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Teachers in Action: A Phenomenographical Study on Mathematics Teacher Agency

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TEACHERS IN ACTION:

A PHENOMENOGRAPHICAL STUDY ON MATHEMATICS

TEACHER AGENCY

A dissertation submitted in partial fulfillment of the

requirements for the degree of

DOCTOR OF PHILOSOPHY

in

CURRICULUM AND INSTRUCTION

by

Indira A. Gil

2020

To: Dean Michael R. Heithaus
        College of Arts, Sciences and Education

This dissertation, written by Indira A. Gil, and entitled Teachers in Action: A Phenomenographical Study on Mathematics Teacher Agency, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Maria Fernandez

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Maria Lovett

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Zahra Hazari

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Barbara King, Major Professor

Date of Defense: March 12, 2020

The dissertation of Indira A. Gil is approved.

_____
Dean Michael R. Heithaus
College of Arts, Sciences and Education

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Andres G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2020

DEDICATIONS

For my mami linda, whose unconditional love and unwavering support made this journey possible. Until we meet again mi corazón de melón.

For my sweet daughter Amethyst, you inspire me to be my best self. Eres lo más bello que tengo en esta vida, te amo.

For Crystal, Nana, Kiki, Azalea, and Matteo. With persistence everything is possible, may this serve as inspiration.

ACKNOWLEDGMENTS

ABSTRACT OF THE DISSERTATION

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TEACHER AGENCY

by

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Professor Barbara King, Major Professor

Teacher agency plays a critical role in determining teachers' identities and decision-making abilities. It is also key in developing teachers' sense of purpose, which leads to forming school environments where teachers are happy and thriving. However, teacher agency has not been researched in depth. Exploring teacher agency is essential in understanding how to create spaces where teachers feel comfortable and eager to share their personal skill sets. In this qualitative study, phenomenography was employed to detect and describe variations in mathematics teachers' experiences of agency. This study investigates teacher agency by analyzing the experiences of 14 mathematics teachers teaching in Title I high schools. The purposes of the study were to examine how teachers enact and experience agency and investigate the factors that influence mathematics teachers to enact agency.

The data analysis resulted in the emergence of four themes representative of the different ways teachers enact agency: acquiring resources, implementing alternative methods, improving the school environment, and constructing personal relationships. Similarities and differences between teachers' theme patterns were explored to create five

distinct categories of description: Problem Focused, Peer Support, Communicators, Instruction Centered, and Go Getters. To investigate the factors that may influence teachers to enact agency, each category of description was analyzed, resulting in two factors: Administrative Relationships and Collegial Relationships. The findings of the study suggest that modifying Administrative Relationships and Collegial Relationships may lead to changes in how teachers experience agency.

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CHAPTER I

INTRODUCTION

Background to the Study

The rise of the era of accountability in the current educational climate has

challenged teacher agency within the teaching community (Van der Nest, Long, &

Engelbrecht, 2018). This era began in the 1980s when a series of reports on the state of

the education system caused mayhem amongst education critics. The most prolific was *A*

Nation at Risk: The Imperative for Educational Reform (National Commission for

Excellence, 1983); the report argued that the education system was not focusing its

attention on the areas that would ensure the US remained a global competitor,

consequently putting the nation at risk. Academic standards were deemed necessary and,

if the US was to remain at the top of the global economy, US schools had to focus on

mathematics, science and technology (Johanningmeier, 2010). Accepted by the public

because of its promise to foster citizenship and its emphasis on quality education for all

children, this report was the start of federal policies being implemented in public schools.

Reform after reform followed, with the most current being *Race to the Top*, which is an

extension to the infamous *No Child Left Behind* (NCLB) act of 2001. These series of

reports have resulted in mandatory standardized tests in nearly every state.

The poor performance of students on standardized tests led many people to

suggest teachers are inadequately prepared to teach and have limited content knowledge

(Ravitch, 2016). This idea served as the rationale for imposing constricted curriculum

components, where teachers are expected to adhere to scripted lessons. Instead of

remedying the situation, this approach has negatively affected teachers (Bennett & Gitomer, 2009). One way has been through the undermining of the teaching community. Teachers have been stripped of their autonomy, often through the constant reforms imposed in their classrooms (Van der Nest et al., 2018). Mathematics teachers in particular have been targeted because mathematics is a gatekeeper for high school graduation, most college degrees, and many high paying occupations (Gutierrez, 2013; Moses & Cobb, 2002). Math teachers, particularly those in low income schools, feel pressured to use test prep materials as the basis of their lessons, at times being explicitly told to do so by school administrators (Lipman, 2002). The emphasis on testing and the enforced use of test prep materials often stifle teachers' sense of agency.

Little is known about teacher agency and its role in the classroom (Biesta, Priestley, & Robinson, 2015) such as the ways teachers enact agency in the current era of accountability. Moreover, it appears that teacher agency has decreased as a result of political and social constraints (Robinson, 2012). For this decrease to change, teacher agency must be examined carefully, especially how teachers experience agency, and the factors that influence them to enact agency. Changes in teacher agency are necessary in creating a school environment where teachers want to share and contribute with each other and their administrators (Helsby, 1999). Furthermore, to achieve school goals, teachers must be encouraged to enact agency by including them in creating these goals as they are a contributing factor in achieving them (Biesta et al., 2015). Teacher agency must be nourished because the day-to-day decisions teachers make in their classrooms determine what goals are accomplished.

Agency

Agency has been described in varying ways within the fields of sociology, psychology and education. The structure-agency dialectic construct is one definition where Sewell (1992) identifies structure as necessary in understanding agency because of structure's role in the reproduction of patterns, even when people do not want those patterns to be reproduced. Structure and agency work intimately together, where one is always presupposing the other. As social agents, those who desire to intentionally change a structure, enact their agency, leading the environment to change. As the environment changes, they adjust their behavior to reconcile their environment. Thus, the structure an individual is part of dictates the opportunity she may have to exercise her agency. In this definition agency one must also consider structure as one cannot be described or fully understood without the other.

Agency can also be seen as multidimensional, with routine, judgment and purpose as its dimensions, which must be situated in time if the interplay of these dimensions is to be understood (Emirbayer & Mische, 1998). The past and future play an integral part in the decisions made by social agents. They need to assess their past as well as consider the many possible future outcomes then use the combination of the two to decide on what actions to take in the present. These continuously repeating assessments guide their actions as time passes. Here, agency is dynamic with each action affecting the situation and the situation affecting each action. Thus, with every action social agents take, the situation changes, and as the situation changes, the social agents must reassess and decide on the action they will take next. In both of these definitions, agency cannot be explained independently.

Lastly, agency is often considered political in nature. Empowerment is sometimes described as being similar or related to agency (Watts & Guessous, 2006). Empowerment is the coming together of a person's confidence with her knowledge of the political world and her ability to secure resources and make decisions on behalf of her community (Zimmerman & Rappaport, 1988). Using the empowerment definition, to take agency is to feel empowered to affect change, be it social and/or political (Watts & Guessous, 2006). Thus, engaging in agentic behavior can be seen as participating in politics or taking political action.

Agency in Education

In the vast field of education, agency has been studied with a varied focus on the structure-agency dialectic construct. For example, Archer (1995) investigated systematic change by studying people's actions, and the use of the structure-agency dialectic construct was minimal, only being used to simplify systematic change. Vongalis-Macrow (2007) implemented the structure-agency dialectic construct to a greater degree than Archer (1995), observing how teacher agency played a role in transforming teacher practice while simultaneously altering teacher agency. Time was also considered a vital piece of agency, as it is only over time that change can occur and for there to be change, the past and present must be compared. Similarly, Martin and Carter (2015) recognized structure and agency remake each other through socially intentional action, where teachers are held accountable for their own actions, even if these actions are to maintain their current structure. Bieler and Thomas (2009) took it one step further and explained the intentional action had to be followed by an observable result. Overall, all these

investigations recognized the interaction of structure and agency and the necessity to understand them together.

Statement of the Problem

Teachers interact with students much more often and at a grander scale than any other school personnel. As they teach, they must make countless decisions and they must feel empowered to make the best decisions possible for their students at each moment. Thus, the instructional program of the school depends on the ability of teachers to enact agency.

There have been numerous studies conducted to examine teacher agency in education. Within these studies, many aspects of teacher agency have been investigated. Teachers' agentic behavior in the midst of education reform has been studied to understand how teachers react to silencing (Bieler, 2013; Bieler & Thomas, 2009; Buxton et al., 2015). These studies mainly observe teachers' comprehension of specific pedagogical methods they are required to employ in their classrooms and how teachers discuss these changes with each other and the investigator. For example, Bieler and Thomas found that some teachers reacted to silencing by enacting agency through creating a plan of action to guarantee they were not silenced in the future.

How teachers speak and express their actions in writing has also been studied to understand teachers' agentic behavior (Martin & Carter, 2015). Here the authors looked at the word choices of teachers to understand their moral stance in comparison to each other as well as the responsibility they assigned themselves when discussing social actions. For example, participants who discussed using their resources to minimize their ecological footprint were considered agents of change.

Despite the range of studies about teacher agency, there is a limited amount of research and a void in the analysis of the types of agentic behavior teachers exhibit. There is value in all agentic behavior, and it is important to understand how teachers enact and experience agency and the factors that may influence teachers to enact agency. For example, in a study about teachers and their involvement in professional learning classes, the authors only looked at the number of classes taken as proof of agency (Buxton et al., 2015). What is lacking here is an analysis of the actions teachers took before, during, and after taking these classes and the teachers' understanding of their lived experiences. We could then have seen how taking professional learning classes changed how they experienced agency.

There are many studies describing what it means to have agency (Biesta et al., 2015; Biesta & Tedder, 2006; Emirbayer and Mische, 1998; Giddens, 1976; Sewell, 1992; Watts & Guessous, 2006; Zimmerman & Rappaport, 1988); however, what is missing from the literature is studying variation in how teachers experience agency, and an investigation into the factors that are related to the enactment of agency. Understanding such factors will help guide us in making modifications to support and encourage teacher agency.

Purpose of the Study

In this phenomenographical study, 14 high school mathematics teachers who work in Title I schools were interviewed. The study used semi-structured, in-depth interviews to examine three purposes. The first purpose was to investigate the types of agentic behaviors mathematics teachers enact, the second purpose was to understand how

mathematics teachers experience agency, and the last purpose was to explore the factors that influence teachers to enact agency.

Research Questions

This study investigated high school mathematics teachers' agentic behaviors in Title I school contexts. The research questions addressed in this study were:

1) What are the different ways high school mathematics teachers working in Title I schools enact agency?

2) How do high school mathematics teachers working in Title I schools experience agency?

3) What factors influence high school mathematics teachers working in Title I schools to enact agency?

Theoretical Framework

Practice Theory

The present research study is grounded in practice theory. In the 1970s, two theorists, Bourdieu (1977) and Giddens (1979), contributed to the development of practice theory through their anthropological work. It emerged when theorists were looking to clarify the actions people take that influence as well as endorse structure. Through the decades, these contributions have been recognized and utilized in the fields of philosophy, linguistics, anthropology, sociology, psychology and, more recently, education (Bourdieu, 1977; Giddens, 1979).

The present study most resonates with Giddens (1979), who developed the theory of structuration. Giddens argues that people's agency is influenced by structure and, simultaneously, structures are maintained or adapted through people's agency. The

combination of structure and agency work together to explain social action. More specifically, people function within the context of social structures and, through compliant behavior, they maintain and reinforce these structures. On the other hand, people have the ability to modify these social structures by enacting their agency, generally by questioning and pushing against the constraints placed on them by social structures. Thus, social structures are socially constructed and can only exist through human action.

Furthermore, structure and agency work in conjunction to create social-interactional events (Giddens, 1984). People are constrained by their social structure; however, they can negotiate their structure through the employment of their cognitive skills (Young & Astarita, 2013). The available choices people have depend on the structure, and the structure is concurrently maintained or changed through the choices people make. Giddens added another layer to practice theory; he insisted social structures are dynamic and created by people through space and time so that the only way to maintain a social structure is through people's habits staying consistent through long periods of time. The interplay of agency and structure has the power to maintain or change social structures; it depends on people's agency. Applying practice theory to the present study will facilitate in understanding how teachers enact and experience agency, and the factors that may influence teachers to enact agency.

Significance of the Study

The findings of the study have the potential to impact teacher education in general, and in particular mathematics teacher education and teaching and learning. In the current research, the researcher aspires to contribute to teacher education through a

theoretical and practical understanding of teacher agency in the mathematics classroom. The researcher also aims to enrich and challenge school discourses about how teachers enact and experience agency, and the factors that support and encourage teacher agency.

The study adds to the research in mathematics teacher education by providing a phenomenographical framework for understanding teacher agency through practice theory. Mathematics teacher agency will be explored through the lens of practice theory and analyzed utilizing a phenomenographical framework to investigate how it varies from teacher to teacher and to examine the factors that may influence teachers to enact agency. The research also aims to address teacher agency when implementing standards-based curriculum. As Priestley, Priestley, and Miller suggested when attending to educational policy, it "needs to be designed to be more flexible, taking more account of teacher agency, and especially teachers' proactive and projective engagement with the policy in question" (2012, p. 211).

The study will provide a greater understanding of teacher agency than currently available within teaching and learning. It seeks to contribute to the development of instructional programs that place teacher agency at the forefront. Furthermore, the study provides recommendations on how to support and encourage teacher agency so that teachers feel equipped to make decisions that best support their students' needs in the classroom and in their schools. Additionally, fostering teacher agency will allow teachers to feel a sense of purpose and experience happiness in their place of employment.

Assumptions and Delimitations

Three assumptions were made while conducting the research. The first assumption was that mathematics teachers want to truthfully share their stories about

their experiences teaching mathematics. To truly understand teacher agency, especially as a phenomenographical study, it is necessary for the participants to be honest and direct about their thoughts, feelings, beliefs and actions. Secondly, it was assumed that teachers have a sense of agency and are constantly exhibiting agentic behavior. Third, it was assumed that understanding teacher agency, particularly in the field of mathematics, bears importance in mathematics teacher education and teacher education in general.

In reference to the population examined in the research, there were three delimitations. The study is concerned with teachers, but only those who teach mathematics as part of their official teaching assignment. Mathematics teachers were chosen because they are arguably more affected by the pressures of standardized testing than other teachers, especially those teaching in high schools. Hence, the second delimitation is the focus on in-service teachers. This study was interested in teacher agency of mathematics teachers who were currently teaching in high schools in the public-school system. Teachers who had previously taught but were not currently teaching and pre-service teachers who were in the classroom part time as part of their field work experience were excluded. The last delimitation was working with mathematics high school teachers who teach in Title I schools because the researcher wanted to look at the possibilities and constraints teachers encounter in the schools identified as needing resources, in these cases through Title I funding.

Organization of Study

In chapter I, the background of the study and its problem statement were discussed. The purpose of the study, research questions, and theoretical framework were also described in chapter I. Furthermore, the significance of the research, and its

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assumptions and delimitations were also outlined. Chapter II will address the relevant

research pertaining to teacher agency and practice theory. Chapter III will cover the

phenomenographical framework, the author's autobiography, the data analysis, and the

assumptions related to the research. In chapter IV, the findings of the study will be

discussed in detail and in chapter V, the implications for further research as well as

recommendations will be presented.

CHAPTER II

LITERATURE REVIEW

Chapter II presents a review of the academic literature on agency and teacher agency and explores practice theory in detail. The purpose of the chapter is to review the relevant research on teacher agency and to explain practice theory as it pertains to teacher agency. The sections covered in this chapter are: Definition of Agency, What Agency Looks Like and How Teachers Enact Agency, My Definition of Agency, Cultivating Agency, Teachers and the Era of Accountability, Practice Theory, Practice Theory in Education, and Summary.

Definition of Agency

Sewell (1992), in his structure-agency dialectic construct, defined agency as "the efficacy of human action" (p. 2). Agency is repositioned from a personal characteristic to a social attribute because it cannot be assigned to an individual; its existence depends on the domain that the individual is a part of (Barton, 2010; Sewell, 1992). Structure is the pattern of relationships between people. It also connects space and time in society so that a set of rules is constructed, which, when followed by people, reproduces and maintains social systems (Giddens, 1979). Structure dictates how social systems function, concurrently, agentic behavior disrupts social systems. Thus, structure and agency work hand in hand, each presupposing the other (Sewell, 1992). In this definition, environment plays a crucial role in the opportunity an individual may have to intentionally act with a desired purpose. Moreover, the agentic behavior performed by the individual plays a role in how the environment changes to accommodate the new behavior.

Emirbayer and Mische (1998) described agency as having three dimensions: the iterative (routine), the projective (judgment) and the practical evaluative (purpose) (Emirbayer & Mische, 1998). The iterative refers to the habits of individual that are informed by past experiences, the projective is the possible futures an individual can imagine, and the practical evaluative is the individual contextualizing the past and future at the present moment. Thus, to capture its complexity, the researchers refer to agency as being situated in time, with an individual understanding the past, considering the various possibilities in the future and using the knowledge of the two time frames to take specific, intentional action in the present (Emirbayer & Mische, 1998). Hence, the individual is constantly considering, assessing, and reanalyzing the different possibilities as time continues to flow. Each agentic action affects the situation and as the situation changes, the individual reassesses and takes another action. Here, as above, the dynamic nature of agency can be observed.

Empowerment and agency are often described as being intimately related. Watts and Guessous (2006) utilized the Zimmerman and Rappaport (1988) definition of empowerment to explain agency. Empowerment is the union of self-acceptance and confidence with one's comprehension of politics and the social realm and the knowledge on how to attain resources and make decisions that affects one's community (Zimmerman & Rappaport, 1988). With their definition in mind, to have a sense of agency is one's ability to feel empowered to take action to affect social or political change (Watts & Guessous, 2006). Watts and Gessous' (2006) definition attests to the political nature often ascribed to agency.

Within teacher education, the structure-agency dialectic construct is widely utilized. The interplay between these two variables has been addressed to varying degrees; some explained it in detail while others simply mentioned the attempt to simplify systematic change through the process of investigating the action of people (Archer, 1995). When investigating teacher agency in globalized education, Vongalis-Macrow (2007) described teacher agency as the cause of transformation in their practice, while, over time, also changing teachers' agency. The relationship between structure and agency is recognized and employed to explain the transformation that systems undertake when teachers act. The author also defined structure as the systematic approach individuals take to organize and use resources, and agency as the compilation of actions taken for a cause that hold authority and was made possible through structural interactions (Vongalis-Macrow, 2007).

Martin and Carter (2015) also treat structure and agency as dialectic, with each one remaking the other through socially intentional action. They understand teacher agency as the positioning of teachers as accountable for their own actions (Martin & Carter, 2015). Bieler and Thomas (2009) delineate teacher agency as the power to make choices and take intentional action and to bear witness to the results of said action. In all these studies, the authors recognized the complex nature of agency and the impossibility of investigating teacher agency without also addressing its relationship to structure. Even though their definitions were not identical, they all specified agency as performing specific acts intentionally and with a precise goal in mind.

