching, time management, and organizational skills. The social dimension of the framework includes interactions with colleagues as part of teacher resiliency; thus it was necessary to observe the participants during a staff or departmental meeting in which they interact with fellow teachers. In addition, observing the participants during a staff or department meeting helped with the triangulation of the data. The interviews for this study captured the perspectives and experiences of the participants and observing the participants teaching provided a more detailed picture of how the participants organize and execute instruction. Observing the participants in a

staff or departmental meeting provided an opportunity for the researcher to examine this feature of resiliency and confirm the findings from the other data collection sources.

In order to ensure the observational data was focused and accurate, an observational protocol was created from the theoretical framework to help guide the field notes taken by the researcher. During each observation, field notes were taken by the researcher to maintain a record of the people, setting, actions, and conversations observed. Creswell (2013) recommends field notes should be detailed, nonjudgmental, and provide concrete descriptions of the events observed. The researcher developed two different observation protocols to collect the field notes for this study. Observation Protocol #1 was used when each participant was observed teaching. This protocol was developed by the researcher to narrow the focus of the field notes. Observation Protocol #1 focused on the professional and emotional dimensions of the theoretical framework of this study. The professional and emotional dimensions of the framework include how the teacher organizes the classroom environment, the teaching skills used by the teacher, and how the teacher manages classroom interruptions. Observation Protocol #1 assisted the researcher in focusing the field notes on these key issues related to the framework. The researcher used Observation Protocol #2 when the participants were observed in a faculty or departmental meeting. Like Observation Protocol #1, Observation Protocol #2 was designed by the researcher to narrow the focus of the field notes taken during these meetings. The social and emotional dimensions of this study's framework related to how teachers interact with colleagues and how they solicit and elicit advice. Observation Protocol #2 allowed the researcher to focus the field notes to address these areas of the framework. Observation Protocols #1 and #2 are included in Appendix D.

### *Teacher Written Stories*

In this study, participants were prompted to write a narrative account of a particular event from their teaching experiences. The writing prompt was provided to the participants after the completion of the interviews and observations. This allowed the researcher to design the prompt based on the initial findings from the observations and interviews. The participants were given the opportunity to respond to one of three prompts. The three prompts were:

- Describe a triumph that you had in your teaching. In other words, describe something positive that happened in your teaching that you reflect on when times are difficult or stressful.
- Describe an instance in your teaching when you were resilient. What happened and what contributed to your resiliency?
- Describe a turning point in your teaching. Can you point to a specific defining moment in your career that contributed to your retention?

At the conclusion of the interviews, the researcher provided the participants both a print and digital copy of the narrative prompts. Participants were given one month to complete their narrative prompt. They then emailed their completed response to the researcher.

Having the participants share a written account from their experiences is a key aspect of narrative research. Narrative inquiry involves the telling of stories and inquiring how these stories influence the decisions individuals make and how they construct meaning.

Olson and Craig (2009) highlight the important role small stories can play in narrative research and how they can highlight particular interactions between individuals. Rex (2011) explains that teachers “talk and think in story” (p. 6) and how stories are an

avenue in which teachers construct their own understanding of their vocation. With the current study, the researcher sought to provide insight into the issue of mathematics teacher turnover through the examination of the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Collecting and analyzing written narratives from the participants helped to illuminate the experiences of the participants further as part of the narrative inquiry process and provided insight into their decisions to remain in the classroom.

### *Data Analysis*

The data collection tools and instruments were designed to provide evidence for each research question. Table 7 shows each research question linked to the data collection instruments that assisted the researcher in the analysis.

Table 7

*Summary of the Data Analysis Methods Used to Answer Each of the Research Questions*

| Question   | Data Collection  |
|--|--|
| Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention<br>1. What role does resilience play in the retention of experienced secondary mathematics teachers?<br>a) What are the profession-related characteristics of experienced secondary mathematics teachers?<br>b) What are the emotional-related characteristics of experienced secondary mathematics teachers?<br>c) What are the social-related characteristics of experienced secondary mathematics teachers?<br>d) What are the motivational-related characteristics of experienced secondary mathematics teachers? | <ul style="list-style-type: none"><li>• Interviews</li><li>• Teacher Written Narratives</li><li>• Interviews</li><li>• Observations (teaching &amp; departmental meetings)</li></ul> |

Qualitative data analysis involves preparing and organizing the data, reducing the data into themes through coding, and representing the data in figures, tables, or discussions (Creswell, 2013). Merriam (1998) argues that data collection and analysis occur simultaneously. Yin (2014) recommends researchers begin data analysis by *playing* with the data first. Playing with the data first will assist in the search for patterns, insights, or concepts that may prove beneficial prior to conducting specific case study analysis techniques. In case study analysis, data is organized “by specific cases for in-depth study and comparison” (Patton, 2002, p. 447). Patton explains in multiple case study design, one of the first responsibilities of the researcher is to do justice to each individual case. In this multiple case study, each participant’s teaching experience is thoroughly detailed based on the evidence provided by the data collection instruments.

After detailing each individual case, Yin (2014) recommends the researcher adopt a general analytic strategy to help guide the researcher through the beginning stages of analysis. One general strategy recommended by Yin is to rely on theoretical propositions, which ultimately lead to the design of the case study. Specifically, the theoretical propositions that led to this current study are the theories that:

- retention is a complex phenomenon with unique circumstances based on the content area,
- personal and situational factors influence a teachers decisions to remain in the classroom teaching,
- resilience is a central trait in experienced secondary mathematics teachers, and
- teaching experiences of experienced secondary mathematics teachers can provide insight into the keys for mathematics teacher retention.

As these theoretical propositions shaped the data collection plan for this study, they are a priority in the analytic process (Yin, 2014). Using theoretical propositions can help point to “relevant contextual conditions to be described as well as explanations to be examined” (p. 136). Along with relying on the theoretical propositions that led to the development of this case study, additional analytic techniques described by Yin (2014) and Kvale (1996) were used to help analyze this study. The researcher describes the techniques, as well as the coding structure, in the subsequent sections.

### *Pattern Matching*

Pattern matching can aid in strengthening the internal validity of a study if the empirical and predicted patterns in the data appear to be similar (Yin, 2014). Specifically, pattern matching “is one based on the findings from your case study—with a predicted one made before you collected your data” (Yin, 2014, p. 145). All reasonable threats to validity were addressed by conducting repeated comparisons (Yin, 2014). Rival explanations were utilized in an attempt to explain the presence of independent variables unique to each case. Pattern matching was achieved by using the theoretical framework and propositions developed prior to data collection and were used as a constant comparison for the data.

### *Constant Comparative Analysis*

Constant comparison is a second analytic technique utilized in this study. Glaser (1978) shared that constant comparison analysis involves identifying recurring events, collecting further data that provide evidence of these recurring events, and describing these events while continually searching for new incidents. Constant comparison also

allows the researcher to make sense of any apparent inconsistencies in the data.

Observations in this study were compared to responses in the interviews provided by the participants. Comparing the events in the observation with the previous information collected in the interviews may lead to new topological dimensions and relationships being discovered (Cross-Francis, 2015). In addition, the data collected from the observations and interviews was compared to the responses provided in the written narratives of the participants. Since this study utilized a multiple case study design, data from each participant was first analyzed and coded individually. After analyzing each individual case, cross-case analysis was conducted by comparing the individual teacher cases for themes and commonalities. Data collected from the interviews, observations, and written narratives were also compared to the themes established by the coding structure described in the next section.

The initial coding structure for the data analysis came from the theoretical framework outlined in Chapters One and Two. Each teacher case was analyzed one at a time, coding under the four broad themes of *professional*, *emotional*, *motivational*, and *social*. Additionally, *resilience* was also used as a separate code along with the four themes of the framework, as this explored what role, if any, resilience plays in the longevity of secondary mathematics teachers. Several divergent themes emerged during the analysis, so axial coding was used for these themes that diverged from the original coding structure. Axial coding, according to Creswell (2013) is a process that allows the researcher to take a divergent code and go back through the data and create categories around the original coding structure. The coding process for this study was completed by the researcher and two additional graduate students who have expertise in coding and

mathematics education. After collecting and transcribing all the data sources, the researcher met with these two partner coders and discussed the coding structure prior to analysis. These partner coders were given the theoretical framework from this study with definitions to assist in the coding process. One interview from the data sources was randomly selected to share with the coding team. The team then individually coded this one data source using the four themes, *professional, emotional, motivational, and social*. After coding the selected item, the team met to discuss and compare the results to ensure consistency in the analysis. After coming to a consensus for each code, each coder was assigned two themes to code the remaining data sources. The researcher coded the data for all themes. After each data source was coded, the researcher met with the two partner coders to compare and discuss findings. The researcher used the coded data from the partner coders to assist with the constant comparison analysis procedures.

### *Kvale's Interview Analysis*

Since interviews made up a large portion of the data collected in this study, in addition to pattern matching and constant comparative analysis, the researcher applied the first four steps of Kvale's (1996) interview analysis. The first step in interview analysis occurs when participants describe their lived world experiences. Participants shared their teaching experiences, how they entered into the field, and the different situations they found themselves in during their career. Kvale explains that in this step of the analysis, there is little interpretation from the interviewer and the participant is simply sharing their lived experiences. A second option in interview analysis occurs when the participants discover new relationships themselves during the interview process. This occurs without interpretation from the interviewer, as participants may begin to discover relationships

between their experiences as teachers and their retention decisions. Step 3 involves the researcher, during the interview, condensing and interpreting the comments by the interviewee and sending the meaning back. Kvale explains, “this form of interviewing implies an ongoing “on-the-line interpretation” with the possibility of an “on-the-spot” confirmation or disconfirmation of the interviewer’s interpretations” (p. 189). The fourth step of interview analysis used in this study was the researcher transcribing the interview and interpreting the results. The results were interpreted using the previously described coding structure.

Each of the data analysis techniques described in the above sections helped reduce the data collected and identify the factors that influence teacher longevity. Through the data analysis process the researcher developed, “naturalistic generalizations from analyzing the data, generalizations that people can learn from the case either for themselves or to apply to a populations of cases” (Creswell, 2013, p. 200). Table 8 provides a summary and timeline of the research plan used for this study.

### *Reliability and Validity*

Lincoln and Guba (1985) propose more naturalistic terminology when discussing reliability and validity and suggest using the alternative terms *credibility*, *transferability*, *dependability*, and *confirmability*. Lincoln and Guba argue qualitative studies can strengthen their credibility, transferability, dependability, and confirmability by triangulating the data, prolonging engagement in the field, providing thick descriptions of the cases, and using protocols to guide data collection and analysis. Triangulation involves using multiple sources of evidence to confirm emerging findings (Merriam, 1998).

Table 8  
*Summary of the Research Plan for the Current Study*

| Time Frame                         | Action  | Purpose/Focus  |
|------------------------------------|---|--|
| • Late August/Early September 2017 | <ul style="list-style-type: none"> <li>Conducted interview #1 with each participant</li> <li>Conducted observation #1: classroom teaching for each participant</li> </ul>   | <ul style="list-style-type: none"> <li>Research Question #1: Participant experiences</li> <li>Research question 2a</li> </ul>              |
| • Late September 2017              | <ul style="list-style-type: none"> <li>Conducted interview #2 with each participant</li> </ul>  | <ul style="list-style-type: none"> <li>Research Question 2; 2b; 2d; Follow-up from observation #1</li> </ul>                               |
| • Early October 2017               | <ul style="list-style-type: none"> <li>Conducted observation #2:staff or department meeting with each participant</li> <li>Conducted interview #3 with each participant</li> </ul>  | <ul style="list-style-type: none"> <li>Research Question 2c</li> <li>Research Question 2; 2a; 2c; Follow up from observation #2</li> </ul> |
| • Late October 2017                | <ul style="list-style-type: none"> <li>Conducted observation #3: classroom teaching for each participant</li> <li>Conducted interview #4 with each participant</li> </ul>   | <ul style="list-style-type: none"> <li>Research Question 2a</li> <li>Research Question 1;2; Follow up from observation #3</li> </ul>       |
| • November 2017                    | <ul style="list-style-type: none"> <li>Transcribed all data sources</li> <li>Created and sent prompt for the written narratives to the participants</li> <li>Collected written narrative prompts</li> </ul>                                       | <ul style="list-style-type: none"> <li>Constant Comparative analysis with four themes</li> </ul>   |
| • January 2018                     | <ul style="list-style-type: none"> <li>Randomly selected one data source and sent to coding team to code for the four themes</li> <li>Met with coding team to compare and discuss results</li> <li>Coded and analyzed all data sources</li> </ul> | <ul style="list-style-type: none"> <li>Pattern Matching; Constant Comparative analysis</li> </ul>  |

Patton (2002) explains that triangulation of data sources can include comparing observations with interviews and using multiple people in independently analyzing the data. In the current study, multiple data sources were used to collect and confirm data. These data sources included interviews, observations, and written narratives. Comparing data from the interviews, observations, and written narratives strengthened triangulation, as described by Patton. In addition, observing the participants during staff or departmental meetings allowed the researcher to examine the participants' interactions with their colleagues, an important aspect of the theoretical framework. In the analysis, the researcher worked with two additional researchers to aid in the coding of the data. Using multiple coders may lead to important insights that can only be gained by the different ways in which multiple people look at the same data. Patton (2002) describes this process as analytical triangulation. Lincoln and Guba's (1985) recommendation for prolonged engagement in the field was addressed in this study. The researcher conducted four interviews, three observations, and collected one written narrative prompt from each participant over a period of several months in the fall of 2017 in order to provide a complete description of each case. The researcher used observation and interview protocols to guide data collection. These protocols were the same for each participant, which is a strength of the multiple case study design. In addition to the recommendations outlined by Lincoln and Guba, the researcher made an effort to preserve the validity and reliability of this research study.

Yin (2014) recommends having key informants review the case study report, which is a method of corroborating the essential findings and evidence presented. This contributes to the construct validity of the study. Participants in this study were provided

a digital copy of their own narrative case study written by the researcher. Participants were allowed to review their narratives for accuracy and send any recommended changes back to the researcher.

Internal validity refers to the trustworthiness of the findings. The data analysis techniques used in this study helped reinforce the internal validity. Pattern matching and constant comparative analysis promoted internal validity because they allowed for the comparisons of empirical and predicted patterns. If the predicted and empirical patterns are similar, the internal validity is strengthened (Yin, 2014). Yin also explained that this process can help address rival explanations, which further supports the internal validity of the study.

External validity addresses whether or not a study's findings are generalizable beyond the immediate study (Yin, 2014). External validity for this study was addressed using replication logic in the multiple case studies. This allowed for the use of the same coding structure for each case and further strengthened the cross-case analysis, which promotes generalizability. Each participant was administered the same interview questions and protocol. Each case was subject to the same number of classroom observations for the same duration.

The objective of reliability is to minimize the errors and biases in a study (Yin, 2014). In this study, interview data was collected using a protocol and an audio recording device. The recordings were transcribed by the researcher. Creswell (2013) explained that reliability can be enhanced by taking detailed field notes and using electronic means to record interviews. Yin (2014) recommends approaching reliability by operationalizing as many steps as possible. For this study, a case study protocol, outlined in Table 4, was

utilized to guide data collection, storage, and analysis. Also, a case study database was developed to ensure that data was properly stored and kept secured. As mentioned earlier, multiple coders were used in the analysis of the data. Intercoder agreement was established to ensure each of the coders understood the meaning of each code.

### *Conclusion*

In this chapter, the research design, research questions, participants, methods of data collection and analysis, and reliability and validity measures were described and explained for this narrative multiple case study. A narrative multiple case study design allowed the researcher the opportunity to explore the experiences and factors leading to the retention decisions of four experienced secondary mathematics teachers. In Chapters Four and Five, the researcher shares the results and findings of this study.

## CHAPTER FOUR

### Results

Using a narrative, multiple case study design, this study explored the issue of mathematics teacher retention by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Multiple interviews, observations, and a writing sample were collected from the participants to assist the researcher in answering the following research questions:

1. Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?
2. What role does resilience play in the retention of experienced secondary mathematics teachers?
  - a. What are the profession-related characteristics of experienced secondary mathematics teachers?
  - b. What are the emotional-related characteristics of experienced secondary mathematics teachers?
  - c. What are the social-related characteristics of experienced secondary mathematics teachers?
  - d. What are the motivational-related characteristics of experienced secondary mathematics teachers?

The theoretical framework used in the current study, as described in Chapter 2, was based on Mansfield et al.'s (2012) work on teacher resilience. Figure 1 displays this framework along with the defining characteristics for each dimension the researcher used in the analysis of the data.

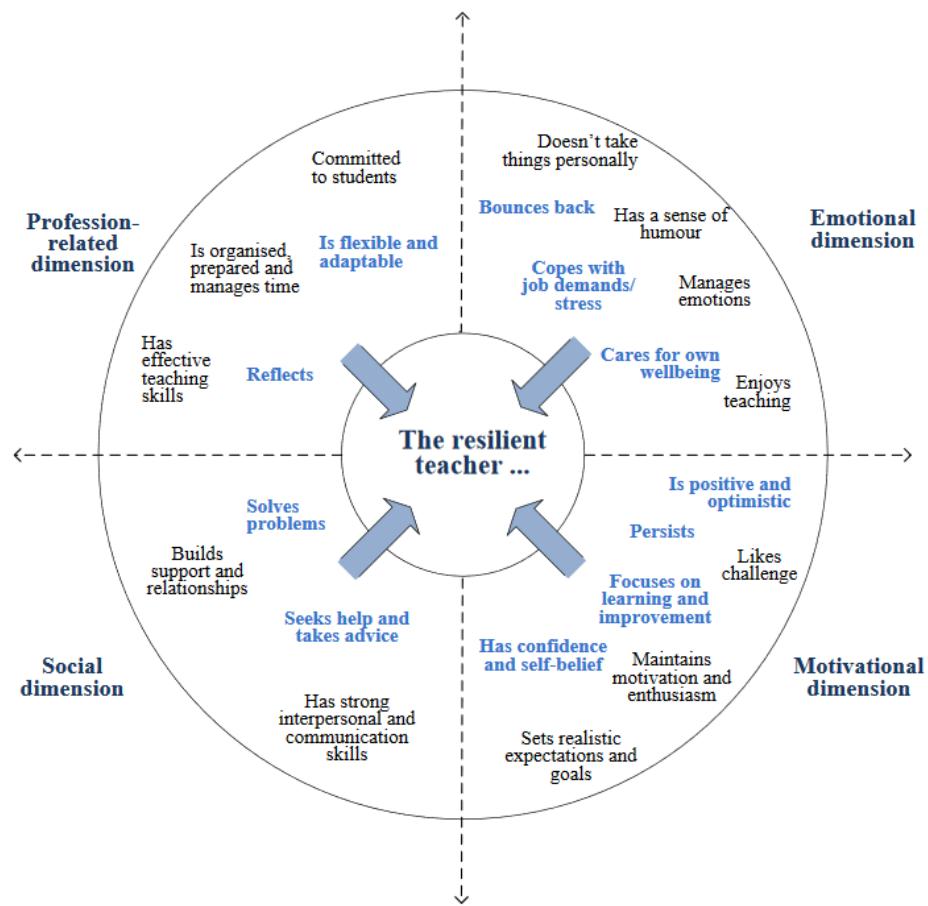


Figure 1. The four dimensional framework of teacher resilience. (Mansfield et al., 2012)

The chapter will begin with a brief overview of the participants and their selection for this study. Following the tradition of a narrative, multiple case study design, each participant will be first detailed as a separate case. These individual case profiles will begin with an overview of the teaching narrative of each participant, including their thoughts and experiences with mathematics teacher retention. Following the narrative, the

researcher will answer the research questions for each participant and discuss additional themes that emerged from each case analysis. After each case is thoroughly presented and analyzed, the researcher will conclude the chapter with a cross case analysis, addressing the research questions based on the responses of all four participants. Additional themes that emerged from the cross-case analysis will also be discussed.

### *The Participants*

A through description of how the participants were chosen and the sampling techniques utilized appears in Chapter Three of this document. This narrative multiple case study focused on participants who are current, experienced teachers of secondary mathematics with at least 19 years of teaching experience. The researcher identified four participants who taught at different schools in the Central Texas area that matched these parameters. Table 9, also presented in Chapter Three, provides an overview of the participants.

Table 9

### *Participants*

| Pseudonym | Years of Teaching Experience | Years of Mathematics Teaching Experience    | Current Grade Level Taught |
|-----------|------------------------------|---|----------------------------|
| Leslie    | 30 years                     | 26 years High School<br>4 years Junior High | High School                |
| Ann       | 27 years                     | 27 years                                    | High School                |
| Donna     | 42 years                     | 19 years Junior High<br>23 years Elementary | Junior High                |
| Ben       | 19 years                     | 14 years Junior High<br>3 years Elementary  | Junior High                |

### *Individual Case Profiles*

In the following sections, the researcher provides a description of each participant, including their teaching narrative, perspectives on mathematics teacher retention, and themes related to the research questions.

#### *Case 1—Leslie*

Leslie has been teaching secondary mathematics for the past 30 years. This includes four years at the junior high level and 26 years at the high school level. During her high school and college days, Leslie had no intention of becoming a teacher. In fact, Leslie shared she never really cared for school, as she mentioned playing in the band and talking with friends at lunch as her favorite parts of the school day. Initially, Leslie majored in engineering in college and as a result, enrolled in a variety of mathematics courses. She graduated, however, with a business degree, having switched her major from engineering. Upon graduating from college, Leslie worked in management in a local business for 13 years and it was during this time that Leslie discovered her love of teaching. During lunch, Leslie tutored the student employees in mathematics and found she had a passion for teaching. Also around this time, Leslie became pregnant and decided to become a teacher, citing her enjoyment of tutoring and the thought that teaching would be less working hours during the week. At that time, it was possible for prospective teachers to obtain an emergency teaching certificate. Leslie chose this route and as part of her experience, she was allowed to teach while she was working towards certification. As a result, Leslie began her teaching career with no student teaching experience. She just walked into a class for the first time and was expected to teach. She remembers that first week being “a total disaster.” Her first goal as a teacher was to,

“make math just so interesting and fun and everybody was going to pass and love it.”

Halfway through her first year, she adjusted her goal to trying to get five students to love math. Despite having to lower her expectations that first year, Leslie found teaching was a good place for her and within 2 years, had earned her teaching certification.

Throughout her 30-year teaching career, Leslie has taught a variety of mathematics courses at seven different schools in the Central Texas area. Leslie’s first 5 years of mathematics teaching was at an open concept 9th grade center, where there were no walls and classrooms were separated by chalkboards. Since there were no walls, the classroom environment was very noisy, and Leslie shared, “The kids would say, ‘I didn’t get what you were saying during class, but when I was in history and you were explaining it again, it clicked.’ and I was like, gosh, I talk too loud.” While Leslie formed strong bonds with her fellow faculty members, there were just too many constraints on her that did not allow her to teach the way she thought was necessary. Leslie described not being able to do activities during class because it made too much noise, so she decided to go to a different school where she would have her own physical classroom space with walls. Leslie taught eighth grade mathematics at a local secondary school and remained at that school for 3 years, before moving to a smaller school where she was the only mathematics teacher for both the middle and high schools. While she enjoyed her freedom at this small school, Leslie shared how she missed collaborating with fellow mathematics teachers. She explained,

The thing I didn’t like about it was there was no one to talk to about the math. You can’t collaborate if nobody’s there. You can talk, I have lots of friends who are math teachers and I can talk to them about general things, but not about your own school.

In addition to the lack of collaboration, the commute of 45 minutes proved to be too much for Leslie, so she took a job at another area school where she taught both 8th grade mathematics and Algebra 2. Leslie was only at this school for a year, citing changes in the administration as a reason for finding another teaching job. Leslie spent the next 16 years teaching at two different high schools before ending up at her current school of employment where she is in her fourth year.

When asked about the reasons behind her decisions to leave these schools, Leslie was adamant that it was never about the students. While some of the decisions to switch schools were based on logistics (commute time), Leslie shared the administration at the schools was the main factor in her decisions to leave. At one of the high schools where Leslie taught for eight years, she shared how they had a different principal every two years, which made it difficult for the teachers to collaborate. At several other schools, Leslie shared how the philosophy of the administration towards education did not align with hers and made for a difficult work environment. Administrative support is very important to Leslie. She shared,

That's the number 1 thing [administrative support] because even if your job is hard, but your principal is saying, "gee you are doing a great job, I really appreciate you doing that." . . . Oh my gosh, you know, I'm there 80 hours a week, it doesn't matter, and then there is somebody else who is like, "why do you have to stay here so late, why can't you get this done." Well then I'm like really? I'm doing this for the kids, so if you are not appreciated, it's tough.

Despite teaching at many different schools during her career, one area that has remained constant for Leslie in her teaching is her dedication to her students. Leslie often referred to herself as being a motherly figure to her students. She currently has a group of students who she has taught for four consecutive years.

I'm like their mama, they'll come ask me about dress code or they'll come ask me about some boy or girl, or who they are going to ask to prom and they will ask me those things, all of that makes me feel wanted and included.

I love the kids. I usually connect with the kids pretty well and I can't imagine, that's where I get my rewards from. So if somebody gives me a hug at the end of the year or tears up because they are going to graduate and we are not going to see each other anymore, you know I'm like, oh my gosh, another year, everything's good.

This connection to students drives Leslie to be committed to their success. In her teaching career, Leslie has been involved in different school organizations and cites the many activities her students are involved in as her sources of entertainment. Leslie is a regular spectator at school sporting events, plays, recitals, and other performances. Her dedication to her students is also evident in her teaching practice as well. Recently she was asked to teach AP Calculus at her current school, which caused her much anxiety, as she had not taught or been in an AP Calculus class in many years. In order to make sure she was well prepared to teach the material, Leslie enrolled in a Calculus course at the local community college to refresh her own content knowledge and to see what the colleges expected students to be able to know and understand when they graduated high school. The motivation behind this was her students. Going back and taking Calculus at the college was not mandated to Leslie by her administration. Leslie wanted to be the best teacher for her students and in order to do that, to ensure their success, she was willing to go back to school during the summer and familiarize herself with the material to teach her students better. This is indicative of her approach to professional development. Leslie has a lifetime teaching certification, and though she is not required to attend any extra professional development, she tries to get about 30 hours of training every year. She does this to stay relevant so her students are not only receiving the best instruction, but to ensure they are prepared for their next phase in life. This can be seen in Leslie's efforts to

include the latest technology in her instruction. For example, she is currently in the process of flipping her classroom so students have access to her notes and examples all the time, even if they missed class. Leslie hopes to flip her classroom by recording her lecture notes and examples, so that students can watch the videos at home and come to class to ask questions and apply what they have learned. According to Leslie, she is often referred to by her peers as the project queen. Despite admitting she hated projects as a student, Leslie recognized the benefit projects have for students and decided to embed them throughout her units of instruction. Her project ideas come from a variety of sources, including other teachers, blogs, conferences, and teaching websites and often include the use of technology. When asked why she decided to incorporate more projects into her lessons when she admitted she did not care for them as a student, Leslie explained,

Most teachers usually are a teacher because they had no problem learning the way they went through school, which was sitting there getting the information and taking notes. That is not the majority of what you are going to be teaching so you have to be willing to step away from that. I don't like to do projects, it's not my thing, I am a number person, but I am the project queen. It's not what I want to do, but the kids seem to like it and get more out of it. It's not for me, it's for them and they are doing it and I'm not, so we are good.

This dedication to students was also evident when the researcher observed Leslie's teaching. As students entered to the room, Leslie talked to every student, asking how they were doing, how the game went, and so on. Around the room, student projects adorned the walls along with multiple inspirational posters. During one of the lessons, a student had his head down for a majority of the instruction time. After class, Leslie walked over to this student and asked how everything was going. The student shared how he had recently taken a night shift at his work and apologized for falling asleep in class. Leslie reassured the student and commented about how she worried about him, but asked if

there was anything she could do to help him out. She told him she could meet with him during lunch or before or after school to help catch him up if needed. This is indicative of the type of relationship Leslie has with her students. Her students' needs come first. She later remarked in an interview,

You have to have the relationships with the students. I have a student that is working 6 days a week because he has to help with the family. It's a requirement. If I didn't know that and he goes to sleep in class, well then I might send him to the office. . . . But if I didn't know that, then I would start, oh my gosh, I am boring, putting kids to sleep, but it has nothing to do with it. He's tired and worn out.

Leslie's passion and commitment to her students was the focus of many of her interview responses. When asked what might contribute to this passion diminishing or the factors that would cause her to leave teaching, Leslie stated,

I just don't know if I am going to retire. I told the kids, I'm just going to teach until I die and one of the kids looked at me and said, 'won't that be hard on the kids' and I said, well not in the classroom.

I think when I am more irritable than not. Like if I take things out on the kids or I don't remember things. If I don't think I am being a benefit to the kids and hopefully I will always be cognitive of that or somebody around me will be, then I definitely will not stay. I will only stay if I feel like I have something to offer.

Even when reflecting on her decision to retire or leave teaching, Leslie's number one concern is her students. Leslie originally had no intention of becoming a teacher. When asked if she could do it all over again, would she choose to become a teacher, she responded,

You know, I didn't really choose to become a teacher in the beginning. Definitely, I think I would. I think this is exactly what I needed because I get as much from the kids as I hope they get from me. So, I can't imagine doing anything else.

Leslie has experienced many changes and challenges during her time as a teacher. What has not changed is her commitment to her students. Leslie indicated in multiple interviews that she will do whatever is necessary to ensure that she is giving her best to

her students. When asked to reflect on her experiences as a mathematics teacher, Leslie shares,

Teaching for me, life for me is a challenge. I don't ever, you know, oh woe is me. This happened, this happened. It's ok if this happened, so what am I going to do? Just like all the clichés. Anything I have done in teaching, it's always, it's not that something is against me, it's a challenge of how am I going to make it better. Whether I'm making it better for the kids, whether I'm making it better for me, making it better for the math. What is it that would make it better? And so, I enjoy the challenge. I enjoy trying different things. . . . I just, I think of it more of a challenge, not that something is being done to me and I'm not sure that everybody feels that way, but if they did, all of a sudden it's kind of a game, you know. This is fun for me.

Understanding Leslie's teaching narrative is important, as it provides insight into the factors and conditions that enabled her retention and the role resiliency plays in her decision to remain in the classroom. The following paragraphs use evidence from interviews with Leslie, observations of her teaching, and a written narrative to answer the research questions for this study.

*Research Question 1: Conditions and Experiences Contributing to Leslie's Retention Decision*

Throughout all four interviews, Leslie identified different conditions and experiences that contributed to her retention in the classroom. The analysis of her interview responses revealed two reoccurring conditions and experiences that Leslie self-identified as the most important in supporting her decision to remain in the classroom.

1. Student Success After Graduating
2. Support From Administrators and Colleagues

The first was being aware of the success of her students outside of the classroom. In each interview, Leslie shared multiple examples of the successes of her former students and how learning about these successes made an impact on her teaching. Additionally, during

each interview, Leslie also shared examples of how administrators and colleagues had supported or not supported her in the past, and how this type of support influenced her decision to remain in the classroom. The sections that follow provide evidence from Leslie's interviews for these conditions and experiences that she identified as contributing to her retention.

*Student success after graduating.* Leslie shared several different experiences and conditions related to the success of her students after graduating as contributing to her retention in the mathematics classroom. According to Leslie, her students are the main reason why she continues to teach. Hearing from former students who have graduated and moved on, Leslie shared, motivates her to remain in the classroom.

I think hearing from the kids. I believe that if you don't know what you are doing makes a difference, then it's kind of hard to stay in. I have always given my phone number out, I've had the same number since 1993. So every once in a while I will get a call out of the blue, "Leslie, I'm a teacher, I'm a math teacher" that always surprises me. Or, you know, I graduated and I was the first one. Those kinds of things keep me going.

The kids. Let me just tell you, that as long as I can relate to the kids and they accept me and somehow that happens, I can't explain how, but it's like a family and so I will keep coming because you don't leave your family, even if you have a hard day or something. You don't say ok, I'm done with you, you work through it.

Leslie chose to write about a triumph in teaching that she experienced for her narrative prompt. In this narrative, Leslie described a student that she interacted with when she subbed in a coworker's classroom. This student sat with his head down during the period and after class, Leslie talked with the young man to see what was going on and to lend some words of support. A bond developed and eventually this student was enrolled in her mathematics classes, where she encouraged him to enroll in the honors class. Leslie even helped him prepare for the PSAT and SAT, which she paid for herself. This student

graduated high school, the first in his family, and went on to college, where he earned both a bachelor's degree and master's degree. He now is a teacher and a coach in Texas. Periodically, Leslie receives a phone call or a text from this former student, usually updating her on what is going on in his classroom. Leslie concluded her narrative by explaining, "Whenever I feel overwhelmed or defeated, I think of this young man and my mood changes immediately." Leslie's interviews and narrative are full of stories like the one previously described. Leslie reports that student success drives her motivation to remain in the classroom teaching. Another condition that Leslie identified as contributing to her retention in the classroom is support from administrators and colleagues.

*Support from administrators and colleagues.* In the first interview, Leslie was asked to describe ways that her colleagues and administrators contribute to her retention. She provided multiple examples how the support she received from administrators and colleagues has contributed to her retention. Leslie shared,

It all has to do with the way the administration is set up and so if they recognize in any kind of way or even if it's just little notes or things like that. The people that I work with make a really big difference because you can just step out in the hall and say I'm having a bad day and they will say, "yeah, it's a full moon" so in department, we are all very close. We are all in the same hall and we try to support each other. We all have the same period off in math, so if we have to do any collaboration we can. I am the department chair here and so I have more materials than most and they can always come in and look and go around. Like I said, I don't have a life outside of it, so if I have a family situation, even if it's in one little corner, then that makes me want to stay. It's my family away from my other family.

In multiple follow-up interviews, Leslie explained how her colleagues provide both emotional and professional support, two areas that she identified as contributing to her retention. Leslie remarked,

Because if you have support with them [colleagues], like if they come up with ideas and I have someone to collaborate with, I can come up with ideas . . . I don't

know, there is just something there that makes me want to stay, so I can come and greet everybody and that kind of thing.

She also shared several examples of schools where the administrative support was lacking, and as a result, she left that particular school. When Leslie was asked during one of the interviews what would happen if she continued to encounter schools where she received little support from administrators, she explained it would contribute to her decision to leave teaching.

The other thing would be administration. I would work 60 hours a week for someone who appreciates me and allows me to do what I want, that kind of thing. But on the other hand, if someone says, ‘No, you shouldn’t have tables, be sure to follow the lesson plan and if you need to change it, too bad’ if they started coming up with things, then I would say it’s time to go.

Leslie explained that support she seeks from administration does not have to be anything “fancy” or “formal.” Leslie shared several examples during her career where administrators would just share a simple greeting or acknowledge the hard work she put into her classroom. These simple acknowledgements, according to Leslie, contributed to her remaining in the classroom. In several interviews, Leslie described that when she started teaching at her current school, her classroom had traditional desks. She believed that tables were more conducive in promoting group work and student collaboration, so she asked her administrators if she could get tables for her classroom. About halfway through the year, the principal dropped by Leslie’s classroom and told her the tables were ordered and would be in her room next week. This effort by the principal, Leslie shared, revealed he was supportive of her efforts in the classroom. When asked to describe how administrators contribute to her decision to remain in the classroom, this story was one of the first examples she provided. Leslie also alluded to finding the right administrative

support as a strategy to address all the changes she experienced in her teaching career and offered advice for newer mathematics teachers to remain in the classroom.

I think part of it is to find the place you are happy. Find the school that has some of the beliefs that you have, find an administration that supports you, which doesn't mean they have to be in their everyday telling you that you are doing a great job, but I mean allows you to teach a lesson and it bombs and they walk through and don't reprimand you.

#### *Summary—Research Question 1*

During Leslie's interviews, she revealed how the success of her students outside of the classroom and support from her administration and colleagues has contributed to her retention. According to Leslie, learning about the success of her students after they leave her classroom reminds her that she is making a difference in the lives of her students, something that she shared is very important in her teaching. Leslie also shared many examples of the support she has received from administrators and colleagues, and the role this support plays in her retention decision. In addition to Leslie's identifying of student success and support as contributing to her retention, additional interview responses, her narrative writing prompt, and observations of her teaching revealed the role resiliency has played in her teaching career and decision to remain in the classroom.

#### *Research Question 2—Role of Resiliency in Leslie's Decision to Remain in the Classroom*

The interview and observation protocols used in this study were designed by the researcher using Mansfield et al.'s (2012) theoretical framework on teacher resiliency. The intent of these interviews and observations was to identify what role, if any, that resiliency plays in teacher retention. Observations conducted by the researcher of Leslie's teaching and participation in a faculty meeting, as well as her response to interviews suggests that resilience has a role in Leslie's retention decision. Leslie views resiliency as

not taking things that happen in the classroom personally. When she first started teaching, she thought that everything that happened in the classroom was her fault. A story that Leslie shared in multiple interviews illustrated this point.

When I first started teaching, I took everything personally. I taught middle school in my 6th year of teaching. And boy, I remember one girl, she always did her work and was really good in class, but this one time, she had a bad day. She came in the room and yelled, “I hate you. I hate this math class. I hate everything.” I was like fighting the tears kind of and the next day she came up and gave me a hug and apologized, had nothing to do with me, it was junior high. So resiliency is very important.

Leslie revealed how this experience showed her the importance of not taking things personally and to bounce back because “you never know where it [student behavior] is coming from.” Resiliency, according to Leslie, is not just isolated to bouncing back from student behavior, but in how you approach and manage the issues that arise in other aspects of teaching. Leslie reflected,

You have to know that there are going to be times when you have such a bad day where things didn’t go right, a lesson didn’t go right, or the kids didn’t act right, I mean everything fell apart. You have to get up the next morning and smile because it’s a new day and then try again.

This seems to relate to Leslie’s understanding of resiliency in teaching as the ability to bounce back when things do not go as planned. This idea of bouncing back, according to Leslie, involves not letting past mistakes or issues influence how she approaches a new day. Leslie described that this aspect of resiliency involves,

Coming back every day as though it’s brand new because if you don’t, you might start counting days and you may end up having more bad days than good days and you will give up on yourself and don’t do that because, yeah, you have to be resilient. It will pay off. You are going to have to learn.

When asked to share a specific example in her teaching where she had to be resilient, Leslie referenced something that happened to her 2 years ago. The Calculus teacher in Leslie’s department retired and the administration was trying to find a replacement.

About 2 weeks before school started, the administration called Leslie and asked if she would be willing to teach Calculus because they were unable to find a replacement. Leslie said she would teach the course, despite having been 30 years since she was last in a Calculus classroom. Leslie admitted that it did not go well and that it was a very stressful experience for her. Despite the stress brought on by teaching this course, Leslie described how she found ways to improve her teaching in this area. The following summer, Leslie enrolled in a Calculus course at the local community college to not only develop her own content knowledge, but to see what colleges were expecting from students at that level. Leslie summed up this resiliency building experience by sharing,

You know, you have the tools, any math teacher you can work at it and this year [teaching Calculus] has been so much easier. It's, I feel more confident, the math didn't change while I was gone and I saw what was important at the college level and so that makes me feel better about what I teach in the classroom. I'd say, dig in, and go for it if you have a professional problem. If, and I've never had this, but I mean if my job was ever on the line, you know that I would need to change things, I have friends that have gone through that. I would dig in and do that and bounce back better than I ever was, but that's really important to me that you stick with it. If this is what you want to do, do it and do it right.

In addition to recognizing the role resiliency played in her teaching experience, Leslie's interview responses and field notes from the researchers' observations provided evidence of the role the four dimensions of resilience, outlined in the theoretical framework of this study, played in her teaching career. These four dimensions of resilience are: profession, social, emotional, and motivational. The sections that follow describe evidence from interviews and observations with Leslie for each of the four dimensions.

*Profession-related characteristics of resilience.* Mansfield et al. (2012) identify five characteristics of the profession dimension of resilience. These include classroom set-up and instructional design, as well as the teacher's commitment to students and

reflection. In addition, profession characteristics of resiliency also include the ability of the teacher to demonstrate flexibility and adaptability. Observations by the researcher of Leslie's teaching revealed her classroom was organized in groups to promote collaboration and group work among her students. In both teaching observations conducted by the researcher, Leslie followed similar lesson plans, which included an introductory problem or launch, followed by teacher led notes and group practice. Leslie shared in follow-up interviews related to the researcher's observations that she designs projects for each unit that allows the students to make real-world connections with the material that they are currently learning. Leslie said she has had to adapt and be flexible in her instruction regarding technology. When she began teaching, technology in the classroom was very different compared to today.

But see the calculators were the big dilemma for me. Because we taught without a calculator for most of my teaching career, and I was like, they can't do it with the calculator because they will not learn the concepts. Well, then I learned how to use the calculator to complement the lesson.

In order to use effective tools, like technology, Leslie explained that she has had to be flexible and adaptable in her instruction. This flexibility and adaptability moves beyond technology. Leslie has adjusted many aspects of her teaching over her career.

All of my teaching has changed. If you saw me the first time to what it is now, it is completely different. And the amount of time I spend on preparing for lessons has tripled compared to what I used to do.

In order to serve her students better, Leslie had adjusted not only how she teaches but how she goes about teaching. Without proper reflection, Leslie admitted, many of the changes she made would not have happened. When she first started teaching, Leslie admitted she did not often reflect. She explained, "When I first started, it was mainly, follow the book, present the material, give a test and it was very little reflection. I was

told to do it this way, and I did it that way." With experience and her continued dedication to her students, Leslie described how she began reflecting more frequently and as a result, her planning adapted as well.

I never used a lesson plan from the year before because it's a different group of kids and so, reflection is always, 'did it work, did they get out of it what I wanted, what can I do to fix it, if it can be fixed. The pacing, that's probably the hardest thing because everyone is so different. It just depends on what kind of background they have. I can't tell you how many times that I thought something was really cool and the kids would really like it and walk in and it just flops. Either they don't like it or it takes five minutes and I thought it would take 30 minutes. So reflection is really big. It's important for me to make sure that they are getting out it what I think they are getting out it, not just present it and that's it, we are done.

Reflecting on her practice, according to Leslie, has caused her to change how she plans and carries out instruction. In multiple interviews, Leslie described how reflecting has helped her remain committed to her students and supported her ability to be flexible and adaptable. In addition to demonstrating profession-related characteristics of resilience, Leslie also shared and was observed incorporating social-related characteristics of resilience.

*Social-related characteristics of resilience.* While Leslie provided some evidence of engaging in all four characteristics of the social dimension of resilience, data analysis resulted in the emergence of three main characteristics in Leslie's teaching: how a teacher interacts with colleagues, builds and supports relationships, and problem solves within their teaching. Leslie previously described the important role positive relationships with colleagues play in her decision to remain in the classroom. As the department chair, Leslie shared that it is easy for her to build relationships with her colleagues because they often come to her for assistance or resources. They also know that Leslie will be an advocate for them.

Every school I have been at, I usually end up being department chair before it's over and so my goal is always if there is any way through the budget I can get anyone anything that's going to make them happy, then I am going to do that. So the resource I try to give them, support, I will meet with anyone before or after school, I share everything I have.

In an observation by the researcher of Leslie in a staff meeting, Leslie made an effort to talk to as many teachers as she could. Some of these conversations were about school issues while others were her asking how things were going. In a follow-up interview on the researcher's observation, Leslie explained that she seeks to build relationships with teachers outside of her school. Leslie serves as an officer for a local mathematics teacher organization and she shared that she brought her colleagues to the fall meeting to get them more involved. In addition, Leslie described how she often seeks out teacher blogs to gain ideas and feedback from other mathematics teachers. She shared a story of how she read about a project idea on a teacher blog but was not sure if it would work in her classroom. Leslie contacted the blog creator for additional ideas and the blogger provided Leslie with additional support and details concerning the project.

The way in which Leslie develops positive relationships with her students has also evolved during her teaching career. Several of Leslie's responses to interview questions concerning relationships focused on the importance of forming relationships with students. She described some opening activities she does during the first week of school in an attempt to develop these relationships with students. At the beginning of Leslie's career, she revealed, developing relationships with students was not a priority.

You know, when I first started teaching that [student relationships] really wasn't that important, they were there to learn and the parents would take care of it if they weren't. It was that kind of situation. It's not like that anymore. If you do not build relationships, then you could see how it would be utter chaos before you know it.

Before, if you built a relationship or not, it didn't matter. If you taught and understood the material, that was good enough for the kids.

According to Leslie, students today need to know that you care for them and understand their situations. Leslie shared several examples, previously described earlier in this chapter, of students in her classroom who occasionally put their head down during class. This was not a reflection on Leslie's teaching, but a result of the students having to work night shifts to help support their families. The researcher in one of the classroom observation also observed this. Without developing a relationship with these students, Leslie explained, she would have never known what they were going through and might have taken their behavior as an indictment against her. Emotional-related dimensions of resiliency were also present in Leslie's interviews and observations.

*Emotional-related characteristics of resilience.* Managing emotions, enjoying teaching, and coping with the demands of the job are three of the seven emotional characteristics of resilience that emerged from Leslie's interviews and observations. Teaching is not easy and Leslie admits there were times when she did not manage her emotions well and even considered leaving the profession. During one particularly stressful year, Leslie explained she applied for a new job in an accounting firm. She shared,

The pay was really good and I thought about it and went on the interview. And then I thought, no, I don't want to be stuck at a desk, doing accounting and so I backed off and thought about why I was doing what I was doing and if it was tough for me, I knew it was tough for the students.

Leslie repeatedly shared in interviews that she loves her job and enjoys teaching. This enjoyment, Leslie explained, helped her manage this difficult time in her career and remain in her classroom. This enjoyment seems to help build her resilience. Leslie shared that every teaching job she has taken has resulted in a salary reduction. When asked if her salary plays a role in her decision to teach, Leslie shared, "It never has, it was, a pay cut

from the beginning and I think that everything I do is a blessing.” Leslie’s enjoyment of teaching has allowed her to manage the emotions of the classroom. When asked what strategies she uses to manage these emotions, Leslie answered,

I try not to stress over things: phones, I do set rules for it, it’s like, I realize it might go off. Mine goes off every once in a while because I forget to turn it off, so I think part of it is to quit stressing over the little things.

It’s really relaxed, you know I’ve learned not to make issues, you know in the beginning, it was like, you cannot lay your heads down. I’ll see you after class or you cannot do this or you cannot do that. Talking, people always wonder about the tables, how do the tables work? As long as they are doing the math, if they want to talk about, what do you think of this movie, I have no problem with that. That’s not an issue.

Leslie credits these strategies of helping her to enjoy teaching more and remain in the classroom. After adopting this attitude, Leslie admits, “I have got much better at that [letting the little things go] and I have a lot more [sic] better days than bad days and I’m not sure that it was that way in the beginning.” Leslie does admit that there are challenges to balancing the demands of her personal and professional life, explaining that in her past, she has not always had an appropriate balance. She explained,

I am doing better about trying to finish my school stuff here and so when I go home, I can relax. If I want to sit and watch TV, I can or go for a walk. Do the things I like to do. That’s nice. I would say for those getting into it, they do need to find a balance because I do think that if you are not careful, then, you are bringing school home too much, then where’s your life there? I do think it’s important.

Leslie also shared how having a close group of teacher friends outside of the school where she teaches has helped her with the emotional related aspects of teaching. She explained, “I have a lot of friends who are teachers. We talk about the old times and we goof around and talk about other stuff and play games. I like that. I do think it’s important.” In addition to the professional, social, and emotional characteristics of

resilience Leslie referenced, she also shared several aspects related to the motivational dimension of teacher resilience.

*Motivational-related characteristics of resilience.* Mansfield et al. (2012) explained the motivational dimension of resilience includes seven characteristics. While Leslie's interviews and observations provided some evidence of all seven characteristics, data analysis resulted in the emergence of four main characteristics of motivation in Leslie's teaching: goal-setting, persistence, positivity, and focusing on improvement. When asked how she manages to stay positive during difficult times, Leslie responded,

Well, I do this in everything, it doesn't matter, teaching or personal, every morning I wake up and I feel like I'm blessed right there. I just know that, I just start out knowing that it's going to be a good day. I start out at 0. It doesn't matter what happened from yesterday, unless I'm trying to fix something. I always get a little bit excited about trying to fix something. Will it work, instead of, "oh my gosh, what if this doesn't work." I just, I try to smile, I try to greet everyone, and it puts everyone in a good mood. I try to come every day with a happy attitude, no matter what's going on by the way. Even if something is tough at home, I do not bring it to school. That's two different things, so when I walk through the doors, it's ok, I wonder what kids are going to be here first, or I wonder what's going on there, so.

This response illustrates many of the characteristics of the motivational dimension of resilience. Despite what may be going on around her, Leslie explained how she persists and remains positive. She reported enjoying finding ways to improve and get better. That does not mean she is immune from failures in her teaching. When asked if and how she encounters failure in her teaching, she shared,

It's a challenge, for me the failure, oh boy does it. When the kids don't do well as a class, then I know it's something I did, so then my challenge is, analyze the test, what is it that they are missing. Then I come up with a plan. I'm not going to let everyone fail because of me, so there will be a plan B. Ok, we are scratching that test, let's go back over this material and we will redo. We can fix that section, there's a lot of different ways of doing it. Boy, have I had failures.

This suggests that Leslie views failure as a learning opportunity. Failure is a motivational tool for her. Instead of focusing on the failure, Leslie explained she chooses to persist and find solutions. This may contribute to the goal-setting she engages in as a teacher. When asked if she set goals in her teaching, Leslie responded that she does and always has. Most of her goals relate to student learning and technology. Her early technology goals related to incorporating calculators into her lessons effectively. Today, she is focused on flipping her classroom. She recently acquired a document camera with a recording feature that will allow her to record her lessons. Leslie shared,

But it's [document camera] going to record the lesson, it's got your voice, it will be the class lesson, so I think that will benefit my kids, especially the kids that are not here. Again, when technology does things like that, I'm like that's exciting.

Leslie's goals highlight her motivation. She frequently explained in her interviews how she wants her students to succeed and is willing to learn new ways to help her students do so. According to Leslie, changes in education, like technology, are exciting and in turn drives her motivation to continue teaching. When Leslie was asked how she has maintained her motivation to continue teaching, she responded,

Do crazy things like take a Calculus class. Actually I think it is to bring in as many new things as I can that make me comfortable and so, no 2 years are the same. I don't even keep my lesson plans from last year. Somebody asked me, they were teaching what I taught, and you know I have to keep them, and so when I gave her all my files, they were in there, and she was asking me about a lesson plan, and I was like, are you kidding me? I don't remember it. It's just, every year is completely different and kids will say, "we didn't do that project, we didn't do that last year" and I'm like of course not, we are doing new things. It's a different group. Some of the projects, if I would have just kept with my same old same old, oh my gosh, how boring. We have done some pretty exciting things. And when I find one that's really good then I keep it, but I try to change them out. It's exciting because I don't know how they are going to turn out. If you are doing the same thing, you will get burned out. It will happen.

Trying new things and differences in students seems to drive Leslie's motivation to continue teaching. Leslie shared that these challenges are exciting and allows her to utilize her skills as a teacher in many ways.

### *Summary of Evidence for Research Question 2*

Leslie revealed through her interview responses that she continues to teach because she loves her job, wants her students to succeed, builds strong relationships, and is motivated by the challenges that teaching presents. These are all key characteristics of resiliency. Leslie explained how she has had to learn to be resilient in her teaching career and acknowledged that without resiliency, it would be very hard to remain in the classroom teaching. Apart from the experiences and conditions Leslie identified as contributing to her retention and the factors associated with resiliency, several additional themes related to teacher retention emerged from the data analysis. These themes are,

1. The Role Mathematics Plays in Leslie's Teaching
2. The Role That Experience Plays in Leslie's Teaching
3. Leslie's Role as an Experienced Secondary Mathematics Teachers

*The role mathematics plays in Leslie's teaching.* In several of Leslie's interviews, many of her responses referenced the benefits and challenges of teaching mathematics. When asked why she chose to teach mathematics, Leslie replied,

I always thought math was fun, not that my math classes were fun, but puzzles and like number puzzles too and all of those things. I always loved just sitting and working them and logic type things, I just thought those were really cool, so I guess it was just kind of my love.

Leslie explained that she chose to teach mathematics because she loved the content herself. Leslie identifies her passion for mathematics as one of the reasons why she

remains in teaching. Her favorite part of teaching mathematics is witnessing those “aha” moments her students have when they finally understand a concept. Leslie was asked to identify the most challenging part of teaching mathematics and she had a hard time coming up with a response. She shared, “All of the kids will tell me, well, I won’t do well in math because my parents didn’t either.” Leslie shared, however, that she enjoys this challenge of teaching mathematics. She enjoys finding ways to promote those “aha” moments and helping her students gain that passion for mathematics. That was one of her first goals of teaching, to get all the students as excited about mathematics as she was. While she quickly realized that was going to be very difficult, she still is constantly looking for new ways to expose her students to the mathematics that she loves. During her tenure, however, Leslie acknowledged that there have been some major changes in mathematics that have been difficult for her. She referenced that currently, she is covering more material than she did when she first started her teaching career. She worries that this coverage mentality is having a negative impact on the students. She explained,

When I first started teaching, the depth that we taught was so much more, like we really made sure that the kids understood the basics. Now it’s the quantity that’s taught and it seems like we are pushing everyone to take Calculus before they graduate. That’s ridiculous. And, oh, let’s skip 5th grade math so kids can take Algebra 1 as 7th graders and then take Geometry as 8th graders. I mean, I don’t know what’s going on. I think we are all about testing and not about learning. I mean big picture. I don’t think individually, I think a lot of us are trying to figure a way to get the learning and still be able to do all those other things and that’s a hard challenge.

Despite this challenge, Leslie provided examples of how she still seeks out different ways to make the mathematics content meaningful to the students. Through projects and class activities, Leslie explained how she attempts to make connections between the mathematics and the real world, so students can see the importance of what they are

learning. Along with mathematics, experience is another theme that emerged regarding Leslie's retention.

*The role that experience plays in Leslie's teaching.* Throughout the four interviews conducted with Leslie, she often referenced how difficult the first few years of teaching were for her and how teaching eventually improved when she gained more experience. When reflecting on the changes she has made during her career, Leslie would often attribute these changes to her experience. For example, when asked about reflection in her early years of teaching, Leslie shared, "It was very little reflection, I think that comes with experience." When asked to elaborate on how she makes adjustments to her teaching when a lesson runs long or short, she shared,

If I think they know something and they don't, then you have to stop right then, you can't say, oh, let's not stop. That's going to be experience. I would never expect new teachers to be prepared for that. In the beginning, I think that's really tough.

Leslie explained that her resiliency was something that developed over time because of her experience in the classroom. With recurring references to needing experience, Leslie was asked at what point she began to feel confident as a teacher, when she felt she had enough experience to really do a great job. Leslie explained,

I think it was after 10 years. I had moved to another school and I was the whole math department, middle and high. And I thought, wow, I can do this and I had a little more confidence. Everything changes in education, which makes it difficult. . . . I'd say I'm more confident in trying new things but I would say I'm the most confident in doing the best. I'm confident in being flexible, knowing that the sun is still going to rise and that the kids are still coming the next day. That did not happen the first 10 years. I guess I thought I would blow it and then they wouldn't come back, I don't know. But I realized that they will always come, so I am more confident in trying new things.

Experience was necessary, according to Leslie, to become a more effective teacher and to build resiliency. She shared teachers need to know that the first year of teaching is going

to be hard, but the second year will become “more than double easy.” With the emphasis Leslie placed on gaining experience to promote retention, she was asked if teaching was more difficult now than when she first started. Leslie shared that teaching is more difficult now than earlier in her career.

I think connecting with people is much more difficult than just going in and presenting the content and leaving. And so, when you make those connections, it’s sadder when a group leaves or sometimes it’s happier when a couple leaves [she added jokingly]. The time you put in for preparation is so much more. Before I could just work the problem set and be like, okay, I’m good, I can go in and work it and be done. Now, it’s not that way. It’s, why are we doing this, it so much more. And I think the requirements are so much more and I think that’s what is hard on the kids.

Leslie admits teaching is more difficult now. It takes more time and energy than earlier in her career. In her interviews, she shared how her past experiences in the classroom have developed her resiliency and allows her to balance the demands of teaching today. With this teaching experience, Leslie feels she plays an important role in the retention of secondary mathematics teachers.

*Leslie’s role as an experienced secondary mathematics teacher.* As an experienced secondary mathematics teacher, Leslie feels that it is her responsibility to help support other mathematics teachers. Leslie previously shared she is often the department chair at the school where she is employed. Therefore, she described how she takes it upon herself to ensure the mathematics teachers in her department have what they need to be successful. Leslie shared the following story from one school where she taught,

Every teacher had a projector in their room, but they didn’t have the computers connected to the projectors. When I left that school, every teacher in the math department had their own laptop, project document camera, and *Smartboard*. Is that not amazing? They had the money for it, it’s just no one asked.

Leslie's past experiences had taught her to be an advocate for other teachers and that it is okay to ask the administrators for something if it's going to benefit both the teachers and students. In her career, Leslie has acquired various resources and supplies that she keeps in a closet in her classroom. She always reminds the teachers in her department that they are free to use whatever they want in that closet. Along with providing support in the form of materials, Leslie is always more than willing to provide emotional or professional support.

I will meet with anyone before or after school, I share everything I have. If they want to bounce a lesson off, I will always be there. I try to do the little gifts on teacher appreciation, their birthdays, anything I can do that will recognize them. Letter of recommendation, I am always available. They can call me at home and tell me they are not going to be there and let me know where materials are and I will make sure it is set up for them. They get that support and usually, when I taught at this one school, it had high teacher turnover. When I was there, we only lost one teacher, only because her husband got a new job and moved. And they even said after I left, everyone else left but two teachers. We had 15 teachers in that department.

Leslie explained how she provides emotional support to her colleagues when they need advice or just someone to talk to. She shared, "I am actually the one most people come to vent to, this is a safe room, anything said in here is gone, I listen and then it's done." Her colleagues actively seek her out for support, as her experience and personality seem to provide these teachers comfort and reassurance.

With her experience as a mathematics teacher, Leslie shared her advice on how to address mathematics teacher turnover. Her number one recommendation was that schools needed to find ways to support new mathematics teachers "like nobody's been supported before." She recommends someone, whether an administrator or team of teachers, check in on new teachers daily. It is important, according to Leslie, that these daily check-ins should "not be a pressure. I think people need to know that there is somewhere or

somebody that you can go to. You just need to give them a little validation.” New mathematics teachers also need to realize the realities of the mathematics classroom. Leslie explained, “Teachers need to know that there are going to be a lot of straight days [direct instruction and practice]. You don’t come in and do an activity every day.” Leslie shared how in the past, she tried to do everything in her classroom through discovery but found the kids shut down on her. She explained that often, new mathematics teachers come in with all these ideas and activities from their college program and want to try them all at once. It’s important for them to try these, Leslie shared, but with a little guidance.

Leslie also wanted to communicate to new mathematics teachers to be true to their personality.

Because some of them [new mathematics teachers] spend a year with a teacher and maybe it worked with that teacher and so they think they are going to do it that way but it doesn’t match their personality. Maybe they will do it, but if it doesn’t meet with their personality, the kids aren’t going to receive it and so they are not going to be successful. They have to find their own way, they don’t have to be like, maybe it seems like that’s a super teacher but you can be a super teacher in your own way. We don’t all have to be Wonder Woman.

Leslie extended this recommendation to encouraging teachers to find their fit with regard to the grade level and school where they teach. New mathematics teachers, according to Leslie, need to find the grade level and specific mathematics course that best fits them. Maybe a teacher is more at home in the junior high classroom. If that’s the case, Leslie explained, they need to be able to find their way to that level. This may require moving schools, which Leslie encourages if it is necessary.

You get to choose the school like they are choosing you. If you choose the wrong one, let them know that it’s okay to move. It has nothing to do with them, there is a place for them. They need to realize once they get that first few years of experience, they need to go and find that place that will make you happy.

Regardless of where a new teacher ends up teaching, they need to remember, according to Leslie, that the first few years are going to be the toughest, but the job is worth it. She finished by reminding new mathematics teachers to “not take things personally and try new things because it will not stay the same.”

#### *Conclusion of Case 1—Leslie*

Leslie’s responses to the interviews and her written narrative provided evidence of various conditions and experiences that contributed to her retention in the classroom. Leslie’s dedication to her students illustrates her passion for teaching. Despite not initially majoring in education, Leslie shared how she cannot see herself being anything except a teacher. Support, student success, a passion for mathematics, and prior experiences are all conditions and experiences that Leslie identified as helping her to remain in the classroom. In addition, responses in her interviews and observations conducted of her teaching and interactions with colleagues suggest that resiliency played a major role in Leslie’s decision to remain in the classroom. Leslie shared examples of different experiences with the professional, social, emotional, and motivational dimensions of teacher resilience. Field notes from observations conducted by the researcher provided evidence of Leslie actively enacting several of these characteristics as well. As an experienced mathematics teacher, Leslie explained that she plays a vital role in the support to newer mathematics teachers to help encourage their retention. The next case in this study concerns a second experienced high school mathematics teacher, Ann.

### *Case 2–Ann*

Ann has been a secondary mathematics teacher at the high school level for 27 years. Ann loved academics and shared how she took every mathematics and science course that was available to her. She recalled being in fourth grade and finishing her mathematics modules quickly and the teacher allowed her to tutor the other students in the classroom who were struggling. Ann points to this early experience as igniting her desire to become a teacher. In college, Ann majored in mathematics. She explained that at the time, she could major in mathematics and add her teaching certificate by taking a few education classes and completing a shorter student teaching experience, so that is what Ann did.

Ann has taught at six different high schools in Texas. During her time, she has also taught a variety of mathematics courses, ranging from Fundamentals of Mathematics to Precalculus. Ann’s first teaching job was at a large high school in Southern Texas. She remained at this high school for 9 years and one 6 weeks, during which she also coached volleyball and basketball and started a family. Ann laughed when she shared the one 6 weeks part of her tenure. At that time, the district built a new high school and did a poor job estimating the number of teachers needed. Where Ann was employed, they had too many teachers while at the newer school, they did not have enough. Despite Ann’s nine years of experience, she was moved to the new high school because they had recently redone her contract because she gave up coaching. Having to redo the contract because of the coaching change caused Ann’s status to be moved to a first-year contract. As a result, she was the lowest ranking teacher and was forced to move to the newer school 6 weeks into the semester. Ann revealed that this was a difficult transition. She had started the

first 6 weeks of the year teaching six sections of geometry at a school where she had been teaching for 9 years and was forced to transfer to a different school where she would be teaching three classes of Algebra 1 and three classes of Algebra 2. In addition to changing the courses she taught, the commute time went from five minutes to 30 minutes, which was difficult for her and her family. It was also difficult for Ann to leave behind her students and colleagues at her previous school. She shared,

I liked working at my first school. To me the kids were, they needed me more than the kids at the newer school because they were from harder background. That's the kind of kid I like to work with which is kind of why I am here now at my current school.

Ann taught at this new school for 2 years. During her second year, her husband, who was a pastor, took a new job in a town south of Houston. She took a teaching job at a high school just outside the town where she lived, which, after her first year, was split up into a ninth grade center and a 10th-12th grade center. Ann was moved to the ninth grade center and really enjoyed working there because, "When you get the ninth graders away from the older kids, they don't try to show off and they are just better behaved." After 2 years in that district, Ann took a teaching job at a high school that was closer to her home and in the same district of the schools that her children attended. Ann was at this school for 1 year before her husband's job took him to Central Texas. After moving to the Central Texas region, Ann took a job at a high school in the district where she currently teaches. She has been in this same district for 14 years.

In most of the cases, the decision to switch schools was out of Ann's control. Her first change was forced upon her by the administration in that school district. In two other cases, Ann moved schools because of her husband's job. Only once did Ann initiate switching to a new school and that was motivated by a shorter commute and being closer

to her children's schools. When asked why she remained in teaching after going through all these forced changes, Ann explained,

I enjoy teaching. I don't enjoy the politics of teaching. And a lot of times, politics of teaching is what drives people out. I happen to be a very patient person, a very persevering person. . . . I'm laid back, so I don't let a lot of things get to me that a lot of people will let get to them. Just having that personality is very helpful.

Ann did admit that there were several times in her career when she considered leaving teaching. At several of the schools where she had taught, Ann described how the administrators made it very difficult to do her job. When she thought about finding a different job, she realized her options were rather limited. When asked why she stuck it out, Ann responded,

Probably because I didn't have anything else to do. I mean, I was a teacher, I didn't have, I guess I could have gone back and got my engineering degree, but I had children, I couldn't just drop everything. It ended up being fine and I liked it over there, but it was just shock and awe. You just have to make the best of it and survive.

This seems to illustrate how Ann's personality influences her approach to teaching. Ann frequently shared in her interviews that she is very easy going in her approach to teaching and life. When asked why she takes this approach, Ann credited her faith.

For me, part of it is having faith. It makes you more understanding. That plays a role, more patience. Ok, so we didn't get to square roots today, it not the end of the world, there are other things more important and we will get to it tomorrow if we are still here.

Ann shared that 9 years ago, one of her own children passed away and as a result, this gave her a different perspective on things. She shared this was a very difficult time in her life and that this experience has influenced how she interacts with her students.

You see the kids differently, you see that I did not get to this today, but that's really not that important in the larger scheme of things, it's all going to be ok and work out. That does play a role. You have a little different focus than you had before.