What Agency Looks Like and How Teachers Enact Agency

Teacher agency looks like motivated individuals who are working to create a future that is strategically different than the past and present (Biesta et al., 2015). First, teachers must feel discomfort or dissatisfaction with the past and present state of some aspect of their profession. This can be how they were or are treated as teachers or how their students were or are treated within the school system. It can also extend to the political realm, such as the systematic racism experienced by teachers and students. Second, teachers must have a vision of how they want the situation to change. Finally, teachers need to have a clear intent of what they plan to do to construct a different future. To explain what agency looks like, a few examples of how teachers enact agency are explained below.

Van der Nest et al. (2018) provided on example in their investigation on how mathematics teachers developed agency in the midst of an expanding curriculum that included formative assessments. One of their participants exhibited a strong sense of agency through his strategic discussions with people in power at his corresponding department of education. He also successfully convinced a neighboring school principal to give him a stack of unused books he needed for his students. Another teacher would incorporate any materials he could negotiate to receive in his lesson plans, often reflecting with students on what content they had not yet mastered and revisiting those concepts. Both of these teachers exhibited agentic behavior through intentional action to attain the resources they needed to improve their students' chances of success.

Throughout the literature, teacher agency has been observed and analyzed in many ways, from how teachers view themselves to what types of actions they take (or do

not take). In a study about preservice teachers' agency concerning education for sustainability, researchers analyzed journal entries and the actions taken by the participants with respect to these writings (Martin & Carter, 2015). Their study provided several examples of agentic behavior. In one case, publishing one or more journal entries through an online platform was considered exhibiting agentic behavior. Another example of agency involved the participants positioning themselves as personally responsible by using the pronouns "I" or "me" or as part of a group, "we" and "us." The researcher was not only looking at actions, such as publishing the journal entries, but also at how the participants viewed themselves. When teachers expressed ownership of their behaviors, it was labeled agentic because the participant fully owned their actions by position themselves as agentic concerning education for sustainability.

In Bieler and Thomas's (2009) study of teachers' responses to silencing, the researchers considered teachers who engaged in dialogue as agentive. More specifically, teachers who felt they were being silenced by educational reforms and who, together, developed a plan of action to ensure they would be heard in the future, were exhibiting agentic behavior. Agency can seem like a conversation about injustice, but to be considered agency, action must take place, even if that action is creating a plan that will address the injustice at a later point in time. Furthermore, the researchers observed how the discourse of small groups of teachers who were experiencing the same feelings of silencing, transformed from inquiring about the ways they were being ignored to creating a plan to not be ignored again, without any guidance from the researchers, which led them to believe teachers who possess a sense of agency are likely to engage in dialectic inquiry (Bieler & Thomas, 2009). To describe dialectic inquiry the authors used an

example: "it is organic, growing out of his personal reflections on his surroundings and thus rejects the formulaic; it signifies his desire for change in himself and his surroundings; and it is willing to ask hard questions that are productive but likely to cause discomfort," (Bieler & Thomas, 2009, p. 1043). Therefore, engaging in dialectic inquiry is more than having conversations with others, it is discussing the difficult and often uncomfortable areas of one's lives and structure in a productive manner.

Agency can also be observed in the decisions teachers make to improve their practice. In a study about teacher agency and professional learning, what and how teachers chose to engage in professional learning implied agency (Buxton et al., 2015). The amount of professional learning classes each participant took was viewed as different levels of agency, with the more classes someone attended as the more agentic they were. Similar to Bieler and Thomas's (2009) observation of the use of pronouns, the words participants used to position themselves as agentic was also categorized in this study. For example, agency was identified when participants expressed feelings of partnership with the facilitators of the workshop because it suggested a sense of agency they did not feel at their work place. Unlike the previous studies, these researchers did not require action to take place in order to classify a statement as agentic. This understanding of agency is interesting because it implies that the act of speaking is enough to change the structure of teachers' current situations.

Despite the varying degrees of agency, all forms of agentic behavior are valuable. As you can see in table 1, using the examples stated above, agency has been categorized in terms of amounts of action taken. In simplest terms, one can have a low sense of agency, meaning they are verbally expressing their discontent with their current situation,

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a medium sense of agency, meaning they are creating a plan to change their current situation, or a high sense of agency, meaning they are taking intentional action to change their current situation. Levels is one way to categorize agency because it is a complex idea that cannot stand alone. Agency is intimately connected to structure, where one is always reacting to the other.

Table 1

Examples of Categories of Teacher Agency

Description	Example	Agency
Teachers writing about or discussing with peers their discomfort/dissatisfaction with their current situation.	1. Teachers keeping journals and using the first person pronouns (Bieler & Thomas, 2009). 2. Teachers expressing a sense of partnership with their professional development facilitators (Buxton et al., 2015).	Low
Teachers writing about or discussing with peers their discomfort/dissatisfaction with their current situation and creating a plan to change it.	1. Teachers engaging in dialectic inquiry and creating a plan to ensure they are not silenced in the future (Bieler & Thomas, 2009). 2. Teachers publishing their writings to inspire others to consider the problems they have identified (Martin, 2015).	Medium
Teachers writing about or discussing with peers their discomfort/dissatisfaction with their current situation and creating a plan to change it, then intentionally implement the plan with a specific imagined result in mind.	1. Teachers negotiating resources with administrators (Van de Nest, Long & Engelbrecht, 2018).	High

My Definition of Teacher Agency

When I think of teacher agency, I imagine teachers in the mathematics classroom who identify something unjust, wrong or illogical in the structure of their school

administration (such as the expectations of the administration, the curriculum or the

pacing guide) and decide to take meaningful action to address the perceived problem with

an intended result in mind. The agentic behavior may be something considered simple

and safe that will not put the teacher's job in jeopardy, or complex and risky that may

result in a loss of employment. An example of simple and safe agentic behavior may be,

a mathematics teacher is told by the administration that all teachers have to assign and

grade specific worksheets as homework every night. The mathematics teacher is aware

of the lack of resources available to some of her students and recognizes that they will not

be able to complete the assignments accurately and on time. Thus, she decides to assign

the homework but to grade on effort, giving full points to all students who attempt the

assignment, with a request for students to reflect on the experience during a weekly class

discussion. The problem here is that not all students have access to the necessary

resources to successfully complete the homework; the teacher enacts agency by grading

on effort as opposed to the traditional percent of correct answers, and the intended result

is to ensure student grades are not unfairly affected by the administration's request. A

complex and risky example would be, a teacher notices her school's administration is

tracking students by placing them in mathematics classes using their score on the

previous year's state exam. The teacher approaches the administration and inquires about

this process, finding out that this is how they place students every year. After failing to

persuade the administration to change this practice by sharing the appropriate research

stating tracking is detrimental to all students involved, the teacher attends the local board

of education meeting, bringing this concern to light in front of her administration's

superiors. Here the problem is the tracking of students in mathematics classes and the

complex and risky way the teacher enacts agency is by speaking of this problem in the board of education meeting with the intended result for the school to stop tracking its students.

When considering my own definition of agency, I too must consider the relationship between structure and agency. I realize there is no way to have one without the other and that as a person acts, structure changes, and as structure changes, the actions a person takes evolve. I also recognize one's past, present and intended future experiences are interrelated and ever changing, creating a dynamic interplay that is constantly restructuring itself as actions are taken and structure is shifted. Thus, as seen above, I have simplified agency in terms of a perceived problem followed by an action performed for the realization of a specific result. With this definition, I will be able to identify agentic behavior when I interview mathematics teachers.

Cultivating Agency

Agency has been extensively studied in the field of sociology and psychology and many factors are considered to lead people to enact agency. According to Zimmerman and Rappaport (1988), the individual needs to be self-confident in their social and political knowledge and have access to resources and the power to make decisions in their community, in order to enact agency. But making political decisions is not the only factor that leads people to develop a sense of agency. Agency can also be developed through dialogues with likeminded individuals or organizing to make changes in their community. Therefore, one specific way agency can be cultivated is through participation in local community organizations, where the individual can make decisions that will get them closer to their end goal. But before that happens, there must be a sense

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of belief that they can make a difference in that field, and as they learn the skills of that field, their sense of agency is further developed (Watts & Guessous, 2006). The suggestion implies that becoming skilled is developing a sense of agency, as well as putting those skills to action. Therefore, considering teacher agency, teachers must believe they can make a difference in their field, and then become involved in groups with people who hold the same views as them. As they become skilled in teaching, their sense of agency increases.

Similarly, others consider people who not only are experts in their fields but also know how to put their knowledge into practice as enacting agency (Giddens, 1976; Sewell, 1992). These capable individuals can use their knowledge in innovative ways and when working together, have the power to make more significant changes to achieve their goal. The more combined power they collect, the more agency they have. Here, agency is not only seen as an individual trait, but also as an entity that can be combined endlessly, through agentic people working together, and has the capability to change the very structure that gave it life. Therefore, the greater the collective group, the more agency they have and the more change they can enact.

The structure-agency dialectic is necessary to understand how agency works, but it implies that agency is something internal that people have. There have been several attempts to reframe agency, but all remain situated in sociology and psychology, where the goal is to explain social action (Archer, 1995; Elias, 2000). When investigating teacher agency, Biesta and Tedder (2006) consider how agency is realized, specifically through people's relationships with one another and their surroundings. Through this

lens, one can situate teacher agency within the broader research on agency and investigate agency in the context of the teaching profession and educating children.

In a study about the role of beliefs in teacher agency, the concern was not on having agency but on how people react and respond to their situation, hence agency, "is not something that people can have – as a property, capacity or competence – but is something that people do" (Biesta et al., 2015, p. 626). Also, influenced by Emirbayer and Mische (1998), agency is described as only achieved when guided by the past while remaining sentient of the future, yet taking action in the present, which is influenced by the available resources, be it cultural, material or structural. When the researchers inquired about the teachers' beliefs, they noticed their beliefs of young people, such as children's inability to take responsibility of their own education, provided justification to enact agency. For example, one teacher disagreed with the amount of testing her school enforced, thus, when administering tests, she chose to intentionally withhold the fact that they were testing from her students, instead acting as though the exams were class assignments. What led this teacher enact agency was her belief that she needed to protect her students from the decisions of her school's administration.

Agency can also be enacted negatively. When teachers cannot connect what they purport to do with how to do it, there is a reduction in teacher agency. In addition, when discourses do not focus on values and purpose, and are limited to the educational policies in place, agentic behavior is less likely to occur (Biesta et al., 2015). Thus, the lack of dialectic inquiry impedes their ability to imagine a future different from their past and present. In turn, the more dialectic inquiry teachers engage in about their practice and its role in the purpose of education, the higher their agency. Teachers must have a clear

vision of the purpose of education before being able to create a plan to move towards that purpose. There needs to be an intended conclusion, a need for teachers to enact agency.

In an investigation on developing new teacher agency through mentorship, Bieler (2013) used three methods to successfully promote the development of agency in the teachers she was mentoring. One way was through creating a space where her mentees voices were heard and valued, which was done through asking the mentees direct questions when other school staff was present, to ensure their voices were heard, and sitting closer to the mentees to create an element of intimacy, and using the mentees' first names to discuss specific requests and suggestions they had previously mentioned. Creating a safe space resulted in the mentees positioning themselves as having agency by taking action in advocating for themselves. The second mentoring move the author engaged her mentees in developing agency was through being inquisitive. Inquisitiveness was described as listening carefully and making connections between what they said and how they were developing their teacher identities. Paying attention and genuinely showing interest to what the mentees had to say increased their sense of agency. The third pedagogical move the mentor employed was "cultivating holistic, agentive teaching, and learning practices," (Bieler, 2013, p. 29), which was achieved through her purposeful insistence that her mentees view their own students as people with interesting and unique lives, which reflected the relationship the author had cultivated with her mentees. As the mentees nurtured their relationships with their students, they constructed their sense of agency in their ability to effectively connect to young people. In Beiler's (2013) study, these three factors impacted these new teachers desire to act

with agency. In every instance of each move, their sense of agency was further developed.

Agency can also be developed during the implementation of new education reforms. Robinson (2012) examined teacher agency as it was transformed during the enforced inclusion of a problematic policy. The researcher addressed agency as not only the means to positive change, but also how it is often through agency that people resist change and enable the preservation of their past and/or current structure. Currently, the work of teachers is socially and politically constructed, often pushing aside the voices of teachers (Goodson, 2003; Robinson, 2012), which, along with the loss of their position of power, is difficult for teachers to construct professional agency, but not impossible. In Robinson's study, the researcher observed three stages of agency development. When first introduced to the new policy, teachers passively reacted with acceptance, often stating they had no choice but to comply, sometimes expressing fear of losing funding from the federal government. The second phase was through inquiry and reflection where teachers tried to negotiate "an understanding which they could equate with their professional agency," (Robinson, 2012, p. 241). In the third and final stage of professional agency construction, the teachers developed expertise in creative and innovative acts of fabrication and resistance. One example was changing the grading scale required by the policy from a letter system to a list of descriptions of the progression of development which allowed the teachers to adhere to the policy while also attending to the philosophy of the school. The process of developing professional agency from phase to phase was complex. The teachers continuously participated in dialectic inquiry with their peers, where they questioned the purpose of the policy, their role in

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implementing it, and how they could keep true to their school's culture along the way. Conversations with peers with similar education ethos is a theme seen throughout teacher agency research and may play a role in impacting teachers' growth of agency.

Often there is no clear philosophy driving educational policies and no collegiality present to compel teachers to participate in the development of policies, many times leaving teachers confused and uninspired (Biesta et al., 2015). To encourage teachers' full participation of their professional agency, spaces must be created where teachers can participate in making decisions about issues that will directly affect them and their students. As was best put, "structural and cultural changes to schooling will do little to improve schooling unless they take into account the importance of the active agency of teachers in constructing the reality of educational practice on a day-to-day basis in their schools and in their classrooms," (Helsby, 1999, p. 30). How teachers enact and experience agency play an essential role in the implementation of educational policies. Enacting and experiencing agency as well as the factors that may influence teachers to enact agency must be explored to better understand how to support and encourage agency.

Teachers and the Era of Accountability

Classrooms are where teachers dedicate their time to improve the academic lives of children through lesson planning, curriculum development and assessment evaluation. In the last several decades, many changes have occurred in the education system of the United States that have challenged the professional agency of teachers. The *A Nation at Risk* (1983) report brought to light uncomfortable topics that succeeded in getting the attention of politicians, scholars, the media and the public (National Commission for

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Excellence, 1983). This report led to the accountability age, where reforms like *No Child Left Behind* (NCLB) and *Raise to the Top* attempted to impede teachers' ability to enact agency by dictating their actions in the classroom. These accountability practices have led to teaching to the test, changing the role of teachers, and scripted curricula.

In the era of accountability, standardized testing has become the norm. Many practices have sprung up as a result of the implementation of standardized testing. For example, Gere and Tucker (2014) discussed the increase of institutional tasks such as collecting and analyzing data pertaining to tests, constant regrouping of students based on test scores, aligning teaching verbiage with the test, and assigning tasks that match the test, all which contribute to teaching to the test. These take large amounts of time away from instructional time resulting in limiting how much of the curriculum is covered, which may also restrict agency because teachers must prioritize the standardized test resulting in few opportunities to make instructional decisions (Gere & Tucker, 2014). These externally developed standardized tests have altered the structure which in turn may have affected teacher agency.

The role of teachers has also changed when considering how standards are taught in the classroom. In a study on teachers' views about the Common Core State Standards (CCSS), Ajayi (2016) found teachers did not feel adequately versed in their subjects' standards. More specifically, the teachers expressed a need for access to better books and information about the curriculum their state required them to put into practice. The majority stated their current textbooks and curriculum did not allow them to enact agency about when, what or how to teach.

Another practice that has contested teacher agency is the use of scripted curricula. Using scripted curricula has become common practice in some schools (Moustafa & Land, 2002). These are externally produced materials that call for teachers to read verbatim from a script while teaching (Moustafa & Land, 2002). Generally, teachers adapt lessons to better serve their students' needs (Datnow & Castellano, 2000), but scripted curricula impede teachers from doing just that because they are required to follow scripted lessons line by line (Kavanagh & Fisher-Ari, 2017). Similarly, pacing guides, which are predetermined calendars that indicate when to teach each standard, limit teacher agency. Bauml (2015) found that the use of pacing guides challenged teachers' decision making and led to discomfort in the classroom. For example, teachers felt their ability to facilitate learning was undermined by the use of pacing guides and felt they should deviate from it, but fear of being reprimanded stopped many of them. Furthermore, scripted lessons and pacing guides do not allocate time for student questions or class discussions that may lead to better understanding of the material and teachable moments. In fact, it ignores the importance of listening to student thinking altogether.

In mathematics, "listening to children's thinking during instruction has multiple benefits including (a) improving children's understandings, (b) providing a means of formative assessment, (c) increasing teachers' mathematical knowledge, and (d) supporting teachers' engagement in generative learning," (Empson & Jacobs, 2008, p. 262). In order to actively listen to how mathematics concepts are being understood by students and respond to support and expand those ideas, teachers must employ responsive listening. Responsive listening happens when teachers are listening to their students

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explain how they solved complex problems, an impossibility when using scripted lessons. Instead, teachers are forced to use directive listening, meaning they are waiting for their students to give a response that matches the answer in the scripted lesson. By using scripted lessons teachers are stripped of their agency to choose how they respond to student thinking. Moreover, scripted curriculum serves to constrain teacher agency because they are not able to fully put into practice their professional knowledge and they cannot enact agency through classroom practices such as responsive listening.

In this study, I sought to investigate the experiences of high school mathematics teachers working in Title I schools as these teachers are particularly susceptible to these accountability practices. There are several reasons why I chose to interview high school mathematics teachers working in Title I contexts. One reason was because high school teachers, compared to many elementary mathematics teachers, have a robust knowledge of their subject area, and this knowledge frees many high school teachers to focus on pedagogy instead of learning mathematical content. High school mathematics teachers take more years of mathematics than elementary school teachers. They generally major in mathematics during their undergraduate studies and/or obtain a master's degree in mathematics or mathematics education, while elementary school teachers generally major in education and take a limited amount of mathematics courses. Therefore, by interviewing high school mathematics teachers, I minimized the possibility that lack of content knowledge would interfere with their ability to enact agency.