Ann uses her experiences to guide how she manages her classroom and plans for instruction. With Ann's background in mathematics and science, she enjoys incorporating STEM themed projects into her lesson. It is important to Ann that her students have opportunities to apply what they have learned to real world situations. The professional development that she seeks out is typically related to STEM and she serves on her school's STEM advisory board. During the researcher's observation of one of these STEM meetings, many of the other teachers sought out Ann for ideas on an interdisciplinary project. They knew Ann frequently used these types of activities in her lessons, so they sought out her guidance. Ann shared how they could use her catapult project to connect to other disciplines. While some of the other teachers in the meeting were complaining about having to find a new project, Ann provided a recommendation for the problem instead of complaining about it. In addition to incorporating STEM projects into her lessons, Ann shared that she really tries to stay up-to-date with technology in order to prepare her students better. She has flipped her classroom in the past few years. When asked what she does to flip her classroom, Ann explained that she pre-records video lecture notes that the students watch at home. Students then come to class to practice and apply the concepts from the videos. When prompted to explain why she made this change, Ann answered,

Because, especially when I got to Precalculus I was noticing they [students] needed me there and I can't be there and as the mathematics gets more advanced, I need to be there more. Also, you would give them notes and there was not time after that to work on problems. How can I keep from being so, I mean, if all you do is notes, you are never doing problems in class, but if I do notes and the next day is work, then I'm getting behind in the curriculum.

Recognizing an issue that she was having in the classroom, Ann problem solved and used technology to design her lessons to meet the needs of her students better. Ann explained

that in her teaching, when she encounters a problem, she looks for the solution. One illustration of this approach that Ann frequently discussed was her philosophy towards grading. Ann initially graded every problem on every assignment. This was taking up too much of her time. Another layer to the problem was the administration's requirement for a minimum number of grades for each course. Ann found a way to address this issue of grading in her classroom.

You can't grade everything, there is something called the circular file [trashcan] and sometimes you make a deposit in it and just because you told them you were taking a grade on it you can take an, uh-huh grade you know? It's not that everything has to be graded. You have to have the minimum number of grades required and I would go above that. Grades can be creative. Be creative on how you get your grades. It's not that everything has to be a worksheet that you grade every single problem. You can grade five problems on it and know whether they know it. You can just go around and see that they are doing it and just check an occasional one. There are a lot of different ways you can come up with your grades instead of grading every single problem.

Ann provided another example of how she addresses problems in teaching. She shared a story of working with a very difficult administrator who had a tendency to talk down and micromanage teachers. Ann explained that many of her colleagues left because of this administrator and others avoided this administrator at all costs. Ann did neither of these. She went out her way to show the administrator how they could use the calculators to help the kids with the state assessment, "just little tricks and things she didn't know, she just thought we were amazing but before that she was a nightmare." Ann concluded,

You have to find ways to get in and find ways, schmooze, politics is part of it. You can try to avoid it, but have to learn to work with people and collaborate. If you learn how to work together, you will be better off than those who can't.

Ann's teaching narrative and background is important, as it provides a context to examine her decisions to remain in the classroom. While describing her teaching narrative, Ann identified several conditions and experiences that have contributed to her

retention. Additional interviews, observations, and her written narrative prompt highlighted these conditions and experiences as well as the role of resiliency in her teaching. The following paragraphs use evidence from these interviews, observations, and written narrative to address the research questions for this study.

*Research Question 1: Conditions and Experiences Contributing to Ann's Retention Decision*

During the four interviews with Ann, she was asked to identify different conditions and experiences that contributed to her retention. The analysis of her interview responses revealed four reoccurring conditions and experiences that Ann self-identified as the most important in supporting her decision to remain in the classroom. These conditions and experiences are,

1. Personality
2. Strong Mathematical Content Knowledge
3. Support From Administrators and Colleagues
4. Students

The first identified condition was her personality. In each interview, Ann frequently attributed her personality as an influencing factor in how she approached teaching. Ann often credited her strong content knowledge as helping her manage many of the difficulties associated with teaching. Support from administrators and colleagues was identified by Ann as key condition to helping her to remain in the classroom. The final condition identified by Ann as contributing to her retention was her students. Ann provided numerous examples of how her students have helped her during difficult times and motivated her to remain in the classroom. The following sections provide evidence

from Ann's interviews for these conditions and experiences that she identified as contributing to her retention.

*Personality.* Ann frequently credited her personality as one the main reasons she has been able to remain in the classroom. In every interview conducted with Ann, she described herself as "very patient and easy going," and explained how these personality traits have helped her to persevere through some challenging times in her teaching. Ann explained, "I tend to be persistent, lots of perseverance, lots of patience, I don't know if ultimately anyone is going to influence my decision to leave teaching any more than I do." According to Ann, this patience and persistence is possible because she tries to be around positive people in education.

I'm assuming you have heard, if you want to stay in teaching, stay out of the teacher lounge because you will hear a lot of negativity. So trying to hang out with positive people. I mean that is true for any occupation, but teaching especially, hanging out with positive people helps because you just start hearing all the negativity or when they start talking about a particular student, you don't want to hear it because you want to develop your own so, you try and not to jump in with the negativity.

Ann shared that her own personality allowed her to manage ups and downs of teaching. She noted teaching is very stressful and, in many cases, what a teacher plans for a lesson rarely goes as expected. Therefore, she explained during an interview, you have to be flexible to manage the ebb and flow of teaching. Ann added, "That's my personality. I'm very laid back. You've got people who are rigid and can't deal with the changes." Ann shared she had witnessed many colleagues who were great teachers but could not handle the continuous changes and interruptions that accompany teaching. Ann even admits, "If I wasn't as laid back as I am, I probably would be out." It is important to point out that being laid back and easy going does not imply that Ann is not dedicated or passionate

about her job as a teacher. While observing Ann's teaching, the researcher noticed Ann's students appeared to respond positively to her personality and demeanor. Students were on task during the class period and worked on the assignments that Ann had set for them. Her calm demeanor seemed to carry over to the students, who frequently asked questions. Ann shared that one student recently had come to her and shared how excited she was to finally understand math. In the past, this student shared, she had always hated mathematics. It was stressful for her. Ann, however, had managed to make a strong connection with this student. Ann explained the student remarked how she appreciated the atmosphere Ann created for her and how it helped her to be able to understand the material better.

Throughout every interview with Ann, when she was asked why she did something in her classroom a certain way or why she maintained a certain philosophy, she frequently attributed it to her personality. Observations conducted by the researcher provided additional evidence of Ann's personality. Ann identified her personality traits as contributing to her decision to remain in the classroom. Moreover, Ann also credits her strong content knowledge as another condition contributing to her retention.

*Strong mathematical content knowledge.* During multiple interviews, Ann was asked to describe how she manages different issues that arise in teaching. Ann frequently shared that her undergraduate major was mathematics, a condition she credits as helping her manage these issues and remain in the classroom. Ann shared she always loved mathematics and enjoyed many of the mathematics classes she took in college. While she took some education courses, she felt they did not prepare her for the classroom as well as the mathematics classes.

I really, because I got my math degree, I know the math and the teaching that I got. Even if you've been doing the teaching, as long as there is another teacher in the classroom, there is a certain amount of protection for you. Until you are really in that classroom by yourself, you don't know how you are going to respond to a particular situation, you are kind of, there is a certain buffer between you and reality whereas with the math classes you take, it's you and the math. I think the number of math classes that you take is likely more important than the number of education classes you take. I think that made a difference, where being successful with the math because you really have to know the math because if you don't, it's obvious and it's not good. I've seen some of those though, when they are majoring in the education, they don't know the math as well and it's hard for some to stick it out because that mathematical knowledge isn't there.

She acknowledged that just because someone knows a lot of mathematics does not mean they are going to be a good teacher. According to Ann, a teacher must be able to break down the material for the students to understand and it takes strong content knowledge to do this. Ann shared an analogy for the importance of strong content knowledge with her husband's line of work.

My husband's a minister and I've always been, tried to be fluent in the Bible, and you hear some of the people at church say the stuff they say, it just like, Oh yes, that's a big deal or no, that's not true and so, same thing with math. There are some things you kind of get away with saying and there are things where it's like, "oh no no no."

Ann has seen many teachers in her time who lacked the content knowledge to make the necessary connections students need to succeed. Ann wondered if the lack of content knowledge of some teachers had negatively affected students' disposition towards mathematics. Ann feels confident in her content knowledge because she has a mathematics degree. Ann says she can make those connections between the topics and help prepare students for the next level of mathematics because she knows where it is going. Strong content knowledge makes planning lessons and activities much easier, Ann explained, because she understands the material. Ann believes the reason many new mathematics teachers do not make it in teaching is because of their inadequate content

knowledge. In addition to her content knowledge and personality, Ann identified support from administrators and colleagues as another condition contributing to her retention.

*Support from administrators and colleagues.* Ann acknowledged in her interviews that administrative support is crucial in teacher retention. When Ann has had strong administrative support, she described teaching as more pleasant and manageable. Ann explained that administrators effect so much of what a teacher does, it is important that they are supportive of teachers.

If they've [administration] got your back and you've got their support, then it makes it a lot easier. I mean if they are not backing you up on discipline, if they are not backing you up, and you keep telling them, these are the things we need to keep doing because you've been around and you know the things that need to be done and they are not doing it, then it doesn't make it very easy. . . . That's probably the biggest because if they are doing their job correctly, then the kids are not going to be that much of a negative influence on you. Even if you have a really, occasionally you have these waves, you hear from the teachers below that this is a really tough group coming through and it is, but if the administration is on the ball then you can get them in line. A lot of times those kids are tough because they have had numerous administrations that haven't worked out for them because they've just had bad administrators and so by the time they've gotten to you, they've had three or four of them and what would you expect. But if you have good administration at your campus a lot of that takes care of the problems.

While Ann shared examples of unsupportive administrators in the past, she credits the supportive ones as motivating her to continue teaching. She recalled one stressful year where some of the administrators were very combative to the teachers. Around Thanksgiving, one administrator walked past her and said, "You know, I know we don't always tell you thank you for all that you do, but I know you work hard and thank you for all that you do for the kids." Ann shared, "And that little bit, just somebody telling you thanks and that they noticed what you were doing, went a long way." According to Ann, support from administrators can include a simple recognition of her hard work in the

classroom. This simple recognition, Ann revealed in multiple interviews, helps her to remain in the classroom.

Ann also credits support from her mathematics colleagues as motivating her to continue teaching. During one interview, Ann was asked who she turns to when she has an issue or question. Ann answered that she typically seeks out her mathematics colleagues first for support or advice. Ann shared that when she was forced to switch schools 6 weeks into the semester, her colleagues at her new school were very supportive and helped make the transition a little easier. She emphasized the support of her mathematics colleagues. When asked why the emphasis on the mathematics teachers, Ann responded, “Occasionally you will talk to your interdisciplinary folks, but let’s be honest, mainly math. They know the kids, they have had them before, they know the subject.” According to Ann, mathematics colleagues provide her the most support because they truly understand what she is going through. Ann explained that while other teachers can empathize with general issues in teaching, her mathematics colleagues provide her with pedagogical content support. Responses from Ann’s interviews also revealed that in addition to her content knowledge and support from administrators and colleagues, she also identified her students and their successes as contributing to her decision to remain in the classroom.

*The role students play in Ann’s retention.* Several interviews conducted with Ann asked her to describe her relationships with students and in what ways, if any, they contributed to her retention. Ann explained that she maintains her motivation to continue teaching because of, “The kids! It’s all about the kids. I like being around the kids.” She elaborated by saying, “When you see their light bulb go off, that encourages and keeps

you going.” Ann credits her students as motivating her to remain in the classroom. One of the favorite parts of teaching, according to Ann, is being able to challenge the students. She explained, “I like challenging them to go beyond what they can get quickly and be able to struggle it out to get to the concept.” She also mentioned that she liked working with students from what she described as “harder backgrounds.” When asked to define what she meant by “harder backgrounds” Ann explained these are the students who needed more support from her because they may not have it at home. She likes being able to provide that support to them. Additionally, hearing from previous students and their successes also encourages Ann to remain in the classroom. When asked to describe her most rewarding experience as a teacher, Ann shared,

You know, occasionally, you have those kids that come back and just say thank you. That’s rewarding or when they come back and visit and say, I remember something that you taught me and I used it in my college class. When they come back and say thanks in one of the many different forms, visiting again and telling you hey, what you did helped.

One drawback to teaching, Ann shared, is that it is difficult to see the impact that a teacher has on a student because it is often not realized until after the student graduates. In several interviews, Ann credited hearing about some of her former students and their successes after graduating, as contributing to her retention. Ann explained that in many instances, she may not realize the impact that she has had on a student. These success stories, Ann shared, show her that she is making a difference in the lives of her students and supports her decision to keep teaching mathematics.

#### *Summary—Research Question 1*

Throughout the four interviews with Ann, she frequently referenced her “easy going” personality. Having this type of personality, according to Ann, influences how she

manages her classroom. Observations conducted by the researcher seem to confirm this conclusion made by Ann. As a result, when asked to identify the conditions and experiences contributing to her retention, Ann made multiple references to her personality traits. Ann also credited in multiple interviews how her strong mathematical content knowledge helped her to remain in the classroom because it allows her to make the necessary adjustments in her lessons. Furthermore, Ann shared multiple examples of how her colleagues and administrators provide support for her, contributing to her retention. Finally, Ann explained how hearing about the successes of her former students has maintained her motivation to teach. In addition to the experiences and conditions that Ann identified as contributing to her retention, interviews, her narrative writing prompt, and observations of her teaching revealed the role resiliency has played in her teaching career and decision to remain in the classroom.

*Research Question #2: Role of Resiliency in Ann's Decision to Remain in the Classroom*

The second research question of this study focuses on the role that resilience plays in the retention of experienced secondary mathematics teachers. Ann was asked to define resiliency in her teaching and provide examples of when she has had to be resilient in her classroom. Ann views resiliency as an important part of her decision to remain in the classroom and shared that resilience is necessary for teachers to be able to deal with the constant change that happens within education. In interviews with Ann, she often associated resilience with flexibility. She explained,

You have to be prepared to change what you are doing during the day. You have to be flexible, and certain years you have to be very flexible depending on your administration. If you are not able to do that you are more likely to drop out or find something else to do because, there have been a lot of teachers I knew who were really good, but they could not deal with the constant ebb and flow of, are

we doing this today . . . oh no, here's another surprise, they couldn't deal with it. I'm just kind of like, ok, we can go back and reschedule.

Ann reflected during one interview that her personality traits help her to be resilient. She shared that you cannot become upset with the little things that happen during the day. Teachers, according to Ann, need to be able to adjust and work through these roadblocks and expect them. Ann expects daily interruptions in her classroom, it is a part of teaching. Instead of becoming upset with these interruptions, she “goes with the flow” and adjusts. Ann’s response to the narrative writing prompt illustrated characteristics of resiliency. She wrote about when she was forced to transfer schools after the first 6 weeks of the semester. This was a difficult transition because not only did she have to develop relationships with new students, colleagues, and administration, it was already 6 weeks into the year. Additionally, she went from teaching Geometry to multiple sections of Algebra 1 and Algebra 2. Ann credits her faith and flexibility for getting her through this transition. These areas, Ann explained, helped build her resilience. In the end, she chose to focus on the positive aspects of the move, including meeting some great teachers and students who she would never have had the opportunity to meet had she not been moved. She concluded her narrative this way, “It taught me how to live the mantra, ‘when the going gets tough, the tough get going’ which helped me later on in my career and personal life as well.” Ann described how she used this tough time in her career to build upon her already resilient nature.

Ann’s interview responses and field notes from the researcher’s observations provided evidence of the role that resiliency plays an important part in her retention. The theoretical framework of this study breaks down resilience into four different dimensions: professional, social, emotional, and motivational. Ann revealed in her interviews

characteristics of each of these four dimensions. Furthermore, observations conducted by the researcher provided examples of these characteristics in Ann's teaching and interaction with colleagues. These characteristics are described in the next sections.

*Profession-related characteristics of resilience.* There are five characteristics of the profession-dimension of resilience (Mansfield et al., 2012). While Ann's interviews and observations provided some evidence of all five characteristics, data analysis resulted in the emergence of three main characteristics in Ann's teaching: using effective teaching skills, being flexible and adaptable, and reflecting. In observations of her classroom teaching, the researcher noted that desks in Ann's classroom are arranged in groups. When asked why she organized her classroom this way, Ann explained it was to promote collaboration among her students, which she believes is an effective teaching skill. During one observation, Ann had her students working together to solve a particular problem that required collaboration. During this time, Ann circulated the room asking probing questions of each group. Ann shared that collaboration is a driving component behind her use of projects and activities. Ann described multiple activities she has designed that promote collaboration. Ann explained that promoting collaboration among students is an effective teaching skill, one that is important in mathematics class.

A second component of the profession characteristic of resilience that Ann discussed in interviews was flexibility. According to Ann, flexibility is key to remaining in the classroom. Without flexibility, she indicated she would not have been able to manage many of the changes and interruptions she has experienced as a teacher. Ann explained, "Oh flexibility. I talked about perseverance and patience, but flexibility is probably #1, you have to be flexible to make it as a teacher." Ann's flexibility seemed to

allow her to manage the challenges of changing schools and difficult administrators. This flexibility is driven in part by Ann's dedication to reflection, another professional characteristic of resilience. Ann shared her reflection process,

You always reflect. You look at a lesson and you see how it went. And as a matter of fact, you reflect after each class and so, usually my best teaching is not the first class, maybe not even the second class, but the third or fourth time I've taught it, which is a good reason to teach the same thing multiple times during the day. I've always hated as a teacher having one of something, because you can never quite, it's not a good, just having a onesy, it's never a good thing because as soon as you thought, I could have done that better, there is nobody else to try it on. So you don't know if you could have done better, and by the time next year rolls around, but I mean I try to make little notes. And like I said, I keep a notebook of things that I used and I will put in some other ones just in case if the thing I did use, I'll make a note on it, "this was not good" or "this was great, we got to use it again." It helps with planning.

Reflecting on her practice seems to help Ann make daily adjustments to lessons that benefit her students. Ann explained in an interview that because she constantly reflects, she is able to be more flexible in her lesson design and preparation because she knows what to expect and how to plan for the unexpected. Ann provided an example of how reflecting on her practice has allowed her to be more efficient in her planning. She shared, "But as you learn to do that, you get better at what you do and it saves you time because you know what works and what doesn't." Reflecting on her practice, being flexible and adaptable, and using her ideas of effective teaching skills are three of the five characteristics of the profession-dimension of resilience. Ann's responses in multiple interviews also provide evidence of several of the social characteristics of resilience she has engaged in during her teaching career.

*Social-related characteristics of resilience.* Of the four characteristics of the social dimension of resilience, two emerged as the most prominent in Ann's interview responses. These are: building and supporting relationships and solves problems. Ann

values building and supporting relationships with students and her colleagues. It is important, according to Ann, to develop relationships with students so that you can get them interested in the material. Ann believes students are not going to care about the mathematics until they know she cares about them. She explained, “You can make a difference in a way a kid approaches a class just by showing that you care and that you are there to help and you want to help.” Ann also values building strong relationships with her colleagues as well. When Ann has served as department head, she shared how she worked to get to know her colleagues and build relationships with them so that she could help them in any way possible. Ann also shared the importance of building relationships with other school employees who are not teachers. She shared how she designed an *Amazing Race* review activity that included the office staff.

When we do the *Amazing Race* activity, for a road block, I usually put a little activity that has nothing to do with math, that's just kind of fun. Like where you have to build a card building, just to kind of, or the one in December, a lot of times with the roadblock will be they have to go sing a Christmas carol in a certain location so they will go, what?? It's fun for the people who are not, like I'll usually have them do that in the attendance office and so it's fun for them so they can hear them and see the kids. The kids they never see, because these kids are never absent and so, in the attendance office they usually see the kids with the attendance problems and so, it's kind of interesting for them.

This is just one example of how Ann seeks to build and maintain relationships at school.

She summarized the importance of building relationships with this conclusion:

I mean, your colleagues can be there to help you or not, so your relationships with them are important. You have to be willing to give and take. If they see you just as a taker, they are not going to want to share with you. It has to go both ways. . . . Some people, you can never, you can do that all you want to and for whatever reason, they are just who they are and then you have to find ways around that too. But generally, most people you know, you learn who the ones are that you really need. Like, people don't appreciate them all the time, the custodial staff, they are so important and you got to show your appreciation to them. How? You make sure your room does not look like a wreck every day, because that's not fair to them to have to clean that up, you take care of most of that and they will bend over backwards to take care of something if you need it. So and then, same thing

with people who procure your items that you need for your classroom or your technology. I mean learn to show appreciation to them and it comes back at you. Relationships are important.

Ann also provided examples of how she problem solves in her teaching, which is another characteristic of the social dimension of resilience. Ann shared that she does not get upset easily. Instead of focusing on the problem or complaining, she described how she looks for a solution. This is something she has developed based on her experience.

When asked if it is important for teachers to problem solve, Ann responded,

Yes, because there are going to be things that come up in everyday situations where you have to figure out, what am I going to do? I'm supposed to be doing a project in a couple of weeks and my stuff hasn't gotten here. What do I do? You always have to have something on the back burner just in case. But, trying to take care of it ahead of time, predict what's possibly a problem scenario, because if you don't think about that stuff ahead of time, then that thing you didn't want to happen is going to happen and you will not be ready for it. But, you know, I'm really, a problem solver, but that's from experience.

The key to problem solving, according to Ann, is planning for it in advance because the earlier you can address the potential problem, the better. Ann connected this to her emphasis on reflection. By reflecting, Ann shared how she is able to make note of problems that developed during a lesson and then make preparations to address this problem the next time she teaches that lesson. Ann also provided evidence in her interviews of how she engages in the emotional characteristics of teacher resilience.

*Emotional-related characteristics of resilience.* The emotional dimension of resilience includes seven characteristics. Four of these emerged from analyses of Ann's interview responses. These include not taking things personally, managing emotions, caring for your own well-being, and coping with the demands of the job. Ann shared examples of these areas in her interviews. As previously mentioned, Ann describes herself as a very patient person. Patience, according to Ann, helps her not take things that

happen in the classroom personally. She described the loss of her own child has helped her gain a new perspective on what is really important in life. This experience, Ann explained, has helped her to not get worked up when things go wrong in the classroom or when she fails to get through everything she had planned. When failure does happen in her classroom, Ann shared how she manages. Things are not always in your control Ann explained. She provided the following example,

I don't take failure personally, because there is a lot of reasons that things happen. For example, I have four pre-AP classes. Three of them do pretty well, but one of them is weaker. So, am I doing a bad job if three of the four do well? No. I just have to figure out why that one class isn't doing as well and tweak what I am doing there but I can't, sometimes you have kids in there who shouldn't be in pre-AP and other times it's four of the five who failed were absent last week. You cannot take it personally. Sometimes it is a personal thing. I was out twice last week, and maybe that was why. Ok, then let's retest or hit this again. I mean you want to analyze it and figure out why it happened. Right now my lowest class is 5th period, they did much worse. Well, I've got some in there who don't want to stay off their cell phone. Does that have an impact, well, yeah. The smart phone is not making them smart.

Ann admitted that teaching is demanding and if you are not careful, it can become overwhelming. It is important to have that balance as a teacher, Ann shared, because,

Occasionally, you can work yourself to death or you cannot. I don't want you to, you need to remember that your evenings are yours. Don't be up here at all hours trying to get stuff done, there needs to be a time where you go home. It will still be there tomorrow. You have to make time for yourself and if that means that occasionally you have to take a day off, then take a sick day and recuperate and come back stronger. That's why professors take sabbaticals. You have to do it. Summertime, try not to do much school stuff, recharge. If you are spending all your time on school, you need to find a different way to do things, collaboration does something for you to. If the kids can help each other, they are learning it better, you can't be everywhere.

When asked how she copes with the demands of the job, Ann explained that she makes a concerted effort to bring as little school work home as possible. Ann shared this has been difficult for her this year, as the administration took away the PLC period and replaced it with another section of mathematics. The grading can be overwhelming.

Therefore, Ann explained she has “found ways to manage things during class and make adjustments, which includes taking grades differently.” These adjustments, Ann remarked, are helping to ease the workload and allows her to not take as much work home. Ann shared, “Teachers have to have a life outside of school. If you try and do everything that they want you to do at school, you are going to go crazy.” Ann works hard to keep the boundaries on her personal time. Occasionally, she shared, she has to take a personal day to reset, which is easier to do now with technology, since her classroom is flipped, she can still have her students work on something productive even though she is not there. In addition to the professional, social, and emotional characteristics of resilience Ann referenced, she also shared several examples related to the motivational dimension of teacher resilience.

*Motivational-related characteristics of resilience.* While Ann provided some evidence of engaging in all seven motivational characteristics of resilience, data analysis resulted in the emergence of three main characteristics in Ann’s teaching: setting goals, maintaining motivation and enthusiasm, and persisting. Ann explained that one of the new Texas Education Agency (TEA) requirements for the teacher evaluation system is that teachers set written goals. Ann shared, however, that she always sets goals in her teaching. This year Ann is working to not let anyone fail her course. She shared, “Does that require a lot on my part? Yes, because I am often working harder than they are. But if they are truly Pre-AP, then they shouldn’t fail.” Ann does not want mathematics to be the reason a student does not graduate. Her written goal for her evaluation is to have 85% of all her lessons flipped. These goals, Ann explained, help her to remain focused on improving as a teacher and provide an opportunity to reflect on her efforts.

Ann previously described how the students she works with contribute to her retention. This is a characteristic of the motivational dimension of resilience. Ann shared how she likes working with students who come from what she described as “tougher backgrounds.” According to Ann, these are students who may not have support at home. Ann revealed this was one of the difficult things for her when she was forced to switch schools 6 weeks into the year. She went from working with students with a “difficult background” to students who she described as “not needing her as much.” In her current school, Ann explained that she gets to work with students who she feels need her. She explained,

I like working with the ones who need you a little bit more than the ones who were born with everything and a silver spoon because their parents are a different kind of difficulty, so I like working with these kids here, they have different needs and they also appreciate it a little bit more.

Ann described in her interviews how working with these kids provides her with motivation to continue teaching. Ann also provided examples of when she has had to be persistent, another characteristic of the motivational dimension of resilience. Many of the things that happen to her, Ann explained, are out of her control, but regardless of what it is, she shared she remains undeterred. One example Ann provided of this is the retesting policy that the current district where she teaches adopted. Ann shared how frustrating this policy can be. She feels that retesting is not adequately preparing students for college or the workforce. She shared,

I have even written letters to the people in charge of advanced academics, stating my concerns. I never get a response. Do you even acknowledge that I sent this? They will come in and say, I don’t see enough rigor, well we try, but then you tell us we have to retest. Who is the burden on? Who is the burden on? The teacher, who has to regrade everything. And then you get behind on where you are at in the scope and sequence, so everything gets pushed back because of this need to reteach and retest. I don’t reteach during class but if they are not getting

something in class, then in other subjects, it doesn't build on it as much, but in math, you have got to stay on top of it.

Though she has attempted to address the problem, Ann explained that she has never received a response. She seems to make the best of the situation even though she does not agree with it. Ann explained that this just requires her to make additional adjustments within her teaching to make sure she is following district guidelines but staying true to her own beliefs.

### *Summary of Evidence for Research Question 2*

Ann's interview responses suggest that she continues to teach because she loves mathematics, connects with her students, and builds strong relationships with her colleagues. Ann provided examples, in both her interviews and narrative prompt, of how she has had to be resilient during her career as a teacher. Being resilient, according to Ann, has helped her manage the workload of teaching and contributed to her retention in the mathematics classroom. Moreover, apart from the experiences and conditions Ann identified as contributing to her retention and the role she described resiliency has played in her career, several additional themes related to teacher retention emerged from the data analysis. These themes are,

1. The Role Mathematics Plays in Ann's Teaching
2. The Role That Experience Plays in Ann's Teaching
3. Ann's Role as an Experienced Secondary Mathematics Teacher

*The role mathematics plays in Ann's teaching.* Ann repeatedly referenced her strong content knowledge during her interviews. These repeated references to content knowledge seem to illustrate Ann's acknowledgement of the difficulties of teaching

mathematics. Ann feels mathematics is the hardest subject to teach. When asked to elaborate, Ann responded,

I mean, the math, because you have so many kids that hate math and that will come in and tell you, “I can’t do this, I’ve never been able to,” it makes it hard to teach. And the, you have the kids coming in with so many outside baggage, teaching math as it is [sic] is hard enough and then you start trying to do it with all of that and then you have all the school board regulations that you have to retest and it just all makes it hard to do. And I will also say that some of the math people coming in are not prepared mathematically, which, contributes to the difficulty to teach it.

This may suggest why Ann puts such value on content knowledge. According to Ann, if a teacher does not know the mathematics, coupled with all the other demands of teaching, it makes it that much more difficult. Ann shared that if a teacher knows the mathematics, they can focus on the other demands and stresses of teaching. Ann explained that mathematics is different from other content areas.

Learning to see it from the kids’ point of view is important but having all those regulations makes it difficult. Teaching history is not, to me it wouldn’t be interesting, and memorizing stuff is easier than understanding it. It’s just one of the more difficult subjects to teach. And math is hard. Getting an understanding from students mathematically, it’s one of the harder things to do. It’s rewarding when they do, but it’s hard, getting to that point. I spent many a restless night.

According to Ann, teaching mathematics adds an additional layer of difficulty to teaching because of the prevailing negative student disposition towards the subject. Ann’s interview responses seem to suggest that she feels that a combination of negative student dispositions and inadequate mathematical content knowledge of the teacher may be a reason why so many new mathematics teachers leave the profession early. Ann also shared through her responses in the four interviews another theme related to teacher retention, the role of experience.

*The role that experience plays in Ann's teaching.* Many of the examples that Ann provided during her interviews were often accompanied with the response, "that comes with experience." Based on Ann's perspective, experience is a critical part of developing the conditions and skills needed for retention. She believes new teachers tend to be rigid in their philosophies and practice. Ann shared that when she first started teaching she felt, "this is the way it's going to be. I graded every problem and for me at that time, homework was for perfection." When she graded in the beginning, her philosophy was that it was either right or wrong; the answer was the most important part. Now that has changed. As a result of her experience, Ann explained that she has come to value the process of students getting to the solution as important. Ann admitted that it took some time for her to realize that she cannot grade every homework problem and that homework should be for practice, which is how she views it now. She admitted that the first few years of teaching are always the hardest. When asked when she felt she had enough experience to feel confident as a teacher, Ann responded,

Probably the fourth or fifth year, you start having more confidence because you are not a rookie. A lot of it is your perception with the other teachers. As they begin to have a little confidence in you, your confidence begins to grow, so a lot of it is peer relationships.

The reason these first few years are so difficult, according to Ann, is that they are so inward focused, it's mainly "trying to keep your head above water." She explained that it is difficult in the beginning for new teachers to use the problem-solving skills necessary to succeed because "you don't often know to look for those things" and that takes experience. Gaining experience does not automatically make you a successful teacher according to Ann. She emphasized that as she gained experience, she continued to reflect on her practice and looked for areas to improve. She explained,

You know, there are some teachers that are in it for 12-15 years and never get better, but they are not really taking what they learned and making themselves better. You know, asking those questions like what could I do to make things better. They are just satisfied with, “oh, I’ve never been absent” but you have also never really taught a lesson.

With experience, teaching has become more manageable for Ann. When asked if teaching is more difficult now compared to when she started, Ann explained,

Not really, I mean, it’s, maturity helps with that. As you get older, you see the world in a different way. Some things that really mattered to you when you first started, back when you were an idealist, now you are a realist. You realize those things that you were adamant about, you look back and are like, why was I adamant about that. You know, I was clearly naive. It’s just a growth process as you go through it. Things you were a stickler for back then, you are now like, why did I waste my time with that and cause myself extra stress. It probably gets easier as you go because you have experience and you know how to handle situations better and you don’t let the little things bug you as much. That’s a big part of being able to stick it out, learning how to let the little things go. I mean if you worry about every little thing, that’s too much stress for anybody, you have to let it go.

Experience appears to have provided a more realistic picture of teaching for Ann. She admits that experience has allowed her to grow and learn ways to support her longevity. These traits, in conjunction with additional experience, Ann attributes to helping her to remain in the classroom. With these experiences, Ann feels as an experienced secondary mathematics teacher, she plays a role in the retention of newer mathematics teachers and has recommendations to address the issue of mathematics teacher turnover.

*Ann’s role as an experienced secondary mathematics teacher.* Ann shared that as an experienced mathematics teacher, she can help support newer mathematics teachers to remain in the classroom. Ann frequently takes on student teachers from the local university’s teacher preparation program. Ann shared how she uses this opportunity to help prepare these teachers for the realities of the mathematics classroom. Ann explained

that when new mathematics teachers join their staff, she tries to mentor them. When asked how she does this, Ann answered,

Occasionally I bring them cookies. Just try to make them feel welcome and let them know that I am here to help if they need anything and give them the ins and outs of the school and occasionally remind them, don't stay until 6 every night, go home, have a life. This is not your life. Take time for yourself. Take time at night, on the weekends, be a person outside of school. If all you do is school and you get here and you are grumpy and then you wonder why the kids don't like you, well, it's because it's a correlation.

Ann also emphasizes to new mathematics teachers the importance of flexibility. She shared she provides examples of resources, including different technologies, that new teachers can use to help them become more flexible. She feels part of her role as an experienced teacher is to provide new teachers with the practical advice that they maybe were missing from their teacher preparation program. Ann reported she encourages all new teachers not to grade everything and to use the "circular file (trash can)." New teachers need to know, according to Ann, that it is okay to take a personal day if they need time to regroup. If things are stressful and not going well, Ann shared, new teachers need to "take a day and just regroup and come back refreshed and ready to go." She believes new teachers often become overwhelmed with planning, especially when trying to design activities. Ann explained in one interview that new mathematics teachers need to understand that teaching "can't always be activities. If it is, then you are not learning much, so sometimes you have to get in and do the dirty work." This is where experience comes in according to Ann. While she believes activities are important, she shared you have to have a balance and sometimes new teachers are lacking that balance.

Ann was asked what she would recommend to address the issue of mathematics teacher turnover. Ann shared that a bonus stipend for teaching mathematics, which she receives at her current school of employment, is very helpful because she views it as a

form of appreciation. Ann also shared that she feels new teachers should not be paid as much as they are currently being paid, because schools tend to offer new teachers more to bring them in while neglecting the teachers who have been there for a longer period of time. She explained,

You need to show teachers, the ones that have been here, a little more love and they are not doing that. It does bring them in initially, but if they can't hack it, then they leave and you are right back where you started.

Ann said this may encourage more teachers to remain in the classroom for longer periods of time. In addition to the mathematics stipend, Ann recommends that administrators need to do a better job of supporting teachers. She explained when teachers are constantly looking over their shoulder because the administration will not give them the autonomy they need, it becomes difficult to enjoy your job. Ann acknowledges though, that this pressure from administrators may not be entirely their fault, as often they are feeling pressure from the mandates passed in the legislature. Ann's final recommendation connects to her previous comments regarding content knowledge. Ann feels it is important for all mathematics teachers to get a degree in mathematics. Ann feels strongly that a solid understanding of the mathematics is best supported through obtaining a degree in mathematics, not in education, explaining a strong understanding of the content will help new teachers deal with the issues that arise when teaching mathematics.

#### *Conclusion of Case 2–Ann*

Responses from Ann's interviews, observations, and written narrative identified various conditions and experiences that seem to have contributed to her retention in the classroom. A strong understanding of mathematics; a patient, easy going personality; support from those around her; and student success are all factors and conditions that Ann

identified as contributing to her retention in the mathematics classroom. Ann also feels that her personality contributed to her resiliency. Observations conducted by the researcher and her responses to interviews provided evidence of how Ann is reflective, flexible, and adaptable in her teaching, all of which are components of the professional, social, emotional, and motivational dimensions of teacher resilience. The next case in this study focuses on an experienced middle school teacher, Donna.

### *Case 3—Donna*

Donna has been a teacher for 42 years. During those 42 years, Donna taught at the elementary school level for 23 years and the junior high level for 19 years. Currently, she teaches seventh grade Gifted and Talented (GT) mathematics at a middle school in Central Texas. Donna says she always knew she wanted to be a teacher. Being the oldest of four girls, Donna explained that she has been a teacher her entire life. In addition to being the older sister, Donna recalls an experience in junior high school where she asked by her neighbors to tutor their son who was struggling with his mathematics facts. She could not recall what exactly she did when she worked with the little boy, but she remembers that he began to improve, and so, the passion for teaching was kindled in Donna. Donna majored in elementary education when she entered college with a specialization in Physical Education (PE), though she admits she had no intention of ever teaching PE but she thought it was fun. Her initial certification was a lifetime certification for first through eighth grade.

During Donna's 42-year teaching career, she has taught in five different schools, four of which were at the elementary level and one at the junior high level, which is where she is currently teaching. Despite teaching at different levels, Donna has always

taught mathematics, whether in a self-contained elementary classroom or in a departmentalized setting. Her first teaching assignment was in an open concept sixth grade classroom. At this school, there were six sixth grade sections that all met in a large room. The teacher desks were in the middle of the room, facing out, like the hub of a wheel. Donna enjoyed working at this open concept school because she felt it was exciting and different. After 3 years, Donna was forcibly transferred to another school in the district because they needed additional teachers at that school and Donna was the lowest ranking teacher at the open concept school. Donna shared that she cried the day she was told she had to move to another school. The new school where Donna was transferred was a self-contained sixth grade classroom. She described it this way, “It was awful. Thirty-six sixth graders in one stinky room, it was awful.” While she was at this school, Donna had her first child and stayed home with him for two years. After deciding that being a stay at home mom was not for her, she called her former principal at the open concept school and was hired back. In total, Donna spent 10 years at these three different schools. After 10 years, her husband’s job required them to move to the city where they now live. Donna interviewed at one of the school districts in the city and was hired to teach at one of the elementary schools, where she taught for 13 years. At the end of those 13 years, Donna was teaching fifth grade when one of her best friends approached her to transfer to the middle school across the street. Donna’s initial response to her friend was no. “They are crazy over there.” Donna recalls saying, “Kids are crazy, teachers are crazy.” Donna described being dragged “kicking and screaming” by her friend to the job interview. They both were offered jobs at the middle school, where Donna has now been teaching mathematics for the past 19 years. For 2 years during this time, the school went

through restructuring and Donna was moved to the 5-6th grade center, but eventually found her way back to the position she is in now, which is seventh grade GT mathematics.

Since Donna's initial certification level was in elementary education, she was asked in one interview why she chose to teach mathematics when she was departmentalized and at the seventh-grade level. Donna shared that she had always been good at mathematics. Her mom was a brilliant mathematician who served in the Navy during World War 2. With her as an example, Donna considered switching her major to mathematics in college. A negative experience with a Calculus teacher, however, made her decide to remain in elementary education. She shared she enjoys teaching mathematics because of the logical nature it assumes. Donna explained,

I remember I took philosophy and ethics in college, I just didn't get it, I'm not that kind of a person, it just didn't make sense, it was too fuzzy wuzzy. Now I don't mind lots of different ways to get there, maybe that's what I like, is that there is more than one way to get there, but it's nice to get there.

In all but one of the school changes that Donna made during her career the decision was out of her control. The only time she decided on her own to move to a different school was a result of her good friend's encouragement. Donna loves teaching. She explained,

I still look forward to it every single day. I don't know. Well part of it is, teaching where I do now, every day is different. Tomorrow will be completely different from today. You've got to get up in the morning, pop out of bed and go to school because you don't know what's going to happen, it's very different.

Every day being exciting and different is very important to Donna. She recalled that when she taught at the self-contained classroom at the beginning of her career it was very boring. It was boring to her, she explained, because they did the same thing every day and the kids were the same. Where she currently teaches, she shared, this is not the case.

Donna explained that her current students are “so different” and they need her as much as she needs them. With each day being so different, Donna described that it feels like she gets a fresh start all the time. She summarized teaching the following way,

This is a great job. You stop and then you get to start fresh again. You get a nice break in between and then you start over fresh. How many jobs do you get to stop and just start over fresh again? You can change the way you want to do it, you can look at it differently, and you can learn from your mistakes and start over. How many jobs get to do that?

Part of the excitement of teaching for Donna is working at her current campus. Donna teaches seventh grade GT mathematics and explained that she tries to incorporate a lot of differentiation in her lessons. Most of the PD that Donna seeks out relates to GT students. She developed a system where students can test out of a certain topic and work on a real-world project related to the topic instead. During one observation of her teaching conducted by the researcher, a student was working on one of these alternative projects independently because he got a 100% on the pre-test. The project that Donna had the student working on involved being an exercise trainer developing a workout plan for clients who want to burn a certain number of calories. Donna shared that she enjoys these types of activities for her students because it is exciting to see what the students come up with and the different ways they use to approach the problem. This seems to relate to Donna’s love of challenging her students. She explained, “I want to lift their ceiling, that’s what I call it. My job is to lift your ceiling, so let’s see how high we can go.”

Donna remarked that this is fun for her, challenging her students and seeing what they produce. She also has high expectations for herself and other teachers. She explained,

Satisfactory is a good job, doing what you are supposed to be doing. You are not extraordinary if you are doing what you are supposed to be doing, you are just satisfactory, that is the difference between old school and now. I’ve never had any career goals to be on the leadership team or anything like that, I like my classroom.

With this excitement for teaching and mantra of high expectations, Donna has never really considered leaving teaching. When she stayed home for those few years with her first son, she explained that she was anxious to get back into the classroom. During her career, she earned a master's degree that would have allowed her to move into an administrator position, but she has never sought out a position in administration. She shared,

I am a classroom teacher, that is what I am. I never had any goals or ambitions to move out of the classroom. I could have, I have a master's in elementary supervision. I'm just staying here. So many of the good teachers move up and I can't tell you how many teachers of the year that have all of a sudden gone into administration and they were such good classroom teachers. Some teachers have career goals, I don't.

Donna still feels that she has a lot to offer her students and reported being confident in her teaching ability. She shared, "I'm good at what I do and I get results." When asked what might contribute to her leaving the classroom for retirement, Donna responded,

I have always said I don't want to be the last one to find out. I just don't want to be the last one to know, somebody just needs to come tell me first before, I don't want to be last to know because there are always those people. There is always that person who everybody knows they should have quit, everyone knows it except them. So I've always said please don't let me be the last one to find out. It will be, actually, my husband and I will retire together, he will leave at the end of the calendar year, and I will finish the next school year, I don't think it would be right to quit in the middle of the year, that's too hard on everyone and we are looking at that right now. Plus, I jokingly tell people this that there are some twins in sixth grade, that I've had the whole family and jokingly promised the mom one time that I would stick around to have them, well they are going to be in the 7th grade next year, so I think the handwriting is on the wall. Then I will have had every one [sic] of their children and she just says the nicest things about me and I keep listening.

Donna explained that she wants to remain in the classroom as long as she feels that she is doing the best and serving the students. One fear she reported in an interview was

becoming ineffective and not recognizing it, which seems to connect to her previous statement of not wanting to be the last person to find out that she needs to retire.

Donna knew early in her life that she wanted to become a teacher. She points to her experience as an older sibling and tutoring her neighbor's son as showing her that she could be successful at teaching. In addition to these experiences, Donna identified some conditions that helped enable her retention and the role that resiliency played in her decision to remain in the classroom. The following sections use evidence from interviews with Donna, observations of her teaching, and a written narrative to answer the two research questions for this study.

*Research Question 1: Conditions and Experiences Contributing to Donna's Retention Decision*

During the four interviews with Donna, she identified different conditions and experiences that contributed to her retention in the classroom. Through the analysis of these interviews, the researcher identified three reoccurring conditions and experiences that Donna self-identified as the most important in supporting her decision to remain in the classroom. These conditions and experiences are,

1. A School Environment of Fun, Freedom, Power, and Love
2. Administrative Support
3. Success of Former Students

The first condition identified by Donna was being able to have a school environment balanced with *fun, freedom, power, and love*. Donna frequently brought up the Glasser (1999) metaphor that connects these four areas to the legs of a chair. Donna also described in multiple interviews how administrative support has contributed to her retention. Finally, the third condition that Donna identified as contributing to her

remaining in the classroom is being able to see the success of her former students after they leave her classroom. Donna shared multiple examples of her interactions with former students and how she has been able to see them and their successes outside the classroom. The following sections provide evidence from Donna's interviews for these conditions and experiences that she identified.

*A school environment of fun, freedom, power, and love.* Donna referenced multiple times in different interviews that she is a “fan” of Glasser’s (1999) four basic needs in choice theory. According to Donna, Glasser used a chair metaphor to describe how to be balanced. A chair has four legs and needs those four legs to properly balance and perform its function. In teaching, Donna explains, this means that “you have to have fun, you have to have some freedom, you have to have some power, and you have to have some love.” In Donna’s case, she reported having experienced this throughout most of her career. She points to this as contributing to her remaining in the classroom. Donna explained having fun is important in teaching and she has been able to have fun throughout her career. Donna shared that if you are not having fun while you teach, then you are miserable and if you are miserable, then the people around you are miserable. When Donna was asked what has made teaching fun for her, she explained it is the type of students she is around. According to Donna, the school where she currently teaches has students from all “walks of life.” She explained,

These kids, you have to love these kids and understand these kids and understand poverty and understand what drives them and understand why this one didn’t come to school the first few days because he didn’t have clothes and then when he got clothes, he hadn’t missed a day. And this one over here, who, will be going to Hawaii over Christmas. I mean, we’ve got everything, we’ve got the whole spectrum in this school and in this program and I think it’s really, that’s what keeps it interesting, it’s just so different every single day.

Donna reported that when she was moved early in her career from the open concept classroom to the self-contained classroom it was difficult for her. In several interviews, she explained that the reason this transition was difficult was because it was boring. She shared that her students were “very similar,” and her lessons involved reading the chapter, answering the questions, and then moving on. She described in her interviews how there was no excitement for her in this type of environment. In Donna’s written narrative prompt, she shared how moving to her current district was a turning point in her career because of the “different types” of students she encountered. She described her students as “unique” and that made teaching fun and exciting for her, which she identified as motivating her to continue to teach. Apart from her early experience in the self-contained classroom, Donna described being able to have fun when she was teaching, especially when she is able to challenge and connect with so many different students. Donna reports that she has had freedom to try new things in her classroom. Even though she teaches seventh grade mathematics, a state tested subject, she explained that she has the freedom to try different things in her classroom because she knows that her students are going to pass the state test. This freedom, according to Donna, allows her to differentiate in her classroom, which includes designing projects and activities that challenge kids to “raise their ceilings.” Donna provided examples in her interviews where in her career, she has also had some power to make decisions regarding her teaching. She recalled a story of being part of a fifth-grade team who decided to departmentalize. The teachers came up with this idea, not the principal. When Donna and her colleagues approached the principal with this idea, he agreed and let the teachers departmentalize themselves. Donna was given the power to teach mathematics, which is what she wanted

and felt the most comfortable doing. Having this bit of power allowed Donna to make decisions in her teaching that were right for her and the students. The last part of the Glasser metaphor that Donna described in her interviews is love. According to Donna, it is important for teachers to feel loved and appreciated. Donna shared that her current school does a variety of different things to make the teachers feel appreciated. She shared some examples.

We get jean passes, I have a whole drawer full. But if blue jeans were my thing, I would use them. They will cook breakfast for us sometimes. Every once in a while they will ask us what Sonic© drink we want and they will bring us a Route 44 drink. You got to feel appreciated and loved. Everyone wants to hear that they are doing a good job. Good math teachers are hard to find.

Experiencing love in the classroom, according to Donna, requires that teachers need to know that they are appreciated and valued. Donna reported that she has been fortunate to experience this throughout her career. In addition to having *fun, freedom, power, and love*, Donna identified administrative support as having helped contribute to her longevity in the classroom.

*Administrative support.* According to Donna, administrative support can make all the difference in teaching. In each of the different schools that Donna taught, she could only point to one administrator that was unsupportive. She explained that this particular administrator was at the open concept school where she first taught. Donna described that one day, the principal walked into the large classroom and told Donna's team leader that Donna was being transferred and walked out. He made the team leader break the news to Donna. Donna explained,

To this day, I've just despised that man who didn't have the guts to do it himself, I don't remember his name or anything much about him at all, because he was just not a part of my world and if you don't have your principal being a part of your world. . . . But nowadays, the principals are a part of your world, they probably

weren't back then. Now they are hands on because they know what is exactly going on in the classroom because they do all those walk-throughs and all those visits, where those old-time principals didn't, they left you alone. They don't do that anymore, they know exactly what you are doing because it's their responsibility to get results.

For Donna, this was the only negative experience that she reported with an administrator, but the experience has stuck with her. She shared that some of her colleagues have worked with administrators who have been spiteful and vindictive, to which Donna responded, "Can you imagine working with someone like that? That has to reflect on what you do." In several interviews, Donna spoke highly of her current administrators. According to Donna, they have high expectations but trust the teachers to make decisions regarding the students in their classroom. They also are very supportive with disciplinary measures, something that Donna values deeply. Her administrators seem to provide the freedom and power that Donna described as critical to enjoying teaching. Donna did share that there were days when everything was not going well. Donna described her strategy for dealing with these kinds of days.

We have plenty of close your door and teach days. Just close your door and stay out of the halls. Nobody goes anywhere, teach, go home. Close your door and teach days. Don't get involved. I haven't had any of those this year, but in the past years I have. Just don't get involved. Something is going on and you don't want to be a part of it.

Administrative support appears to be very important to Donna. While there are issues that arise every now and then in her teaching, Donna explained that it is important for teachers to have strategies to manage this. In her experience, Donna has found that sometimes it is best to just close your door and teach. In addition to administrative support, Donna also identified the success of her students as contributing to her retention.

*Former students' success.* Donna describes seeing her former students as one of the most rewarding parts of being a teacher. She referenced, in every interview, seeing her former students as a reason why she prefers living in the same community where she teaches. Donna explained that at this point in her teaching career, she has taught several generations of students from the same family. She previously shared that she made a promise to a parent that she would teach all of her children before she would retire, so she is waiting for these twins to come through her classroom so she can keep her word. Donna shared one story of seeing one of her former students at the grocery store and the impact it had on her.

One of my favorite stories is a little boy, who is probably in college right now, he and I butted heads all the time. He told me that I better watch my back, and that ended up being a police threat, I mean it got big time. Last year, I look up at the HEB line and he is the checker, so I said, ok, we are going to stay in this line because I almost changed lines. I stayed in his line and he recognized me right away and he acted like I was his long lost friend. He is going to [the local community college], I asked him about his math grades and asked how his little brother was. I walked away with my jaw dropped. Did he not remember any of that? I did. I remembered it. That was a good story.

Despite the initial struggles Donna reported with this student, she explained that she had no idea the impact that she had on him. Being able to see him working and going to school seemed to be an important moment for Donna. She shared several additional examples.

One of the local little league girls team won the World Series, so my husband and I went to the banquet. I knew we had one or two students who were on the team and I watched the games and saw the coach. As I am sitting there watching the coach, I realized I knew him from somewhere. I knew him. After it was over, I went over to him and he said, I know who you are, you were my fourth-grade teacher. . . . I had seen him on TV but until I saw him in person, it didn't click. You see, that's fun. A couple of years ago I had the daughter of a young man I taught. He was fun and he would come in and see her and chat. One of the custodians here was one of my students. I went to a local restaurant the other night and one of my students was serving the food. It's so much fun to see them. You wouldn't have that experience unless you live in the city you teach. It annoys

the tar out of me when people teach in one district and live in another. They don't benefit from seeing the kids in the town like I do.

Donna explained that she intentionally chooses to live in the same city where she teaches because of the important role students play in her teaching. It is fun and rewarding, according to Donna, for her to see her students after they have left middle school and gone on to start families, careers, etc. She wrote about these experiences as part of her written narrative prompt on what contributed to her retention in the classroom. These encounters seem to remind Donna about the difference she makes in the lives of her students and continues to be a motivating factor for her decision to remain in the classroom.

#### *Summary—Research Question 1*

During Donna's interviews, she identified several conditions and experiences that have contributed to her retention. Donna shared how important it has been for her to have a sense of *fun, freedom, power, and love* in the classroom. Donna provided in multiple interviews different examples of how these four areas influence her teaching and how administrators have supported her efforts in the classroom. Finally, Donna frequently explained why she chose to live in the neighborhood where she teaches. Living in the same community, according to Donna, allows her to see the successes of her former students, a condition she identified as contributing to her retention. In addition to the experiences and conditions she identified that contribute to her retention, Donna's interviews, observations, and written narrative provide evidence of the role resilience has played in her decision to remain in the classroom.

*Research Question 2–Role of Resiliency in Donna’s Decision to Remain in the Classroom*

The interviews and observations protocols used in this study were based on the teacher resilience framework (Mansfield et al., 2012). Donna’s responses in these interviews provide evidence of the role resilience seems to play in Donna’s retention in the classroom. Observations, conducted by the researcher, of Donna’s teaching and participation in a PLC meeting further provided examples of Donna engaging in many of the characteristics of resilience as described by Mansfield et al.’s framework. When asked if she would describe herself as resilient, Donna responded,

Yes. I wouldn’t still be doing this if I wasn’t, I’d be drowning, I would quit. If you can’t react to all that and if you don’t enjoy it and it doesn’t keep you on your toes and you don’t want to come back tomorrow, then go, either quit teaching or go somewhere else.

According to Donna, she would not be in the classroom had she not been resilient in her career. Donna credits her ability to connect with students and make adjustments based on their needs as building her resiliency. Donna was asked to describe an instance where she had to be resilient in her career. She explained that when she began teaching seventh grade GT mathematics, she knew she would eventually need to take the Grades 4-8 content test because her original license was the Grades 1-8 lifetime certificate. One Monday, the administrators came to her and explained that she had to pass the test by Friday or she would have to be transferred to a different school. Donna shared that instead of panicking, she developed a plan to pass the test. She explained,

So, I stayed home on Tuesday and didn’t even get out of my bathrobe because somebody had the book and I just took the book. Then I went to school on Wednesday because I felt like I needed to and Sylvan just happened to have the math test offered on Thursday, so I stayed home on Thursday, took the math test and then came back to school on Friday and waited for the results and I was going to be transferred on Monday if I failed. I passed it, but I was nervous because I didn’t want to be transferred.

When confronted with this issue, Donna shared she did not panic or overact, but problem solved instead. These are traits of resiliency. Donna also emphasized the importance of teachers being able to make adjustments for the unexpected in teaching. Donna shared that she typically assigns homework a couple of times during the week. During an observation of Donna teaching conducted by the researcher, she did not assign homework when normally she would. When asked in a follow-up interview why she made this adjustment, Donna shared, “We are in the middle of the fair, so the kids are yawning and sleepy and they have their ride bracelets, so I’m not giving any homework this week, but next week they will have homework four nights.” Instead of being so rigidly attached to her plans, Donna made an adjustment to her lessons to meet the needs of her students. She shared that it is critical for teachers to be open to adjusting their lessons based on what is actually happening in their classroom, not what they originally planned for. In addition, responses from Donna’s interviews and field notes from the researcher’s observations of her teaching provided evidence of the role the four dimensions of resilience (professional, social, emotional, and motivational) play in her teaching.

*Profession-related characteristics of resilience.* There are five characteristics of the profession dimension of resilience. While Donna provided some evidence of engaging in all five characteristics, data analysis of Donna’s interviews and observations resulted in the emergence of two main characteristics in her teaching: using effective teaching skills and reflection. Donna reports that she uses effective teaching skills. Observations revealed that Donna arranges her students in strategically selected groups to promote collaboration. One lesson that was observed by the researcher illustrated Donna’s approach to differentiating her instruction, as groups of students were working

on different tasks based on their ability level. One student, who tested out of this section's topic, was working on a real-world application project that allowed him to apply the material he already mastered in a different way. In the follow-up interviews that were conducted after this observation, Donna shared that she believes differentiation and collaboration are examples of effective teaching skills, which is why she incorporates these practices into her lessons. In addition to Donna's reporting of using effective teaching skills, she shared the important role that reflection plays in her teaching. She explained,

You reflect constantly. I don't keep a lot of plans from year to year, but I can't remember the last time I looked back at the lesson plan from last year or the year before because every year is different, every group is different and every kid is different so I recreate the lesson plans every year. That would probably be the biggest reflection piece, is what worked, what do I need to do better, what do I need to change. Just in the last year or two I started to keep a notebook of activity ideas, which is very helpful.

Reflecting appears to allow Donna to make the necessary adjustments to her lessons to ensure it meets the needs of her current students. Because of the differences in students, Donna explains that reflection is important to ensure she can properly differentiate her instruction. Donna described differentiation as being exciting for her. She explained,

I have heard of school districts where they have notebooks and you open your book and this is what you do Day 1, Day 2, and here is your test for Day 4. I can't imagine teaching that way. That's crazy. It would be boring and dull. I know of districts in our area that have that.

Donna explained that it would be very difficult for her to teach in this type of environment, as it goes against her belief that teaching needs to have a balance of *fun, freedom, power, and love*. In addition to the profession-related characteristics of resilience, Donna shared experiences reflecting the social dimension as well.

*Social-related characteristics of resilience.* Data analysis of the evidence from Donna's interviews and observations revealed the emergence of two social-related characteristics of resilience, building and maintaining relationships and solving problems. Donna described the importance of building and maintaining relationships with students. She explained,

I think each child, you need to get to know each child, because I think they can be handled a little bit differently, you can't one size fits all and many years ago you did. You just treated them all like they were the same and they all were the same. I suppose there are districts that still have everyone the same. Around here, I think that's why I am still here, because I have so much fun because it's so different.

It is critical for teachers, according to Donna, to build relationships with students so that they can understand where they are coming from. Donna shared a second example of building relationships with students.

You've got, the little one who didn't come to school the first week because he didn't have clothes, smart smart guy, lives in a crack house and yet he is hanging in there. So I give him a little more slack than I do the kid who lives in a different part of town and always does his homework. I give this one a little more under the table support. They are all different and you just have to get to know them. Some have to be challenged and some of them you can't challenge them but you can handle it a different way. Some of them need to be snapped at when they mess up and some of them the claws come out when you snap at them so you have do it a different way, with humor. You just have to get to know your kids. They will do anything for you if they know you have their back.

Without building strong relationships with her students, Donna explained, she would be unaware of many of their circumstances and the kids may be less willing to connect with her. Donna shared a third example of the importance of building and supporting relationships.

Today one of our, it takes a village child, had his backpack in just a mess and everything was just crammed in there. I had him back at the table with me and we were working on things and I realized his backpack was like that, he said I got to get a new backpack, and he said to me, can you get a new backpack for me? And I said, I sure can, I knew where they were. . . So he came in at lunch and he repacked his backpack and reorganized everything and we threw the old one away

and he started stuffing papers in there and I said, “no, no, no. I’m not giving you that backpack to stuff. You take them out and put in your folders. You have all your folders and if there is stuff in there that you don’t use,” like he had two huge binders that were empty and I said, “let’s put your name on it and you can put it in my closet and you can have them anytime you need them.”

This third example of building and supporting relationships provided by Donna also connects to a second characteristic of the social dimension of resiliency, being a problem solver. This example highlights how Donna saw a problem with a student and solved it in an appropriate way. She shared that it was important for her not to do everything for this student. She wanted him to help her and together, make a plan so that the issue did not happen again. When asked to describe her approach to problem solving in teaching, Donna responded, “You just do what you got to do. You can’t not, you can’t ignore it, you have to address it, whether it is discipline, weather change, field trip, fire alarm. You just deal with it.” Every teacher is faced with different problems daily. Donna explained that it makes a difference how you choose to react and address the issue. Donna shared that she knows there are going to be problems during the day and instead of dwelling on them or letting them consume her, she tackles them head on to find a solution. Emotional-related dimensions of resilience were also present in Donna’s interview responses and observation field notes.

*Emotional-related characteristics of resilience.* Not taking things personally, caring for her own wellbeing, and coping with the demands of teaching are three of the seven emotional characteristics of resilience that emerged from evidence in Donna’s interviews. Donna described how she has learned to not take things that happen in her teaching personally. As a result, she shared that she has come to expect mistakes to

happen in her teaching. When asked how she manages mistakes or failure in her teaching, Donna responded,

There are lessons that bomb and you just admit it and go, well that was fun. Tomorrow we are going to try this again. Just admit it and try another way to do it. Or get, somebody in that room who understands it, get them to come up and explain it.

When things go wrong in the classroom, Donna emphasized in her interviews that she does not take them personally. Sometimes, Donna explained, the issues are out of her control.

And it's not always your lesson and it's not always you. It could be the barometric pressure. I'm a firm believer that when the barometric pressure drops, the kids go nutty. You can tell when the weather is changing. So sometimes it's that.

Donna's responses concerning failures in her teaching seems to connect to her ability to problem solve as well, as she explained having a student explain the concept if she was struggling getting the point across. Donna did share that teaching takes an emotional toll on her. She explained that she makes a concerted effort to try and balance her personal and professional lives. This is a characteristic of the emotional dimension of resilience.

She shared,

This is hard, intense packed into the day. You manage 100-125 kids or more and 30 minutes for lunch, which is a working lunch, I always have kids in here working. I don't think the general public understands the emotional intensity of teaching. It's not easy.

Donna described how she tries to reserve her weekends for her family by making an extra effort to have all her lesson plans completed for the following week before she heads home for the weekend. With all the extra responsibilities teachers are asked to take on, Donna was asked how she manages them. She responded,

Like I said, one thing goes on your plate, another has to come off. Last year, or the year before, was the first year of our online curriculum, so that was interesting

getting used to, but you just go through the training and you just muddle through it and go with the flow. Things change, teachers are flexible.

A major part of dealing with the workload of teaching, Donna explained, is to expect and prepare for it. Donna shared in multiple interviews that she does not dwell or focus on these extra roadblocks that are thrown at her. She emphasized the importance of taking these issues in stride. That's why summers are so important for Donna. She explained that she needs summers off to refresh and come back ready for a new year. She shared that summer break, "is refreshing and it's renewing and I can't imagine other jobs where you only get two weeks of vacation." Along with the professional, social, and emotional characteristics that Donna referenced in interviews, she also shared several responses related to the motivational dimension of resilience.

*Motivational-related characteristics of resilience.* Two of the seven characteristics of the motivational dimension of teacher resilience emerged from the analysis of Donna's interview responses. These two characteristics are: setting goals and maintaining enthusiasm. Donna described herself as a goal-setter. Donna's current goals relate to differentiation and the progress measure she is evaluated on. Donna explained that it is not acceptable for students at her school to just pass the state and district assessment. Her students are required to demonstrate that they made more than a year's growth in her class. A year's growth is not acceptable, according to Donna, because that is what is expected of students. Donna must ensure that her students grow beyond that year. Differentiation is key, Donna shared, because her students are all at different levels, and a year's growth will look different for each of them. As a result, Donna explained that she must tailor her instruction to meet each individual student's needs. She also involves the students in this goal setting. Donna asks her students to set a personal goal

for their assessments. She provides them with their state assessment score from the previous year to help students with setting their goals. She explained,

I gave them their sixth grade STAAR score, which surprised some of them because they thought they made higher and I said not in math, maybe in reading. And they set a goal for seventh grade STAAR, and I wouldn't let them set a goal lower than what they made last year and I told them to think about it and I am going to check it tomorrow, so I need to do that and make sure they've set their goal. Of course they will not know if they reached their goal until July of next year, but at least they have a goal to reach for. So they have goals and mine is 75% progress measure.

Donna explained that as students complete benchmarks throughout the year, they graph their results and they compare their progress to their goal. She said this helps her to evaluate the progress towards her goal as well.

Another characteristic of the motivational dimension of resiliency that can be found in Donna's interview responses is her enthusiasm for teaching. Donna repeatedly shared in interviews how much she loves teaching. She points to this enjoyment as contributing to her retention. This enjoyment and enthusiasm, according to Donna, is supported by her interactions with her students. She remarked,

And I tell people I keep going because I still pop out of bed in the morning and want to come to school and when I don't want to do that, I won't. They [the students] need me, the way I look at it is they need me, and I need them, so it's a win-win for both of us. That keeps me going.

Donna seems to suggest that once her enthusiasm diminishes, she will leave the classroom. Her enthusiasm for teaching, she explained, is driven by her students. This connects to other interview responses Donna provided where she shared how the successes of her former students drive her retention. Donna shared numerous examples of seeing students who have graduated around town and the excitement she feels when she learns about their successes. She explained how this excitement continues to motivate her to remain in the classroom. Having lived in the district for the past 31 years, Donna

shared, has allowed her to see her students succeed, which would not have been possible if she moved around a lot or lived outside the district.