Another reason I chose to interview high school mathematics teachers was because mathematics is considered a gatekeeper such that mathematics achievement impacts ones ability to graduate from high school, pursue many college degrees and enter countless high paying careers (Gutierrez, 2013; Moses & Cobb, 2002), hence high school

mathematics teachers have the added pressure of preparing students to pass a standardized test that plays a vital role in their students' futures. Elementary school teachers also prepare students for examinations, but they do not carry the same weight in elementary school as they do in high school. Furthermore, high school mathematics teachers working in Title I schools are pressured to teach to the test (Lipman, 2002), which many contribute to Title I schools having the highest teacher turnover rates (Ingersoll & May, 2011; Simon & Johnson, 2015). Thus, I reasoned that the pressures from teaching high school mathematics and in Title I schools may result in more opportunities for teachers to enact agency.

The education reforms of the past several decades have changed the role of the teacher, led to teaching to the test, and reduced engaging lesson plans to scripted curricula. These examples ensure teacher agency are repeatedly challenged. The teacher community in general has been undermined by these reforms, but it has also produced situations where teachers are uncomfortable. To take agentic action an individual must first feel discomfort, these reforms may have set the stage for teachers to enact agency in the classroom, which has barely been explored (Biesta et al., 2015). Thus, the present study aims to investigate what teachers are doing to challenge these reforms, and the way it intends to do that is by investigating how teacher enact and experience agency and what factors influence teachers to enact agency.

Practice Theory

Sociology and anthropology theorists have been formulating ideas about practices and practice theory since the 1970s. Practice theory was developed to denote the actions people take that affect structure. Besides sociology and anthropology, many fields needed practice theory, such as philosophy, linguistics, and cultural education. Two of

the theorists to develop practice theory, whose contributions cannot go unnoted, were Bourdieu (1977) and Giddens (1979).

The first attempt to unite phenomenology and structuralism through action and social structure (Young & Astarita, 2013) was when Bourdieu (1977) observed how habits were formed while interpreting the gender roles of the Kabyle people in Algeria. While conducting ethnographic investigations, Bourdieu noted how Kabyle men and women walked and carried themselves differently and how actions were valued differently depending on who did them. Often, tasks performed by men were seen as dignified and hard, yet when those same tasks were performed by women they were regarded as simple and expected. Bourdieu (2001) saw this as the delineation of certain tasks as inferior and not worthy of the attention of men. Moreover, Bourdieu saw these habits as inscribed in the body with the social power they generated as then considered part of the person. Thus, the body is a device that is integral in reproducing culture.

Several theorists expanded on Bourdieu's idea. Certeau (1984) reflected that the history of people did not completely determine their actions. Using the analogy of a person walking from one destination to another, Certeau noted that the route made by the walk only represented the what of the person's actions and not the where, when, how and why of the actions. The walker cannot walk freely, there are structures in place that prevent completely free mobility, such as the crosswalks, street signs and buildings. These limited routes are negotiated by the walker with little thought because this walk is one of many lived experiences within the walker's structure. Walking is an ingrained habit and Certeau used it to emphasize the limited freedom people have in any practice. People's choices are limited to the possibilities attainable in their environment. Foucault

(1995) considered the idea of habitus a bit differently than Bourdieu and Certeau. Foucault thought of habitus more as discipline, where structure and power is ingrained in the body to the point that it is considered a natural occurrence. Hence, the idea that structure is ingrained in the body suggests taking agency is constrained by the body itself. It is hard and time consuming to break habits thus it is difficult to dismantle structure.

Giddens (1979) contributed to practice theory through his theory of structuration. In particular, Giddens anatomized agency, structure and their relationship within practice theory. Agency is described as "a stream of actual or contemplated casual interventions of corporeal beings in the ongoing process of events-in-the-world," (Giddens, 1979, p. 55). Agency is not a solid entity; it is fluid and can be observed through different angles. The interventions mentioned in the quote refer to the actions a social agent takes and, the theorist argues, at any point in time the agent could have taken a different action or none at all. These actions do not, necessarily, have a purpose or intention since a majority of the actions humans take are out of habits that have been established through routines. To explain the different reasons humans take action, Giddens distinguished between unconscious, practical consciousness, and discursive consciousness. Unconscious actions are performed without thinking about the consequences that may result from those actions. Discursive consciousness is when a person takes action purposefully and can explain in written form or verbally their reasons behind taking the action, including their intended purpose and imagined result. Yet, Giddens mainly focused on practical consciousness, claiming it is responsible for social reproduction.

Practical consciousness is "tacit knowledge that is skillfully applied in the enactment of courses of conduct, but which the actor is not able to formulate

discursively," (Giddens, 1979, p. 57), which is consciousness that lies between unconscious and discursive consciousness. Within practical consciousness, even if people have a motive for their actions, they may not know how to explain their reason. Practical consciousness may occur in part because when monitoring actions, the actions and the environment of the interactions are monitored concurrently, thus a single person's action cannot be reasoned in isolation.

Structure, as described by Giddens (1979), is better defined as structuring property because by stating structure as structuring, it is binding space and time in social systems. The term property here refers to the rules and resources utilized to reproduce social systems. Structure engrosses an order of differences that recognizes that there is knowledge within the memories of people on how things are done, there are social practices assembled through performing routines of that knowledge, and there is power that producing these routines entails. Moreover, structure can be analyzed by studying how deep its layers run when considering the length of time it has maintained its practices and how prevalent they are across disciplines, with the most pervasive being institutions. This is how Giddens fit space and time into the equation.

Continuing this train of thought, Giddens (1984) argued that structure and agency did not work in isolation to create social-interactional events, but in conjunction. As explained by Young and Astarita (2013), "objective social structures are defined by properties of society as a whole, while autonomous human agents are not only constrained but also enabled by social structures as they employ cognitive and practical skills to negotiate them," (pp. 179-180). The choices available to individuals depend on their social structures and the choices they decide to make directly impact these same

social structures. But social structures are not merely present, they have been created over time and to truly understand how agency and structure are intertwined, they must be situated in space and time. The mundane activities individuals take part in, habits, are what reproduces social structures, assisting in its maintenance through long periods of time. Furthermore, Giddens reflected on free will, stating people do not have free will but must work within the structures already in place. Yet, even though social structures may impede human actions, these structures are not static, thus, people do have the opportunity to change history through repeatedly constraining against social structures. The interplay of agency and structure can work together to either maintain the status quo or change it.

Practice Theory in Education

Practice theory is, in many ways, ideal for the study of education. Its design works well when considering the interrelationship of people and their environment, which in education most often translates to teachers and their schools of employment or students and the schools they attend. It also addresses how people's choices depend on their environment and their environment can change through their choices, which leads to the tension of being enabled and simultaneously constrained to enact agency. With its addition of time and space, practice theory can assist researchers in understanding actions through a series of behaviors as opposed to a single instance. Thus, it is no surprise that practice theory has been extensively applied in education research.

A study working with first generation students learning a foreign language, practice theory was presented as a philosophical and methodological framework to better explore the relationship between social context and learning a foreign language (Young

& Astarita, 2013). Here practice theory revealed a dialogue between the current experiences of learning a foreign language and the permanent nature of their past experiences. The dialogue was observed through the construction of their identities, where they had to forge their new identity of foreign language learners to their identity as working-class people. The relationship between structure and agency can be observed in how they resisted and reproduced their identities through the different categories. Time and space were other components of practice theory necessary to dissect the students' negotiation of their past and present identities.

In teacher education, when Henningsson-Yousif and Aasen (2015) reflected on Handal and Lauvas' 1983 study, practice theory assisted researchers in offering rationalizations for actions taken by teachers in professional circumstances. Participants who were studying to become teacher mentors were introduced to practice theory through the use of written reflections (Henningsson-Yousif & Aasen, 2015). These students shared challenging everyday work experiences through writing and then discussed them with their peers and their teachers. Sharing in small groups provided a platform for collaboratively reflecting on situations where the relationship between structure and agency was visible. Practice theory was applied to enhance awareness of professional actions and to understand pedagogical and moral choices and how these are dependent on the structure within which they exist. In Henningsson-Yousif and Aasen's (2015) study, practice theory was a crucial component in educating teachers on what their actions meant and what the result of their actions implied in the greater context of their school environments.

Practice theory's attention to routine behavior and how people exhibit agency within the constraints of their structure is entrenched in ideas about cultural reproduction (Eisenhard & Finkel, 1998; Giddens, 1979; Levinson, Foley, & Holland, 1996). Practice theory attends to the daily routines of individuals and how they take agency through these routines. It also considers how social agents work together to contest or maintain their current structure, making practice theory an appropriate lens to explore individuals acting against the status quo. Buxton (2001), during an investigation of the characteristics of same-sex science groups, observed an all-male group that appeared to contest the cultural norms of science (being loud and acting silly), yet at closer inspection they were actually conforming (e.g., competing for resources). On the other hand, the all-female group appeared to maintain the cultural norms of science (being quiet), when in reality they contested these norms through smaller, less noticeable methods (e.g., tutoring younger science students). Buxton's (2001) findings is an example of practice theory's ability to showcase patterns and aid researchers in solving cultural puzzles.

Similarly, Carlone (2004) investigated girls' reactions of alternative science classes that defined doing science and being a science person differently than the cultural norm. An alternative course to Physics, entitled Active Physics, was created. While analyzing the data, the investigator noted that after completing the class, even the girls who were most interested in the topic and did well academically decided not to take any more Physics courses. Further, even after their success, they rejected a science identity. Viewing these results through the lens of practice theory, where structure must always be considered, Carlone was able to show that it was the structure itself that prevented the female students from changing their perspectives of science. The school maintained the

cultural norms of science, such as the idea that science is inherently difficult and that a science person is someone who possesses raw talent. Despite the novel curriculum of Active Physics, these ingrained meanings perpetuated the classroom. Practice theory's focus on both micro and macro actions and settings made Carlone's interpretation of this data possible.

Practice theory not only spans across disciplines; it has also been adapted to different areas in education. Moreover, practice theory can be employed in innovative ways to better understand data involving the interplay of agency and structure. It can be applied to understand how people resist and reproduce their own identities and it can negotiate the actions within the past and present to form ideas on the different possible actions to take in order to reconstruct the future. Practice theory can also be applied as a model for individuals to dissect their actions and the actions of others and what those actions mean as it pertains to their structure. It can emphasize patterns in social structures that may otherwise go unnoticed, assisting researchers in resolving social issues. On the whole, practice theory is multifaceted and has the capability to arm researchers with multiple angles to examine.

Summary

In this chapter, agency, teacher agency and practice theory were explored. First, agency was defined, then how teachers enact agency and how teacher agency may be cultivated was examined. Later, teacher experiences in the era of accountability was discussed. Finally, practice theory was explored within the context of teacher agency.

CHAPTER III

METHODS

In this chapter the purpose of the study and research questions are covered, followed by a discussion on phenomenography. This researcher's autobiography and the assumptions related to the study follow, and then, the sampling methods, procedures for data collection and process, data analysis and data management are described.

Purpose of the Study

There were three purposes for the current study. The first purpose was to investigate the different ways mathematics teachers enact agency, the second purpose was to examine how teachers experience agency, and the third purpose was to explore the factors that influence teachers to enact agency.

Research Questions

This study investigated high school mathematics teachers' agentic behaviors in Title I schools. The research questions addressed in this study were:

1) What are the different ways high school mathematics teachers working in Title I schools enact agency?

2) How do high school mathematics teachers working in Title I schools experience agency?

3) What factors influence high school mathematics teachers working in Title I schools to enact agency?

Phenomenography Framework

Phenomenography focuses on the different ways people conceptualize and experience a phenomenon and its many aspects (Bowden et al., 1992). Thus, the researcher does not examine phenomena but instead studies how people experience phenomena (Ornek, 2008). In other words, phenomenography explores how people see and relate to phenomena differently, homing in on the "variation and the architecture of this variation by different aspects that define the phenomena," (Walker, 1998, p. 28). These variations are studied by the researcher to understand the lived experiences of each individual participant. The experiences of the participants are as much the subject of the study as the participants themselves.

In phenomenography, the subject and the object are interrelated and must be studied as part of each other (Ornek, 2008). Thus, the meaning of a phenomenon cannot exist unless interpreted by a person, and the meaning varies from person to person. For example, if group of children are asked to multiply six by 15, one child might use the traditional algorithm to find the answer while another may use the distributive property, multiplying six by ten and six by five separately and then adding their results together to arrive at the solution. Thus, the phenomenon and the subject are not independent, the phenomenon is conceptualized in a specific way by each person (Ornek, 2008).

Each person experiences phenomena in two different ways (Marton, 1986; Marton & Booth, 1997). First is the external horizon, meaning how the phenomenon is viewed separately from everything, including its context. The phenomenon is viewed as separate from the subject, as its own entity that is not affecting anyone or anything but itself. The second way people experience a phenomenon is called the internal horizon,

meaning that the subjects relate the phenomenon to themselves, their experiences, and other aspects of their lives. Hence, how people experience phenomenon depends on where their focus lies and must be viewed through both ways of experiencing to fully grasp the subjects' conceptualization of the phenomenon.

The purpose of phenomenography is to describe how other people experience phenomena and to delve into how these experiences vary (Marton & Booth, 1997). Phenomenographic researchers identify and examine "the phenomenon in a specific context and then present different ways of experiencing that phenomenon from a decontextualised perspective," (Tan, 2009, p. 96). In this way, the variety of experiences can tell a more complete story of the phenomenon and its effect on people. Because the aim of the present study is to examine teacher agency, how it is enacted and experienced and the factors that may influence teachers to enact agency, phenomenography is an ideal framework.

Researcher Autobiography

It is important to shed light on the experiences of the researcher as they relate to the context of the study because these insights can assist the reader in understanding why the researcher chose the topic, how the topic is viewed by the researcher, and how the researcher will empathize with the participants. Moreover, researcher autobiographies have the potential to reveal the biases and assumptions of the researcher, a necessity when ensuring transparency. What follows is the short version of how I became a teacher and several instances where I took agency.

Agency in my own Mathematics Classroom

As graduation approached, the pressure to decide on my next course of action mounted. Like many 21-year-old students graduating from liberal arts institutions, I had a

lot of passion but little knowledge of what to do with it. A Google search on "things to do after college" resulted in many suggestions, one of them being teaching through an alternative teacher preparation program, The New York City Teaching Fellowship (NYCTF). The NYCTF prepared college graduates in all areas, be it recent grads or career changers, to become New York City teachers while also funding their master's degree in their assigned teaching area. I applied on a whim and to my surprise, two months later I received an email notification stating I was invited to interview. After consulting with family and friends, I decided to accept the opportunity and participate in the day long interview that consisted of a group interview, teaching a lesson, debating a controversial education policy topic and, if you were a finalist, a one on one interview. Several days later I received and accepted an offer to teach in the South Bronx area. This began my career as a secondary mathematics teacher.

I taught during the accountability era and, throughout the years, encountered many instances where I questioned the policies governing the schools where I taught. During my first-year teaching, I was assigned a class where all the students had failed the previous year's standardized exam. I inquired about the reasons behind grouping these particular students together and quickly learned that the school implemented tracking, a practice where students are placed in classes on the basis of their test scores and grades, often being labeled as low, average, and high achieving (Boaler, 2015). Noticing the lack of basic mathematics skills such as adding, subtracting, multiplying and dividing in my students, I asked the math coach for lesson plans and work books that would better serve my students' needs. After realizing my request for resources had gone unnoticed, I decided to set aside the curriculum I was told to use and instead focus on ensuring my

students learned the basic mathematics facts they needed to successfully complete the course. I did not realize it at the time but, looking back, that was the first time I enacted agency in the classroom. I felt uneasy about a particular situation, I formulated a plan to change the situation, and I implemented the plan to acquire an intended result. The intended result, ensuring my students learned the basic math facts, was achieved and to the surprise of many, every single one of the students in that class passed that year's standardized test. For some it was the first time they had ever passed a standardized test in mathematics.

The positive outcome of everyone passing played a big part in my personal perception of teaching. I continued to question the practices that I found bothersome throughout the rest of my teaching career and often tweaked lesson plans, curricula and behavioral modification practices. As the years passed, I became more and more vocal than I was when I started. Two particular acts of agency are worthy of mention. I last taught at a middle school where I was the only eighth-grade mathematics teacher. I was assigned pre-Algebra, Algebra and the gifted Geometry class. These classes varied by more than their names. If you were in the pre-Algebra class it meant that you did not pass or did not do very well in the seventh-grade standardized exam (one to three out of five, one and two are failing, three is proficient). If you were in the Algebra class, it meant that you did well (a score of four or five out of five) in the seventh-grade exam. More importantly, if you were in pre-Algebra you would take the eighth-grade standardized test and if you were in Algebra you would take the End of Course Exam (EOC). Being in Algebra as opposed to pre-Algebra is an important difference because it means that, despite being in the same grade, you were either going to take an extra year

of pre-Algebra as an eighth grader or take the EOC in Algebra, meaning that you would take Geometry during freshman year of high school. Essentially, mathematics class placement using the previous year's test score determined the mathematics classes each student would need to take in high school. As for the gifted Geometry students, this was reserved for students who had been recognized and placed as gifted. These students took the Algebra EOC at the end of seventh grade and the Geometry EOC at the end of their eighth grade, putting them ahead of the pre-algebra placed students by two years.

Tracking potentially means some students will finish the high school required mathematics courses one or two years before graduating, freeing up space in their last years of high school to take mathematics classes that will make them attractive candidates to top schools, such as Calculus. Mathematics is the greatest predictor of success in college science courses (Sadler & Tai, 2007), by denying students access to mathematics classes, we are denying them the chance to pursue some of the highest paying careers (Moses & Cobb, 2002), hence denying them access to social mobility.

During my penultimate year teaching I advocated for Algebra classes across all of eighth grade because I believed that, if given the opportunity, many more students would place out of Algebra. The administration refused, stating too many students would fail the Algebra EOC exam. This would be too hard a hit on their overall school score. Thus, as I got to know my students, I requested several of them to be switched to Algebra. Even though I felt uncomfortable picking and choosing who I advocated for, I also understood that it was better to extend the opportunity to move forward in mathematics to some students than to none.

During my last year of teaching I successfully convinced the administration to change an entire class from pre-Algebra to Algebra. The administration was ecstatic to find out that these students achieved a one hundred passing rate on that year's Algebra EOC exam. I sometimes think about and hope that my agentic behavior served as an example to the administration and to other teachers in my school. These instances and many other smaller acts are part of the reason I chose to focus my attention on teacher agency as opposed to other related topics such as social justice and equity. In my experience, my insistence to negotiate with my school's administration to better serve my students made a difference in my experience as a teacher and the experiences of my students.

I often think of the words of Stephen Jay Gould, "few tragedies can be more extensive than the stunting of life, few injustices deeper than the denial of an opportunity to strive or even to hope, by a limit imposed from without, but falsely identified as lying within," and reflect on how they relate to my students (1996, p. 50). During my teaching tenure, I taught in the New York City and south Florida public school systems. I repeatedly witnessed students being denied opportunities to succeed and teachers being silenced through the implementation of standardized testing. The false narrative constructed through education reforms like NCLB and *Race to the Top* about students, teachers, and the ability to quantify knowledge have played a big role in imposing a limit "from without, but falsely identified as lying within." I hope my study contributes to better understanding teacher agency and its role in the mathematics classroom.

Assumptions

I have many assumptions about teacher agency. Under careful consideration I have narrowed them down to:

1. Most, if not all, teachers have a sense of agency. The nature of the teaching profession is to manage a classroom full of students and facilitate their learning of various topics.

2. Teacher agency plays an important role in how teachers feel about themselves professionally and personally.

3. If the structure warrants it, how teachers experience agency has the potential to change the culture and overall feel of their classroom. In fact, teacher agency can contribute to greater opportunities to learn. Conversely, the lack of teacher agency can result in the maintenance of harmful social structures.

4. Teachers can increase their agency. Further, teachers need to question their schools' practices and reflect on how these affect their students' academic and personal wellbeing.

5. Teachers can exhibit different levels of agency, where all are necessary to enact change but some require drastic measures while others do not.

6. Teachers do not necessarily know they are enacting or experiencing agency.

Sampling Methods

When selecting participants, researchers often want to contact people they already know or are acquainted with such as friends, family, classmates or colleagues, making it a convenience sample (Seidman, 2013). Because of the nature of my research, I opted out of the convenience option. My mathematics teacher friends are people who I

connected with while teaching, meaning we bonded over similar interests and teaching philosophies. Hence, because I have a strong sense of agency, the people I connect with professionally do as well. I also considered recruiting the math teachers pursuing a masters' or doctoral degree at the university I attend, but interviewing graduate students was also problematic because the mere act of pursuing a higher education degree is an act of agency, meaning that my sample would be biased towards those who may be more likely to enact agency. Also, the courses they are taking may influence how they think and/or how they teach. To truly examine how mathematics teachers enact and experience agency, I had to take a different approach.

I wanted to interview mathematics teachers that were currently teaching in Title I high schools, and thus I employed purposive sampling. This type of sampling is when the researcher has a specific demographic in mind then finds these individuals on the basis of those specific characteristics (Johnson & Christensen, 2008). I narrowed my search by locating a list of Title I schools in the south Florida public school system on the World Wide Web. I then did an electronic search of each high school to obtain a list of their current mathematics teachers. Using the emails on those lists, I sent recruiting emails with my contact information as well as that of my advisor who is the principal investigator in this study. After a week, I sent follow up emails to the prospective participants who had not responded to the original email. The week after that, I called the schools and left messages for the teachers who had not responded to either email.

Participant Selection

The present study focused on how high school mathematics teachers enact and experience agency in the context of their structure. The concern of choosing participants

adequately were addressed by identifying teachers who will fulfill these criteria. The schools where the participants teach were narrowed to Title I schools in the south Florida Area. Title I schools are schools with a high percentage of students from low-income families. The federal government provides these schools and local educational agencies financial support to assist students in meeting state standards as long as the schools abide by their requirements (U.S. Department of Education, 2005). These schools also have the highest teacher turnover rates (Ingersoll & May, 2011; Simon & Johnson, 2015), which is one of the biggest problems in education. The lack of agency experienced by teachers may be part of the reason so many teachers choose to leave.

One of the requirements to graduate from high school is passing the Algebra 1 End of Course Exam, thus mathematics teachers are constantly under pressure to ensure their students pass the standardized test. Additionally, mathematics high school teachers generally have more content knowledge than elementary school teachers, suggesting their agency is not limited by their content knowledge. For these reasons, I actively searched for participants that teach mathematics at high schools under the Title I umbrella.

Another concern in this study regarding participant selection was data saturation. What is a sufficient number of participants to answer the research questions? In phenomenographical studies, Sandberg (2000) suggested 20 participants as an accurate amount to reach data saturation. But, as in phenomenology, saturation can occur at varying points depending on the topic explored. Because a too small sample may not uncover all of the important perceptions in the area of study, but a too large sample may result in repetitive information that has already been uncovered (Glaser & Strauss, 1967), I constantly reviewed the data as they were collected. As the interviewing process

progressed, I noticed reduced variation among the responses until there were no more

qualitatively new descriptions presented. Even though I aimed to interview 20

participants, saturation was the guiding principle during the data collection process.

Consequently, I reached saturation at 14 participants. Table 2 shows the variation in

years or experience and courses taught by the participants.

Table 2

Participant Information

Participants	Gender	# of Years Teaching	Courses	Grade Level(s)
Elisa	Female	8	Algebra 1 and Geometry	9 and 10
Jan	Female	10	Algebra 1 and Geometry	9 and 10
Mia	Female	9	Geometry and Algebra 2	10-11
Fong	Male	15	Algebra and Intensive Math	9 and 10
Gem	Female	13	Intensive Math	10
Hannah	Female	10	Geometry and Algebra 2	10 and 11
Deondra	Female	2	Geometry	10
Kristen	Female	15	Algebra 1	9
Carla	Female	30	Finance and Algebra 2	11 and 12
Leah	Female	7	Algebra 1 and Geometry	9 and 10
Ana	Female	14	Algebra 1 and 2	9 and 11
Beatriz	Female	16	Precalculus, Calculus 1 and 2	11 and 12
Ivan	Male	3	Algebra 1 and Geometry	9 and 10
Naomi	Female	15	Geometry, Statistics, and Trigonometry	9, 10 and 11

Data Collection

Phenomenographical research studies collect data through interviews. Interview

types vary from structured survey interviews to friendly conversations (Seidman, 2013).

The data for the present study were collected through in-depth, semi-structured

interviews. These interviews focused on the experiences mathematics teachers had as

professionals and the meaning the teachers make of the experiences. Even though

experiences are fleeting and people can re-interpret the same experience to mean different

things depending on space and time, the present study tried to understand the point of

view of the participants at the moment of the interview. Essentially, the lived

experiences in the context of agency were at the center of the interviews.

In depth-interviews have specific characteristics that were implemented when

interviewing the participants. Rubin and Rubin (2011) point out that interviews should

carry on naturally, like a regular conversation one might have with a friend. The

interviewees are not just participants; they are research partners that also want to

understand their lived experiences better than before. The interviews were purposeful

conversations that served as data to shed light on how the participants interpreted their

experiences (Bogdan & Biklen, 2007). As advised by Rubin and Rubin (2011), I looked

for examples and stories of experiences that were rich in details, I asked open ended

questions that provoked elaborate responses and raised new questions, and I was vigilant,

paying careful attention to their words to ensure I asked questions in adequate format and

order.

Process

The current study, I wanted the participants to feel like they were having a

conversation with someone they confided in, but I also wanted to make sure I covered all

the topics I wished to include in my research. Thus, I used semi-structured interviews. A

semi-structured interview is necessary when a researcher is exploring answers to specific

questions (Rubin and Rubin, 2011). A series of open-ended questions are prepared ahead

of time but are not asked one after the other verbatim, rather, they are asked throughout

the conversation as the researcher deems fit, often followed by questions specific to the

participants' response. These follow-up questions work with the prepared questions on

several levels: so the conversation runs smoothly, to tap into the participants memories, and to center in on the rich details that are unique to the participants' lived experiences.

Agency cannot be understood without considering its interplay with structure (Sewell, 1992). Thus, I asked organizational-cultural questions that led to understanding the structure the participants worked in (Rubin & Rubin, 2011). These questions were used to find out specifics such as the rules, philosophy, and expectations of an organization that are passed down from employee to employee through stories and from employer to employee through expectations. These were necessary because they helped me explore why some employees "violate rules, why they obey orders when their moral compass says they shouldn't, and why some organizations are much more creative and adaptive than others," (Rubin & Rubin, 2011). Part of understanding teacher agency is being knowledgeable about the nuances of the structure each participant is negotiating within.

Generally, the research questions are not asked in a straightforward manner, instead the researcher prepares them so that they are focused in on the different themes that compose the research questions (Rubin & Rubin, 2011). The questions should also be broad as to not lead the participants to specific answers. In this study, the themes and their related questions were:

Theme 1: Background information.

- Tell me how you became a teacher.

  o How did you decide to become a teacher?

  o How did you decide to become a mathematics teacher?

  o What steps did you take to become a teacher?

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- How did your family react to your decision to become a teacher?

- How did your friends react to your decision to become a teacher?

Theme 2: Exploration of workplace expectations and philosophy.

- Describe how you became a teacher at your school.

  - At your school, what are some strengths?

  - At your school, what are some weaknesses?

- Tell me about a typical faculty meeting.

  - What does the principal say?

  - What do your colleagues say?

  - What does the meeting look like?

    - What is generally said?

    - Do you participate? How so?

Theme 3: Exploration of the process of teaching.

- Describe how you plan a unit plan.

  - Do you follow a curriculum?

    - Who developed the curriculum?

  - Do you follow a pacing guide?

    - Who developed the pacing guide?

- Walk me through your thinking as you plan a lesson.

  - Do you plan with other teachers?

    - What does this meeting look like?

    - Is this a school requirement?

- Tell me about a typical day teaching.

- o   Describe what the classroom looks like.

  - ▪   How is the classroom set up?

- o   Describe what the students are doing.

  - ▪   How are the students seated?

- o   Describe what you are doing.

- •   Do you have access to resources?

  - o   What process do you have to follow to access these resources?

    - ▪   Do you have to get approval every time you need something?

Data Analysis

The analysis of the data started as soon as the data collection began (Bruce, 1997), with a careful review of the interviews to understand the participants' experiences. Immediately after each interview, notes were taken detailing self-reflections and initial impressions of the interview. Within 24 hours the researcher followed up with a thank you email in which the participants were asked if there was anything else they would like to share. Working with different participants created a challenge where the researcher had to balance being consistent with the questions asked and accommodating the variety of details offered by asking follow-up questions depending on what the participants shared.

All participants agreed to be recorded via phone interviews and each interview was transcribed verbatim. The recording of the interviews aided the researcher in fully interpreting the meaning of the participants' responses because the shifts in tone and volume, as well as any pauses, were logged and considered as part of the analysis. As the data were analyzed, there was an emergence of qualitatively distinct themes, where

variations in the ways mathematics teachers enact agency were identified. After additional immersion in the data, a limited number of categories of description were discovered to address the different ways teachers experience agency.

One of the core principles of phenomenography is that there exists a logical relationship between the different ways of experiencing a phenomenon. It is not enough to identify categories of description, an outcome space must be developed to create a logical structure relating the categories of description, often as a hierarchy or Venn diagram where the relationships between categories of description are clearly outlined. In phenomenographic analysis, it is imperative to look at the experience of phenomena holistically, where human experiences are considered collectively while also recognizing the variation in these experiences (Akerlind, 2012; Svensson, 1997). Thus, the categories of description do not consider all details in the interviews, instead, they focus on holistic meanings of the experience and serve to separate and differentiate the differences between these meanings. Furthermore, as stated by Akerlind (2012, p. 117), "phenomenographic research aims to explore the range of meanings within a sample group, as a group, not the range of meanings for each individual within the group," meaning that each interview is interpreted within the context of the group of interviews as a whole. Thus, the transcripts were considered as a group to discover the range of meanings emerging from the group, to then develop an outcome space representative of the different ways the participants experience the phenomenon. In the present study, the phenomenon was mathematics teachers' experiences of agency.

During the transcription process, several emergent themes were identified (Smith & Shinebourne, 2012). Then, in accordance with Patton (2002), each transcript was

reviewed several times to identify statements with significant meaning. To find a range

of meanings, similarities and differences throughout the transcripts were identified

through selecting and comparing significant statements. In the present study,

significance was assigned to acts of agency. As the statements were identified, they were

grouped based on variation, meaning that similar statements were grouped together

creating a list of themes. Each theme is a description of an element that has been

identified in the text (Bazeley, 2009). To continually develop the themes, transcripts

were re-read to consider each theme and its specific aspects so that each transcript was

read multiple times with different focuses in mind. Thus, there were two methods used

repeatedly. First, the transcripts were repeatedly read to identify similarities and

differences in meanings which were categorized as themes, then the transcripts were

repeatedly examined with a focus on the identified themes and their aspects. Each time a

transcript was reviewed, the list of themes was further developed. Themes were analyzed

several times resulting in the combination, deletion, and subcategorizing of themes.

Transcripts with similar theme patterns were grouped together to create categories

of description. Categories of description are classifications of the different ways people

experience phenomena so that each category of description embodies how an individual

may experience a phenomenon (Bowden, 2000; Marton, 2000). Through the data

analysis process, the researcher creates the categories of description and organizes them

in an outcome space, which is necessary to get a full picture of how individuals

experience the phenomenon (Akerlind, 2012).

To determine whether the categories of description were sufficiently indicative of

the collected data, the transcripts were re-examined. During the re-examination process,

alterations were made to the descriptions of the categories to fully embody every aspect

of the experience of agency. Here, significant statements extracted from the transcripts

were considered to support and substantiate the categories of description. In accordance

with phenomenographic data analysis, the process of iterative analysis was repeated

several times, with categories of description being readjusted as many times as necessary

to delineate them as accurately as possible (Akerlind, 2012; Marton & Booth, 1997;

Marton, 1986).

To explore the factors that influenced some teachers to enact more agency than

others, the established categories of description were examined for similarities and

differences within the same categories as well as similarities and differences between the

different categories.

Managing my Subjectivity

One issue that has to be acknowledged when analyzing qualitative data is

subjectivity (Peshkin, 1988). Within the many methods recommended to address

subjectivity and thus increase reliability, there are two particularly popular ones. The

first is interjudge reliability. This is where the researcher asks colleagues in their field to

crosscheck the data analysis to ensure they correctly identified the categories (Marton,

1986). The second is the notion of interpretive awareness and theory of intentionality

(Sandbergh, 1997). Here the researcher demonstrates every step of the process, from the

development of the research questions to the selection of participants to the data

collection to the reporting of the analysis. It highlights the need to actively confront and

acknowledge one's subjectivity.

To manage my subjectivity, I employed these recommendations. While working with my advisor, the principal investigator in this study, she examined my data analysis. This way there was another set of eyes ensuring the data were analyzed in accordance to phenomenographical paractices. To address the second suggestion, interpretive awareness and theory of intentionality, I kept a researcher journal where, along with noting every step of the research process, I addressed any biases that presented themselves. I managed my subjectivity by writing down the biases and interpreting them, such as where they were coming from, how they were related to the research and how to manage them so that they did not affect the study.

Data Management

I had two forms of data collection: audio recordings and written transcripts of the interviews. The audio recordings were collected at the time of the interview during the spring of 2019 and were saved as audio files and stored with password protection, each recording under its own pseudonym to protect the participants' identities. The audio recordings were transcribed during the spring and summer semesters of 2019. The written transcripts were saved in Microsoft Word documents, the software I used to edit and save documents. These were saved under their respective pseudonyms. The transcripts were filed in a folder within my dissertation folder where all the relevant documents were stored. Everything was saved in my password protected laptop.

Summary

Chapter III outlined phenomenography, the research design I used in this study. The population I interviewed were mathematics high school teachers currently teaching in Title I schools in the south Florida area. The focus was on teacher agency, more

specifically the different ways teachers enact and experience agency and the factors that

influence teachers to enact agency. Semi-structured interviews using open-ended and

follow up questions were conducted. Managing my subjectivity was an important aspect

to maintaining the integrity of the study, thus how I did this was explored.

CHAPTER IV

FINDINGS FROM DATA ANALYSIS

The three purposes of this phenomenographical study were to (a) reveal the different ways mathematics teachers enact agency, (b) explore how mathematics teachers experience agency, and (c) examine why some mathematics teachers enact more agency than others. Chapter IV discusses the findings from the interviews conducted with the participants, 14 high school mathematics teachers. The first and second research questions are considered through an investigation of the variety of ways mathematics teachers enact agency. In the third research question, the factors that influence Title I high school mathematics teachers to enact agency were explored.

Findings

The findings consist of three sections: themes, categories of description, and factors that may influence some teachers to enact more agency than others. First, the data analysis resulted in the emergence of four themes: *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*. These themes are the different ways the participants enacted agency in their classrooms. Second, the transcripts were reviewed utilizing these themes. Participants with similar theme patterns were grouped together to create categories of description, for example, the transcripts where all four themes emerged were grouped together to form one category. Using this approach, five categories of description emerged describing the different ways mathematics teachers experience agency: Problem Focused, Peer Support, Communicators, Instruction Centered, and Go Getters. Third,

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each category of description was analyzed for factors that may have influenced some teachers to enact more agency than others. At this point, two factors emerged, Administrative and Collegial Structures. Structures are the patterns of relationships between people and the continuation of these patterns, which play a part in maintaining or disrupting social systems. Below, themes are carefully described, followed by an exploration of the categories of description, then an analysis of the factors that may contribute to the differences in enacting agency.

Themes

In this project, agency is defined as a perceived problem being identified, followed by an intentional action that is taken with an intended goal in mind. In other words, a mathematics teacher recognized something she thought of as a problem, then made an active plan to rectify the problem, with the intention of achieving a specific goal. For example, a teacher notices class time ends before her students develop understanding of the mathematics concepts, so she begins offering tutoring after school with the objective of providing more time for students to work on their mathematics skills. Each theme is thus considered with this particular meaning of agency in mind. Therefore, each theme can be explained using the three parts of the definition: the perceived problem, the action taken, and the intended goal. These themes are the response to the first research question:

1) What are the different ways high school mathematics teachers working in Title I schools enact agency?

The ways the participants enact agency are by *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships.* Following are the themes described in detail.

Theme 1: Acquiring Resources

The first theme, acquiring resources, emerged from the data as the participants expressed a lack of the resources they considered necessary to attend to their students' learning needs. Some of these teachers enacted agency by acquiring these resources through fundraising, grant writing, and personal finances. Furthermore, they expressed an insufficient amount of class time, thus they provided more time to assist their students in learning mathematics outside of classroom hours. As can be observed in Table 3, there are two subthemes within *acquiring resources*, physical resources and time as a resource, and these two ways of enacting agency were observed throughout the transcripts, indicating the participants' perception of resources as being an integral part of teaching.

Table 3

Theme 1 Outlined Using the Definition of Agency

Theme	Perceived Problem	Action	Goal
Acquiring Resources			
- Physical resources	- Students do not have enough or adequate physical resources.	- Fund physical resources through personal finances or grants.	- Students have enough and adequate resources to tackle the mathematics content.
- Time as a resource	- Students need more time to grasp the mathematics content.	- Allocate time outside of classroom hours to aid student learning.	-Students have enough time to assimilate the mathematics content.