#### *Summary of Evidence for Research Question 2*

Donna revealed through many different interview responses how excited she is to be a teacher. She attributes this to her belief that each day in teaching is different and as a result, this helps maintain her motivation to continue teaching. Donna admitted that without being resilient, she would not still be in the classroom teaching. A key part of being resilient, according to Donna, is to not take things that happen personally and be flexible. In addition, Donna repeatedly emphasized that living in the community where she teaches is very important to her and helps her to maintain her motivation and enthusiasm for teaching. Apart from the experiences, conditions, and characteristics of resilience that Donna identified, several additional themes emerged from the data analysis related to teacher retention. These themes are,

1. Finding the Right Fit in Teaching for Donna
2. The Role That Experience Plays in Donna's Teaching
  - a. Donna's Experiences with State Testing
3. Donna's Role as an Experienced Mathematics Teacher

*Finding the right fit in teaching for Donna.* In many of her interview responses, Donna emphasized the importance of finding her fit in teaching. This includes both the school, grade level, and subject area. When Donna first started teaching as an elementary teacher, she taught every subject. While mathematics was her favorite subject, she did not have the opportunity to focus on it solely until her team decided to departmentalize and

she was given mathematics. This, according to Donna, fit with her strengths and contributed to her decision to remain in the classroom. While at first admitting being hesitant to teach at the middle school, Donna explained that she is glad she made the switch. This grade level change seems to have helped her maintain her excitement for teaching. She shared,

Again, you have to enjoy what you do and you have to enjoy the age group though. You got to find the age group you enjoy and middle school is not for everybody. Some people cannot stand the chaos in the hall. They want to go in straight lines like elementary school. Some elementary teachers and I was one of them, thought that middle school teachers were crazy, teachers are crazy, kids are crazy, and I was dragged here. But it's wonderful. You just got to find the right subject. We self-contained for a long time and then we departmentalized and that changed my whole life. You have to, find the right subject, grade level, building, students, leadership team and sometimes you just get lucky. And if you don't, you need to try somewhere else.

Finding the right fit can be a turning point in a teacher's career. When Donna was asked to share a specific point in her career when teaching "clicked" for her, she responded that it happened when her elementary team decided to departmentalize. She explained,

Probably not until you stumble into the age group you were most comfortable teaching, it may or may not be what you thought it was. I was upper elementary and probably when we switched from self-contained to departmentalized, that's fifth grade and our principal let us do it. That is probably when it became something that I really thought, oh this is so cool, this isn't just a job, it's a great job. There were three of us, and I grabbed the math section. It was terrific, great. We could do a much better job when you weren't so spread thin.

Donna shared that teachers need to understand that it is okay for them to switch schools in order to find the right fit. It may mean taking a big leap of faith or challenging a previously held assumption, like she did when she switched to middle school, but she shared it will be worth it if the teacher finds their perfect fit. Along with finding her right fit, learning from experience is a second theme that emerged from Donna's interviews.

*The role that experience plays in Donna's teaching.* During the four interviews, Donna attributed many aspects of her teaching philosophy and actions to experience. Donna explained that her undergraduate teacher preparation was not the strongest, but she did not let that deter her because "she did not know any better." Donna explained, "When you are new, and you don't have a lot of experience, you are not reflecting, you are just keeping your nose up. And you change grade levels so much. You are not guaranteed a grade level." Teaching is challenging at any experience level, but when you are new, according to Donna, it takes longer to get that repeated experience needed to improve. Despite having 41 years of teaching experience, Donna believes that teaching is more difficult now than when she first started. When asked why, she responded,

Definitely. The responsibilities are huge, the testing responsibilities. You are raising children, you are a counselor, a mother, parent, discipline, and you give them clothes, your wisdom, love, it's just not go to school and they go home. You have to get to know each one of them because they are needy in some way but then, we are needy too. I like to say they need me, but I need them.

According to Donna, students today require a strong relationship with their teacher because their situations are very different from when she first started teaching. In the beginning of her career, creating strong relationships with students was not that important. Donna explained,

I don't remember the interpersonal relationship, or the need to feel that at the beginning like you do now and that might have been because I was younger and less experienced and didn't realize the value of interpersonal relationships. And you have to understand the culture you teach.

Teaching today, Donna shared, is very different compared to when she started. She described many of the changes she has witnessed during her career. According to Donna, the curriculum, standards, textbooks, and technology all are so different from her first

years in the classroom. During her experience, Donna identified one change that has had a significant impact on her teaching: testing.

*Donna's experiences with state testing.* Donna described five different state testing initiatives that she has seen during her time as a teacher. These include: the Texas Assessment of Basic Skills (TABS), the Texas Assessment of Minimum Skills (TEAMS), the Texas Assessment of Academic Skills (TAAS), the Texas Assessment of Knowledge and Skills (TAKS), and the State of Texas Assessments of Academic Readiness (STAAR). Before Donna taught GT students, she was at a school where they were pressured to “literally just teach them to pass the test.” Now that she has moved to the GT section of her school, according to Donna, the passing is no longer an issue. Instead, she explained that she is being evaluated on a progress measure that assess whether the students made more than a full year’s improvement in mathematics. The timing of the testing is frustrating to Donna as well. The teachers and students spend all year preparing for the test they take in the spring, but they do not know how the students did until July. Donna shared,

Testing has gone from the fall diagnostic testing to the late spring end of the year testing, which I think is, it drives me crazy. We work so hard to get these kids to do well on that STAAR. We do that in early May and they don’t get their scores until July and we never get to see them again to celebrate their successes. I think that if you are going to put that kind of stress and pressure on people, let us at least celebrate with the kids when they get their scores. They need to come back by the end of the year. Maybe, I don’t know, I think, the most benefit of testing I found was the fall diagnostic. I’m not a big fan of May testing. I think it’s so sad we don’t get to celebrate with the successes. They get a letter in the mail at home and they don’t even know what that means. It could be so much more satisfying if we had a chance to visit with them.

Donna expressed frustration on behalf of her students. As she explained, the students work so hard all year but there is no celebration for them. Donna mentioned earlier that

she tries to address this issue by having the students set personal goals based on their scores from sixth grade. As they complete diagnostics through the year, they can at least match their progress with their goals. It is important to note when Donna shared her frustration with the testing and increased pressure, her main focus in her interview responses was on the students. As a result of her teaching experience, Donna shared that she plays a role as an experienced secondary mathematics teacher in supporting new mathematics teachers in the classroom.

*Donna's role as an experienced secondary mathematics teacher.* In many of her interviews, Donna referenced working with student teachers from the university in her community. Donna takes her role as a mentor very seriously and tries to be as honest and supportive as she can with her student teachers. Donna believes that “teaching is not for everybody.” In a couple of cases, Donna shared she had student teachers who fell into this category. She described working with one student teacher who had the mathematics down but just not the teaching. After working with this student for most of the year, Donna shared with him that, “I just don’t see you in the classroom.” She explained that she felt he was better suited for a different career and needed to be honest with him. She shared that this student felt the same way and is now working in a local business instead. Donna’s expertise is often sought out when issues with student teachers come up. She described one student teacher who had been dismissed from an experience at a different school. Donna was willing to let her transfer to her classroom and worked with this student teacher to improve. She explained,

I got her in the fall and she graduated and she is teaching in the area. She’s still there. She is a fine teacher, she just needed a little more, she just didn’t fit their mold. I’ve had teachers who I knew weren’t going to last and sure enough, she let

me know after 3 years, and she kept being let go from each district and finally decided she needed to be an actuary. She runs numbers in front of a computer. I knew she was not going to hang around too long. But 95% of the student teachers the university sends are amazing and I get them for a whole year. A whole year, so I can see them from beginning to end and at the end of the year, 95% of them are ready to be a first-year teacher and well ahead of an average first year teacher.

As an experienced teacher, Donna explained that she knows what these student teachers are going through and wants to provide them with the best, most realistic experience they can have. She shared, “I’m very sensitive to the fact they [student teachers] pay a lot of money to do this for free, so I respect their time and I want to make the best of their tuition money.” Working with the student teachers seems to have a positive impact on her as well. Several former student teachers have contacted her and shared exciting things that have happened to them in the classroom. She shared one example.

I have gotten emails from my intern two years ago at the beginning of her spring, of her first year, she told me she was the first-year teacher of the year for the district and she said she couldn’t have done it without me. I thought, no, you were fabulous when you arrived, I just made it easier for you. I just thought, wow, that was cool.

These types of stories appear to help drive Donna’s motivation to continue teaching. She not only has a lot to offer her middle school students, but her experience and expertise provide support for future teachers as well.

Donna did provide some recommendations to address mathematics teacher turnover. Donna explained that first of all, teachers have to really like teaching. It’s too hard of a profession, according to Donna, to not enjoy and keep at it. She emphasized that teachers need to feel welcomed and wanted. Being appreciated by those around you will go a long way in keeping a teacher in the classroom. Donna recommends that new teachers,

Find a co-worker, I guess that would be a math person, that you get along with and are comfortable with that you can pour your heart out to and get some good

advice. They need it for classroom management, how to present a skill they are not getting, you have to be able to explain it five different ways because that fifth time, everyone will get it. Don't be afraid to ask. Beg, borrow, and steal anything you can get. Make copies of everything and don't be afraid to ask because that person over there is doing their own thing and they may not think to tell you so you need to ask. And make sure you know there are other ways to do it. Just because this is the way I do it doesn't mean it's going to work for her.

#### *Conclusion of Case 3–Donna*

Donna has been a teacher for 42 years. Her responses to the interviews and her written narrative provided evidence of various conditions and experiences that have contributed to her retention in the classroom. Donna repeatedly shared that she loves what she does because it is exciting and rewarding. Living in the same community where she teaches allows her to see the impact she has had on students, which she identified as contributing to her desire to remain in the classroom. In addition, Donna described in her interviews administrators in her career that have allowed her to have the *fun, freedom, power* and *love* in the classroom. Donna has also found the right fit for her teaching style, middle school mathematics, which fosters her enjoyment of teaching. Donna wrote in her narrative prompt how finding her fit, the school where she currently is employed, was a turning point in her career because of the excitement it brings her. While Donna shared several ups and downs in her career, she credits resiliency as helping her manage the emotional burden of teaching. The final case in this study focuses on a second experienced middle school teacher, Ben.

#### *Case 4–Ben*

Ben is in his 19th year of teaching. These 19 years have been in a variety of roles, which include an elementary teacher, high school teacher, technology specialist, administrator, and middle school teacher. Ben began his undergraduate program

intending to major in pre-medical sciences specializing in pediatrics. After the first semester of pre-med classes, Ben decided medical school was not going to happen for him and switched his major to church music, citing his passion for that area and working with kids. Ben was advised during his collegiate career to major in something instead of church music so that he would have something to fall back on in case the church music track did not work out for him. He switched his major to all-level music education so that he could pursue both of his passions: music and working with children. Ben added one more semester to his college tenure so that he could also earn his general elementary education certificate, which allowed him to become K-8 certified in all areas. Later in his career, Ben earned a certification for Grade 4-8 mathematics, Grade 4-8 master mathematics teacher, Grade 7-12 mathematics, and information processing technologies Level 1 certification. When asked why he decided to focus on teaching mathematics after initially being certified to teach all areas of K-8, Ben responded,

Because it is black and white. In a middle school setting, which is where I love, I love middle schoolers, but I am not about to do something that is not black and white. There are no other subjects in middle school where there is a right answer and there is a wrong answer. And I can teach you how to find the right answer and we can figure out why you got the wrong answer. That's what I need for the middle school minds that I love.

Ben's first teaching job was in a self-contained fourth grade classroom, where he taught for 3 years. Ben was drawn to this position because it was self-contained, which allowed him to be with his students all day long. Building strong student relationships is very important to Ben. During these 3 years, Ben began working on his master's degree in technology part time, but after the third year, decided it would be more beneficial to work on it full time, so he was hired in an assistantship role at the university where he was working on his masters. After completing his degree, Ben took a job at a high school

as a computer application and web design teacher. Ben was at this high school for 1 year, but the job became too overwhelming as he was also expected to be the school's network administrator and provide technology training for the other teachers. His next job took him to two elementary school campuses, where he served as the technology specialist for 1 year before taking a job at the local university working on the electronic library for 3 years. After working at the university, Ben was hired to teach fifth and sixth grade mathematics at a local private school, where he remained for 7 years. During that time, he also served as assistant principal and taught several upper level mathematics courses, including Algebra 1 and Geometry. After working at this private school, Ben took a seventh grade mathematics position at a local junior high school where he taught for a year. After that year, Ben was unemployed for a year before being hired to teach eighth grade mathematics and Algebra 1 at another local middle school. Ben was at this school for 5 years before leaving for the current middle school where he teaches and is in his first year teaching Pre-Algebra and Algebra 1.

Ben has had a wide range of experiences at a variety of educational institutions. His decision to move schools or jobs has been influenced by various personal factors. Some of these moves have been financially motivated. The decision to earn a master's degree allowed Ben to apply for more administrative roles. He shared that his decision to work at the university digital library for 3 years was "better for our family financially." Ben referenced how his faith also played a role in several of his job and school changes. When working at the private middle school, Ben shared how he felt called to resign his teaching position at the end of the school year. The principal at that school ended up having some medical issues and they asked Ben to serve as the assistant principal, which

he did for 2 years. After serving as the assistant principal for 2 years, Ben again felt called to leave this school to take a different mathematics job at a local public junior high school. In several other job changes, Ben shared that frustrations with the administration and a loss of autonomy were reasons he chose to find different positions. Ben shared that in only one instance of his job changes was the decision made for him and it was related to the administration. He had been teaching at this school for one year and shared that things were going well. One day he was called into the office and was told that they were not going to renew his contract. When he asked the administrators why they were not renewing his contract, he was never given a reason. He was only told he could resign or they would non-renew his contract. Ben chose to resign but finished out the year. Despite all these changes in his career, one thing that has remained constant for Ben in his teaching is his passion and dedication to his students.

When asked why he remained in teaching after all these changes, Ben responded, Because I love what I do and I love the ability to see students grow and make it through eighth grade. I'm not in this for the curriculum, I'm in this for the students. Math just happens to be the easiest way for me to do that, so it's all about seeing students who are not confident in themselves or math walking out of my room the complete opposite.

For Ben, the content is not as important as the students. It seems that teaching mathematics is just a way for him to work with students and make a difference in their lives. Even outside of the classroom, Ben values working with students, as he leads a high school youth group at his church. Students are the reason why Ben shared he continues to teach. When asked what students do to contribute to his remaining in the classroom, Ben explained, "Show up! Really them being here. It's them being here and me doing whatever I can to work with them, love and care for them and build them up."

This has not changed during Ben's career. Ben described how his care and concern for

his students has always been at the center of his teaching philosophy. Ben was asked to describe how he has remained the same during his teaching career. He responded,

It's completely student focused, that has not changed one bit. If a student has a need, I will do whatever I can to fill that need. If that's peanut butter crackers because they did not eat breakfast, if that is having a discussion about deodorant you know, any of those things, it's the care level of the student that has not changed and will not change because when that has to change, I have to go. That would be the only thing, because if you think back to 1994 when I first started, the advent of technology and the way technology has changed, you cannot be the same teacher today and be successful with the students we have because they have changed more than anything else. It's all about meeting the needs of the students however I can.

Ben often expressed frustration when he has encountered teachers who he described as not student focused. When asked about the most stressful part about teaching mathematics, Ben answered,

Probably the most stressful is I guess, [sic] one of the most stressful is trying to teach a kid who decided a long time ago that he was not good at math and was never going to be good at math. That draws a thin line between challenge and stressful. The stressful part is because at some point some teacher told him that. He did not learn that on his own. That makes me stressed out that he actually had someone in his life who made him think that and did not do anything about. I don't care if he is bad at math, you never let him know that. That is probably the most stressful because it's all the weight on the shoulders of that child who is 12 or 13 year old who already decided for the rest of his life that he is not going to be good at something. That is not ok with me.

Ben's desire for his students to succeed seems to be driven by his care for them as individuals. According to Ben, it is upsetting to him when he encounters students who have negative experiences towards school and mathematics because of a past experience with a teacher. Ben described how he works to correct this issue in his classroom because he wants to make students feel valued and cared for. When asked how he does this, Ben explained,

I focus more on them and I make sure to give them areas to be successful so that they are successful so that they see success and they see small steps of success and then bigger steps and I focus on that success. Constantly saying, "dude did

you see that? You just did that by yourself!” Girls too, not just guys. “You just did that. Do another one and show me.” It’s just, they have got to leave my classroom knowing they can be successful in whatever area of math they want to.

Ben shared that he wants his students to experience success. According to Ben, this requires him to remain up-to-date on the latest teaching methods and technology.

One way that Ben shared he meets the needs of his students is by participating in professional development opportunities. Ben explained that he tries to involve himself in professional development as much or as often as possible. Ben strategically looks for professional development opportunities that will provide him something that he can use in his classroom and best meet the needs of his students. He recently attended a summer professional development academy at a local university that targeted algebraic thinking in the middle grades. Technology also plays an important role in Ben’s teaching and professional development selections. Ben previously shared how much technology has changed during his career and that he owes it to his students to meet these changes by including technology in his lessons. It is important, he explained, to remain open to learning new ways to use technology to reach all of his students. He described, “typically, a lot of us come into the profession thinking things are going to be like it was for us and what we have to remember, that was years ago.” In the last 5 years, Ben shared he began flipping his classroom. Ben described his flipped classroom as one where students watch videos that he pre-records over different concepts. When the students come to class, they then are able to ask questions, work on practice problems, and engage in projects. When asked why he made this change, Ben explained,

I knew I didn’t like the way things were going because I never had enough time, nobody had enough time and so, our district went one to one with iPads and so because that was available and all the kids, no one had an excuse not to be able to watch a video at home, I just decided to jump in cold turkey and have never looked back.

It seems Ben flipped his classroom because he felt it would help address a problem that his students were having. With the breadth of the curriculum that he was expected to teach, Ben felt he never had enough time to get through what he needed to in the classroom. Since his school district made the decision to provide iPads to all the students and teachers, Ben adapted his teaching to a flipped classroom, to meet the needs of the students. Ben described that he is a believer in the flipped classroom philosophy, commenting that he will never go back to teaching the way he previously did.

Ben explained that he is passionate about teaching because he enjoys building relationships with his students and caring for them as individuals. If he were ever to lose that student focus, he shared that he would leave the teaching profession. When asked what else might contribute to his decision to leave the classroom, Ben again referenced the role that his faith plays in his teaching. Ben responded that if he felt called or moved to do something else, he would, so he prayerfully considers these types of decisions. In addition, Ben shared that a loss of autonomy would lead him to consider another career. He explained,

When I am not given the freedom to teach the way I want to because it works then it will be, it might be an easier decision to make. For instance, I know that there are a lot of campuses now where everything is scripted, where you are given what to say, when to say, and how to say it, everybody has to be doing the same problem at the same time. I couldn't live under that. It wouldn't be a difficult decision in that case.

According to Ben, losing autonomy would mean he could not teach the way he feels is best. He shared that he would rather seek out a different profession than comprise his dedication to his students.

Ben's teaching narrative and background provided examples of the different experiences that influenced the way he approaches teaching and his relationship with

students. The following sections use evidence from interviews with Ben and his written narrative to examine the conditions and experiences he identified as contributing to his retention. Additionally, evidence from observations conducted by the researcher and Ben's interview responses will be used to identify the role that resilience plays in Ben's retention decision.

*Research Question 1: Conditions and Experiences Contributing to Ben's Retention Decision*

During the four interviews with Ben, he was asked to identify different conditions and experiences that contributed to his retention. Ben self-identified three reoccurring conditions and experiences critical to his retention in the classroom. These conditions and experiences are,

1. Success of Former Students
2. Faith
3. Administrative Support

The first condition and experience identified by Ben was seeing the success of his students after graduating. Ben provided multiple examples in each interview of different ways his former students have communicated with him and their successes. Ben also shared how his faith has contributed to his retention in the classroom, providing multiple examples of how he has relied on his faith for guidance during difficult times in his teaching. Finally, Ben referenced in many of his interview responses how administrative support is important for him to remain in the classroom. The next sections use evidence from Ben's interview response to address the first research question of this study.

*Student success after graduation.* Ben revealed in his interview responses that the success of his students after they graduate helps him to continue teaching. When asked to identify a rewarding experience from his teaching, Ben shared,

The most rewarding things are, for example, an email I got from a former student, who is in college, explaining that he used a song that I taught him to help pass a physics test, it's things like that. It's the success of the students who come out of my classroom into whatever it is that they are doing. Whether it is high school or college or life and being successful young people and for whatever success means to them.

These success stories, according to Ben, help him to see that his efforts with his students are making a difference. Remembering student successes seems to help Ben remain in the classroom because it allows him to navigate the days where things did not go as planned.

These student success stories go into what Ben described as his “rainy-day fund.” He explained,

I have a rainy day fund. I don't remember, I think it was the children's minister at the church where my kids, where we were when my kids were born. And she has this concept of a rainy day file, and a rainy day file you put all those nice notes and pictures students drew or the Christmas cards and I put those in a file and I go back and read them. It's those things. The times that I get an email from a freshman or sophomore in college that says hey, I was taking a test in engineering class and I sang the song you taught us about mean, median, and mode and it helped me pass that test. I print those and put those in the file. If it is a voicemail, it stays on my phone, I never delete it. It's those things because it's all about did I make a difference in the kid's life and if I did, then I am still capable of making a difference in a kid's life. She called it a rainy day file because everything is gloomy, so the file allows you to look back at the positives.

Keeping these reminders in his rainy-day fund, Ben explained, helps him to remember what he loves about teaching. His main concern, he reiterated throughout his interview responses, in the classroom is his students and their success. By being able to focus on these successes, Ben shared he can make it through those difficult days in teaching because it reminds him that he does make a difference, motivating him to continue in the classroom. Ben often referenced in his interviews the demands that teaching places on

him and the stress that accompanies many of the extra duties that teachers are expected to complete during the school day. Ben explained that these extra duties can often be overwhelming. Focusing on the student success appears to help Ben to not only make it through the stresses and demands of teaching, but it drives his desire to remain in the classroom. Ben concluded,

It's all about student success. The cards and the letters at the end of the year and the personal messages from students that you can tell weren't their parents telling them to write but were really heartfelt things from them, those are what makes it meaningful.

Knowing that he is making a difference in the lives of his students because of their successes is one condition and experience that Ben identified as contributing to his retention. In addition to student success, Ben shared how his faith has contributed to his retention in the classroom.

*Faith.* Ben described in his interviews how his faith plays a central role in his personal and professional life. When asked to identify conditions that have contributed to his retention in the classroom, Ben answered,

I have not felt led by the Holy Spirit to do anything else. There are times when things got rough in the past where I prayed and prayed about doing something different and never felt that I was supposed to do that. And that's where the, for me, that is where this whole decision process lands.

Through this response, Ben appears to reveal that he views teaching as a calling. Ben explained that he feels called to remain in the classroom to continue making a difference in the lives of his students. Though he admitted he has considered leaving the profession entirely, Ben shared how through prayer, he has not been led to do anything else. His faith seems to have helped contribute to his retention because it allows him to navigate the *ups and downs* of the profession. He explained,

And I should say this because it does matter, my faith is tremendous in that I know God is in control and there is nothing that I can or will do that will change it and I can rely on that all the time and if things don't go my way, I can turn to Jesus and if things are going my way, I can still turn to Jesus. Because of that I can have the attitude that these students are my focus from 7:30-4:15 and sometimes afterwards, but for the most part that is my focus and outside of my family and my faith, that is the most important thing because it is my job.

According to Ben, understanding that God has a plan for him is comforting and allows him to continue teaching. Because God is in control, Ben explained, he can focus on his students and show them the care that he feels they deserve. Ben remarked that his faith has helped him reevaluate his priorities in teaching. He shared,

I am less controlling of everything, the environment, the students, the student behavior. I realized that there are a lot of things out of my control I can just deal with and it's not even a control thing anymore. One of the big shifts over the last 5 years is with my first intern, I wanted to, I wanted her to do everything my way and that doesn't work. So, it took about a year and half to realize that it doesn't have to look like I want it to look. It doesn't have to smell like I want it to smell or it doesn't have to feel like I want it to feel. If the same thing is happening and the learning is happening, who cares if it's not what I would have done.

Over his career, Ben shared how he has learned to accept that not everything is in his control. When he first started teaching, Ben described that he thought he could control everything and as a result, when things did not go as planned, he took it personally. Through his faith, he shared, he has come to realize that he is not in control and that has been freeing for him in the classroom and in life. This shift appears to have allowed him to maintain his focus on his students and their successes, which were previously, identified factors that contribute to his retention in the classroom. Along with student success and faith, Ben identified administrative support as contributing to his decision to remain in the classroom.

*Administrative support.* Ben defined administrative support as administrators allowing him to teach the way that he feels is best for the students. For the most part in his career, Ben shared that he has had this freedom. Ben identified this freedom and autonomy as contributing to his retention. When asked what administrators do to contribute to his longevity, Ben answered,

Give me the freedom to be me. When I am, when that freedom is taken away and I have to conform to something else that I do not feel philosophically bought into, I won't continue into the classroom. Up until this point, that's one of the reasons I left my previous school. That freedom was being taken away. When I came to this campus that freedom to be me, even though it is in construct of stations, I still flip, I still do it the way that is comfortable for me in this setting. We will see how the year goes. It started off wonderful and I am imagining that it is going to stay that way.

Autonomy appears to be very important to Ben and administrators, according to Ben, dictate the level of autonomy that teachers experience. Ben shared in an interview just how important having administrators that provide autonomy is to him. He explained this as one of the main reasons that he left his last school. Ben shared how he felt that the administration was taking away his autonomy and not allowing him to teach the way he felt was best for his students and in turn, he felt he lost their support. As a result, he shared that he looked for a new position where he could have the administrative support to be autonomous. According to Ben,

Above that, the working relationship that you have with your administration makes or breaks your year. If I don't have a positive working relationship with the administration, they don't trust me and I don't trust them, I'm not going to be able to accomplish anything I want to. I can try and I'll be butting up against heads, it's not worth it. So doing whatever it is that you can to keep that positive relationship with administrators.

Ben, for the most part, shared in his interviews that he has had the administrative support necessary for him to remain in the classroom teaching. When he has lacked that support, he explained that he often sought out a different school where that support existed. It is

important, according to Ben, for him to be able to teach in the way that best allows him to reach and support his students. This requires administrators that support his philosophy and fortunately, Ben revealed, he has had this throughout his career, which he identified as helping him to remain in the classroom.

#### *Summary—Research Question 1*

Throughout the four interviews with Ben, he identified several experiences and conditions that have contributed to his retention. Ben shared how seeing and focusing on student success has helped him to maintain the motivation to keep teaching. He also shared multiple examples of how his faith has guided him in his career decisions, providing comfort and direction when times were stressful. Finally, Ben provided examples of how he has had support from administrators during his career. He shared that this support has allowed him the opportunity to teach the way he feels is best in the classroom. When he has lacked this support, Ben explained how he has managed to find a different school where the support he seeks exists. In addition to these identified experiences and conditions, Ben’s interviews, observations, and written narrative revealed the role that resiliency plays in his retention.

#### *Research Question #2—Role of Resiliency in Ben’s Decision to Remain in the Classroom*

In interviews with Ben, he was asked to describe what role, if any that resilience plays in his retention. He was asked to define resiliency and provide examples during his career when he had to be resilient. The researcher also conducted three observations of Ben, two of his classroom teaching and one of his participation in a PLC meeting. The researcher, using Mansfield et al.’s (2012) framework for teacher resilience, designed the

protocols for these observations. In Ben's responses to multiple interview questions, he identified resiliency as a necessary component for teacher retention. When asked to define resiliency based on his own career, Ben answered,

Off the top of my head, is putting up with the unrealistic expectations that come down from a government made up of people that do not understand or know anything about the field of teaching. That is resilience. Sticking through it despite the, in some cases, the stupidity of the regulations, the ignorance of the regulations, the amount of time that is required for us to deal with these issues that are mandated without funding most of the time and still try and meet the needs of our students.

Ben made frequent references in his interviews to needing resilience to deal with the outside influences on education, the areas that he cannot control. The influences that he identified included: state testing requirements, regulations, and mandates. Ben was asked how he manages to be resilient when faced with these outside pressures. Ben responded:

Ignoring what does not relate to me. Doing the bare minimum of what is expected where those types of regulations are concerned but continuing to focus on what my mission is and that is building relationships with students so that they can leave my classroom knowing they are a valued human being. I'm doing it through the guise of a math teacher and so my focus is on the students. When that focus is taken away, then I will choose to find a different career. When I am not allowed to focus on students and I am not allowed to push the things aside and focus on students and the needs of students, the realistic, meeting the realistic needs of the students, then I can't do this anymore.

Ben's main concern as a teacher, he shared, is his students and their success. This seems to build his resiliency. He explained that he does not completely ignore the expectations of the outside pressures, but he does not let them overpower his main mission in teaching.

Ben shared that his main focus is on the students and his breaking point will be when the outside demands force him to take his focus off his students. Ben was asked to describe a specific professional challenge he encountered where he had to be resilient. He shared the story about when he taught at one local junior high school and his contract was not renewed. Ben was only at this school for one year and he shared how he felt things were

going well and how he received positive feedback from his colleagues and administrators. He was blindsided when one day his administrator called him in and told them they were not renewing his contract. He could resign, but they were not going to renew his contract and they provided no explanation for their decision. To this day, Ben explained, he still has no idea why they did this. When asked how he managed to be resilient through this challenge, he answered,

I just decided, I'm not going to let this affect me and it's not going to affect the way I treat my kids and not going to affect anything at all. I'm just going to keep doing what I do and finish out the year and then move on to something else. It was odd. The principal never said another word to me after that meeting. Did not say another word for the entire school year and I don't exaggerate. She did not, she would never look me in the face and would never say another word and at that point, you realize, it is not me. It is something else and they are choosing not to tell me so I just let that roll off my back.

Once again, Ben identified how focusing on his students is how he manages to be resilient when dealing with a difficult challenge. Ben shared that his personality supports his resiliency. He provided examples how he does not let outside influences impact his teaching. In order for this to happen, Ben explained, he has had to learn that things are not always in his control and taking the mentality that "this too shall pass." This involves being able to deal with those things that are out of his control. Ben explained,

You deal with it and do whatever you can to deal with it and don't let it affect you, I don't take it personally and I don't let my kids take it personally, we just do what we can and the results happen. I will say that if I allowed all of that to affect me internally, I would have left the profession a long time ago. It's all about the kids.

Ben revealed in his interview responses that had he not learned to be resilient, to let the little things out of his control not bother him, he would have left teaching. As long as he can continue his mission with his students, he explained, his resiliency will grow and enable him to remain in the classroom. In addition to Ben's interview responses,

observations conducted by the researcher provided evidence of the four characteristics of resilience: profession, social, emotional, and motivational.

*Profession-related characteristics of resilience.* There are five characteristics of the profession-related dimension of teacher resilience. While Ben provided some evidence of engaging in all five characteristics, data analysis resulted in the emergence of three main profession-related characteristics: commitment to students, using effective teaching skills, and reflection. Ben continuously referenced in his interviews his commitment to his students. Ben shared how his students are the main reason he remains in the classroom and he organizes his instruction to meet their needs. As a result, Ben described that he uses many effective teaching skills to reach his students. Ben explained that it is important for him that his students learn to collaborate and work together on tasks. At his current school, Ben shared they utilize station-teaching, which, according to Ben, requires constant collaboration among teachers. Field notes from the observations conducted by the researcher provided evidence that Ben has his tables organized in groups so that students can work together. As part of the station teaching practice, Ben designs contracts that the students work on during the unit. These contracts outline for the students the expectations for the unit, deadlines for completion, and any additional information necessary. These contracts provide the students the opportunity to work collaboratively, independently, and at their own pace. During one observation conducted by the researcher, Ben began the class with a video demonstrating an area model of the Pythagorean Theorem. During this exercise, Ben used questions to probe student thinking. Some of the questions he posed to his students were: “What do you think is going to happen,” “When will this not be the case,” “You need to be able to explain . . . ,”

and “Where have we seen this before?” Ben shared how he believes these types of questions are examples of effective teaching skills. Ben also shared the important role another characteristic of the profession-related dimension plays in his teaching, reflection. Ben explained,

There is always an element of reflection in teaching. Sometimes it is immediate reflection, sometimes it is several weeks, months, or next year when you start to look at the same topic that you taught. So, the immediate reflection always happens, so first period is typically the guinea pigs, is this working, if not, what are we going to adjust for the next classes, and so, there is always that immediate reflection.

Reflecting, Ben admitted, allows him to make those necessary adjustments to his lessons to ensure he is meeting the needs of his students. Ben also uses reflection when planning additional lessons or projects. During an observation of a PLC meeting conducted by the researcher, Ben was working with his colleagues to develop a Halloween project on graphing. When the team was brainstorming different ideas, Ben shared ways he had done the project in the past; what worked well and what did not. The group was able to use these ideas from Ben to design a project that would best fit their current students. By reflecting on his previous practice, it seems Ben was able to assist his team in planning a project that meets the characteristics of their students. In addition to the evidence of the three profession-related characteristics Ben engaged with, his interview responses and observations conducted by the researcher provided evidence of characteristics of the social-dimension of resilience.