Physical resources. During the interviews, I asked each participant about the resources available to students. In their responses, three out of the fourteen participants described enacting agency by recounting how they obtained physical resources for their students to help them be successful. Ana shared how, when she was assigned a geometry class for the first time, her students did not have the materials they needed so she took matters into her own hands. She said, "I fundraised in 2011 and got my school 92 geometry games." Later in the conversation she also shared one of the methods she used to teach,

> *What I like to do at my school also is to write grants, like they donated a table that you can write on so I assist students. I'm in the middle of the table and they use markers and they can do things on the table, so I see what they're learning, and I see, 'oh, you know how to do this'.*

Not only does she fundraise, she also writes grants to acquire the resources she perceives as necessary for her students to succeed in her class. Similarly, Ivan received a donation that he used to fill a void in the resources needed for his students, "I got 25 laptops donated to me and I actually let the kids take it home.*"* This indicates he recognized the donated laptops are useful for more than classwork, they are also valuable resources that students can use at home.

Gem also talked about getting the materials her students needed:

> *Usually I have calculators on their desks, I have a box on top of their desk and inside that box they have a calculator, dry erase markers, and an eraser. And inside the desk they have a whiteboard. I provide all of that for them.*

In her case, she purchased items she considered necessary for her students to succeed in her classroom.

Overall, the perceived problem these teachers are addressing is that their students did not have the necessary physical resources, thus the participants enacted agency

through fundraising, grant writing, and personal finances to achieve the intended goal which was for their students to have access to these materials to be successful in classes.

Time as a resource. Time as a resource was way participants described *acquiring resources.* Six participants discussed having to allocate time outside of the classroom for student learning and interaction. For example, Beatriz uses technology to keep in touch with her students:

> *I have this program called Remind that people can actually text me their problems and I send it back and I tell them, 'you need to do this, we need to do that,' and my students have talked to me all the time.*

Through this program she can communicate one on one with students outside of class time, further developing their mathematical understanding. Jan also uses Remind with her students:

> *I use Remind, so I send them their homework assignments via Remind and I also send them PDF attachments of the work from the textbook because they prefer nowadays to be either on the tablet or phones.*

Even though she did not indicate she tutored students through this application, she used her personal time to provide the classwork through an alternative method. She also demonstrated an understanding of her students' preferences. Kristen, on the other hand, not only used an application where the teacher can assist students, but where students can assist each other:

> *I also have an Edmodo so that if they do have an issue they can communicate it to me through Edmodo and they can use that as a way to say, 'hey, I need help', and the students can help each other and when I see that they do need assistance, I will intervene.*

In this way, Kristen provides a unique platform for students where they can communicate and aid each other in attaining their learning goals. Ana also has students peer teach, but in her case, she has structured it as an after-school program:

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> *So I have 5 executives tutors in different classes, they come after school and help
> me. I sit with them and talk about the student deficiency and I provide
> assignments that I have and I walk table to table.*

Students who successfully passed Ana's class volunteer their time after school to tutor

current students, under Ana's guidance. Beatriz provided her personal time a bit

differently:

> *Last year I went to Texas and you go for a week of workshops, and someone is
> there teaching you and giving you ideas and it's not like I don't like math, it's what
> I like, but they gave me ideas that I didn't think about before… So last year I said
> 'I'm going to try this this time, now I'm going to try this instead of what I usually
> do', and to see if I liked it or if my students like it.*

She recognized there may be different ways of reaching her students and she utilized her

personal time to learn new strategies to improve her teaching. Naomi tutors mathematics

after school and on Saturdays, but it goes beyond the content:

> *I do a lot of after-school tutoring, so I have been working my butt off. Saturday is
> just another day but we can talk about things like civic engagement and things
> that are not necessarily math, but it gives them a chance to voice how they feel
> and then they would do some math.*

The time outside of class is structured differently, presenting students with an opportunity

to discuss more than the mathematics content. Ana also tutors her students, but like

Naomi, the students can communicate about more than mathematics, "so they come to

me at lunch, I don't have a lunch really because they come to me with their questions or

to use a computer and we're talking and laughing." This creates a different atmosphere

where students seem to be more relaxed than in the classroom.

Interestingly, it is not always the teacher who recognizes the need for more time

to engage with the mathematics content. In the case of Beatriz, it is the students who

initiate time outside school hours, "sometimes they ask me, 'please let's meet on

Saturday,' so we meet at Panera and they come with all their questions and we stay there

for a few hours." Beatriz's students want to work on their mathematics skills, and as their teacher, she schedules and organizes meet ups to assist them in grasping the mathematics content.

These teachers provide access to information to their students outside of the classroom remotely through online applications as well as through face to face interactions. All these examples of enacting agency stem from recognizing students need more time to comprehend the mathematics content. As a result, students were able to ask their questions and receive additional support.

Theme 2: Implementing Alternative Methods

The second theme that emerged from the data was *implementing alternative methods*. Some participants enacted agency by using methods of instruction that were counter to those prescribed in the lesson plans provided by their schools. Others enacted agency by using alternative methods of grading. Table 4 shows the two subthemes for implementing alternative methods and describes them through the definition of agency. The first subtheme focuses on making changes in prescribed lesson plans and the second subtheme considers grading student work differently than the school norm.

Table 4

Theme 2 Outlined Using the Definition of Agency

Theme	Perceived Problem	Action	Goal
Implementing Alternative Methods			
-Accommodating Lessons	-Lessons used by the school do not reach all students.	-Accommodate lessons to reach all students.	- All students grasp the mathematics content.
-Alternative Grading	- Grading methods used by the school are not beneficial for all students.	- Accommodate grading to accommodate students.	-Grading accommodates all students.

Accommodating lessons. When asked about lesson planning, there were 11 teachers who shared how they changed different aspects of their lessons from what was suggested by the school administration. For example, despite having a set of lessons to follow, Beatriz decided to do something differently, "this year I said I'm doing this oh, I'm going to jump to this other chapter because it's a continuation of what I'm doing and then I go back to the ones I haven't done." She is enacting agency by ordering the lessons in a different way, a way that makes sense to her and her students, as opposed to the way the school has decided. Fong expressed being in tune with his students and changing current lessons accordingly:

> *You get a general sense at times when you look at the students that something is going completely over their heads and to continue it's just not going to be effective. Sometimes I just stop a lesson and switch it up or search online to see what teachers have done to teach the same lesson.*

He is willing to spontaneously change the lesson or the strategy he is using to better reach his students. Likewise, Hannah feels she must change the lesson on the spot, but for several reasons,

> *Sometimes I completely have to change it because I say they are totally not getting this so I have to go back and review something that is easier so that I can then push them on a harder subject or I see they're really getting this and I say let me give them the harder questions.*

Like Fong, Hannah recognizes her students may not understand the lesson thus she has to step back and review, but she also points out that there are lessons that students may understand quickly and she must change the task to challenge them.

There were some participants who relied on common planning to *implement alternative methods*. Hannah, for example, has participated in changing lessons while common planning with her colleagues,

We have changed questions that are either too difficult or not difficult enough than what we needed them to achieve at the standard. Sometimes we deviate from the book because it doesn't do the standard check list so we do our own examples to try to compensate where we think the book either did too much or didn't do enough.

Also referring to common planning, Deondra explained how the mathematics teachers tried to follow the pacing guide, but there were times when that was not possible, "sometimes a lesson won't go as planned and we might need an extra day to figure it out but we do try to stick to the pacing guide the district gives us." Instead of moving on to the next lesson, the teachers collectively decide to spend more time on a topic to ensure students remain on track mathematically. This indicates Deondra and her colleagues were willing to make changes to accommodate their students' learning, suggesting common planning supported them as they enacted agency.

Not only did the participants make small accommodations, some changed lessons altogether to increase student engagement. Carla likes to connect the class content with the outside world and does this by exposing her students to ideas and information that is not part of the curriculum. For example:

So I found an article about how regular people become Millionaires and I brought it into the classroom and said, 'hey I have a present for you' and we talked about using matching funds in their retirement and everything that is appropriate to that finance class.

Another teacher shared using a completely different curriculum as part of a program she is leading:

So last year and this year I am using (a different) curriculum so it's a curriculum that no other teacher is using in the district. So math is very hands-on, they did a lot of activities, being able to connect something more concrete and tangible, something that made more sense to them and then we made it more abstract into the math.

When the researcher asked her to explain further, Leah continued by describing,

> *Every week I make sure there's always some activity with them walking around the classroom or they have to present or do a poster, summarize what they learned to make some connections. There's always a class discussion either at the beginning or the end and then we debrief at the end. What we did in the classroom, what do you need to work on, not only the content but how they're doing in the class.*

Leah uses this curriculum with the students in the program as well as regularly enrolled students, meaning she enacts agency through her use of a curriculum that she believes is superior to the district mandated curriculum.

In these examples it can be observed that the participants enacted agency through the accommodating of lessons and, in a few instances, the curriculum. The problem the participants were addressing was that the lessons were not reaching all students, the action was making changes to the lessons, and the intended goal was that all students would learn.

Alternative grading. The second subtheme of the theme, *implementing alternative methods*, is alternative grading. Three participants shared the use of grading methods that were different than those used at their schools. Deondra learned of a way to grade her students' mathematics work differently during a professional development session and decided to implement it in her classroom:

> *What I have shifted towards is nontraditional type of grading where I'm focusing in on mistakes, I try to tell my kids you guys are really smart and good at math but sometimes you make mistakes which might lead you to the wrong answer. Everyone makes mistakes. So I highlight their mistakes on their exit ticket so you don't see what grade do you have and you don't even know your grade unless you see the grade book so they still get a grade but it's not the way they are used to where they see it on the paper. So when I pass it back you did not get an A or an F. So there is less of a stigma and more of attention on, 'WOW I did it correctly but I forgot the sign was negative and I made a mistake here and that's what led to wrong answer.' And that came from a professional development common*

planning that I found to be helpful for myself. Not only that, after they see the highlighted and what they did, I then let them correct it.

She does not grade each question right or wrong, instead, she tells them she uses a highlighter to highlight their mistakes and offers her students a second chance to work out the problems that are incorrect. This method of grading left an impression on Deondra, where her students confront their mistakes and are given a chance to fix them.

Another method was used by Gem who curves her students' grades using the scores they receive on the school or district topic tests:

They have a raw score for their topic test but then they have an equivalent. And what I do for the equivalent is I take the raw score that the school gets or the district, whichever one is the lowest of the two, that's the one that I use for my cut off point, that becomes a 60.

Instead of calculating the percentage, Gem assigns the lowest raw score a grade of 60 and works up from there so that no student has a failing grade because, "a 60 is passing for the county." Kristen also alters her students' grades, but in different ways:

I let them redo their work, for example instead of giving them a zero, if they didn't do it right, I just do it for completion. So if they did it but they did it wrong I give them a 60 and I tell them that they can redo it for their grade so that if they redo it and get an 80 or 90, depending on how they did, it can improve their grade but they will not get a 0.

She does not agree with students receiving 0s even if they completed the assignment incorrectly, thus she changes anything between 0 and 59 to a 60. Apart from that, she also lets students redo the assignments so that they may improve their grades.

These examples of the participants' experiences of enacting agency arise from their perception that the format for grading used by their school is not beneficial to their students. As a result, students were graded differently.

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Theme 3: Improving the School Environment

When analyzing the interview data, another theme that arose was the participants' experience of enacting agency through sharing their ideas with others. Eleven participants discussed sharing ideas with their colleagues as well as administrators to improve the environment of the school. In Table 5, the theme of *improving the school environment* is explained using the definition of agency.

Table 5

Theme 3 Outlined Using the Definition of Agency

Theme	Perceived Problem	Action	Goal
Improving the school environment	- The school environment needs improvement.	- Speak to teachers and administrators to improve school environment.	-Influence teachers and administrators to change school environment.

Participants spoke about influencing how others think to improve the school environment by sharing their ideas with their colleagues during common planning sessions. Deondra talked about her contribution during common planning as follows:

> *We're sitting here and we're talking about planning 12.2, why? This is the same 12.2 that it's been for the last couple of years, so the lesson is good, it's a solid lesson. How can we now use this time to plan better for misconceptions, for example. We all know how to lesson plan, I'm a pro at it, I can lesson plan in my sleep, lesson planning is solid. So now how can we use these 90 minutes that we are all together to take it further. Students are sitting there like, 'oh math', how can we make this more engaging. Let's come up with some strategic way to make 12.2 come alive.*

She influences fellow mathematics teachers by making suggestions on the areas they need to work on. She recognizes that they are skilled at lesson planning and, perhaps more importantly, that they already have good lesson plans. What Deondra insists on is using their time to further develop their lesson plans by highlighting areas students would

benefit from such as attending to misconceptions and improving student engagement. Elisa also influences her colleagues during lesson planning,

> *I said, 'look man, this is a team effort, we are teachers here and we all service this community and at the end of the day we are all representatives of the school by the grade that we are given so if you're doing something spectacular in your classroom and you're part of the same one team, a part of this geometry team, you need to share with your team.' We don't want just one star in the team, that doesn't look good.*

In Elisa's example, she's not suggesting ways to improve the lessons, she is asking her colleagues to share what is working in their classrooms. It is a call for camaraderie, she is reminding them of their common goal and what it means to be part of a team.

Other participants influenced their administrators by speaking up when they perceived a problem. One teacher recalled a meeting she attended:

> *We're at the district, and they wanted to take this out and skip that and I said, 'you can't, those things are on the EOC. I was the reader for this test so I remember what I saw. I can't tell you what's on there but I can tell you not to skip anything on the curriculum'. The principal noticed and came over and asked what was going on and I told him how I wanted to add stuff. Finally, I forwarded an email of the platform for the geometry EOC and I told them I had expertise because I was a writer for them, and I was a reader to reject or proof questions for the EOC.*

The problem Carla noticed was the omission of mathematics content students would be tested on and decided to speak against what the district was doing to ensure students were exposed to all the material necessary. By standing up for what she perceived as correct with the intended purpose of changing the decision to omit content, she enacted agency. Janette found herself in a similar situation when she was assigned to teach a class where she felt that she would not be able to cover all the necessary material needed for students to pass the end of course exam:

> *They want me to teach a semester of Algebra 1 and a semester of Geometry to kids who haven't even passed the Algebra 1 EOC. I focus on having my students*

pass the Algebra 1 because it is a requirement to graduate and I've told the assistant principal and the principal 'look, I need them to pass algebra 1 because I want them to graduate.' I recently mentioned that to an assistant principal because I can't follow the pacing guide because I need to focus on just Algebra and she said 'no, our Geometry scores reflect the school scores so you have to focus on that.' So it's like who cares about the actual students and trying to get them a high school diploma, just teach the Algebra 1 and move on to the geometry but unfortunately the Geometry they just have to take it but they don't have to pass it, but for Algebra 1 there is a passing score so to me to help the students out I teach Algebra 1 more.

Jan realized she and her students would not have enough time to effectively absorb all the Algebra 1 content if they also had to cover Geometry. She brought this to the attention of an administrator as an argument to why she was not following the pacing guide for that class. The administrator disagreed and told her to focus on Geometry. In Jan's quote, she does not share her direct response to the assistant principal, instead points at the differences in priorities where she perceives herself as attending to her students' needs while the administrator's focus is on the school's score. In the end she stood by her beliefs and concentrated on Algebra 1, the course she deemed of higher importance because her students need to pass the Algebra 1 end of course state exam in order to graduate high school. This is an example of enacting agency defiantly, where the teacher directly went against the administrator's request.

Theme 4: Constructing Personal Relationships

The final theme, *constructing personal relationships,* emerged from eight of the participants' interview transcripts. These participants expressed taking purposeful action to build relationships with their students by being available outside of class hours as well as taking the initiative to connect with students during class time. In Table 6, the theme of *constructing personal relationships* is explained using the definition of agency.

Table 6

Theme 4 Outlined Using the Definition of Agency

Theme	Perceived Problem	Action	Goal
Constructing Personal Relationships	- Students are not emotionally invested in learning.	- Cultivate personal relationships with students.	-Students try and/or persist in comprehending the mathematics content.

Fong recognized the importance of being there for his students:
I try to demonstrate that I am not just here for math but that I am willing to listen to anything they might have an issue with. And I think I try to be a little humorous in the classroom so that there is a willingness to see me as someone who is not just rote and dry but also human and hopefully interesting as well.

He expressed that as a teacher he wants to do more than help his students with math, he

wants to be there emotionally. Similarly, Ivan recognizes the importance of building

relationships:

So I spend a lot of time in the beginning of the year forming relationships, building relationships with my students and making sure that I am willing to listen to them, that I'm there to support them, that I'm there as their ally, and that I'm there totally willing to put in the work with them.

As part of his practice, Ivan takes the time and puts in the effort to connect with his

students. When asked how he does this, he explained he is the soccer coach as well as:

So I found out about this Saturday program and when I first went it was only one or two kids from (my neighborhood) and like 20 kids from (another neighborhood) and like 30 for kids from another place. And my students from (my neighborhood) would just be there with their headphones and not really being a part of it. So, I started working as a volunteer and then I was approached to run a program and incorporate a college readiness program where I would have kids, I would recruit like 25 kids for six weeks in the summer.

This program is part preparation for the SAT and part extracurricular activities such as

art, culinary, and wellness. Additionally, he pairs his high school students with "little

buddies," who are students from the nearby elementary school, to act as tutors and

mentors. This work has positively influenced his classroom, "with all my work outside

of the classroom mentoring and coaching, I find that I do not have any behavioral issues."

Establishing deep personal connections with his students has earned him their respect.

Students see him in multiple roles inside and outside of the classroom that aim at

supporting them holistically. He is there for his students as a mathematics teacher,

summer and after-school tutor and mentor, and as a coach.

Leah sees her role as both a teacher and a parent. Like Ivan, her personal

relationships extend to her students' mathematics work:

> *I have a nurturing relationship, I'm like that Mom, I'm here for you but at the same time I'm not going to let you walk all over me. It's much more than math. To me, I tell them, I'm trying to not only teach math but to teach them a sense of respect, being someone that is persistent and hard-working, someone that is willing to put in time to think and not just do math to do it.*

She is cognizant of the influence she has on her students and utilizes it to instill values

she deems important to be successful in mathematics. Naomi shared a comparable view:

> *Instead of doing the do now for example, we might just spend 15 minutes talking about how the week was and what they're going through. And I learned that doing that, it actually allows some lessons to happen, so they are less likely to interrupt me or talk to their neighbors if you have that type of conversation before the class starts.*

With experience, she noticed that taking the time to have personal conversations with her

students led to a classroom environment conducive to learning. It made such a difference

that she allocates classroom time to have these talks. Moreover, when a student seems

lost or disinterested, she will immediately address the issue. For example,

> *One day (a student) had her head down for a good ten minutes, so I asked her if she was frustrated and she said, 'yeah that's why I quit', so then I said, 'okay, come to my desk, let's talk about this one on one', and we went through the lesson. And the reason I did that, even though part of it was that she didn't pay attention during the lesson, I wanted her to know that I respected that she was struggling and that I understood that that's why she quit, but at the same time it's like you have the right to say, 'hey, slow down Miss, I don't understand,' and ask some questions. I am understanding in that aspect. And I think that's what most*

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students want, is for somebody to listen to them. I want to know what they're going through because for me I think that makes them better learners.

Listening to her students and taking the time to work with them one on one demonstrates camaraderie on Naomi's part. She saw her student struggling and stepped in to help her while also giving her the tools she needed to be successful in the future. Naomi explained to the student that she has the right to speak up and request a slower pace.

Beatriz, on the other hand, discusses her relationship with her students as a group effort with the goal of successfully completing the Advanced Placement (AP) exam:

I feel like they feel we are in a group which is what I want them to feel, that we're in this together that I'm here to help them, not to fail them, that it's the last thing I want to do, I want to help them pass this AP test.

She positions herself as one of them, someone who is there supporting their journey in her class.

In these examples, the participants demonstrated an understanding of the impact *constructing personal relationships* has on their students' willingness to tackle the classwork. They perceived the problem that students are not invested in learning the material and they took action by cultivating relationships with the intended result of students engaging with the mathematics content.

Categories of Description

Categories of description are "the totality of ways in which people experience, or are capable of experiencing, the object of interest" (Marton & Booth, 1997, p. 122). These categories capture the essence of the variation; thus, a category of description conveys one manner in which a phenomenon may be experienced (Bowden, 2000; Marton, 2000). These categories of description are created by the researcher through the data analysis process. To create the categories of description, the researcher first

identified the themes that emerged from the data: *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*. Once the four themes were identified, the transcripts were reviewed again through the lens of the themes looking for similarities and differences in the ways the themes were described by each participant (Akerlind, 2012; Bowden & Welsh, 2000). The transcript from each participant interview was carefully considered and varying degrees of each theme were identified. Some transcripts had little to no description of themes, while other transcripts had all four themes discussed (as shown in Table 7). The transcripts with similar results were grouped together to create categories of description, for example, Ana, Beatriz, Ivan, and Naomi became a group because all the themes emerged in those transcripts. With careful inspection, this resulted in five ways of experiencing agency: Problem Focused, Peer Support, Instruction Centered, Communicators, and Go Getters.

Table 7

Number of Times Themes Emerged in Each Transcript

Categories of Description	Participants	Acquiring Resources	Implementing Alternative Methods	Improving the School Environment	Constructing Personal Relationships
	Elisa			✓	✓
Problem Focused	Jan	✓		✓	
	Mia				
	Fong		✓✓✓		✓
Peer Supported	Gem	✓	✓✓✓		
	Hannah		✓✓✓	✓	
Instruction Centered	Deondra	✓	✓✓	✓✓✓	
	Kristen	✓	✓✓	✓	
Communicators	Carla		✓	✓✓✓✓	✓
	Leah		✓✓	✓	✓✓
	Ana	✓✓✓✓	✓✓✓	✓	✓
Go Getters	Beatriz	✓✓✓	✓✓	✓✓	✓
	Ivan	✓	✓	✓✓	✓✓✓
	Naomi	✓	✓	✓✓	✓✓

To organize the categories of description, an outcome space was created (see figure 1). The outcome space is a representation of the relationships between the categories of description which, according to Akerlind (2012), is crucial when holistically considering the human experiences of a phenomenon. This outcome space serves to address the second research question:

2) How do high school mathematics teachers working in Title I schools experience agency?
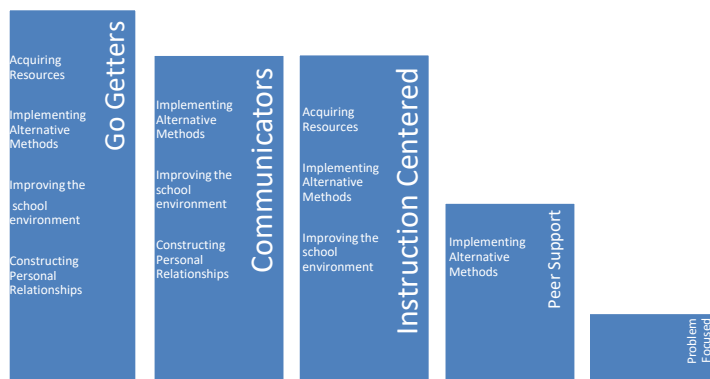
Figure 1. The outcome space for the mathematics teachers' experiences of agency.

In this figure, the more themes a category of description had, the taller the bar. Starting on the right, the shortest of the bars is the Problem Focused group because they enacted agency in the least number of ways. They are followed by the Peer Support group because they mainly enacted agency through one theme, *implementing alternative methods*. The bars of the Instruction Centered teachers and Communicators are at the same height because they both enacted agency through three themes. Finally, the Go Getters have the highest bar because they enacted agency through all four themes. Therefore, a hierarchy is formed with the Problem Focused group at the lowest end and the Go Getters at the highest end.

Problem Focused

The Problem Focused Group is at the bottom of the hierarchy because they enacted very little to no agency in their classrooms. Throughout the transcripts, these participants focused their discussions on the perceived problems plaguing their schools without explaining efforts to improve the situation. Jan, for example, talked about her perceptions of the administrators' treatment of the teachers at her school. For instance,

> *I like teaching but it's kind of rough with the administration because they do not treat the teachers well. A lot of good teachers have left and a lot are not coming back. I am 90% sure that I will be leaving too because of the way that they treat the teachers just because of one teacher that is really, really low, so I am going to get out.*

She continued in this manner for most of the conversation, focusing on the negative experiences of the teachers with the administrators. She viewed her principal as playing favorites and, as an example, stated, "One of the complaints is because I actually got a low rating as a teacher even though I was voted teacher of the year at my school by my colleagues." This to her does not make sense because, how can she be voted teacher of the year and be assigned a low rating from the administration? Her frustration of the situation was evident throughout the interview. Jan also expressed distress, but in her case about the priorities of her school,

> *My school overall has gotten ridiculous because when you are testing, testing, testing to collect data, there's no time to teach. We just have to test so much that there are very few teaching days. I would say the year is 30-40% of the days is testing.*

Jan was overwhelmed by the amount of testing imposed on her students and saw this as a hindrance to her teaching.

Agency is perceiving a problem and taking intentional action to address the problem with the goal of solving it. This group perceived problems but failed to create

action plans to tackle them. Overall, the conversation centered around their negative

experiences, leaving little room to enact agency. Therefore, barely if any of the themes

manifested in the transcripts of this group.

Peer Support

Those who enacted agency primarily by *implementing alternative methods* were

named Peer Support. These participants expressed immense support from their

colleagues and indicated the important role common planning played in their efforts to

implement alternative methods. Hannah spoke about her thoughts on common planning

with fellow mathematics teachers as follows,

> *I think the culture of common planning helps because you are not doing it by*
> *yourself. Like if you had to create a surplus all by yourself for all the chapters*
> *and had no feedback or anything, yeah you could still be a great teacher, but you*
> *will be doing so many things by yourself it can be very daunting and exhausting*
> *mentally and physically. So I think it does definitely release some stress from the*
> *teacher.*

Hannah perceived planning with her colleagues, not as a necessity, but as a way of

sharing the workload so that they are less stressed. She also mentioned how, when

planning on your own, you do not get any feedback and the workload alone can lead to

mental and physical exhaustion.

All the Peer Support teachers constantly met and discussed lesson plans with their

colleagues. Gem shared that the entire mathematics department met once a week to

discuss any issues and anything happening within the department. Because she teaches

Algebra and Geometry, she met with the Algebra teachers once a week and the Geometry

teachers once a week but at different times so that they could focus on each subject area

separately. This enabled the mathematics team to always be on the same page and each

subject area to be able to keep up with each other week to week.

As an entire department or a subject area, the Peer Support group worked collaboratively. They built strong relationships with their peers which led to *implementing alternative methods*.

Instruction Centered

Experiencing agency as Instruction Centered are those who enacted agency by means of *acquiring resources*, *implementing alternative methods*, and *improving the school environment*. Under this group were Kristen and Deondra, who both described a focus on instructing their students. The teachers in this group regularly provided students with time outside of regular class hours. Kristen uses an application software where her students can communicate with her at any time of the day, and Deondra has an open door policy where her students can, "come and interact in my class, they can come and sit and I tell them they are always welcomed."

To plan their lessons, Instruction Centered teachers assess their students' learning on a day to day basis and use this information to guide their teaching. Instead of following the district mandated pacing guide, this group uses an alternative method, they focus on the areas their students need to master. Deondra, for example, uses an exit ticket to decide what to teach the following day, "it is a single problem that encompasses all the concepts as a whole and that is really special to me to see what they got that day." Once she reviews her students' answers, she can decide if she needs to go over the content or move on to the next lesson. Kristen studies her students' class assessments to decide what to teach next, "the lesson plans, I set them up myself. I do them in the way that I think they need to be." Again, they concentrate on instructing the students they have in front of them as opposed to following a pre-planned lesson.

When *improving the school environment*, their focus is also on instruction. Kristen wants to improve her practice and has told the mathematics teachers at her school, "what we should be focusing on is execution and how we teach this lesson and the best way possible for maximum retention." She wants to figure out how to improve the lesson plans and their delivery in a way that will result in students remembering the material. Overall, instruction Centered teachers' main concern is instructing their students to best meet their learning goals.

Communicators

Communicators enacted agency by *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*. This group focused on using their voice to speak up for themselves and others. For example, Carla explained how she advocates for herself when the administrators are assigning the classes each teacher will teach the following school year. Because there are two different mathematics teaching certifications to teach high school, not all teachers have the credentials needed to teach upper-level classes. In order to ensure she teaches juniors and seniors, she exclaimed, "I have to run some interference with the principal and department head that I'm here and I'm qualified to teach the class and they are not so you have to give it to me." She also speaks up for her colleagues during faculty meetings, such as informing them of their options if they have an emergency and need time off.

Leah also used her voice on behalf of herself and others, especially when it comes to the curriculum she uses, one that is different than the rest of the math faculty. For example, at her former school she stood up for herself when the administrators and district would criticize the materials she used to teach. She shared the difference between

how her previous placement and her current one viewed her, "at [former school] I was perceived as the rebel or the one going against the current, here I feel like me having a difference of opinion or being vocal about how I feel about what we are doing is actually perceived as something good." Because of this, she believed changing schools was the right decision.

She also advocated for her students, believing that hands-on activities and students building relationships with her and each other is a big part of learning. When talking to other teachers about her beliefs, they disagreed, she regretfully shared, "I would hope that as a math department we would all be on the same page and that we would have the same goals for our students, but we don't." Despite being at odds, she remained firm in what she believes her students need to succeed in her classroom. Furthermore, despite having different beliefs and using a different curriculum, she shared with her colleagues, "sometimes I vocalize how I am teaching and how I am covering that standard."

Overall, the Communicators were confronted with obstacles that they managed to overcome through discourse. In the process they enacted agency in a variety of ways, by *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*.

Go Getters

The fifth and final way of experiencing the phenomenon of enacting agency was as Go Getters, the group at the top of the hierarchy because they enacted agency through all themes: by *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*. This group made

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themselves available to students inside and outside of the classroom, influenced their peers and administrators, and advocated for resources. Overall, they expressed a strong sense of belonging in the classroom. Ana described her classroom,

> *that's why I say my classes, I don't feel like, 'oh my God,' you know, no I feel like relaxed, it's my home, it's my house. My school, I feel, it's my home, that's the way I see my school, as my home.*

She loves her school so much that she considers it her home. Go getters had positive perceptions of their schools, administrators, colleagues, and students. Some even recognized that their situation may be a bit different than other teachers. Beatriz, for instance, knows her students are above average in mathematics,

> *I think my students are great. In Calc 1 classes only the best students that can get in that school go to my classes. The truth is the best people are the ones that come to my class so my students usually are great. Now if I were teaching for example Algebra 1, people say that it is a headache because you have to deal with discipline, because they are 9th graders and they do not know how to behave correctly. But I don't have to deal with that because the students that I get, they are the top 15% of the class in my school.*

She compares her situation to that of mathematics teachers teaching first year students and acknowledges that part of the reason her students do well is because they are proficient in the basics of mathematics (top 15%) and are mature enough to not cause behavioral problems. This group also expressed positive perceptions of their colleagues. When talking about the Geometry team, Ivan said, "You would never think the six of us would be friends, like we have really good relationships all six of us, we are in a group chat as well where we collaborate." He went on to describe how they are all so different yet have formed strong bonds that make him feel welcomed to share thoughts and ideas about issues inside and outside of the classroom.

Go Getters were comfortable enacting agency. They enacted agency in all four ways that emerged from the data: *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*.

Relationships

Structure is an important factor when considering an individual's opportunity to enact agency (Sewell, 1992). Social structures are patterns of interactions between people and the continuation of said interactions, and these play a crucial role in enacting agency (Giddens, 1979). Additionally, structure binds time and space in society resulting in a set of rules people follow that result in the reproduction and maintenance of social systems. Structure and agency work together, where one imposes itself on the other, thus structure can maintain a system while agency can disrupt it.

When people participate in day to day interactions, they are constructing the structure at that place, at that time. When considering the participants of this study, the patterns of interactions they have with their colleagues, administrators, and students have created a structure. The tension between agency and structure is consistently negotiated during these interactions. Thus, individuals can challenge the system by enacting agency, or aid the system in maintaining and reproducing itself by conceding the structure. As Sewel (1992) attested, these relationships play a role in the ability of individuals to enact agency, and this was the case for the participants of this study. Hence, while analyzing the data, possible responses to the third research question emerged:

3) What factors influence high school mathematics teachers working in Title I schools to enact agency?

The factors that contributed to some participants enacting more agency than others were two relationships that were evident throughout the data: the participants' interactions with their administrators (Administrative Relationship) and participants' interactions with their colleagues (Collegial Relationship). These relationships varied from category of description to category of description, with some participants identifying relationship constraints, some expressing neutral perceptions of relationships, and others describing positive relationships.

In Figure 2, the categories of description are graphed. The teachers' perceptions of the Administrative Relationships are graphed along the x-axis and their perceptions of the Collegial Relationships are graphed along the y-axis, by category of description. Each category of description described each factor as positive, negative or neutral. If a category of description described their administrators as supportive, it was considered a positive Administrative Relationship. If the category of description did not have an opinion either way, it was considered a neutral Administrative Relationship. If the category of description primarily described their administrators as unsupportive, it was considered a negative Administrative Relationship. The same logic was utilized to consider the participants' perceptions of their Collegial Relationships. Hence, each category of description considers the two factors, for example, Go Getters experienced positive Collegial Relationships and positive Administrative Relationships, placing them up and to the right. In this way, you can see how the Administrative Relationships and the Collegial Relationships influenced each category of description.
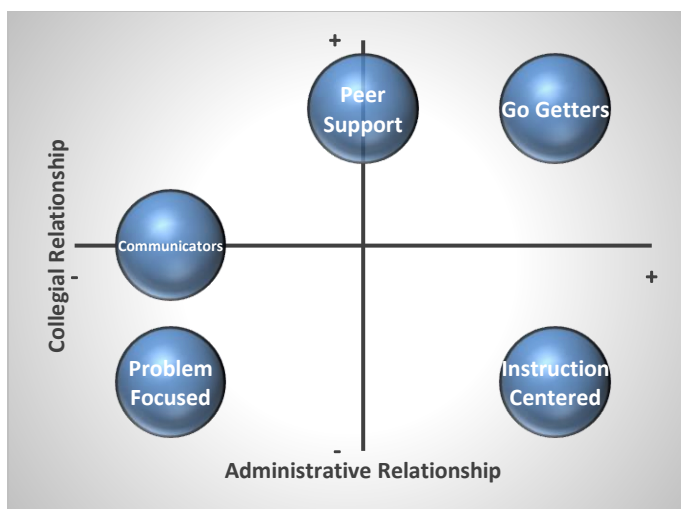
Figure 2. Summary of How the Collegial and Administrative Relationship Influence Agency.

To summarize,

- mathematics teachers who experienced agency as Problem Focused had negative Administrative Relationships and negative Collegial Relationships;

- mathematics teachers who experienced agency as Peer Support had neutral Administrative Relationships and positive Collegial Relationships;

- mathematics teachers who experienced agency as Communicators had negative Administrative Relationships and neutral Collegial Relationships;

- mathematics teachers who experienced agency as Instruction Centered had positive Administrative Relationships and negative Collegial Relationships;

- mathematics teachers who experienced agency as Go Getters had positive Administrative Relationships and positive Collegial Relationships.

Collegial and Administrative Factors: Problem Focused

The phenomenon of agency can be experienced as Problem Focused. This category of description is reserved for the teachers who described little to no experiences of enacting agency. Instead, they were focused on perceived problems at their schools.

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Their Administrative Relationships were negative, as were their Collegial Relationships.

For example, Elisa, a Problem Focused teacher, confided:

> *It's one of those schools where they bring administrators, and okay this is a school that has 24,25 hundred kids and the thing is, it's a great place for administrators to go in and do their time, learn a lot and then leave and start at their own school. When they see that someone is doing well in our school, they take him away. And that is how it's been, we've had an abundance of principals and assistant principals and we've had some good ones but they see them and say 'oh my God you're doing such a fabulous job, we have to put you in our school.' But then what now, what about us now? Or they'll provide support from the district and then when they see we're doing well they take away the support. And it's like, 'what do you expect will happen once you take away the support?'*

Her main concern was the inconsistency in administration, comparing their tenure there

to a jail sentence through the phrase "do their time." Furthermore, in her opinion,

whenever administrators made a positive difference, they were relocated to another

school. She also noticed that the district provided support for limited amounts of time and

expressed frustration by wondering what the district was thinking. Another Problem

Focused participant, Jan, shared her thoughts on her principal:

> *He just plays favorites; he gives the people he likes high scores and the others low scores. He plays favorite so it feels like no matter what you do it doesn't matter and other people that barely do anything, they get rated highly effective so they even make more money than you even though they barely do any work. The grading affects me financially and that's why other teachers have gone to other schools and even changed careers, because they were not happy at the school.*

Jan was unhappy because she perceived her principal as preferring some teachers over

others. Part of the yearly teacher evaluation at her school is a grade the principal gives

each teacher during their formal evaluation. This, in conjunction with their students'

performance on the state exam, determines the raise they will receive, which can be 2%,

1%, or 0% of their current salary. Because her principal rated her low, Jan's salary will

be affected. She does not see this as merit based, instead she sees it as an unfair practice

of rewarding the teachers liked by the principal. These quotes exemplify the Problem

Focused participants' negative perceptions of their Administrative Relationships.