*Social-related characteristics of resilience.* There are four characteristics of the social dimension of resilience. One of the characteristics, building support and relationships, emerged from the analysis of Ben’s interview responses and observation protocols. When asked how important relationships are in teaching, Ben answered:

Extremely important. If I quantify that on a scale of 1-10, it's a 12. I have been in situations where I have been the lone ranger [sic] in that not only was I the only teacher in that subject area, but I taught with a group of people who did not care to work together and it is horrible. And then I have taught with people who get along well, but still want to do their own thing and that is so much better, but not ideal.

Ben described the importance of forming relationships with colleagues and students. It is important to develop strong relationships with colleagues, according to Ben, because of the planning that teaching involves. He explained, "The relationships in education that you form with your colleagues need to be such that, you can work together, brainstorm ideas, whether you use them or not, the cooperation is extremely valuable." The field notes taken by the researcher from an observation of a PLC meeting where Ben was working with his colleagues provided examples of how important relationships are to Ben. Ben is in his first year at this campus, yet his colleagues looked to him for suggestions and recommendations during the meeting. Ben made an effort to include all the teachers into the discussion concerning the Halloween project they were planning. Ben managed to share a positive comment with each teacher in the meeting, often thanking them for their suggestions or asking for their personal recommendations. With these positive relationships established, the team was able to plan the Halloween project efficiently with each teacher playing a role. Even though Ben was new to the campus, he had worked hard to form these relationships with his colleagues so that they could work together for the benefit of the students. Ben also emphasized the importance of building strong relationships with his students. He shared,

But the very most important relationship that you can have in this profession is the relationship with the people in your classroom. If you do not form positive relationships with them on the surface level and every once in a while on a deeper personal level based on their issues and the needs they have as a young person, you might as well find another profession.

Ben frequently shared in his interviews how students drive his desire to teach and remain in the classroom. This would not be possible, according to Ben, without forming strong relationships with each student and letting them know that he cares about their success.

Ben explained,

The students that resist forming some type of positive, even if it's just a hi in the hallway, are the ones who struggle the most because when they get to a struggle, they have nobody to turn to and then they just crater. It is imperative that you attempt to form those relationships with your students.

Ben responded in an interview how his philosophy towards relationship building has changed over the course of his career. He shared,

That philosophically has changed over the course of my career, but as a personal thing, that has never changed. When I started my career, I knew I had to form relationships with my kids so that they knew somebody loves and cares for them and they can trust. But there has been a bigger push for that in the literature, in everything over the past 5 years I think, where people are saying, these kids need somebody to relate to because they don't have that at home, they don't always have somebody at home and who is that one person they spend the most time with, the teacher.

According to Ben, the students he sees today come from very different "situations" compared to students when he first started teaching. He described that kids today are lacking the support at home that in his early years of teaching, was commonplace. Therefore, for Ben, it seems more critical than ever to build positive relationships with students to show them that someone cares about them and wants them to succeed. Along with building and supporting relationships, Ben provided evidence of engaging with several of the emotional related characteristics of resilience.

*Emotional-related characteristics of resilience.* While Ben provided some evidence of engaging in all seven emotional-related characteristics of resilience, data analysis resulted in the emergence of three main characteristics in Ben's teaching: not

taking things personally, bouncing back, and coping with the demands of the job. Ben described how important it was for him to recognize that some things that happen in teaching are out of his control and not to take it personally. Ben described in an interview his frustration with the latest mandate passed regarding monitoring student progress. He explained,

The newest thing is tracking progress on your students and trying to deal with what is a completely non-reliable depiction of what the state of Texas depicts as progress that a student makes from one year to the next based on a standardized test and the number of questions they get right year to year. That is what the state tells me that I have to measure progress by and so I have a choice, I can let that keep me up at night and monitor my kid day after day and make sure they are meeting progress or I can ignore it and do what I do best and let the data say what it's going to say.

Ben described how he learned that he can either focus on the outside pressures or his students. He explained that he chose to focus on doing what he thinks is best for his students, and in doing so, he feels they will still be able to succeed on the mandated tests and demonstrate the progress expected of them. While this has come easy for Ben, he provided examples where his colleagues have struggled with this. Ben shared,

And I have had colleagues, who every year, when it comes time for that standardized test, I have to sit down with a different group of teachers who are just stressed to the max because of all of the weight they are carrying. I have the same conversation every year. Stop. You have done exactly what you can do, you've taught, you've done the best you can do, there is nothing else that you could have done, you just have to let it go. The kids will perform the way the kids want to. It's not a reflection on you on the good side and it's not a reflection of you on the bad side. It was what the student decided to do on that day. And that helps to calm people's nerve, because they see me living out. I just live it out.

Ben feels strongly about not taking things personally and focusing on what he feels is best for his students. Because of his strong feelings, Ben explained that he helps his colleagues take this approach as well. When asked in an interview how he does this, he responded that he tries modeling the behavior for his colleagues and encouraging them.

To Ben, this appears to be a key part to being resilient and remaining in the classroom.

As a result, he shared that he tries to help his colleagues adopt this same approach.

Taking this approach does not lessen the demands of teaching. Ben admits that he is not always the best at balancing his professional and personal life. Teaching takes a lot of time and effort. According to Ben,

If teaching doesn't take up a lot of your time, you are not doing it right. I've done this 19 years and even, I was so good at flipping, but I still had to recreate videos and I was still creating some of the activities, there is never a point where it just stops and I can just go off what I have done in the past.

Being the type of teacher that he wants to be, Ben explained, requires a lot of time and effort. But for Ben, he shared that the effort is worth it. He does admit that he is better at balancing his life more now than earlier in his career. He credits adjusting his grading philosophy as helping him become more balanced. He shared,

I try to take one day off a week and not do anything school related. It doesn't always happen. It depends on what is going on. Over the years, I don't grade papers anymore, the students grade as I call out the answers, they grade it. I might score them. I quit grading papers a long time ago and that took away a vast majority of the time. So, there is really not a lot I have to do at home. I choose to do some things but that was the biggest thing so when I say I don't balance, I'm balancing a whole lot more now than I used to.

Although teaching requires a lot of time and effort, Ben explained how he recognized that he had to do a better job at balancing his personal and professional life. By making adjustments and setting boundaries, he shared how he has been able to improve that balance. In addition to the professional, social, and emotional characteristics of resilience that Ben referenced, he also shared through interviews, different ways he connects with the motivational characteristics of resilience as well.

*Motivational-related characteristics of resilience.* Two of the seven characteristics of motivational dimension of resilience emerged from the analysis of Ben's interview responses. These are maintaining motivation and focusing on learning and improving. Ben revealed in every interview that one of his main motivations to remain in the classroom is his students. One of his favorite things about teaching mathematics, he shared, is when his students finally understand the concept and they leave his class with a different appreciation towards mathematics. He described,

The light bulbs. When, well there is kind of two favorite parts. One is the light bulbs that come on as students are learning something that they have never seen or heard before and they get it and I can see it on their face that they get it finally. The second part that I absolutely love even more than that is reluctant math students coming to my class and leaving my class loving math. My goal is for them to walk away believing that they can and then living up to that.

Turning around students' disposition towards mathematics and learning in general seems to contribute to Ben's motivation to remain in the classroom. In addition to these "light-bulb" moments, Ben shared in several interviews how his rainy-day fund, previously described in his narrative, helps fuel his motivation when things are not going well or he had a bad day. Ben explained that having this motivation contributes to his resiliency and allows him to persist when things are out of his control. In turn, Ben explained, this motivation allows him to overcome any mistakes or issues he encounters in teaching. Ben hates the word failure and chooses to look at it a different way. He explained,

No, it's not failure, it's a mistake. Something didn't work right. I've had to choose that definition of failure because it did not come naturally. There's always tomorrow. That is how I deal with mistakes or things that didn't go well. If things didn't go well, just scrap it and see what we can do next to make it better.

By focusing on failure as a learning experience and not dwelling on it as Ben explained, seems to build the motivational-dimension of resilience. This was not always the case for

him. At the beginning of his career, Ben shared how he was not as effective in dealing with things that went wrong.

Was it that way in the beginning? No, not at all, but because I have evolved with so much growth in my own personal life and in teaching, this too shall pass. Now, if it's a mistake that I made that I need to be at fault for, I admit the mistake and do what I need to move on. If it's someone else's mistake, just grace. I need grace so I have to give grace to whoever it was.

Experiences in his personal life appear to have helped Ben evolve in the way he manages mistakes and issues in teaching. Learning to manage the ups and downs of teaching is a critical part of resiliency. Again, the role that Ben's faith plays in his teaching seems to contribute to his retention. Recognizing his need for grace, he shared, made him realize he must be willing to give his students, colleagues, administrators, and parents that same grace. If they upset him or do something that he does not agree with, he shared, he cannot let it impact his teaching. This approach seems to have been helpful for Ben, which he identifies as contributing to his decision to remain in the classroom.

#### *Summary of Evidence for Research Question 2*

Ben's interview responses suggest that resilience has played a major role in his decision to remain in the classroom. Ben admitted that without resilience, he would no longer be in the classroom. Field notes completed by the researcher provide further evidence of Ben enacting several of the dimensions of resilience outlined in the theoretical framework. Ben provided examples of how he makes a concerted effort to keep his focus on his students and not to let outside demands or influences impact the way in which he teaches. A key part of resilience that Ben identified was forming strong relationships with his students and colleagues. Apart from the experiences and conditions Ben described as contributing to his retention and his responses concerning the role of

resilience in his career, several additional themes emerged from the data analysis related to teacher retention. These themes are listed and described in the next sections.

1. Ben's Experiences with State Testing and Mandates
2. The Role of Salary in Ben's Teaching Decisions
3. Ben's Role as an Experienced Teacher

*Ben's experiences with state-testing/mandates.* In every interview conducted with Ben, he expressed frustration with state testing and the mandates passed down from the state. On several occasions, Ben shared these mandates and testing requirements have made him consider teaching at a different, untested level. At times, Ben explained, he has felt,

completely frustrated and wanting to give up because of standardized testing. And honestly, I don't know how long I can stay in eighth grade. Because eighth grade is the heaviest tested grade level and there is so much pressure on the kids and there is so much pressure from everybody else. Even though I am a math teacher, ensuring the social studies, science, and ELAR are taken care of, and it's not worth it for the kids' sake and it's not worth it for my sake. Because I am pulled in so many different directions because of this one test when there is so much more we could be doing for the kids. I've said that for several years in a row, and yet I'm still teaching eighth grade.

Ben shared that these outside pressures make it difficult for him to focus on what is most important to him—his students and their success. According to Ben, this is why it has been critical for him to develop resiliency and his “don’t sweat the small stuff” personality. These mandates and assessments, Ben explained, are the biggest challenge to his resiliency and personality. He explained,

The only reason I mentioned state testing and change in curriculum because those are the ones that I feel are the most damaging, that have damaged the face of education in my career. The others, I can deal with it. You call roll with the punches. Those are the things I can deal with. The ones that are the most damaging are the ones that are given to us as mandates without backing up, either financially or with professional development or with any sane reason as to why

they are done from the math educators perspectives. So many of these things come from legislation brought about by people who don't understand what education is like. Those things are the hardest to deal with. Yeah, we have to deal with them, but they are the hardest to deal with because typically they come at inconvenient times and are coming with less than stellar professional development, so it's much harder to deal with.

These outside demands, according to Ben, make it difficult for teachers to focus on the students. Ben shared this was one of the main reasons why he believed so many new mathematics teachers leave the profession. According to Ben, these new teachers are unable to,

meet the demands that are put on them because they are a heavily tested subject without any support whatsoever. The breadth and depth of curriculum that has to be taught in the small time span they are given, to students who don't come prepared to learn the material.

He previously shared how he has had to help many colleagues who struggled with the demands of state testing. He explained that he manages to deal with these pressures and mandates by maintaining his focus on his students and their success, and reminds his colleagues to do the same. According to Ben, as long as he can continue teaching the way he feels is best, he will do so. If these mandates and pressures get to the point where he cannot, he explained, he would leave the profession. When asked what he would recommend to a new mathematics teacher to prepare them for these challenges, Ben responded,

First, I would have a discussion on what is your purpose for teaching. And, if their purpose is not to affect children's lives for the positive, then, the discussion ends there. There is nothing I can do for them. But if it is, then we talk about, what does that mean? That doesn't mean that they have to make a 100 on a standardized test. It means that they walk out of here knowing they are loved and cared for and if you learned some math along the way, then hallelujah, you learned some math, but it's more important for them to know that they are valued members of society and how can we walk that out in a mathematics classroom. And when you can focus and re-envision yourself for what can I do for my students so that they will enjoy math and have fun and learn something, I'm not saying scrapping learning, but I'm saying the first focus has to be the students and

then how can I help them learn the most, learn the best, what do I need to do to do that. And that's when we have that discussion on scrapping that topic and teaching this way so that they can bring in some more fun activities and get up and do instead of sit down and do a worksheet and take some notes. Overall, it is what is your purpose and how can we attain that purpose in the guise of a mathematics classroom.

According to Ben, teachers need to remember what their purpose and motivation is for being in the classroom. That is how he revealed he manages to cope with the pressures and demands of teaching. His central focus is the students and their well-being. If teachers cannot overcome the pressures and mandates associated with teaching, then Ben recommends they find a different profession because they are not going to make it in education. In addition to these mandates and demands, teachers must be prepared to deal with the financial realities of teaching.

*The role of salary in Ben's teaching.* Ben admitted that he was not drawn to teaching because of the salary. According to him, you cannot be an effective teacher if you are just doing it for the money. Despite salary not being a motivating factor in his decision to be a teacher, Ben frequently shared the financial strain that teaching placed on him and his family. Some of the job changes in his career, Ben explained, were the result of financial factors. He accepted the job at the university electronic library, he shared, because it made sense for his family financially. In addition, Ben described that he often has worked some part time jobs that have not been teaching related “to bring in extra money.” This financial strain can bring additional stress to an already demanding profession. When asked if he could go back and do this all over again, would he still become a teacher, Ben’s only hesitation was because of finances. He shared,

I don’t know. . . . And the only reason I say I don’t know is because of the financial strain that it always has been on my family, so that is the only thing that would make me, I wouldn’t not choose teaching. To turn that around, but I don’t

know, based on what I know about the financial strain that has been my whole life, that would be the only reason why I would have any question.

Despite loving to work with students and watch them succeed, Ben expressed that the financial strain that teaching has placed on him and his family would make him reconsider joining a profession that he loves. When asked what he would do to address this issue in education, Ben provided several recommendations.

One is pay us for the hours that we work and if that means a higher salary for more hours and even more contract days where we have more planning times it is not fair for us to be paid for 186 days but expect 250. Because when you look at the amount of time outside of class that we spend that's what it really amounts to. I talked to one of my friends about this, even if, what I want to do if I ever make my first million is to start a grant or a scholarship fund for heads of households who are teachers. For instance, male teachers, and in my mind, that's a flat \$10,000. I will give you \$10,000 if you stay in the classroom to teach, above your salary, just because I know how much that will help, how much that will benefit your family, allow your wife or spouse to stay home if that's the case or whatever, but because men are so necessary in the profession. Financially it's so difficult to be a teacher and not expect a two parent income or live very simply, which isn't necessarily a bad thing.

Ben seems to feel that teachers are not fairly compensated for the time and effort that they put in to their profession. He expressed frustration when people outside education imply that teachers only work 186 days a year, when in reality, it is much more because of training, planning, and professional development. An extra-financial incentive for teachers who are heads of household would be helpful according to Ben. He shared this would not only help bring in new teachers and assist with retention, but it may help to attract more male teachers to the classroom as well. Ben shared that it has been difficult for him as the male head of household to provide financially for his family as a teacher. This financial incentive advocated by Ben does not appear driven by greed. Ben explained that he wants quality, caring people in the classroom and by providing a more comfortable salary, more teachers may be motivated to remain in the classroom. Ben also

feels that because of his variety of experiences in the classroom, he has an important role to play in supporting teacher retention.

*Ben's role as an experienced secondary mathematics teacher.* During Ben's experience as a teacher, he has hosted several student teaching interns in his classroom from the local university. Ben's feels that it is important for him to help these student teachers manage the stresses of teaching by encouraging them to keep their focus on the students. He shared that student teachers often struggle with letting the little things go that happen in teaching. Ben explained,

I mean I am good at letting those things go now, but there are so many people around me who have not yet reached my levels of expertise in letting things go and it really is encouraging them to not sweat this, focus on kids. If you know that you are focusing on kids, then we got to learn to let those things go.

One way he does this is by providing them with freedom and autonomy when designing and implementing lessons. He previously shared how this was a learning experience for him, as he realized that as long as the student teachers were effective in promoting student learning, the way they teach does not have to be like him. In an observation of a PLC meeting conducted by the researcher, Ben allowed his student teacher to lead the meeting and the planning. He provided encouragement and suggestions, but allowed her to direct the meeting to best reflect her personality. Ben also uses his experiences to help support his colleagues. When asked what he does to support his colleagues, Ben shared,

Doing whatever I can to make it easier on everyone else to keep them around. Because I know what it's like to rotate through teams, it's hard to bring new people in and help them feel comfortable and get to know them and so, by nature anyway, I will do more to help you be successful, even if it's a sacrifice of everything I do and I'll never let you know that.

Ben not only cares about the successes of his students, but this care extends to his colleagues as well. He shared his willingness to sacrifice his own time and resources to help his colleague. He gave the following as an example.

Like right now I have one of my teammates is a first year math teacher, has taught several other subjects but never taught eighth grade math and my other partner is a second year teacher who taught math but, second year on a different campus and so, I am making all the videos right now, I am really spearheading and leading all the stuff and I make a lot of the things that we use I have as an arsenal or it comes quickly because I've done this so many times, that's just who I am, even I am going to do it for me, I might as well do it for everyone else. So it really is and then having interns and really doing as much as I can to encourage them in the process and give them all the experiences that they need and don't understand that they need but, hopefully will be of value at some point in their career.

It is important to remember that despite all of Ben's experiences, this is his first year on this campus. He is in the process of learning a new system. Despite this, his interview responses seem to suggest that he still feels called to support his colleagues, who are relatively new to the classroom. He explained that he is willing to take on this role because of his prior experiences. Ben described how he wants his colleagues to be successful and as a result, he will go above and beyond to ensure that they have the necessary support to be successful. The field notes conducted by the researcher in the PLC meeting further confirmed this feeling of Ben's. Ben was the one who took the initiative with the Halloween project, previously discussed, offering to collect the supplies, obtain the necessary permission, and organize the activity. This was additional work for Ben, but he did not complain during the meeting and took these responsibilities on to help his colleagues. He shared with his colleagues that he had done this activity before and he knew his experience would help make planning the project easier. Ben recommends that new mathematics teachers need to "find a wise soul who can help you know when to not sweat the small stuff and what needs to be sweated." Ben admitted that

he fills this role as the “wise soul” at whatever school he finds himself in. He feels this type of support for new mathematics teachers will help them to remain in the classroom.

When asked to share any other recommendations to improve teacher retention based on his experiences, he shared,

I would love to look every teacher in the face and say, do you love your kids enough to do this every day, if not, let me help you find another good job. It's so difficult to repair the kids who come out of a bad math experience. I mean I have 115 students this year and I would say at least 1/4th of them are incredible people, come from two parent households, have all of the middle class everything. But at some point in their career were not successful in math and were never told they could be and I am having to repair that because they are not walking out of my room believing that. At some point there was some teacher who just really didn't love their job or got frustrated or whatever, and made them feel like they could not do this. . . . I don't care if they fail the STAAR test, they will walk out of here thinking they can do any math course they want to.

This seems to illustrate Ben's dedication to his profession and his students. Teachers affect their students' lives. If a teacher is not interested or willing to put in the necessary effort to help their students succeed, Ben believes they need to look for a different job. Ben takes his role as a teacher seriously and works hard to ensure that his students and colleagues feel cared for and supported. As an experienced mathematics teacher, he feels prepared and equipped to serve in this capacity.

#### *Conclusion of Case 4—Ben*

Ben credits his faith and resiliency as helping him to remain in the classroom for 19 years. Ben's interview responses provided multiple examples of how he is motivated in the classroom by his students. He provided examples of how he works hard to ensure that all of his students feel cared for and supported. This extends to his colleagues as well. Ben feels his experiences allow him to provide the support his colleagues need in order to be successful. Observation field notes completed by the researcher provided

further evidence of Ben's dedication to his colleagues. Ben revealed in his interviews how he has been fortunate in his experiences to have had many administrators that have supported him and granted him the autonomy he desires in the classroom. Despite the financial strain and accountability pressures he has experienced, Ben shared how he remains committed to the classroom for as long as he can continue teaching the way he feels best supports students. The case of Ben is the last individual case in this study. In the next section, a cross-case analysis of all four experienced teachers in this study is described.

#### *Cross-Case Analysis*

As part of the data analysis procedure, all four cases in this study were compared as part of the cross-case analysis. The researcher utilized constant-comparison analysis to compare each individual case for themes and commonalities. The results of the cross-case analysis were organized first by examining and comparing the teaching narratives of the four participants. Next, each research question was addressed by comparing the responses from each participants' interviews, observations, and written narratives. The analysis concludes with a comparison of emerging themes from each individual case.

#### *Teaching Narratives*

Similar experiences emerged from the teaching narratives of the four participants. Table 10 provides an overview of these similarities.

Table 10

*Teaching Narratives*

| Participants | Education Major in College | Early/Additional Experience as a Teacher | Changed Schools | Mentored Student Teachers | Teaching is More Difficult Today | Flips Their Classroom |
|--------------|----------------------------|--|-----------------|---------------------------|----------------------------------|-----------------------|
| Leslie       |                            | X  | X               | X                         | X                                | X                     |
| Ann          |                            | X  | X               | X                         |                                  | X                     |
| Donna        | X                          | X  | X               | X                         | X                                |                       |
| Ben          | X                          |  | X               | X                         |                                  | X                     |

*Education Major in College*

Only two participants in this study majored in education when they entered college. Donna was an elementary education major with a PE specialization while Ben majored in music education. They both later added endorsements so that they could teach middle school mathematics. Ann was a mathematics major in college and added a teaching certificate. Leslie majored in business and earned her teaching certificate after spending 13 years in the private sector. Of the four participants, Donna was the only one who expressed that she always wanted to be a teacher. Ben described how he enjoyed working with children and after deciding to not become a pediatrician, found that education would allow him to pursue his passion. Leslie was the only participant who admitted that teaching was never initially on her radar as a career choice. It was a later experience with tutoring that led Leslie to teaching.

### *Early/Additional Experience in Teaching*

Three of the four participants shared stories of how an early or additional experience led them to becoming a teacher. Donna explained that as the oldest of four sisters, she has been a teacher her whole life. Additionally, she shared the story of helping tutor her neighbor's son on his mathematics facts. Donna discussed how she enjoyed this experience and that it showed her she was good at teaching mathematics. She credits this experience as one of the factors that led her to become a teacher, specifically a mathematics teacher. Ann also shared a story about tutoring when she was younger. In elementary school, Ann finished her mathematics modules faster than her classmates. Her teacher would then encourage her to help her classmates, which is something that Ann enjoyed doing. Ann identified this story as one of the contributing factors for her deciding to teach mathematics. Leslie shared how an experience tutoring after college led her to pursue teaching. In Leslie's private sector job, she often found herself tutoring some of the younger employees during lunch who were in high school and college. She described this experience as very rewarding and as a result, decided she wanted to go back and become a teacher. Ben was the only participant who did not share an experience related to education that led him to becoming a teacher.

### *Changed Schools*

All four participants have taught at more than one school during their career. Donna, who has taught the longest of the four participants, has taught at five different schools during her career, which is the least amount of job changes among the participants. Leslie, with 30 years of experience, has taught at seven different middle and high schools in her career. Ann, with 27 years of teaching experience, has taught at six

different high schools during her tenure. Ben has taught at seven different schools during his 19 years of experience. All participants shared some of the moves were initiated by them, while others were due to a spouse or family issue, and others were forced upon them by administration.

### *Mentored Student Teachers*

At some point during their careers, all four participants have served as a mentor for student teachers. Since these teachers all live within the vicinity of a university that has a teacher preparation program, student teachers are often placed in their classrooms. During this study, both Donna and Ben had a student teacher placed with them. All four participants shared how they take the role of student teacher mentor very seriously.

### *Teaching Difficulty*

The participants frequently shared how education has changed during their careers. Their interview responses provided evidence of how standards, curriculum, technology, and accountability are all very different from when they first began teaching. When asked if teaching is more difficult now than when they first started, two of the participants, Leslie and Donna, both agreed. They felt that teaching is much more difficult now than when they first began. They cited that students today require so much more support from them, both academically and emotionally, compared to when they first began teaching. Also, Leslie and Donna have the most teaching experience of the four participants. When Ben was asked this question, he shared that while teaching is not any more difficult from when he started, it definitely is not any easier. He feels that the difficulty is the same but has changed in certain areas.

### *Flipped Classroom*

When they described their experiences as teachers, all four participants shared how technology has changed so much compared to when they first started. They all reported that they try to stay up-to-date with technology to better serve their students. Leslie, Ben, and Ann have all flipped their classroom or are in the process of flipping their classroom, as described in each of their individual cases. For these three teachers, flipping their classroom involved recording lecture videos that students watch at home. When students come to class, they can then ask questions and spend more time working on practice problems and applications. When asked why they made this change, these three teachers shared that they were not being able to cover the amount of material required. Ann and Leslie shared that because they teach upper level mathematics courses, they were noticing their students needed more time to work with them on the material and ask them questions. Flipping the classroom, these teachers shared, also allows them to use technology to address student absences. All three described how posting videos on a website has been beneficial for the students who miss their classes because of illness or activities. Technology seems to have allowed these teachers to address previous problems they had experienced in their teaching.

All four participants shared similar experiences that they encountered during their teaching careers. They have all taught at multiple schools and have mentored student teachers at some point during their career. Some referenced experiences with tutoring that led them to the teaching profession, while others explained that they entered college wanting to become a teacher. In addition to these similarities in their teaching narratives, the participants shared some similar responses to each of the research questions outlined

in this study. A cross-case analysis of the research questions, highlighting both the similarities and differences among the participants, is discussed in the next section.

*Research Question #1: Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?*

Several themes emerged from the analysis of each individual case regarding the experiences and conditions that the experienced secondary mathematics participants identified as contributing to their retention. Table 11 provides an overview of the participants and the themes that emerged for each of them.

Table 11  
*Conditions and Experiences Contributing to Retention Identified by Participants*

| Participants | Student Success After Graduating | Support from Administrators and Colleagues | Personality | Content Knowledge | Faith |
|--------------|----------------------------------|--|-------------|-------------------|-------|
| Leslie       | X                                | X  |             |                   |       |
| Ann          | X                                | X  | X           | X                 |       |
| Donna        | X                                | X  |             |                   |       |
| Ben          | X                                | X  |             |                   | X     |

*Student success after graduating.* All four participants referenced, in multiple interviews, the role that student success plays in their retention decision. Participants shared that visits, phone calls, e-mails, and other forms of communication from their former students helped to remind them that they are making a difference in the lives of their students. Participants shared in their interviews that students are the reason they are teachers and seeing them succeed and being aware of that success drives their motivation

to remain in the classroom. According to Donna, this is one of the reasons why she and her husband chose to live in the community where she teaches, so she could see her students after they leave her classroom. Donna shared that one of her most rewarding experiences as a teacher is “just seeing them [former students] out in the community and how they turned out.” Ben shared how he has a “rainy-day” fund of notes and correspondences from former students that help him manage those emotional and difficult days he has teaching. Leslie wrote her narrative over a former student that became a teacher. She wrote, “Whenever I feel overwhelmed or defeated, I think of this young man and my mood changes immediately.” Like Ben, Leslie uses these experiences to help her manage the days when things do not go as planned or when she feels emotionally taxed. Ann shared how it is rewarding for her when a student comes back and tells her thanks or shares how they used something that she taught them to pass a college exam. These small tokens of appreciation were identified by all the participants as reasons why they have remained in the classroom. In addition to all four participants identifying student success as contributing to their retention, they all included that the support they have received from administrators during their career has enabled their retention.

*Support from administrators and colleagues.* Support appears to have played a role in the retention of all four participants. All four participants identified, in multiple interviews, how support from students, colleagues, and administrators, was critical to their longevity. Administrative support was the most referenced type of support by the participants. As identified by the participants, one way administrators have demonstrated their support is through appreciation. All four participants described that when they feel

appreciated, they are willing to put in the extra hours and efforts to ensure that their students are given every opportunity to succeed. Leslie explained that she would work “80 hours” for an administrator if they showed they appreciated her. Ann explained how a simple “thank-you” from one of her previous administrators helped her navigate a difficult year.

Ben shared that in his career, for the most part, he has had administrators support him by giving him the autonomy he needs in the classroom. At his previous school, Ben shared how the administrators “were taking the freedom in the classroom away” and as a result, he left that school in search of a different one where he was free to teach the way he felt is best for the students. Donna shared that at her current school, there is an administrator assigned to just the mathematics department and he comes to all their PLCs and provides support. If there is ever a leadership issue, Donna explained, he takes care of it, which is “really nice to have. They are available every day.” Donna identified this type of support from administrators, being available, as an important condition contributing to her retention. The success of students after they graduate and support from administrators and colleagues were two experiences and conditions that all four participants identified as contributing to their retention. Additionally, participants also identified conditions and experiences that were unique to their retention. These include: personality, mathematical content knowledge, and faith. These conditions and experiences are described in the next sections.

*Personality and mathematical content knowledge.* Ann was the only participant to identify her personality and content knowledge as contributing to her retention. Ann described her personality as “going with the flow.” She does not let the little things that

happen in teaching bother her, and according to her, this has helped her remain in the classroom. The other three participants did describe their own personalities as easy going, similar to what Ann shared. Ben gave examples of how he had become less “controlling” in his classroom. Leslie shared examples of how she previously let comments from her students get to her and elicit a response. While all the participants described how their personality shapes their teaching and how they manage the demands of the profession, Ann is the only one who repeatedly identified her personality as a reason for her retention. The same is true with content knowledge. Ann was the only participant who identified her content knowledge as a contributing condition in her retention. Of the four participants, Ann was the only one to major in mathematics in college. She shared several examples of how strong mathematical content knowledge helped her to manage different issues that have come up in her teaching. She repeatedly emphasized that to improve mathematics teacher retention, new teachers need to have their mathematics degree. While Ann was the only participant to identify her personality and content knowledge as contributing to her retention, Ben was the only participant who identified his faith as enabling his retention.

*Faith.* In multiple interviews, Ben shared how his faith has kept him in the classroom. He explained how he feels called to be a teacher and that he has not felt “led” to do something else besides teach. Ben provided several examples where he went through some difficult times in his teaching and shared that he prayed to the Holy Spirit for guidance, but never felt called to do anything different. Ann mentioned how her faith helped her through her daughter’s death, which in turn, caused her to re-examine the way she looks at things in life and in the classroom. Leaning on her faith helped her to manage

the stressful times during teaching, but only Ben credited it as contributing to his retention.

*Research Question #2: What role does resilience play in the retention of experienced secondary mathematics teachers?*

During the four interviews with each participant, they were asked to describe the role that resilience, if any, plays in their longevity. Observations provided additional evidence of how the participants enacted characteristics of the four dimensions of resiliency in teaching. All four participants credited resilience as impacting their retention and provided examples of instances where they had to be resilient in their career. Most participants described resilience in teaching as being able to bounce back when things do not go as planned, being flexible, and not “sweating the small stuff.” Both Ben and Donna shared that if they had not been resilient throughout their career, they would not have made it in teaching. All participants agreed that resilience is necessary for teacher retention. According to the participants, without resiliency, a teacher will not last in the classroom. Each participant provided a specific example when they had to be resilient in their teaching career. Donna described when she was told on a Monday that she had to pass the Grade 4-8 mathematics content exam by Friday or she would be transferred. Ann shared the story of being forcibly transferred to another school 6 weeks into the semester. Leslie shared that she was asked to teach Calculus 2 weeks before school started, despite it being over 20 years since the last time she had taught that subject. Ben described the time when he was told that they were not going to renew his contract and gave no reason for the decision. During each of these examples, all the participants described how they had to be resilient to make it through these challenges. One additional note regarding resilience is that all four participants acknowledged that this was a skill that they

developed over the course of their career. Many of the participants shared that they were not very good at being resilient in the early stages of their career. Leslie shared she often let “the little things get to me” in the beginning and she had to learn how to become more resilient. When these participants were asked how they became more resilient, they all replied that it takes experience.

#### *The Four Dimensions of Teacher Resilience: Profession, Social, Emotional, and Motivational*

The theoretical framework used in this study outlined four dimensions of teacher resilience and provided characteristics unique to each of these dimensions. These dimensions include: profession, social, emotional, and motivational. The researcher’s observational field notes, the participants’ interview responses, and written narratives all provided evidence of the characteristics described by the four dimensions of teacher resilience.