When asked about working with colleagues, Jan responded they did not get

together and instead shared her opinion on the role of teachers:

> *I don't think there is much freedom for teachers. We have to teach to the test, we*
> *have to follow the pacing guide because if someone comes in and we are not*
> *following the pacing guide, we could get in trouble. Some teachers want to do*
> *something different but they know people from the district keep coming in and*
> *they say 'I have to follow the pacing guide, I don't want to get in trouble, what*
> *can I do?'*

She expresses a perception of lack of freedom when teaching and fears she will be

reprimanded if she does anything differently, which impedes her ability to deviate from

the pacing guide. She also expresses a belief that all teachers are powerless, that even

when they want to enact agency, they cannot. Elisa also spoke about the constraints of

the pacing guide:

> *Sometimes you can teach a lesson and there are deficiencies that you are not able*
> *to address in a timely manner because you have to move on to the next lesson*
> *because of the pacing guide, because you have a topic assessment that you have*
> *to take coming up the next week and you don't have time to go back.*

Even when she recognizes deficiencies in her students' learning, she does not address

them because she fears they may fall behind, not realizing that by not attending to

deficiencies also leads to students falling behind. Her focus is remaining on track with

the pacing guide and the scheduled assessments. Although she encourages her peers to

share what they are doing well in their classroom (*improving the school environment*),

Elisa does not attend common planning and speaks of her assistant principal as follows:

> *I have somebody now that doesn't know the content as far as the standards and*
> *everything for math and has never been a math teacher and never taught in a*
> *math class… The teachers in our school, they know common planning is not a big*
> *deal.*

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Overall, experiencing enacting agency as Problem Focused fixates on the problems instead of problem-solving. This group perceived their Administrative Relationships as unproductive, and the policies, such as following the district developed pacing guide, unchangeable. Collegial Relationships are perceived as negative or unnecessary. Thus, Problem Focused participants limited agentic behavior may have been influenced by the Administrative and Collegial Relationships at their schools.

Collegial and Administrative Factors: Peer Support

Peer Support is the category of description for teachers who predominantly enacted agency through the theme of *implementing alternative methods*. The similarity that emerged throughout this group was a strong community of educators, where mathematics teachers supported each other through the lesson planning process. This group expressed a deep sense of community with the other mathematics teachers at their schools. Fong and his colleagues work often and well together:

> *My math department that I belong to, we have a good camaraderie. We are willing to seek each other out for advice or help, we get along well when we attend our meetings, I think we're all pretty relaxed and cordial with each other.*

When asked to describe these meetings, he spoke of their use of the pacing guide to plan:

> *We will also have common planning meetings where the team that is responsible for the particular subjects meets and we talk about what lessons we're doing on that particular topic at the present time, what is being covered, when the topic assessment is taking place, which is a district-wide exam that is reviewed for the data amongst ourselves here at the school and at the district as well. So we have common planning meetings for the subject matter teachers almost on a weekly basis… What we are trying to do is simulate the atmosphere of the end-of-course assessment that the students are responsible for taking and hopefully passing at the end of the school year. So we have an outline that is drawn for the pacing guide, and we subject matter teachers have an input in creating and then we follow it to the best of our ability between the three or four day time frame and that is also available to us as well on a Google Drive that the math department can use.*

He and his colleagues use the pacing guide to map out their days and then work together

to create the lesson plans week to week. The topic assessments are viewed as data that he

and his colleagues can use to inform their planning. Additionally, Fong talked about

support in the classroom:

> *My math department chair, which is more than regularly in my classroom and also helps out, she will also mill about the room and answer questions as we're doing our exercises so sometimes, we have three of us helping the kids. Myself, my volunteer, and the department chair.*

Not only does he have the support of fellow mathematics teachers, he also has a recent

college graduate who volunteers daily and regular visits from the mathematics

department chair. Gem also experienced agency as Peer Support. She shared similar

sentiments, "I love the environment, the culture, we get along very good, my math team

is amazing, I have great support." When asked why she thought this, she explained

common planning, how each course would meet every week to plan together:

> *We discuss what we are teaching, when we are teaching it, and how we are teaching it so we are all on the same page… We follow (our district's) lesson planning. We have the pacing guide and the testing, and the math coach is present at the meetings and she's the one that guides and leads the meetings.*

Gem enjoys working with her colleagues and math coach. Not only do they plan the

lessons together, they also alter the lessons together, adjusting them so that each teacher

focuses on reaching the particular students in her class:

> *So we discuss, 'okay, at this level this is how we do it,' so basically we differentiate depending on the level of, you know, which students we have in our classroom. It is very individualized, the lesson planning. We really foster and take care of how we each are teaching our lesson in each section.*

Gem and her colleagues support each other through discussion, exploring how to adapt

each of their lessons to address their students' needs. Hannah also experienced agency as

Peer Support, working closely with her colleagues, tweaking lesson plans repeatedly

throughout the year:

> *We are always updating the slides on our Google Drive and talking about it, 'oh I did this question last year and it didn't work well, let's do this instead,' or will say, 'oh the section is too hard, let's do it like this, let's change it, let's do it like that.' The way we do it is that each teacher is assigned a chapter and they have to change it as they see fit and then whenever their chapter comes up, we will review it and make even more changes than they saw, as a group collectively.*

Hannah, like Fong, can access all the lesson plans created by herself and her colleagues

through a shared Google Drive, making it *their* work as opposed to individual work. All

the Peer Support participants expressed being part of a supportive group that worked

together on a regular basis to improve the mathematics lessons, at times, changing them

around, which is indicative of their perception of the lesson plans as dynamic. Hence, it

is no surprise that *implementing alternative methods* was the most common theme that

emerged from this set of data. People in the Peer Support category of description had

positive Collegial Relationships.

When asked about the administration at their schools, the Peer Support group did

not express positive or negative thoughts about administrators, instead, they spoke of

school wide and societal issues. Hannah, for example, empathized with the

administration and placed blame on society as a whole:

> *I think our Administration has done a great job with the hand they've been dealt. I think the teachers work really hard and I think they are underappreciated as a culture in general. Definitely here there are really good teachers. The salary rate in (this state) compared to other states, especially in (this county) where there are so many students that need a lot of different things being emotional or social or psychological, teachers deal with a lot in the classroom that not only do they need to be supported financially but I don't know, I don't know how to fix it other than that. It's not just teaching, there is a lot that goes along with it in the classroom, they are counselors, they are moms, they are a coach. I think that they are underappreciated and devalued. NFL players are making millions of dollars*

and teachers are making $50,000 teaching four classes, it kind of seems lopsided sometimes.

She directed her frustration of being underappreciated and underpaid to society, viewing it as a problem of the profession as opposed to individually or a problem solely of the teachers at her school. Gem's perception of her school's administration was also empathetic, and her focus was on school-wide issues of discipline. She shared:

Sometimes discipline is an issue but that also has to do with location, where the school is located. The population does not look to learn to appreciate what we have. So discipline is definitely our number one issue at our school even though the administration is a great support we deal on a daily basis with over and over and over the same discipline issues. Because of the discipline issues they do not perform to the best of their ability.

She points out the location of the school, placing responsibility on outside forces, similar to how Hannah mentioned the underappreciation of teachers as a society. Fong did not mention his administrators at all but directed the conversation to an example to explain his main concern at his school:

This is in respect to what happened last year because you know the anniversary is coming up next week. I have a daughter who attends school in (another county). One day when I had to stay home she contacted me because she started not to feel well herself, so I travelled up to her school and it was a real task to try to find the entry point to the main office that was accessible. They locked gates to the parking lot, they locked fences, they locked the walkthrough. So in that sense I thought, 'wow this is really demonstrating that they want to keep the kids safe,' and it doesn't seem to be that way here. It seems that access to and from the campus during the day is less tight in comparison to my daughter's school.

Fong first refers to a school shooting that happened at a nearby school the previous school year to then compare the accessibility of his school's campus to that of his daughter's. He does not talk about the administration or their responsibilities when it comes to school safety. Like Gem and Hannah, Fong speaks of societal issues that are currently affecting the teaching profession.

Overall, Administrative Relationships are perceived as neutral, where they neither

mentioned being constrained nor encouraged by the administrative staff at their schools.

Collegial and Administrative Factors: Communicators

In the third category of description, three themes emerged: *implementing*

alternative methods, *improving the school environment*, and *constructing personal*

relationships. People in this category experienced agency as Communicators because

they used their voice to advocate for themselves and others. For example, Carla

discussed a recent incident to describe an issue at her school:

> *Our last meeting, the principal decided to talk about teachers coming in tardy*
> *etcetera, so instead of talking nicely and individually with those teachers, he'll put*
> *a P in their attendance sheet and use it as a personal day. After that it will be in*
> *their file and after that if you're late or absent you have to personally notify an*
> *administrator on their cell phone, and it has to be documented that way. Some*
> *teachers come and go and are late every day and nobody says anything, so there's*
> *a lot of bias and preference in our school. There's an in crew and out crew in our*
> *school and the in crew could do anything unnoticed, of course it's just ignored,*
> *and others are the feeders of the fire so it makes a hostile environment between*
> *the union and administrators.*

She stated the principal does not communicate with his staff and is inconsistent in his

behavior. Thus, Carla believes he is playing favorites. She navigated this particular

situation by making an announcement during the faculty meeting:

> *Contract says you have to treat all employees fairly and the same way just as any*
> *other job oh, it's the same way… I said 'if you have an issue like if you have a*
> *relative that is sick and you have medical documentation, you can apply for*
> *FMLA which is family medical leave of absence and your family is protected, but*
> *of course that requires paperwork. And if you have another kind of problem and*
> *you need assistance like your car broke down and you can't budget your money*
> *and you have to take the bus for two weeks, you can call for assistance'… Instead*
> *of just, 'you're going to get consequences and the principal will try to fire you.'*

Carla negotiated her beliefs about fairness with those of the principal's by informing her

colleagues of their options. Even though the Administrative Relationship is not

supportive, she enacts agency by making an announcement to counteract the principal's actions. When asked about working with her colleagues, she said:

> *So individually I prepare a week or two weeks ahead of the classroom and I have to include the standards and all those codes in my lesson plans. Lots of people download lesson plans that are pre-written but I actually had to write mine.*

Unlike people in the Peer Support category of description, Communicators did not describe experiencing common planning. Carla explained that she is working alone because she does not have support from her principal or colleagues. Yet, she enacts agency by *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships*. Leah did not have the support of her administration either:

> *There's just a lot of impotence in (the other county) when it comes to standardized testing. And the way that I perceived a lot of the district personnel was that they came into my classroom and the feedback that they would give to the school was much like based on, 'how we think the students are going to be successful on the exam, how we need you to teach to the exam,' and I wasn't down with that. And there was a lot of pushback between the district and my former principal from the fact that there was a lot of material that I would use, like my own material or the algebra project material and they were a bit unhappy with that.*

Thus, she decided that, instead of leaving the profession, she would take drastic measures:

> *So I found out from someone that (another county) was considering implementing the (program I prefer) here at (my current school) so when they found out that I was considering leaving (my school), they reached out to me and said, 'look, we are considering piloting this program and it would be amazing if we can get an experienced teacher to be the pilot teacher versus getting a brand new teacher.' So they reached out and I went through the interview process, and now I'm here.*

Leah negotiated with herself, instead of changing careers, she would teach at another school. A school that wanted her to teach using the curriculum she believed was best for her students. She also did not have the support of her peers because she taught using a

different curriculum than everyone else. Communicators enact agency through

improving the school environment, constructing personal relationships, and

implementing alternative methods. They had negative Administrative Relationships and

neutral Collegial Relationships.

Collegial and Administrative Factors: Instruction Centered

The fourth way teachers experience agency is as Instruction Centered. These

teachers enacted agency by *acquiring resources, implementing alternative methods,* and

constructing personal relationships. The Collegial Relationships at their schools are

lacking. Deondra expressed this when asked about faculty meetings:

> *It is usually a time where they have all of us together and they need to tell us*
> *something like events that are coming up, things to keep your eye out for, if there*
> *is a particular security issue that we should be aware of, they will try to share as*
> *much as possible. Yup, those are faculty meetings. A lot of things could be shared*
> *via email. But when I do go to the meetings, I do other things because as a*
> *teacher I've learned to maximize my time because there are not enough hours in*
> *the week to get everything done*.

She does not consider faculty meetings useful and believes that any new information

should be communicated electronically. Thus, Deondra does not attend all the faculty

meetings, and when she does go, she uses the time to plan lessons and grade student

work. She continued sharing how she lesson plans on her own:

> *I do this thing called backwards planning, so I plan from the end and I'll start*
> *there. So after I have a clear idea in mind of their objective and what they are*
> *supposed to learn from the item specs I think about, 'they have been doing well*
> *for the past few weeks, they have been doing well with their exit tickets'… So for*
> *me, the exit tickets are like immediate feedback, so I'll teach, give them the exit*
> *ticket and immediately see. It all starts by creating the exit ticket, what is it that I*
> *want them to be able to answer?*

Her planning is centered around her students' progress. Every day she looks at what she

is supposed to teach and where her students are in the lesson and creates a plan

accordingly. There is common planning, but she disagrees with its format, preferring

they focus "less on common planning and more on" addressing retention, engagement

and misconceptions.

      Kristen also focuses her attention on her classroom, planning alone and day to

day, like Deondra. When asked what a day in her class looks like, Kristen responded:

> *Let's say it's Monday, then the agenda, if we have finished a module, then it would be a review day or we will take a test. If we haven't finished a module, then we'll be discussing what we did the day before and then if there is an issue we will tackle any issues, if there are no issues I teach the new lesson and then I give them time to work on their own. If we have finished the module I can collect the module and we have a review.   The review can be online, the review can be from Algebra Nation, or the review can be something that I put together for them.*

She evaluates her students' work every day, letting it guide the direction of her lesson

plans. Deondra and Kristen do not have strong Collegial Relationships, but when asked

about the strengths of their schools, they shared how they are content with their

placements. Kristen explained:

> *I really can't complain because I like my schedule, if I have any issues I can take care of them, if I have to leave early I can, the administration is very pro-family so if I have to take care of my family, that's not an issue either. I can't complain. We have a lot of programs in my school, we have an arts program, and IT program, and the Cambridge program. It's a really good thing because it keeps the students focused and moving rather than be like 'okay we don't know what we're doing' because it keeps them focused on what is in front of them. We do have assistance for students who speak other languages throughout the day, we do have a society that helps out in math and science that they do at lunch time, we have different things that help which are really good.*

The Administrative Relationship at her school is strong in a variety of ways. Kristen

does not have to worry about being able to take care of her family if an emergency arises.

She also shared there are a multitude of magnet programs at her school, which she

supports because she believes it motivates students. And, help is available for ELL and

students who need assistance in math and science. Kristen provided many examples that

point to a positive perception of her administrative team. Deondra also shared optimistic

Administrative Relationship views:

> *I feel like we have a really solid administration team who is open to new and fresh ideas. So the leadership sets the tone for the rest of the school and we have a really strong administrative team. We have one principal and five assistant principals and they're all really, really great. And when I talk to them I can tell that oh, they may not implement every idea that you throw at them, but they are at least open. One of the strands that kind of goes along with this, they're trusting of teachers, kind of the idea that your principal is going to be in your classroom breathing down your neck, that doesn't exist in our school and that is one of the strengths at my school. The principal lets me stand there and really find my own teaching style with what is required of me to teach. So there's a lot of trust when it comes to administration and how they interact with you.*

The administrators listen to their teachers and give them space. Deondra feels a sense of

trust because the principal listens to her ideas and lets her find her "own teaching style,"

especially when comparing this to overbearing principals at other schools. Overall, the

Instruction Centered group does not have Collegial Relationship support, but they do

have Administrative Relationships that encourage teachers.

Collegial and Administrative Factors: Go Getters

The last way mathematics teachers experience agency is as Go Getters. This

category was created to exemplify the experience of teachers who enacted agency

through all the identified themes: *acquiring resources*, *implementing alternative methods*,

improving the school environment, and *constructing personal relationships*. When

examining the data, this group expressed positive Administrative and Collegial

Relationships. Naomi spoke of her assistant principal fondly:

> *Our AP is really flexible at making himself available as needed, so if we need to sit down and talk, whether it's before school or after school, he makes himself available to discuss any issues we might have. Also, twice a year we have observations. During this time we have a pre-observation meeting where we sit down and explain what he would expect to see in the classroom, and there is one more meeting that is a data chat and in the data chat we talk about practice, how*

the students are doing, we look at the distribution of the grades and we discuss any issues the students are having and things like that.

He serves as a support system to the teachers, meeting them officially as required by the school, as well as providing availability at his teachers' convenience. Ana also reported positive interactions with her administration:

My administrators are super, super nice. My principal is great, we have an excellent relationship. The most important thing is that what I like about my school is that you have the freedom to teach, probably you earn that from administrators because they know that you're doing good.

In her case, she sees the administrators as supportive and attributes this to her performance as a teacher. These are two examples of how Go Getters articulated their positive perceptions of their schools' Administrative Relationships. This group of participants also experienced positive Collegial Relationships. When discussing his colleagues, Ivan was enthusiastic:

Common planning was my most utilized resource as a first-year teacher. It was great for me. We talked about the lessons we are going to cover and where we are at, we distribute work amongst ourselves. My common planning, oh, I know that in (this area) our geometry department is amazing, because we are very collaborative, and we are literally from all walks of life. We'll go through a particular lesson of PowerPoint or an idea that someone might have and we'll talk through it and plan out what lesson we're going to do on what day, when the content test is, chit chat a little bit.

He thinks of fellow math teachers as colleagues who he can plan lessons with and discuss ideas. At the same time, he sees them as friends who he can have conversations with. Not all the Go Getters expressed excitement, but they all have and utilize common planning, for example, Naomi plans with her colleagues on a monthly basis:

So the pacing guide tells you what to teach and I communicate with the other geometry teachers, there are these professional planning days that happen once a month and that's when our common planning is. We talk about where we are at and we use the pacing guide to go on from there.

She plans with her colleagues but, later on, shared that she did not think once a month was enough, stating, "it's very difficult considering how much you have to teach to be on pace." Even though the Collegial Relationship at her school is positive, she sees there is room for improvement. Overall, the Go Getters have a double advantage, they are supported through the Administrative Relationships and the Collegial Relationships at their schools.

Summary of Administrative Relationships and Collegial Relationships

The third research questions explored the factors that influence teachers experiences of enacting agency. The researcher identified two factors, Administrative Relationships and Collegial Relationships, that may play a role in why some teachers enact more agency than others. Mathematics teachers who experienced agency as Problem Focused had negative Administrative Relationships and negative Collegial Relationships, mathematics teachers who experienced agency as Peer Support had neutral Administrative Relationships and positive Collegial Relationships, mathematics teachers who experienced agency as Communicators had negative Administrative Relationships and neutral Collegial Relationships, mathematics teachers who experienced agency as Instruction Centered had positive Administrative Relationships and negative Collegial Relationships, and mathematics teachers who experienced agency as Go Getters had positive Administrative Relationships and positive Collegial Relationships.

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Summary

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This chapter covered the findings of the analysis of the qualitative data and presented the ways mathematics teachers enact agency, the categories of description describing the different ways mathematics teachers experience agency, and the factors

that may influence some teachers to enact more agency than others. The next chapter

will present the discussion and implications for further research.