*Profession-related dimension.* There are five characteristics of the profession-dimensional of resilience. While the interviews and observations from all the participants provided some evidence of all five characteristics, data analysis resulted in the emergence of two main characteristics in these four participants’ teaching: using effective teaching skills and reflecting. Each participant explained that they use effective teaching strategies. They all have their classrooms organized in groups to promote collaboration among students. Participants shared the importance of designing projects so their students can apply the information they are learning in new and different situations. Leslie shared she is often called “the project queen” and observations showed Leslie uses student projects to decorate her room and display the work of the students. Ann uses her

background in STEM to design projects that integrate science and technology and connect them to real-world applications. A second area from the profession-dimension that was present in all four cases was the role of reflection. Each participant shared reflection is an important part of teaching. Donna and Ben shared how reflection is done constantly during the lesson, making the necessary adjustments based on the characteristics of the students. Leslie explained her reflection influences her planning, as she does not use the same lesson plans every year because the students are different each year. Donna echoed this same strategy. She too does not use the same lesson plans every year. She may use the same project, but it is always adjusted to meet the needs of her current students.

*Social-dimension.* There are four characteristics of the social-dimension of resilience. One of the characteristics, builds support and relationships, emerged from the analyses of all four participants' interview responses. Participants all expressed and demonstrated the important role that building and supporting relationships plays in their teaching. Leslie, Ann, Donna, and Ben all shared how important it is to develop strong relationships with students, parents, administrators, and colleagues. As experienced teachers, they reported that in many cases, they often are the sources of support in the relationships with their colleagues, as they are frequently sought out for advice. In the observations of PLC and departmental meetings, the participants all provided input during the meeting and were often asked for ideas and strategies. All four participants shared that forming relationships with students is the most important type of relationship for teachers. Leslie shared several activities that she does with her students to get to know

them at the beginning of the year. Other participants noted how they attend activities and events that their students are involved in to build relationships.

*Emotional-dimension.* While all four participants provided responses and were observed carrying out the seven characteristics of the emotional-dimension of teacher resilience, data analysis resulted in the emergence of two main characteristics: not taking things personally and enjoys teaching. Leslie, Ann, Donna, and Ben all described the importance of not taking things personally in their teaching. All four participants shared examples of how things that used to bother them early in their career no longer gets to them. Ann explained that at the beginning of her career, she graded her assignments with a “right or wrong” mentality. Now she realizes the process and thinking is much more important than the answer. Ben and Leslie gave examples where they were upset when students acted out against them or their content. They learned during their career, that in many cases, these events are out of their control. It could be that the weather changed or the student had a fight with a friend. Realizing that sometimes things are out their control has helped these participants not to take events in the classroom personally. Additionally, all four participants provided responses in their interviews of how they enjoy teaching. Donna shared she felt she has been a teacher her entire life and is excited to wake up every morning to go to her classroom. Leslie explained the many hours she dedicates to planning and preparing lessons is driven by her enjoyment of teaching. Ann and Ben both provided multiple examples of how their enjoyment of teaching is driven by their students and seeing them succeed outside the classroom.

*Motivational-dimension.* While the interviews and observations from all the participants provided some evidence of all seven characteristics of the motivational dimension of teacher resilience, data analysis resulted in the emergence of one main characteristic in these four participants' teaching: focusing on learning and improvement. Leslie, Ann, Donna, and Ben all described in their interviews the importance of focusing on learning and improvement. This idea applies to them as teachers and their students. All four participants explained that they actively seek out professional development opportunities to help them grow and improve. Leslie shared how she often pays for her own professional development because her school cannot always afford to send her where she wants. Ben explained he hates the word failure and so when his lesson does not go as planned, he views it as an opportunity to improve. The other three participants shared similar philosophies. They acknowledged that things do not always go as planned in their lessons. Instead of dwelling on the mistake, they look for ways to improve and get better. This appears to tie into the importance they place on reflection. Without constantly reflecting, participants shared, they would not be able to focus on learning and improving. This connection between learning and improving and reflection can be seen in how the participants approach lesson planning. Both Leslie and Donna explained how they do not keep the same lesson plans year to year. While they may use the same projects occasionally, they change or adjust their lessons based on their reflections and their students' characteristics. They shared that after each lesson, they reflect on ways to improve the lesson, and as a result, their lesson plans are different every year.

The cross-case analysis revealed similarities and differences between the evidence provided by the participants regarding the research questions for this study. Apart from

the experiences, conditions, and characteristics of resilience that the participants identified as contributing to their longevity, several additional themes emerged from the data analysis related to teacher retention. These themes are discussed in the next section.

### *Emerging Themes Related to Teacher Retention*

Constant-comparison analysis resulted in the emergence of several themes related to secondary mathematics retention for each participant. Evidence from interviews, observations, and written narratives contributed to the development of these themes, which are listed in Table 12.

Table 12

### *Emergent Themes Related to Secondary Mathematics Teacher Retention*

| Participants | Role of Teaching Mathematics | Role of Experience | Role as an Experienced Teacher | Finding Your Fit | State Testing | Salary |
|--------------|------------------------------|--------------------|--------------------------------|------------------|---------------|--------|
| Leslie       | X                            | X                  | X                              | X                |               |        |
| Ann          | X                            | X                  | X                              |                  |               |        |
| Donna        |                              | X                  | X                              | X                | X             |        |
| Ben          |                              | X                  | X                              |                  | X             | X      |

#### *The Role of Teaching Mathematics*

Both Leslie and Ann discussed teaching mathematics and the impact that it has had on their retention. They both explained how they always loved mathematics and their passion for the subject helps contribute to their enjoyment of teaching it. As a mathematics major in college, Ann enrolled in many mathematics courses because she enjoyed them. At one point in her collegiate experience, Leslie was an engineering major

and took many mathematic classes as well. Donna also shared that she enjoyed mathematics growing up, but it did not emerge in enough sources of evidence to become a theme for her. Ben was the only participant who rarely focused on the role of mathematics in his position, explaining that for him, teaching mathematics is just a means for him to impact the lives of his students. All four participants, however, did share challenges that teaching mathematics involves. Donna and Ben are both junior high teachers and teach state tested courses. Ben and Donna admitted the pressures of preparing for these mandated assessments provide additional stress in their work as a teacher. Ann shared how teaching mathematics is the most difficult of the content areas because of student dispositions. All four participants shared that one of the challenges in teaching mathematics is dealing with the negative student dispositions towards mathematics. However, the participants also shared that, overcoming these dispositions and seeing the “light bulbs” go off is a rewarding part of their job.

### *The Role of Experience*

All four participants repeatedly described in their interviews the important role that experience played in their retention. In many of the interview questions, when the participants were asked to share why they do something in their classroom or how they learned to cope with a certain issue, they often credited experience. Leslie described her first year of teaching as a “total disaster.” Ann discussed how she tried to grade every single assignment and problem that her students did and how it took up all her time. The participants shared getting through these mistakes and issues required experience. When Donna was asked if she has always reflected in her teaching, she responded, “when you are new, and you don’t have experience, you are not reflecting, you are just keeping your

nose up.” Other participants expressed similar feelings about their beginning years of teaching. Participants were asked to identify how many years of experience it took for them to feel confident as a teacher. Leslie shared it took her nearly 10 years and for Ann, it was after 5 years. Donna could not pinpoint a certain number of years, but she felt it was when she finally found her fit as a teacher, the grade level and content area that she felt most comfortable, which was not at the beginning of her career. Ben felt more confident after the first year at each campus. It appears that Leslie, Ann, Donna, and Ben did not begin their careers managing things the way they do now. They all reported that they have had to learn and grow from experience.

#### *Role as an Experienced Teacher*

All four participants explained that they felt they play an important role in the retention of other mathematics teachers because of their experience. They all provided examples of different ways they support their colleagues, whether it is by sharing resources, providing advice and recommendations, listening, supplying positive support, or by working to ensure their colleagues have what they need to be successful. Ben shared how he is willing to sacrifice his own time to help his colleagues. Leslie expressed how many teachers come to her room to borrow resources or just vent. She explained that her room is a “safe room,” where teachers can go and vent, celebrate, or cry. As previously mentioned, all four participants, at some point, have mentored or currently mentor student teachers from the local university. Donna gave several examples of former student teachers of hers that keep in contact with her and often credit her for their success in the classroom. She also gave examples where she was very honest with her student teachers, encouraging a few of them to find the profession that better fits their

passion. As experienced teachers, they all provided different suggestions for addressing the teacher retention issue. All four participants emphasized that new mathematics teachers need to feel supported to remain in the classroom. As experienced mathematics teachers themselves, they shared they can help provide part of that support for these new teachers.

### *Finding your Fit*

While all four participants mentioned the importance of finding your fit as a teacher, it emerged as a theme for both Leslie and Donna. All four participants have taught at a variety of different schools. One reason for some of these moves is that they were searching for the grade level and mathematics course that best fit their personality. Donna shared she found her fit when she became a departmentalized mathematics teacher. When she was approached to move to the junior high to teach mathematics, she was very hesitant. After some encouragement from her friend and her husband, she moved to the junior high. She explained that she has found her fit as a junior high mathematics teacher and loves every minute of it. Leslie shared that in her experiences, she has switched schools to find a better fit. She spent a few years teaching mathematics at the junior high level, but soon realized that it was not the grade level for her. Leslie and Donna both explained that mathematics teachers need to understand that it is okay for them to move schools and find their fit and that this does not make you a bad teacher. They credit finding their fit as helping them to remain in the classroom.

### *State Testing/Mandates*

Interviews with Donna and Ben revealed an emerging theme of state testing and mandates. Both are middle school teachers in heavily tested subjects. Donna shared the major change in education that she has witnessed is the amount of testing that students go through. Since Donna teaches at a GT campus, she is not evaluated on the percentage of students that pass the assessment, but instead, their progress measure. Students do not get their results until July and Donna expressed frustration that they do not get the opportunity to celebrate the successes with the students. Ben responded more negatively to the impact of testing and mandates. Many of the issues in education, according to Ben, are a result of mandates passed down by individuals not associated with education. Ben explained that he tries not to let the pressure of the tests influence how he teaches and works with students. The amount of testing and the pressures associated with it have caused him to consider moving to the high school in a non-tested mathematics course. While Leslie and Ann shared the different high-stakes tests they have seen in their career, it was not a theme for them, but this may be because they both currently teach upper high school mathematics courses that are not tested.

### *Salary*

Salary only emerged as a theme for Ben. All four participants reported that salary was not a motivating factor when they first became teachers. Leslie shared how she took a large pay cut from her job in the private sector when she became a teacher. Leslie, Ann, Donna, and Ben all reiterated that people who go into teaching for the money will not last. Ben reported how being a teacher has placed a financial strain on his family. This strain has been so impactful, that when Ben was asked if he would still be teacher if he

could do it all over again, he did not know, and it was because of the salary. Ben explained that if he had the resources, he would start a grant or scholarship for teachers who were heads of households because it is difficult to support a family on the income of one teacher. Ann shared that she receives an additional bonus from her district because she teaches mathematics, which she likes, but feels that new teachers are often over-paid when there is no guarantee that they will remain in the classroom. She shared that experienced teachers are often overlooked because districts are too focused on recruiting new teachers. Donna shared that while she made very little in the beginning of her career, her salary today is fair.

### *Conclusion*

In this chapter, findings from the data analysis were introduced and reported. In the tradition of multiple case study design, each participant was analyzed as individual cases. These cases were analyzed using pattern matching and constant-comparison techniques. Following the four individual cases, a cross-case analysis was conducted to compare and contrast the four cases with regard to the research questions and emerging themes from the analysis. Using recommendations from Creswell (2013) regarding qualitative data analysis, the researcher developed “naturalistic generalizations from analyzing the data, generalizations that people can learn from the case either for themselves or to apply to a population of cases” (p. 200). In Chapter Five, the researcher discusses the implications of these findings.

## CHAPTER FIVE

### Discussion and Implications

Teacher turnover is a major issue facing schools today, as it has critical implications both financially and academically for schools. In an attempt to address the issue of teacher turnover, researchers have called for focusing on improving the retention of teachers and exploring the role that resilience plays in teachers' decisions to remain in the classroom (Bobek, 2002; Cochran-Smith, 2004; Day & Gu, 2009; Doney, 2013; Gu & Day, 2007; Howard & Johnson, 2004; Ingersoll, 2001; 2003; 2011; Ingersoll & Smith, 2004; Mansfield et al., 2012). In this narrative case study, the researcher investigated mathematics teacher retention by focusing on the teaching narratives of four experienced secondary mathematics teachers still in the classroom teaching. The intentions were to both highlight the narratives of these experienced teachers to identify the conditions and experiences that contributed to their retention and also apply a theoretical framework of teacher resilience. The study consisted of four participants purposefully selected by the researcher that met the following criteria: they were current secondary mathematics teachers, they had at least 19 years of teaching experience, and they all taught at different schools in the Central Texas region. In this narrative, multiple case study, each participant was treated as an individual case, analyzed, and then compared with one another for a cross-case analysis. Results from the analysis are detailed in Chapter Four. In the remaining sections of Chapter Five, a discussion of significant findings, with connections to the literature will be shared. Additionally, implications and

recommendations from the results of this study will be outlined along with possibilities for future studies.

*Discussion of Significant Findings Related to the Research Questions and Connections to the Literature*

The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Two research questions were crafted to guide the researcher in this study.

1. Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?
2. What role does resilience play in the retention of experienced secondary mathematics teachers?
  - a. What are the profession-related characteristics of experienced secondary mathematics teachers?
  - b. What are the emotional-related characteristics of experienced secondary mathematics teachers?
  - c. What are the social-related characteristics of experienced secondary mathematics teachers?
  - d. What are the motivational-related characteristics of experienced secondary mathematics teachers?

Through the use of interviews, observations, and written narratives, three significant findings related to these research questions emerged from the analysis. These include:

- Administrative support contributes to the retention of experienced secondary mathematics teachers.
- The success of former students contributes to the retention of experienced secondary mathematics teachers.
- Resilience plays a major role in the retention of experienced secondary mathematics teachers.
  - Experience is needed to build resilience.

#### *Administrative Support Contributes to the Retention of Experienced Secondary Mathematics Teachers*

All four participants referenced in their interviews how administrators have influenced their decisions to remain in the classroom and provided examples of how administrators have supported them in their career. Both Leslie and Ann shared examples of several administrators who went out of their way to show appreciation. Leslie and Ann explained that these types of interactions with administrators have helped them to remain in the classroom and encouraged them during difficult times in their teaching. Ben and Donna discussed how supportive administrators in their careers have given them the autonomy in the classroom that they value. Having this autonomy during their teaching careers, according to Ben and Donna, has contributed to their retention in the classroom. This finding is strongly supported in the literature. Researchers on teacher retention have found teachers who have remained in the classroom frequently reported the important

role that administrative support played in their retention decisions (Brunetti, 2001; Curtis, 2011; Dainty et al., 2011; Robbins-LaVicka, 2007). Podolsky et al. (2016) shared in their summary of research findings that teachers who report strong levels of administrative support are more likely to remain in teaching. They further explained, “teachers who expected to remain in teaching in their school rated emotional and environmental support as the attributes they valued most highly from their administrators” (Podolsky et al., 2016, p. 39). Interview responses from Leslie, Ann, Donna, and Ben included frequent examples of emotional and environmental support they received from administrators that they identified as contributing to their retention. This evidence supports the conclusions from the literature. Teachers seem to be more willing to remain in the classroom when they have administrators that recognize the hard work and effort they put into their practice and when they are given the freedom and autonomy to do what they deem best for their students in their classrooms.

Researchers on teacher turnover frequently cite lack of administrative support as one of the key reasons teachers leave the profession (Kersaint et al., 2007; Kukla-Acevedo, 2009b; Loeb et al., 2005; Scherff, 2008). In Kukla-Acevedo’s (2009b) study on teacher turnover, lack of administrative support emerged as one of the main reasons teachers reported leaving the profession. Leslie, Ann, Donna, and Ben all shared experiences of working with unsupportive administrations. Although all participants have experienced supportive administrators and described how they contributed to their retention, they have not been immune from unsupportive administrators who made their efforts in the classroom difficult. Leslie cited several examples of administrators during her career that often implemented policies that she did not agree with or created

environments where it was difficult to work. Both Leslie and Ben discussed how they moved to different schools because of unsupportive administrators. Donna explained how a previous negative encounter with an administrator still upsets her today. Though all four participants have experienced unsupportive administrators, they all shared they have encountered more supportive administrators than unsupportive. The experiences of the four participants suggest the important role that administrative support plays in the retention of teachers. Despite working with unsupportive administrators during some point in their careers, all four participants were able to either manage these encounters or move to schools where they could find the support they needed. It is important to note, however, the participants did explain that if they were repeatedly faced with unsupportive administrators, it would have been very difficult to remain in the classroom. Thus, it appears in order to improve teacher retention, it is critical that proper administrative support is present that provides teachers the autonomy and recognition needed to contribute to their success in the classroom.

*The Success of Former Students Contributes to the Retention of Experienced Secondary Mathematics Teachers*

When asked in multiple interviews to identify a condition or experience that had contributed to their retention, all four participants shared examples of how the success of their students after graduating plays an important role in their retention in the classroom. This evidence is aligned with the literature on teacher retention. In a study on experienced urban teachers, Moe (2014) found the teachers in her study often pointed to the success of their former students as driving their motivation to remain in the classroom. In a second study on experienced teachers, Brunetti (2001) found participants in his study expressed joy in watching their former students succeed and visiting with

them when they came back after graduation. It appears that when teachers are made aware of the successes of their students, they find more satisfaction in their work and are more likely to remain in the classroom. Teachers are sometimes unaware of the impact they have on students because it is often not realized until later on. Leslie, Ann, Donna, and Ben repeatedly provided examples of former students who had contacted them and thanked them for all that they had done for them while they were in their classroom. Ben shared his example of his “rainy-day” fund of student correspondences that he looks through when he feels frustrated or upset. Donna explained that she lives in the same community she teaches in so that she can see her students after they leave her classroom and hear about their successes. Being made aware of the impact they have had on students seems to be a key aspect of the retention of the teachers in the current study. Evidence from the participants’ interview responses suggests that an awareness of the difference they have on the lives of their students is a way for these teachers to manage the difficulties and stresses they often experience in the classroom.

#### *Resilience Plays a Major Role in the Retention of Experienced Secondary Mathematics Teachers*

Evidence from the participants’ interview responses, observation field notes, and narrative writing prompts appears to support the idea that resilience is a necessary component of teacher retention. Leslie, Ann, Donna, and Ben all admitted in their interview responses that had they not been resilient, they would no longer be in the classroom teaching. This data is aligned with the literature on the role of resilience in teacher retention. Several researchers have argued that resilience is necessary for teacher retention (Bobek, 2002; Day & Gu, 2009; Doney, 2013; Howard & Johnson, 2004; Mansfield et al., 2012; Patterson et al., 2004; Tait, 2008). The researcher specifically

prompted each participant to point to a time in their career when they had to be resilient and the strategies they used to navigate this time in their lives. Each participant was able to provide more than one detailed example of a difficult circumstance they experienced in their teaching and how they managed to be resilient during this time. Ann chose to write her narrative over a time in her career when she had to be resilient and shared the story of when she was forcibly transferred to a different school 6 weeks into the semester. The interview responses from all four participants provided evidence that these teachers face daily challenges and issues within their teaching that requires them to be resilient. Being able to manage these daily challenges is a key part of resilience. When resilient teachers encounter issues within their teaching, they look to solve and manage the issue, instead of playing the victim (Patterson et al., 2004). Tait (2008) argued that this ability of resilient teachers, to manage the issues and problem solve, are predictors of a commitment to a teaching career. Evidence from the participants' interview responses and their written narratives seem to confirm Tait's claim. Leslie, Ann, Donna, and Ben have had to be resilient throughout their careers and this seems to have supported their retention.

The teacher resilience framework (Mansfield et al., 2012) served as the theoretical framework for this study. The four dimensions of the framework, *professional*, *social*, *emotional*, and *motivational*, and their accompanying 23 characteristics, were used by the researcher to craft interview responses and develop observation protocols. Interview responses and field notes from the researchers' observation protocols provided evidence that these four dimensions and 23 characteristics were present in these experienced teachers. This evidence seems to confirm Mansfield et al.'s (2012) argument that resilience is a multi-dimensional phenomenon encompassing a range of overlapping

professional, social, motivational, and emotional aspects of teaching. These 23 characteristics describe different professional and personal factors related to teaching. Researchers have found that a major cause of teacher turnover is when teachers are unable to balance the professional and personal factors illustrated in the theoretical framework (Buchanan, 2009, 2012; Cieśliński & Szum, 2014; Curtis, 2011; Kersaint et al., 2007; Tye & O'Brien, 2002). In the four different interviews conducted by the researcher, participants were prompted with questions concerning these four dimensions and their experiences with the characteristics. Several of the characteristics in the framework, such as *is organized and manages time, uses effective teaching skills, and builds support and relationships*, are observable, which is why the researcher conducted observations of the participants' teaching and participation in a meeting. Evidence from the interview responses and observation protocols suggests that Leslie, Ann, Donna, and Ben were able to remain in teaching because their resiliency had helped them to manage the personal and professional demands of teaching that often lead to teachers leaving the profession. In addition, all four participants either provided examples in their interview responses of how they enact the characteristics of Mansfield et al.'s (2012) framework or were observed engaging in them by the researcher.

*Experience is needed to build resilience.* While the evidence from the interviews, observations, and written narratives suggests for these participants, resilience is a necessary condition for retention, they all described that resilience is something they developed over the course of their career. Each participant shared in multiple interview responses that many of the characteristics of resilience that they engage in now were not present at the beginning of their career. For example, all four participants expressed the

important role that reflection, a characteristic of the profession-dimension of resilience, plays in their teaching. When they first began teaching, however, they all shared how they rarely reflected. Donna explained that as a new teacher, you do not have time to reflect, “you are just keeping your nose up.” Leslie often concluded many of her interview responses regarding the characteristics of resilience with, “that takes experience.” Ben and Ann echoed similar comments, explaining that over time, they have developed different strategies to be resilient. The importance of teacher experience is well documented in the literature as well. Researchers have found experienced teachers are, on average, more effective than their less experienced peers (Han et al., 2016; Ladd, 2013; Papay & Kraft, 2015). Ladd (2013) argued that as teachers gain more experience, they not only are more effective at raising student test scores, but they also become better at other areas of teaching, including decreasing absences. The results from this study seem to suggest that as teachers gain experience, they also tend to develop characteristics of resiliency. It appears that based on Leslie, Ann, Donna, and Ben’s interview responses, that in their first few years of teaching, they lacked many of the resilient characteristics they display today. Thus, it may be that there were other factors in their early years of teaching that enabled these four teachers to gain the experience needed to build their resiliency.

#### *Summary of Significant Findings Related to the Research Questions*

Analysis of the participants’ interview responses, observation field notes, and written narrative revealed three major themes that contribute to teacher retention: administrative support, the success of former students, and resilience. Administrative support seems to support the retention of teachers. All four participants provided

examples of how administrators have provided them the level of support needed to be successful in the classroom. They also described examples where they felt unsupported and provided details of how they managed to navigate this lack of support. Learning of the success of their former students was also identified by the participants as contributing to their retention. This conclusion is supported in the literature as well. When teachers learn about the successes of their former students and the role they played in that success, they tend to continue teaching. Finally, resilience appears to play an important role in the retention of teachers. Without being resilient, the participants in this study would no longer be in the classroom. This conclusion is documented in the literature, further supporting the critical role that resilience plays in teacher retention.

#### *Discussion of Additional Significant Findings and Connections to the Literature*

Apart from the themes related to the conditions and experiences identified by the participants as contributing to their retention and as well as the role of resiliency, the analysis of the data sources for this study also uncovered two additional themes related to teacher retention. These themes included:

- Challenges and benefits of teaching mathematics
- Finding the right fit in teaching to promote retention

These themes, with connections to the literature, are described in the next sections.

#### *Benefits and Challenges of Teaching Mathematics*

One of the reasons argued for the need for this study was the lack of retention studies on specific content areas. The current literature on teacher retention tends to generalize the issue, by looking at teachers in different content and grade levels at the

same time. Several researchers, however, have found the factors influencing retention varies among content areas, highlighting the challenges each teacher faces in their respective disciplines (Guarino et al., 2006; Hancock & Schreff, 2010; Murname et al., 1991). The participants in this study provided numerous examples concerning what they identified as challenges and benefits of teaching mathematics. Many of these examples, however, were not necessarily unique to the teaching of mathematics and may be found in other teaching disciplines. Three of the four participants shared in multiple interviews their passion for mathematics and described how their love of mathematics contributed to their decision to become teachers. Ann was a mathematics major in college, while Leslie and Donna shared different experiences they had with mathematics that fostered their enjoyment. Other researchers have found that a passion for the content area is a motivating factor for teachers remaining in the classroom. Curtis (2011) found the mathematics teachers in her study identified their passion for mathematics as a motivating force behind their decisions to teach. Priyadharshini and Robinson-Pant (2003) reported in their study on people who change their careers to teaching that their participants frequently cited their knowledge and enjoyment of their specific content area as an influencing factor in their decision to become a teacher. It appears that passion and enthusiasm for the discipline taught by a teacher is an important factor related to teacher retention.

Participants also shared some of the challenges of teaching mathematics. All four participants, in multiple interviews, explained that one of the most difficult aspects of teaching mathematics is addressing the negative dispositions that students have towards the subject. Negative student dispositions towards mathematics were documented in the

literature (Mohr-Schroeder et al., 2017). Negative student attitudes have been connected to the lack of proficiency and interest demonstrated by students in mathematics (Rice et al., 2012). Leslie, Ann, Donna, and Ben all shared in interviews how discouraging it is for them when they encounter students who come into their classroom expressing that they “are not good at mathematics” or that “they hate mathematics.” These negative dispositions provide another challenge in teaching that Ann argued is unique to mathematics. She explained, “It’s just one of the more difficult subjects to teach.” The challenge of negative student dispositions is not necessarily unique to the teaching of mathematics, as suggested by Ann. Other researchers have found that negative student dispositions toward a specific discipline can often lead to teachers leaving the classroom (Lloyd & Sullivan, 2012; Scherff, 2008; Tye & O’Brien, 2002). This seems to suggest that a key aspect to teacher retention is the ability of the teacher to overcome the negative student dispositions towards the discipline taught by the teacher. The participants in this study all shared different strategies they have had to develop to counter these negative dispositions, but still admitted that these dispositions add additional stress to a demanding profession.

Another discipline related stressor that emerged from the data sources was the influence of teaching a heavily tested subject. Two participants, Donna and Ben, are junior high school mathematics teachers who teach grade levels that are heavily tested at the state level. Both Ben and Donna expressed frustrations with teaching a state tested subject. Donna was most upset with the timing of the tests, expressing disappointment with not being able to celebrate with the students who passed. Ben, in multiple interviews, often described how the pressures of testing has negatively impacted his

colleagues. He described how his resiliency and focusing on his students has helped him manage the stresses of teaching a heavily tested subject. He did admit though, that he has considered teaching at a different grade level in an attempt to avoid the state mandated assessments. While mathematics is one of the heavily state tested disciplines, it is not the only one. Several other researchers have noted the demands of accountability and high-stakes assessments related to specific disciplines have contributed to teachers leaving the classroom (Kersaint et al., 2007; Lloyd & Sullivan, 2012; Tye & O'Brien, 2002). Thus, it appears that accountability and testing demands related to the content level taught presents challenges for teachers that they must learn to navigate if they wish to remain in the classroom.

#### *Finding the Right Fit in Teaching to Promote Retention*

Leslie, Ann, Donna, and Ben, in their interview responses, described the importance of teachers finding the right fit to support their retention. The right fit, according to the participants, includes a grade level and specific mathematics course related to the strengths and expertise of the teacher. Previous researchers have found teachers who reported teaching assignments outside their expertise or excessive teaching loads, tend to leave the profession (Johnson & Birkeland, 2003; Luekens et al., 2004). Participants in these studies seemed unable to find the right balance or fit for them at the schools where they taught. Leslie, Ann, Donna, and Ben were prompted by the researcher to describe when they felt comfortable as teacher, when teaching “clicked” for them. All four participants shared that a contributing factor to them feeling comfortable and confident as a teacher was when they found their right fit. Donna explained she found her fit when her team departmentalized, and she was allowed to teach mathematics. Leslie

described her experiences teaching junior high and how she realized this grade level was not a good fit for her and moved to teaching at a high school. Since finding the right fit was so important to all four participants, they all provided examples of when they decided to switch to a different school in an attempt to find a better fit for them. This conclusion is supported by the literature. Several researchers found teachers often switch schools to obtain teaching assignments more aligned with their expertise (Johnson & Birkeland, 2003; Luekens et al., 2004).

Participants were asked to respond to multiple interview questions concerning what they recommended for new mathematics teachers entering the profession to promote their retention. All four participants reiterated their emphasis on finding the right fit. Both Donna and Leslie shared that new mathematics teachers need to realize that it is acceptable to switch schools in order to find their ideal fit. They referenced how this helped during their own careers to support their retention. According to the participants, new mathematics teachers need to be encouraged to switch schools where they teach when appropriate to find the right fit for them. It appears that since Leslie, Ann, Donna, and Ben all feel that it is vital that teachers find the school that is the best fit for them, they recommend moving schools as needed to find this fit. This conclusion and recommendation, however, is contrary to previous studies in the literature on teacher turnover. Several researchers found that generally less effective teachers tend to leave their initial placements for different teaching jobs, and the teachers that remain, outperform those that have left (Boyd et al., 2008; Hanushek & Rivkin, 2010). Additionally, Ronfeldt et al. (2013) found when teachers leave schools, the teachers that are left behind are also negatively impacted by the departure of their colleagues. These

researchers recommend schools do everything they can to help keep grade-level teams intact to avoid the issues of teacher turnover. Thus, if finding the right fit for teachers is important for retention, but teachers leaving schools negatively impacts student achievement, it appears school leaders need to be aware of the needs of their teachers to find the best fit for them within their school. This would address both recommendations. To prevent teachers from moving schools to find the right fit, school districts need to be able to find the best placements for their teachers and make changes when needed to ensure that teachers can find their fit at that school.

#### *Summary of Additional Significant Findings and Connections to the Literature*

Analysis of the data sources provided additional findings related to secondary mathematics teacher retention. Teaching mathematics provided challenges for the teachers in this study. All four participants shared the impact that student dispositions towards mathematics have had on their teaching. The junior high teachers in this study described the pressure that state testing places on their teaching and the impact it has on them and their colleagues. It appears it is important to take into consideration the challenges that each content area presents when examining the factors contributing to teacher retention. It is also critical for secondary mathematics teachers to find the right fit as a teacher. When mathematics teachers find the grade level, courses, and administrators that best support their philosophy, teachers seem more likely to remain in the classroom. All four participants shared how they changed schools where they taught in order to find the right fit for them and encouraged new mathematics teachers to do the same.

### *Implications and Recommendations for Teacher Retention*

Evidence from this study provided several implications for different groups to support the retention of secondary mathematics teachers. In conjunction with the implications for these groups, the researcher also provides recommendations to support retention as well. These groups and recommendations include:

- Administrators
  - Support teachers by showing appreciation and providing autonomy.
  - Develop professional development opportunities related to retention.
  - Support teachers in finding their right fit.
  - Connect with former students to highlight successes and share with teachers.
- Teacher Preparation Programs
  - Incorporate the characteristics of resilience within coursework and field experiences.
  - Provide a variety of field experiences in different grade levels and content areas.
- Education Policymakers
  - Craft policy recommendations related to specific grade levels and content areas related to teacher retention.
  - Work with current, experienced teachers when developing policies related to teacher retention.

The implications and recommendations for each of these groups, are detailed in the next sections.

### *Administrators*

The participants in this study all identified administrative support as a key condition to their retention. This conclusion is well supported in the literature, and thus, it appears to be a vital factor in teacher retention. In Chapter Four, the researcher presented different examples provided by the participants of the ways administrators have supported or not supported them in the past. Although the importance of administrative support in teacher retention is well known and often listed as one of the contributing reasons teachers leave the profession. Stearns, Banerjee, Moller, and Mickelson (2015) call for efforts to “emphasize hiring and training competent administrators who are capable of clearly communicating goals to school staff, as well as obtaining staff buy-in for those goals” (p. 21).

The retention of secondary mathematics teachers also appears to be supported when teachers are made aware of the successes of their former students. It is often difficult for teachers to realize the impact they have had on a student until much later on, usually after the student has graduated. The participants in this study repeatedly shared in their interviews how hearing from former students who have graduated contributes to their decision to remain in the classroom. The successes of their former students helped motivate them to continue their work in the classroom because they are making a difference in the lives of their students. Moe (2014) similarly found teachers’ retention is positively influenced by hearing from and learning about the success of their former students.