CHAPTER V

DISCUSSION

This chapter consists of a summary of the responses to the research questions. It is followed by the discussion, limitations and implications for further research, and suggestions of how to modify Administrative and Collegial Relationships to encourage agency.

Summary

The responses to the three research questions will be discussed in this section. The first question asked, what are the different ways high school mathematics teachers working in Title I schools enact agency? The analysis found that the participants in this study enacted agency in four distinct ways, by *acquiring resources*, *implementing alternative methods*, *improving the school environment*, and *constructing personal relationships.*

In the first theme, *acquiring resources*, two subthemes emerged: physical resources and time as a resource. The participants spoke about the lack of resources in their school and the actions they had to take to obtain those resources, including physical resources such as calculators and laptops. Besides purchasing these items with their personal finances, the participants discussed fundraising and applying for grants. As for the second theme, time as a resource, participants felt there was not enough instructional time during school hours, thus found ways around this problem. Many participants related using online applications (apps) to supplement school hours. One app used by several participants, Remind, lets them communicate with their students through text

messaging. One participant, Beatriz, spoke of students texting her mathematics problems through this app, which she then responds by explaining the steps they need to take to solve the problem.

Acquiring resources can be observed in the findings of Van der Nest et al. (2018) on teacher agency. In their study, teachers also spoke about the lack of resources but went about obtaining them a bit differently; they negotiated with nearby school administrators. Time as a resource was also reflected in the research. When looking at professional learning, it was found that choosing to attend professional development classes was a form of enacting agency (Buxton et al., 2015), much like Deondra, a participant who shared how she changed her grading after attending a professional development class that taught her how to grade her students' work by highlighting mistakes. Beatriz also spoke about her experience attending a weeklong teacher workshop every summer, one that she supported, "it's something positive which is what teachers need, teachers don't get enough communities of ideas."

The second theme, *implementing alternative methods*, also had two subthemes: accommodating lessons and alternative grading. The subtheme of accommodating lessons arose when the participants shared how they planned their lessons. Some participants made accommodations to the lessons when they lesson planned with other teachers. According to Giddens (1976), when people know what to do with their knowledge and skill set and execute it properly, it is a form of acting with agency. They often used common planning to discuss and improve lessons which gave them an opportunity to put into practice their knowledge of teaching mathematics. One participant recalled, "we have changed questions that are either too difficult or not

difficult enough," to explain how she and her team have changed lessons in the past. Even though they had a set of lesson plans to teach, they made accommodations to better reach their students. Others spoke about making impromptu changes as they taught. For example, Fong shared how he goes by how his students are reacting to his teaching and makes changes when, "something is going completely over their heads."

The second subtheme, alternative grading, describes different ways of grading than the norm at their schools. Robinson (2012) considered changing the grading scale as a form of resistance. In Robinson's study, teachers were required to use a letter system, but they changed it to a list of progression of development descriptions. In the present study, some participants spoke of changing their students' grades, with two teachers stating they alter their students' grades so that, when completing the work, no one earns a failing grade. Another teacher explained how, instead of checking off answers as right or wrong, she returns her students' assessments with all the mistakes highlighted, then gives them a chance to study and correct the mistakes.

Improving the school environment was the third theme that emerged from the data. The participants discussed the different ideas they shared with their colleagues and administrators. A participant spoke to her colleagues about the importance of being a team and communicating with each other what was working well in their classrooms. Another shared her thoughts on what they should focus on when planning together, arguing that instead of lesson planning they should focus on areas such as student engagement and misconceptions. One participant who enacted agency in this way, Carla, spoke up during faculty and district wide meetings, while Naomi spoke to the assistant principal privately whenever she wanted to make changes in her student roster such as

switching students from one class to another. This are examples of what Bieler and Thomas (2009) described as engaging in dialectic inquiry, which they explained as a rejection of the formulaic, causing a need for individuals to change their surroundings by posing difficult questions. They also argued that those who engaged in dialectic inquiry possessed a sense of agency. These were some of the different ways *improving the school environment* was presented.

The final way mathematics teachers enacted agency was through *constructing personal relationships*. These participants purposefully build relationships with their students to improve student engagement. During class hours, some participants set time apart to converse with students about their interests and personal lives. Outside of class, some participants taught after school and Saturday classes, where they not only engaged in mathematics but also discussions on topics such as civic duty and the college application process. When teacher and student personal relationships are in place, participants said students were "less likely to interrupt" and "willing to put in time to think." Bieler (2013) considered this an important part of constructing a sense of agency. In her study, she found that building relationships with students helped teachers construct agency in their ability to connect with their students, which reflects the findings in this study.

To explore the second research question, how do high school mathematics teachers working in Title I schools experience agency, the interviews were considered through the lens of the themes to identify similarities and differences between the participants, thus as each transcript was reviewed, varying degrees of each theme were

identified. With careful consideration, five categories of description emerged: Problem Focused, Peer Support, Instruction Centered, Communicators, and Go Getters.

The Problem Focused group enacted little to no agency and, instead, were focused on the problems plaguing their school. This group discussed the administrators' lack of consistency and the absence of teacher support. The Peer Support group's main format of enacting agency was through *implementing alternative methods*. This group discussed a deep sense of camaraderie with their colleagues that flourished while spending time together, such as during common planning periods. Instruction Centered participants enacted agency by *acquiring resources*, *implementing alternative methods*, and *improving the school environment*. They enacted agency with the goal of improving their instruction. One of them, for example, talked with her colleagues about her vision of finding ways to help students retain information. Communicators utilized their voices to advocate for themselves and their students which resulted in enacting agency by *implementing alternative methods, improving the school environment, and constructing personal relationships*. The last way the participants experienced agency was as Go Getters. This group enacted agency in all four ways: *acquiring resources*, *implementing alternative methods, improving the school environment,* and *constructing personal relationships*. Go Getters worked with their students, colleagues, and administrators to create a classroom culture conducive to learning.

These categories of description are a new contribution to the literature, but there are currently several studies that also considered varying levels of agency. For example, Buxton et al. (2015) measured teacher agency by the number of professional development courses their participant undertook, deciding that the more courses taken,

the greater the teacher's sense of agency. Martin and Carter (2015) analyzed it differently. They looked at how teachers positioned themselves, deciding that those who used pronouns such as "I" and "we" had a greater sense of agency than those who used pronouns such as "him" and "they". The categories of description in the present study similarly reflect a hierarchy of teacher agency, with the Problem Focused participants enacting the least agency and the Go Getters participants enacting the most agency.

The third research question explored in this study was, what factors influence high school mathematics teachers working in Title I schools to enact agency? Two factors influenced how mathematics teachers enacted agency, Collegial Relationships and Administrative Relationships. Collegial Relationships is the pattern of interactions between the participants and their colleagues, and Administrative Relationships is the pattern of interactions between the participants and their administrators. The participants in each category of description perceived the relationships at their schools as positive, neutral or negative. For example, if a category of description described their administrators as unsupportive, it was considered a negative perception of their Administrative Relationships. If a category of description described their colleagues as a meaningful resource who they planned lessons with on a regular basis, it was considered a positive perception of their Collegial Relationships. If the category of description did not have an opinion either way, as was the case for some of the participants who did not meet with their colleagues to plan lessons, it was considered a neutral perception of their Collegial Relationships. In Table 8, the perception of the Administrative Relationships and the Collegial Relationships of each category of description can be observed.

Table 8

Perception of Relationships by Category of Description

Category of Description	Administrative Relationships	Collegial Relationships
Problem Focused	Negative	Negative
Peer Support	Neutral	Positive
Communicators	Negative	Neutral
Instruction Centered	Positive	Negative
Go Getters	Positive	Positive

Each category of description perceived the relationships in their schools differently, suggesting that if the Relationships change, the way participants experience agency may also change.

Discussion

According to Sewell (1992), structure maintains a system and agency disrupts it. Considering this while reflecting on the findings of the third research question, what factors influence high school mathematics teachers working in Title I schools to enact agency, there are two distinct ways the teachers in this study experienced agency. One way maintained the system and the other way disrupted the system.

The first way teachers experienced agency maintained the system that was already in place because these teachers navigated their agency within the system. One example is the Go Getters. This group reported positive relationships with their administrators and their colleagues, thus they were able to work within the system at their school to enact agency in many ways. There was no tension between agency and structure. In fact, the Go Getters made comments such as having "excellent relationships" with their administrators and "working well" with their colleagues. Overall, their actions did not change the system, their actions replicated the system.

Other groups of teachers experienced agency in ways that disrupted the system. The Communicators, for example, shared enacting agency in a variety of ways regardless of having negative relationships with their administrators. These teachers shared instances where they disrupted the system by going against the structure. Leah shared her school wanted her to teach to the exam, which she disagreed with, saying, "I wasn't down for that." Instead she resisted the pushback from her administrators and used her own materials and those of another curriculum because she believed it better attended to her students' needs. The administrators were "unhappy with that", but she was steadfast in her beliefs and continued to enact agency to disrupt the system.

In this study, enacting agency was defined as perceiving problems, then creating a plan of action with an intended result in mind. The results indicate that the teachers experienced agency, either with actions that maintained the system or actions that disrupted the system. This finding is an important contribution to the field as it is important for those exploring teacher agency to ask, is this maintaining the system or disrupting it? This study found there were teachers who experienced positive relationships and enacted agency as well as teachers who experienced negative relationships and enacted agency. It is essential to consider that enacting agency is important in both scenarios. To create schools our students deserve, it is necessary for teachers to enact agency in supportive and encouraging school systems as well as disrupt unsupportive and discouraging ones.

Limitations and Implications for Further Research

This phenomenographical study had several limitations. In the following paragraph, four limitations will be discussed, each followed by a suggestion on how to address the limitation.

This study consisted of high school mathematics teachers working in Title I schools. The findings describing the ways teachers enact agency aligned well with the current research, but that does not say that teachers of other subject areas or other grade levels enact agency in the same ways. There may be methods of enacting agency that are specific to different groups of people. In science, for example, it has been suggested that teachers who contest cultural norms, such as the idea that science is difficult and those who succeed in science are inherently talented (Carlone, 2004), as enacting agency. The first suggestion is to conduct research that includes teachers from different subject areas and grade levels to examine if their experiences are consistent with those of the participants in this study. In other words, do the teachers of subject areas other than mathematics experience agency the same way as the participants in this study? And, do the teachers at the elementary and middle school grade levels experience agency the same way as the participants in this study? Researching these teachers would broaden our understanding of teacher agency.

It is also possible that the ways of enacting agency found in this study are not always found in other schools, such as the need for *acquiring resources*. The participants in this study worked as full-time teachers at Title I public schools. Title I schools are schools where the majority of students come from low-income families and the federal government provides financial support to aid these schools in meeting state standards

(U.S. Department of Education, 2005). It is possible that resources at these school are limited, prompting teachers to find ways to fill the void. Thus, *acquiring resources* may not be one of the ways teachers enact agency in other schools, ones where students come from high-income families. Therefore, the second suggestion for future research is to explore the experiences of teachers in a variety of schools.

Agency is situated in time. When preparing to enact agency, people must consider the past and understand how their actions may affect the future before taking intentional action (Emirbayer & Mische, 1998). The participants in this study were interviewed once, during the third quarter of the school year, thus their responses may have been affected by the timing, suggesting that by interviewing them at that specific point in time, they may have been assessing and analyzing their actions based on the future. Moreover, they may have been considering the past, which may have also influenced their interviews. To fully explore teacher agency, the third suggestion for further research is to interview teachers multiple times within the same school year. Furthermore, it would be interesting to examine whether there are variations in teacher agency at the beginning, middle, and end of the school year.

As observed by Van der Nest et al. (2018), "agency is not intrinsic to a person, but is rather perceived as occurring interactively with the environment" (p. 3). The current study considered the interplay of structure and agency to explore how teachers experience agency, and it found that there are two factors that may influence teachers to enact agency, the Collegial Relationships and the Administrative Relationships at their schools. The fourth suggestion is to study how the same teachers enact agency in schools with different administrative and collegial relationships. A longitudinal study where

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researchers follow teachers who move from school to school may serve to further explore the factors that influence teachers to enact agency.

Modifying Relationships to Encourage Agency

An important contribution in the findings of this study are the categories of description. These are the distinct ways teachers experience agency, which were found to be: Problem Focused, Peer Support, Instruction Centered, Communicators, and Go Getters. Another important contribution was the identification of the factors that may influence teachers to enact agency: Collegial and Administrative Relationships. This section will consider how Collegial and Administrative Relationships can be modified to shift how teachers experience agency.

The categories of description form a hierarchy based on the number of themes that emerged in their transcripts, with the Problem Focused group at the bottom, followed by the Peer Support, then Instruction Centered and Communicators, and finally the Go Getters at the top. When it came to relationships, each category of description perceived their Collegial and Administrative Relationships as positive, negative or neutral. If we look at either end of the hierarchy, the Problem Focused group had negative perceptions of both their Collegial and Administrative Relationships and the Go Getters had positive perceptions of both their Collegial and Administrative Relationships. The findings suggest the potential that if the Collegial and Administrative Relationships at the schools change, so do the teachers' experiences of agency. More specifically, when looking at the hierarchy formed by the categories of description and considering the Collegial and Administrative Relationships, teachers' experience of agency may oscillate between

categories of description based on their schools' relationships. This suggests that modifying the relationships to be more positive may lead more teachers to enact agency.

Modifying Relationships

Let's say the goal is for teachers to enact agency. This study found that the category of description Go Getters enacted agency in all the ways that emerged from the data; *acquiring resources, implementing alternative methods, improving the school environment,* and *constructing personal experiences* were expressed naturally and without hesitation. Another commonality within this group is their positive relationships with their colleagues and administrators. Thus, the question is, what can teachers and administrators do to shift teachers' perceptions of their Collegial and Administrative Relationships to feel empowered to enact agency, therefore changing their experience of agency?

Modifying Collegial Relationships. The categories of description who reported positive Collegial Relationships were Peer Support and Go Getters. They related feeling a strong sense of camaraderie, often giving examples of planning with their colleagues on a weekly basis and sharing ideas with each other on how to improve their practice. Some considered their colleagues close friends who they communicated with outside of the school. Moreover, working together as a team led to enacting agency, in particular *implementing alternative methods*. These participants used common planning with intention. Some, for example, would distribute the work amongst themselves. Each teacher would take a topic, chapter, or specific lesson to work on during planning periods, then when they came together to common plan, they presented their work. This

was followed by questions and suggestions. In this way, every teachers' voice was included.

Thus, the first suggestion is for teachers to structure their common planning using a format where all teacher voices and strengths are included. It is not enough to plan together because this may result in a few voices dominating the conversations. Instead, all teachers should have the opportunity to bring forth their positive attributes. As suggested by participants in this study, teachers should distribute the topics and, if possible, choose their strengths. This will enable them to contribute their best practices to the group. Also, through this process, the teachers will learn from each other and build rapport. Moreover, their sense of camaraderie will increase which may encourage them to share what is working in their classrooms beyond teaching the lesson, such as classroom management techniques. To take this suggestion further, as some participants shared, teachers should also attend professional development courses, then share what they learned with their colleagues. Building relationships with colleagues where teachers feel comfortable using their voice is a way to shift their perceptions of the Collegial Relationship from a neutral or negative one to a positive one. This shift will lead to changes in how teachers experience agency.

Modifying Administrative Relationships. The categories of description that reported positive Administrative Relationships were Instruction Centered and Go Getters. These categories of description discussed feeling supported by their administrators, some stating they felt comfortable sharing their thoughts and ideas because they felt they were being heard. In these schools, teacher voice was not only supported but encouraged. One participant shared how her assistant principal had set times during the week where

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teachers could come by her office to discuss any issues, ask questions, or just chat. This encouraged teachers to voice their opinions and share their ideas. For example, the participant shared how she wanted to change a student from a regular statistics class to an honors statistics class to provide the student with the opportunity to prepare for Advanced Placement Statistics. She communicated her idea during the set visiting hours and the assistant principal approved, contacting the guidance counselor and the student's parents to immediately make the changes. Examples like this one lead me to make the following suggestion on how to shift Administrative Relationships.

Not only should administrators include teachers when making decisions that affect them and their students, they must encourage teacher's voice. One way is by providing a safe space to participate in discourse. Administrators need to make themselves available to teachers to listen and consider their ideas, then do what is within their power to assist teachers who speak up. For example, there should be a set time during faculty meetings where teachers make suggestions and ask questions and the administrators respond. If more time is required than available, a one on one meeting should be scheduled. Furthermore, administrators should set open door hours where teachers are urged to discuss ideas with them, then they can brainstorm how to bring these suggestions to fruition. Building a school culture where administrators encourage teachers to utilize their voice is one way to shift teachers' perception of Administrative Relationships from negative or neutral to positive.

The relationship between agency and voice cannot be ignored. To increase teacher agency, the voices of teachers must be included and, when they present their ideas, they must be thoughtfully considered and if possible, pursued. To change how

teachers experience agency, teachers must intentionally structure common planning to include all teacher voices and administrators must establish multiple ways to consistently encourage teacher voice.

Summary

The purpose of this phenomenographical study was to understand how mathematics teachers enact and experience agency, and the factors that influence teachers to enact agency. In this chapter, the three research questions were answered followed by the discussion. The limitations of the study were also explored along with implications for further research, where suggestions were provided that may extend the findings of this study. Finally, modifying relationships to encourage agency were considered. Overall, this study gives readers an understanding of teacher agency and the factors that may play a role on teachers enacting and experiencing agency.

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APPENDICES

INTERVIEW QUESTIONS

Theme 1: Background information.

- Tell me how you became a teacher.
    - How did you decide to become a teacher?
    - How did you decide to become a mathematics teacher?
    - What steps did you take to become a teacher?
    - How did your family react to your decision to become a teacher?
    - How did your friends react to your decision to become a teacher?

Theme 2: Exploration of workplace expectations and philosophy.

- Describe how you became a teacher at your school.
    - At your school, what are some strengths?
    - At your school, what are some weaknesses?
- Tell me about a typical faculty meeting.
    - What does the principal say?
    - What do your colleagues say?
    - What does the meeting look like?
        - What is generally said?
        - Do you participate? How so?

Theme 3: Exploration of the process of teaching.

- Describe how you plan a unit plan.
    - Do you follow a curriculum?
        - Who developed the curriculum?
    - Do you follow a pacing guide?
        - Who developed the pacing guide?
- Walk me through your thinking as you plan a lesson.
    - Do you plan with other teachers?
        - What does this meeting look like?
        - Is this a school requirement?
- Tell me about a typical day teaching.
    - Describe what the classroom looks like.
        - How is the classroom set up?
    - Describe what the students are doing.
        - How are the students seated?
    - Describe what you are doing.
- Do you have access to resources?
    - What process do you have to follow to access these resources?
        - Do you have to get approval every time you need something?

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