*Recommendations for administrators.* The researcher recommends that administrators be made aware of the important role they play in the retention of

secondary mathematics teachers. Administrators, based on the results of this study, can improve teacher retention by showing appreciation to their staff. Writing thank you notes, stopping by classrooms to thank teachers, and providing autonomy are all ways administrators can show appreciation to their teachers. To ensure all teachers are included, administrators could develop a plan to stop by every teachers' classroom at least once a month to check in on how things are going and provide encouragement.

A second recommendation for administrators is to implement an intensive professional development program for new teachers, as beginning teachers are more likely to leave the profession than their more experienced peers (Ingersoll, Merrill, & Stuckey, 2018). This type of early professional development could be an opportunity for administrators to immerse new teachers in the school district's culture and learning outcomes. Totaro and Wise (2018) described a successful professional development program at their school district that engaged new teachers in an intensive orientation that emphasized problem solving, team building, lesson planning, and project design. Totaro and Wise explained that this type of sustained professional development has helped their district develop and retain their teachers.

Based on the results from the current study, a third recommendation for administrators is to support their teachers in finding the right fit. Leslie, Ann, Donna, and Ben all emphasized how important it was for them to find the right grade level and mathematics courses that they felt most comfortable teaching. Therefore, administrators, when hiring teachers, need to make sure they understand the different experiences, including the previous grade levels and courses taught by the teacher, when filling vacancies. Administrators also need to understand the courses and grade levels that

teachers feel most comfortable teaching. This may include allowing teachers within the school to more freely try new courses and grade levels in an effort to find their right fit.

A final recommendation for administrators is to develop a plan to connect with former graduates of their school and highlight their successes. Social media provides an opportunity for schools to keep in contact with former students. Additionally, through these platforms, administrators could create and send follow-up surveys to track their former graduates. This information should then be communicated back to the teachers at this school. Inviting former graduates back to their schools through special alumni events could also provide an opportunity for teachers to interact with their former students and learn about their successes.

### *Teacher Preparation Programs*

The themes that emerged from the data analysis of this study present several implications for teacher preparation programs. The first implication involves emphasizing and promoting resilience in the preparation of future teachers. Resilience appears to play a vital role in secondary mathematics teacher retention. As described in Chapter Four, all four participants indicated without being resilient, they would no longer be in the classroom. Teacher resilience seems to help teachers manage the difficulties that accompany teaching. Resilience also appears to help teachers overcome many of the issues that teachers who leave the profession report as driving them out. Thus, it seems critical that teacher preparation programs integrate resilience in their coursework.

Teacher retention also seems to be supported when teachers find their right fit. While finding the right fit has implications for administrators, teacher preparation programs can also help develop this area in teachers as well. As mentioned previously,

Leslie, Ann, Donna, and Ben all emphasized in their interview responses how finding the right mathematics course and grade level to teach contributed to their retention. They all described in their narratives how finding this right fit took time and that they often moved to different schools in their efforts to find this fit. When these teachers found their fit, they all described that teaching began to “click” for them. Teacher preparation programs need to provide opportunities for preservice teachers to find their right fit in the classroom.

*Recommendations for teacher preparation programs.* The researcher recommends that teacher preparation programs incorporate the characteristics of resilience within their course work and field experiences. Teacher educators need to spend time helping pre-service teachers reflect on and develop the characteristics related to teacher resilience. Mansfield et al.’s (2012) framework, which served as the theoretical framework for the current study, proved to be an effective tool in describing characteristics of teacher resilience. The teachers in the current study all displayed evidence of engaging in the 23 characteristics of this framework. Using this framework to develop activities and discussions related to teacher resilience could prove beneficial in teacher preparation programs. Teacher preparation programs could also plan professional development opportunities related to teacher resilience for teachers currently in the classroom teaching. Loucks-Horsley and Matsumoto (1999) argued professional development is central to reform in education. As a result, with the important role that resilience plays in retention, it is important for teachers to be exposed to professional development opportunities related to resilience. Aguilar (2018) developed the *Mind the Gap* framework for teachers focused on “a person’s desired ability and current ability in accomplishing something” (p.

25). According to Aguilar, emotional resilience is key to this framework, and thus designs and implements professional development related to emotional resilience. Thus, there are resources available for teacher preparation programs to conduct professional development sessions related to resilience in teaching. The four participants in the current study shared that many of the resilient characteristics they engage in were developed over time. Therefore, it appears that focusing on resiliency should be ongoing, as teachers at any stage of their career may benefit from this type of training.

A second recommendation for teacher preparation programs to promote teacher retention is to provide a variety of field experiences for their preservice teachers. For teachers to find their right fit, they need experiences in different classroom settings. This recommendation is also highlighted in the Association of Mathematics Teacher Educators' (2017), *Standards for Preparing Teachers of Mathematics*. These standards are a guide for the preparation of Pre-K-12th grade mathematics teachers. Standard 3 relates specifically to teacher preparation program characteristics and Indicator P.5.3 calls for teacher preparation programs to design frequent and varied field experiences that provide teacher candidates the opportunity to teach diverse courses and different grade levels. For secondary teachers, teacher preparation programs should provide field experiences at both the junior high and high school levels. This may help teachers find the grade level that best fits their strengths and personality. In addition to the different grade levels, teacher preparation programs should ensure that preservice teachers have a variety of experiences in different courses within the discipline. For example, field experiences for secondary mathematics preservice teachers should provide them opportunities to work in beginning mathematics courses such as Algebra 1 or Geometry

and more advanced courses such as statistics or Calculus. Providing a variety of field experiences for preservice teachers may help them to find their right fit in teaching, which may help them in finding future teaching positions related to this fit. As a result, they may be more likely to remain in the classroom for a longer period of time.

### *Education Policymakers*

Many of the policy initiatives addressing teacher turnover and retention, as documented in Chapter Two, cite research studies that include teachers of all grade levels and content areas within the same study. As a result, many of the recommendations provided in these policy studies presents a one size fits all approach to address the issues of teacher turnover and retention. While there are certainly several recommendations that relate to all teachers to support their retention, studies, such as the current one, demonstrate the significance of the content area and grade level taught by teachers. Each content area and grade-level presents challenges for teachers.

Another implication of this study for policymakers is the role that experienced teachers play in addressing teacher turnover. All four participants shared in their interviews that they feel they play an important role in preventing teacher turnover. To them, this included supporting new mathematics teachers in the department or working with student teachers from the local university teacher preparation program. This seems to support Howard and Johnson's (2004) call for researchers and policy makers to focus on those teachers who have remained in the classroom as a way to address teacher turnover.

*Recommendations for policymakers.* The researcher recommends that as policymakers attend to teacher retention that they focus on more specific initiatives related to the content area and grade level taught by the teacher. For example, one of the policy recommendations in supporting teacher retention from Podolsky et al. (2016) was to “survey teachers to assess the quality of teaching and learning environment” (p. ix). While this is an important recommendation, the survey will do very little to address the issue of teacher turnover if it groups all teachers together. Many of the challenges related to the teaching and learning environment a first-grade teacher faces may be different from a high school mathematics teacher. As a result, the researcher recommends that surveys, like the ones suggested by Podolsky et al. be distributed to and disaggregated by teachers of similar grade levels and discipline areas. This may provide more targeted information related to specific issues within each grade level and content area.

A second recommendation from the researcher is that as policymakers attend to teacher retention, some of the focus should be on the experiences of those teachers who have demonstrated longevity. The participants in this study revealed they are more than willing to provide support and recommendations to new mathematics teachers to encourage their retention. The experiences and recommendations of current, experienced teachers could provide additional information and examples to help craft policy that supports the retention of all teachers. Using narrative inquiry, as described in Chapter Two and Three of the current study, is one way to highlight the experiences of these teachers to provide additional insight on what influences teacher retention. Thus, when considering future policy decisions regarding teacher retention, it appears that

experienced teachers may provide valuable information and insight that can be used to craft future initiatives to promote teacher retention.

### *Recommendations for Future Research*

Future research studies on teacher retention could build upon the work from the current study. The following areas could benefit from further research:

- Resilience and Teacher Retention
  - How teacher preparation programs promote resilience
  - Further investigation of Mansfield et al.'s (2012) framework
- Expanding the current study
  - Following experienced secondary mathematics teachers throughout the school year
  - Relationship between why teachers enter the profession and retention
  - Looking at experienced teachers in other grade levels and content areas
    - Testing the themes from this study

### *Future Research on Teacher Resilience and Retention*

*Teacher preparation programs and resilience.* The findings from the current study and others in the literature highlight the important role that resilience plays in the retention of teachers. Future studies could analyze how and/or if university teacher preparation programs incorporate resilience into their teacher education courses and the resulting impact. These studies could examine course syllabi, readings, assignments, and field experiences to see if there are any connections to building and supporting resilience.

Additional studies could examine the impact of the teacher resilience framework (Mansfield et al., 2012) on pre-service teachers and how it influenced their retention.

*Investigating the teacher resilience framework.* The researcher used Mansfield et al.'s (2012) teacher resilience framework to examine the role resilience plays in the retention of experienced secondary mathematics teachers with at least 19 years of experience. Future studies could examine how this framework or resilience in general, influences teachers with fewer years of experience. These studies could document how teachers, with varying levels of experience, engage and develop their own resiliency.

Additionally, while all four participants provided evidence in their interviews, observations, and narrative of all 23 characteristics identified in this framework, several of these characteristics did not emerge as themes. For example, *seeks help and takes advice*, from the social dimension, did not emerge as a major theme. While the participants all shared a few examples in their interviews of when they had done this in their career, it was difficult for the researcher to observe this in action. The same is true for other characteristics: *solves problems, bounces back, has confidence and self-belief*, and *likes challenges*. Future research studies using this framework could target these characteristics, using additional data sources that could include targeted interview questions and observations. The observations could be used to test the fidelity of the participants' responses in the interviews. Also, several of the characteristics in this framework were very similar. For example, *persists* and *bounces back*, as well as *cares for own wellbeing* and *copes with job demands/stress* seem very similar and were difficult for the researcher to distinguish between at times. Future research studies could be designed to define each characteristic in the framework. Defining each characteristic

could improve the effectiveness of the framework by providing researchers specific actions and responses to look for when analyzing resilience. Those using the framework to build resilience in teachers could benefit from these definitions as well, as they would provide examples and guidelines of these characteristics in action.

### *Expanding the Current Study*

*Following current, experienced secondary mathematics teachers throughout the school year.* Based on the implications described in the previous section, future qualitative studies could further examine the practice of experienced secondary mathematics teachers. This current study incorporated three observations in the data collection, two of the participants teaching a lesson and one of their interaction with colleagues in a meeting. Future narrative studies could incorporate additional observations of experienced secondary mathematics teachers throughout the school year. This could include how these teachers plan for instruction, especially at the beginning of the school year. Observations could also include the practices of an experienced secondary mathematics teacher throughout an entire school day, documenting how the teacher manages their work during a “typical” school day. The researcher could then conduct additional follow-up interviews with the participants concerning what was witnessed during the observations. These observations could provide further evidence regarding the practices of experienced secondary mathematics teachers and their relationship to resilience and retention. Evidence from these observations could provide helpful recommendations for teacher preparation programs as they would highlight the practices and characteristics of experienced teachers.

*Relationships between why teachers enter the profession and retention.* In this study, the four participants explained the different reasons they went into teaching. Future researchers could examine what, if any, relationship exists between the reasons teachers provide for entering the profession and their retention. For example, in the analysis of data sources for Ben, his faith emerged as a contributing factor to his retention. Ben shared that he has remained in teaching because he has not felt “called” to do anything else. Ben explained that his view of teaching as a calling is related to his retention. Other scholars have explored this idea of teaching as a vocational calling (Hansen, 1995; Palmer, 2007). Hansen (1995) explained that, “the idea of vocation presupposes a social practice in which to enact one’s inner urge to contribute to the world” (p. 5). Thus, according to Hansen, teachers who view their work as a vocation or calling are motivated by unique factors. Future studies in teacher retention, therefore, could examine the relationship between teachers who view their purpose as a calling and their retention decisions. These studies could highlight any potential similarities or differences between teachers’ motivations to become a teacher and their longevity.

*Looking at experienced teachers in other grade levels and content areas.* As described in Chapters Two and Four, the content area and grade level of the teacher can provide challenges for teachers. Future studies on teacher retention could examine experienced teachers in specific content areas and grade levels. For example, a study could look at experienced secondary language arts teachers or experienced first-grade teachers. Resilience could serve as the framework for these studies as well. These content and grade-level specific studies could provide additional information related to teacher retention. Furthermore, these content specific retention studies could be compared with

one another, highlighting any similarities and differences related to retention among the content areas. These additional studies could also be a way to test the themes that emerged from the current study on secondary mathematics teacher retention. In this study, the researcher found administrative support, the successes of former students, and resilience all play an important role in the retention of secondary mathematics teachers. Additionally, finding the right fit and managing the challenges of the content area emerged as themes related to teacher retention. Future studies on teacher retention to test these same themes with other experienced mathematics teachers or teachers in different content areas could be beneficial.

#### *Reflections from the Researcher*

The purpose of this narrative case study was to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of four experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. The researcher hoped the evidence from this study could help address secondary mathematics teacher turnover by providing recommendations and suggestions to better support and prepare mathematics teachers for long careers in the classroom. Disappointed by the overwhelming focus in the literature on the reasons why so many teachers left the profession, the researcher chose instead to focus on the success stories, those secondary mathematics teachers who have remained in the classroom for an extended period of time. It was the intent of the researcher to highlight and learn from the experiences of these teachers to inform his own practice of preparing future mathematics teachers better.

After reflecting on the results of this study, the researcher came to several conclusions regarding teacher retention. Focusing on the retention of teachers seems to be an important part of addressing the issue of teacher turnover. Prior researchers have called for an increased focus on the retention of teachers and this study showed that experienced teachers can provide information regarding the experiences and conditions that contribute to their retention. Supporting and improving teacher retention cannot be achieved with a one size fits all approach, which, unfortunately, is often advocated by many current policy recommendations. Every teacher has their own unique experiences and conditions that have influenced not only the way they teach, but why they remain in the classroom. Results from this study seem to suggest that there are discipline and grade level stressors and challenges that teachers must address if they wish to remain in the classroom. Finally, resilience appears to be a necessary aspect of teacher retention. In addition to the conditions and experiences that administrators, teacher preparation programs, and education policymakers create to support teacher retention, developing and supporting resilience in teachers may help increase the likelihood of these teachers remaining in the classroom. Resiliency, coupled with the conditions and experiences outlined in Chapter Four, appears to be a promising approach to supporting the retention of teachers.

Throughout this experience, the researcher was reminded of the benefit of learning from teachers and the knowledge they provide. The narrative aspect of this study highlighted for the researcher the power of teacher narratives. Schultz and Ravitch (2013) explain, “stories reveal how teachers engage in the construction of narratives about themselves in the context of their schools, classrooms, and communities, as well as the

current political context of their teaching and learning to teach” (p. 37). Learning about the teaching narratives of the participants and the stories they provided in their interview responses reminded the researcher of the knowledge that teachers have about their practice and how they use stories to make sense of their experiences.

The researcher entered into this study with his own biases. As a former mathematics teacher, the researcher expected to find unique factors related to the retention of mathematics teachers. While several challenges related to the teaching of mathematics emerged from the data analysis, many of these challenges, including student apathy, testing, and negative dispositions, are not unique to mathematics. Other content disciplines may encounter these same issues. However, the implications and recommendations from this study will be useful for the researcher as he continues his work in teacher preparation. The researcher will work to ensure that resilience is embedded in his coursework. Targeting readings, case studies, and field experiences to build the resiliency in preservice teachers will be a core component of his coursework. In addition, the narratives from this study will be used by the researcher as he continues his work with pre-service teachers, highlighting the knowledge, conditions, and experiences needed for retention.

### *Conclusion*

This study began with the premise that focusing on the retention of teachers is key to addressing the issue of teacher turnover. Ingersoll (2003) explained,

In short, recruiting more teachers will not solve the teacher crisis if large numbers of such teachers then leave. The image that comes to mind is that of a bucket rapidly losing water because of holes in the bottom. Pouring more water into the bucket will not solve the problem if the holes are not first patched. (p. 151)

Studying the experiences of current, experienced secondary mathematics teachers provided valuable insight into teacher retention. Administrative support and the success of former students were identified by the participants as contributing to their retention. These conclusions confirm similar findings found in the literature regarding teacher retention. The researcher also confirmed the role that resilience plays in the retention of secondary mathematics teachers. All four participants provided examples of times they had to be resilient in their careers and concluded that without resiliency, they would likely have left the classroom. The teacher resilience framework (Mansfield et al., 2012) proved to be an accurate mechanism to analyze resilience in these experienced teachers.

Many of the current policy initiatives and programs designed to address the teacher turnover issue focus on increasing the supply of teachers. Increasing the supply of mathematics teachers will do very little to address turnover if we neglect the experiences, conditions, and role of resiliency that experienced teachers identify as enabling their retention. These experiences and conditions, in conjunction with resiliency, could perhaps be the patch that finally plugs the holes in the bucket described by Ingersoll (2003).

## APPENDICES

APPENDIX A  
Baylor University IRB Approval



# BAYLOR UNIVERSITY

INSTITUTIONAL REVIEW BOARD – PROTECTION OF HUMAN SUBJECTS IN RESEARCH

## NOTICE OF EXEMPTION FROM IRB REVIEW

Principal Investigator: Keith Kerschen  
Study Title: Secondary Mathematics Teacher Retention: A Narrative Case Study of Experienced Teachers  
  
IRB Reference #: 1100926  
  
Date of Determination: 07/26/2017  
Exemption Category: 45 CFR 46.101(b)(2)

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The above referenced human subjects research project has been determined to be EXEMPT from review by the Baylor University Institutional Review Board (IRB) according to federal regulation 45 CFR 46.101(b):

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The following documents were reviewed:

- IRB Application, submitted on 07/14/2017
- Protocol, dated 07/13/2017
- Consent Form, dated 07/25/2017
- Interview Protocols, submitted on 07/14/2017
- Letters of Support, submitted on 07/14/2017

This exemption is limited to the activities described in the submitted materials. If the research is modified, you must contact this office to determine whether your research is still eligible for exemption prior to implementing the modifications.

If you have any questions, please contact Deborah Holland at (254) 710-1438 or [Deborah\\_L\\_Holland@baylor.edu](mailto:Deborah_L_Holland@baylor.edu).

Sincerely,

Deborah L. Holland, JD, MPH  
Assistant Vice Provost of Research  
Director of Compliance

**APPENDIX B**

**Consent Form**

Baylor University  
**Department of Curriculum and Instruction**  
Consent Form for Research

PROTOCOL TITLE: Secondary Mathematics Teacher Retention: A  
Narrative Case Study of Experienced Teachers

PRINCIPAL INVESTIGATOR: Keith Kerschen

SUPPORTED BY: Baylor University

**Purpose of the research:**

The purpose of this qualitative narrative case study is to provide insight into the issue of mathematics teacher turnover by examining the experiences and perspectives of experienced secondary mathematics teachers and their decisions to remain in the classroom teaching. Exploring the retention of experienced secondary mathematics teachers may help provide insight into thinking about ways to reduce the turnover of mathematics teachers by bringing into focus the experiences and perspectives required for teacher longevity. We are asking you to take part in this study because you are a current, experienced secondary mathematics teacher in Central Texas.

**Study activities:** If you choose to be in the study, you will participate in several activities which include:

- **4 interviews with the principal investigator relating to your experiences teaching secondary mathematics**
- **3 observations: The principal investigator will observe your teaching and participation in a staff or departmental meeting**
- **1 writing sample: Submit 1 short, written response to a prompt provided by the principal investigator about your experiences teaching mathematics.**

We expect that you will be in this research study for 5-7 months. During this time, observations and interviews will be scheduled with you at an agreed upon day and time. Each interview will be 30-60 minutes long. The interviews will be recorded and transcribed at a later date. The observations will focus on how you organize your classroom, the structure of your lessons, and your interactions with colleagues. No data on your students or colleagues will be collected. A pseudonym will be used for your name in all printed and published materials. If you agree to take part in this study, we will ask you to sign the consent form before we do any study procedures.

**Audio recording:**

We would like make an audio recording of you during this study. If you are recorded it will be possible to identify you by voice recognition on the recording. We will label these

recordings with a code instead of your name. The key to the code connects your name to the recording. The researcher will keep the key to the code in a password-protected computer/locked file. The recordings will be destroyed following the completion of the study. Audio recording is required for this study. If you do not want to be recorded, you should not be in this study.

**Risks and Benefits:**

To the best of our knowledge, there are no risks to you for taking part in this study. You may or may not benefit from taking part in this study. Possible benefits include contribution to better understanding of secondary mathematics teacher retention. School personnel and teacher educators may benefit in the future from the information that is learned in this study, as it may help to prepare future teachers for successful careers in the secondary mathematics classroom.

You may feel emotional or upset when answering some of the questions. Tell the interviewer at any time if you want to take a break or stop the interview.

You may be uncomfortable with some of the questions and topics we will ask about. You do not have to answer any questions that make you feel uncomfortable.

**Confidentiality:**

A risk of taking part in this study is the possibility of a loss of confidentiality. Loss of confidentiality includes having your personal information shared with someone who is not on the study team and was not supposed to see or know about your information. The researcher plans to protect your confidentiality.

We will keep the records of this study confidential by using codes and keeping all research material in a password protected computer and locked file cabinet. We will make every effort to keep your records confidential. However, there are times when federal or state law requires the disclosure of your records.

Authorized staff of Baylor University may review the study records for purposes such as quality control or safety.

**Compensation:**

You will not be paid for taking part in this study.

**Questions or concerns about this research study**

You can call us with any concerns or questions about the research. Our telephone numbers and email addresses are listed below:

Principal Investigator: Keith Kerschen, [Keith\\_Kerschen@baylor.edu](mailto:Keith_Kerschen@baylor.edu)

Faculty Advisor: Dr. Trena L. Wilkerson, [Trena\\_Wilkerson@baylor.edu](mailto:Trena_Wilkerson@baylor.edu)

If you want to speak with someone not directly involved in this research study, you may contact the Baylor University IRB through the Office of the Vice Provost for Research at 254-710-1438. You can talk to them about:

- Your rights as a research subject
- Your concerns about the research
- A complaint about the research

Taking part in this study is your choice. You are free not to take part or to stop at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information that you have already provided will be kept confidential. Information already collected about you cannot be deleted.

By continuing with the research and completing the study activities, you are providing consent.

## **APPENDIX C**

### **Interview Protocols**

## Interview #1 Protocol

Date/Time of Interview: \_\_\_\_\_

Location of Interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Interviewee: \_\_\_\_\_

Addresses Research Question #1: Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention?

### Demographic Information

- 1) What was your undergraduate major?
  - a. If not in education, ask how they became certified to teach.
- 2) How long have you been a secondary mathematics teacher?
  - a. Have you always taught mathematics? If not, what else have you taught?
- 3) What courses do you currently teach?
  - a. What other courses have you taught during your career?
- 4) What other school activities, if any, (coaching, class sponsor, etc.) are you currently involved with?
  - a. If not currently, when have you been involved, if ever, with any other school activities?
- 5) What, if any, organizations related to teaching are you involved with?
- 6) What, if any, educational related activities are you involved with outside of school? (e.g., tutoring, other teaching activities (Sunday School, VBS)).
- 7) How long have been teaching at your current school?

- 8) Why did you decide to become a teacher?
- Why do you teach mathematics?
  - What is your favorite part about teaching mathematics?
  - What is the most challenging part about teaching mathematics?

### Experiences

- 9) How well did your undergraduate preparation prepare you for teaching mathematics?
- 10) Describe your teaching narrative (story), from your first job to today.
- Where have you taught prior to your current placement?
    - If different from your current placement, why did you leave that position?
  - What were your teaching course loads for each position you have held?
- 11) Why have you remained in teaching?
- 12) In what ways, if any, has your teaching style/philosophy changed over the course of your experiences?
- 13) Have there been times, during your teaching career, when you considered leaving the classroom? Can you tell me what your thoughts were at that the time and what ultimately happened to change your mind? (Brunetti, 2001).
- 14) What is your approach to classroom management? (Buchanan, 2009, 2012)
- In what ways, if any, has this changed over the course of your career?
- 15) How do you manage the workload of teaching?
- In what ways, if any, has this changed over the course of your career?

- 16) What role, if any, does salary play in your decision to teach? (Podolsky et al., 2016)
- 17) How has your life outside of school (e.g., as a family person, a community member, a private citizen) influenced and been influenced by your work as a teacher? (Brunetti, 2001).
- 18) What, if anything, does/did your school (current and/or any previous school you have taught at) do/did that contributes to your decision to remain in the classroom? (Moe, 2014).
- a. What, if anything, do your colleagues (current and previous) do that contributes to your decision to remain in the classroom?
  - b. What, if anything, do your students (current or previous) do that contributes to your decision to remain in the classroom?
  - c. What, if anything, does your building leadership (current or previous) do that contributes to your decision to remain in the classroom?
  - d. How, if applicable, does the school environment/resources (current or previous) contribute to your decision to remain in the classroom?

## Interview #2 Protocol

Date/Time of Interview: \_\_\_\_\_

Location of Interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Interviewee: \_\_\_\_\_

Addresses Research Question #2: *What role does resilience play in the retention of experienced secondary mathematics teachers?* and sub questions:

- a. *What are the motivational-related characteristics of experienced secondary mathematics teachers?*
- b. *What are the emotional-related characteristics of experienced secondary mathematics teachers?*

### Follow-up questions from observation #1

- 1) When I observed your class, I noticed that \_\_\_\_\_ (fill in specific for each participant based on my observation).
  - a. Regarding classroom set-up: Have you always done this or has this changed during your teaching career?
  - b. Regarding classroom organization: Have you always done this or has this changed during your teaching career?
  - c. Regarding interactions with students:
  - d. Regarding delivery of the mathematics content.

## Resilience

- 2) How would you describe teacher resilience (Doney, 2012)? (If they do not know, I will provide the definition from Chapter 1 and ask if they would change or modify that definition. From Chapter 1, *the ability to adjust to varied situations and increase one's competence in the face of adverse conditions*" (Bobek, 2002, p. 202). "*involves dynamic processes that are the result of interaction over time between a person and the environment and is evidenced by how individuals respond to challenging or adverse situations*" (Mansfield et al., 2012, p. 358).
- 3) Have you ever felt "burn out"? If so, describe this experience and what did you do to recover? (Patterson, Collins, & Abbot, 2004) (**Emotional Dimension**)
- 4) Provide me an example when you had to face a tough professional challenge and had to be resilient. What did you do? (Patterson, Collins, and Abbot, 2004) (**Emotional Dimension**)
- 5) What is the most stressful/difficult part about teaching? How do you manage this stress? (**Emotional Dimension**)
- 6) What is the most stressful/difficult part about teaching mathematics? How do you manage this stress? (**Emotional Dimension**)
- 7) How do you balance your professional and personal lives? (**Emotional Dimension**)
- 8) What do you do to take care of your own well-being? (**Emotional Dimension**)
- 9) What strategies do you use personally to stay positive during difficult times? (Patterson, Collins, & Abbot, 2004) (**Motivational Dimension**)

10) How do you manage failure in your teaching? (e.g., a lesson not turning out the way you planned; a student who reacts negatively to your efforts; poor test scores)

**(Motivational Dimension)**

11) Do you set goals in your teaching? If so, what are they? **(Motivational**

**Dimension)**

a. If set goals, how do you determine if they are met and what happens if you fall short?

b. How, if applicable, have your goals changed during your career?

12) How have you maintained your motivation to continue teaching? **(Motivational**

**Dimension)**

### Interview #3 Protocol

Date/Time of Interview: \_\_\_\_\_

Location of Interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Interviewee: \_\_\_\_\_

Addresses Research Question #2: *What role does resilience play in the retention of experienced secondary mathematics teachers?* and sub questions:

- a. *What are the profession-related characteristics of experienced secondary mathematics teachers?*
- b. *What are the social-related characteristics of experienced secondary mathematics teachers?*
- c. *What are the emotional-related characteristics of experienced secondary mathematics teachers?*
- d. *What are the motivational-related characteristics of experienced secondary mathematics teachers?*

#### Follow-up questions from observation #2

- 1) When I observed your class, I noticed that \_\_\_\_\_ (fill in specific for each participant based on my observation) (**Profession Dimension**).
  - a. Interactions with students
  - b. Delivery of the mathematics content

#### Resilience Questions Based on Framework

- 2) What role does reflection play in your practice? How do you reflect on your teaching? Has this changed over the course of your career? (**Profession Dimension**)
- 3) What, if any, professional development opportunities do you participate in? (**Profession Dimension**)
- 4) Education is rife with change. Administrators, standards, curriculum, students, parents, and policy are just a few areas that often undergo changes in education. Over the course of your career, what major changes have you seen in education? (**Profession Dimension**)
  - a. Which, if any, of these areas of change have influenced your teaching?
- 5) How do you manage changes involved in education? (e.g., statewide, districtwide, school wide) (**Profession Dimension**)
- 6) How do you problem solve in your teaching? In other words, what do you do when you encounter an issue/problem? (e.g., your students are struggling with a concept and you are having a hard time getting through to them, you have a difficult student/parent that is causing you issues, your lesson plans are disrupted by your absence/school assembly/snow day) (**Social Dimension**)
- 7) There are all kinds of relationships in teaching. As teachers, we must form relationships with colleagues, administrators, parents, and students. How important are relationships in teaching? (**Social Dimension**)
- 8) What are your main sources of support? Who do you talk to about teaching (stresses/challenges/triumphs/advice)? (Howard & Johnson, 2004) (**Social Dimension**)

## Interview #4 Protocol

Date/Time of Interview: \_\_\_\_\_

Location of Interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

Interviewee: \_\_\_\_\_

Addresses Research Question #1: Which experiences and/or conditions, do experienced secondary mathematics teachers identify, as enabling their retention

### Final Reflective Questions

- 1) What has been your most rewarding experiences as a teacher? (Brunetti, 2001)
- 2) In looking back at your career as a teacher, in what ways, if any, have you changed since your earliest years in the classroom?
  - a. How have you remained the same?
- 3) What will contribute to your decision to leave teaching?
- 4) If you could do this all over again, would you still choose to become a teacher?  
Why or why not? (Buchanan, 2009, 2012)
- 5) Which experiences and/or conditions, do you identify, as enabling your retention?
- 6) **Is teaching more difficult now than earlier in your career?**
- 7) **When did you start to feel confident as a teacher? When did teaching “click” for you?**
  - a. **What, if anything, contributed to this?**

- 8) Why do you think so many new mathematics teachers leave the profession early (prior to retirement)? (Curtis, 2011)
  - a. What would you do to address this issue? In other words, how would you suggest improving mathematics teacher retention?
- 9) What advice would you give an early career secondary mathematics teacher to prepare them for a long career in teaching?
- 10) What role do you think you play, if any, as an experienced teacher, in supporting and contributing to the retention of mathematics teachers?
- 11) Are there any other comments or suggestions that you would like to share concerning teacher retention?

**\*Items bolded were added based on the first three interview results.**

**APPENDIX D**  
**Observation Protocols**

### Observation Protocol #1: Classroom Instruction

Observation Date: \_\_\_\_\_

Time: Start: \_\_\_\_\_ End: \_\_\_\_\_

School: \_\_\_\_\_

District: \_\_\_\_\_

Teacher Name: \_\_\_\_\_

Observer: \_\_\_\_\_

Course: \_\_\_\_\_

Topic: \_\_\_\_\_

#### **Classroom Layout (Sketch) (Profession Dimension):**

#### **Lesson Plan Overview (Profession Dimension);**

| Descriptive Notes                                       | Reflective Notes |
|---|------------------|
| <b>Introduction/Preparation (Profession Dimension):</b> |                  |

| Descriptive Notes  | Reflective Notes |
|--|------------------|
| <b>Lesson Structure (Teaching skills used/Profession Dimension):</b>     |                  |
| <b>Management of Interruptions (Student/School/Emotional Dimension):</b> |                  |

Additional Takeaways:

### Observation Protocol #2 (PLC/Department Meeting)

Observation Date: \_\_\_\_\_

Time: Start: \_\_\_\_\_ End: \_\_\_\_\_

School: \_\_\_\_\_

District: \_\_\_\_\_

Teacher Name: \_\_\_\_\_

Observer: \_\_\_\_\_

Context: \_\_\_\_\_

### **Agenda**

| <b>Descriptive Notes</b>                                | <b>Reflective Notes</b> |
|---|-------------------------|
| <b>Interactions with colleagues (Social Dimension):</b> |                         |

| Descriptive Notes   | Reflective Notes |
|---|------------------|
| <b>Participant Contribution (Social Dimension):</b>                   |                  |
| <b>Seeks Help/Advice(Social Dimension/Motivational Dimension):</b>    |                  |
| <b>Provides Help/Advice(Social Dimension/Motivational Dimension):</b> |                  |

Additional Takeaways:

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