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## Elementary Classroom Teachers' Perceptions of Redesigned Classroom Space: A Qualitative Case Study

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**ELEMENTARY CLASSROOM TEACHERS' PERCEPTIONS OF REDESIGNED  
CLASSROOM SPACE: A QUALITATIVE CASE STUDY**

by

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## **ABSTRACT**

### **ELEMENTARY CLASSROOM TEACHERS' PERCEPTIONS OF REDESIGNED CLASSROOM SPACE: A QUALITATIVE CASE STUDY**

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Classroom redesign is being recognized globally as necessary to better increase student's enjoyment levels, engagement, collaboration, and learning. Instead of seeing traditional classrooms in a fixed setting where students are seated in rows facing the front of the room, classrooms are being arranged in multiple ways. As a result of this focus on redesigned learning spaces, there is a need to examine teachers' perceptions about redesigned classroom spaces and understand the decisions behind their design. Thus, it is important to examine teachers' perceptions of their classroom space to better understand if they consider their students learning needs, engagement levels, and reactions when designing their classrooms. As a result, there is a call to understand the features (i.e. desks, chairs, plants, technology) teachers perceive to be important in their redesigned classroom spaces.

This case study investigated elementary classroom teachers' perceived conceptualizations and rationalizations of redesigned classroom spaces during the design process, as well as any considerations of students' potential learning, reactions, and engagement levels when designing classroom spaces. Eight elementary classroom teachers currently teaching in a full-day suburban Mid-Atlantic, U.S. public school comprised the case study in this research. Data were collected in the form of drawings with written responses, individual interviews, and a focus group. Triangulation of data was performed to develop main categories and identify central themes within the case study.

Findings contributed to the field of research in elementary teachers' perspectives of redesigned classroom spaces. The data from the qualitative case study revealed that teachers consider their students' learning, collaboration, and needs when designing the classroom space. Specifically, conceptualization included students' physiological needs, equity, and limited multicultural awareness. Classroom designs were perceived to support students learning through flexibility, movement, engagement, and creative spaces. Data collected through this research also supports the idea that teachers use their personal experience with students and their own experiences when constructing their classroom space. Lastly, elementary teachers perceived grouped desks, flexible seating options, and manipulatives as important features in the classroom space. Research findings from this study will inform teachers, administration, policymakers, and school building designers of elementary teachers' perspectives of a redesigned learning space and their considerations during classroom design.

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## **DEDICATION**

This dissertation is dedicated to my family and friends who have supported me throughout this journey. To Tyler for his love and support and always pushing me to keep going and never give up. I achieved this goal because of your help and countless accommodations. To my parents for their unconditional love and guidance. I could not have done this without you all. I also dedicate this work to my friends who were just a phone call away and without them I could not have completed this process. Rachel Rossik who was always there to encourage me and support my progress. Your loyalty and encouragement are greatly appreciated.

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## **CHAPTER ONE**

### **INTRODUCTION**

To many, the classroom space is viewed as simply a place for students to sit in chairs, at desks, and gain knowledge by listening to the teacher. The contents in a classroom are all too familiar: four walls, two windows, one closet, dozens of chairs, individual desks, two whiteboards, a handful of computers, notebooks, pencils, and the curriculum. These objects have become the primary vision of education (Harouni, 2013). While some of these contents have remained the same, many 21st century classrooms are being adapted and redesigned in schools to incorporate more flexibility, mobility, variability, and connectivity. Instead of seeing traditional classrooms in a fixed setting where students are seated in rows facing the front of the room, classrooms are being arranged in multiple ways to support collaboration, technology, inquiry, creativity, and self-directed learning (Freeman et al., 2017).

These new and innovative ways to redesign classroom spaces are also referred to as flexible, redesigned learning spaces, and new generation spaces (Mulcahy et al., 2015). If you were to walk into a redesigned classroom space, one might observe comfortable couches, stools, chairs, round tables, plants, natural light, and multiple pillows and rugs for lounging. Research has shown that these redesigned learning spaces increase student learning, engagement, collaboration, and enjoyment to learning and being in the classroom (Adedokun et al., 2017; Kariippanon et al., 2017). Also, teachers are viewed as equal partners and more facilitators of knowledge and less of a lecturer to students when practicing in a redesigned classroom (Brooks, 2012; Kariippanon et al., 2017; Parsons, 2018; Rands & Gansemer-Topf, 2017).

Dillon et al. (2016) stated, “As a teacher, you can have the best curriculum and you can be the best facilitator of knowledge, but if you don’t have an environment that’s conducive for learning, then nothing else truly matters” (p.3). The environments in which students and teachers

interact are a key part of the classroom curriculum. For instance, the Reggio Emilia approach recommends three educators in the classroom at one time: the teacher, the student, and the environment. This approach states that environments contribute to the learning taking place by providing an atmosphere for collaboration, active learning, flexibility, creativity, and exploration, alongside teachers and students (Strong-Wilson & Ellis, 2007). It is within the classroom space that relationships are built between students, teachers, and peers so the construction of a functioning environment is substantial for learning. The significance of a child's environment has also been recognized as a key influence on their learning experiences and success in education (Kellock & Sexton, 2018).

The classroom space is often an explicit statement of the educational philosophy built between the teacher and the students (Proshansky & Wolfe, 1975). Although one person, the teacher, seems to be dominating the space. The teacher, as much as students, must accommodate and alter the environment for others. They become designers and are responsible for preparing the environment to achieve desired learning objectives. The classroom space can be a powerful teaching instrument, or it can be undirected and unrecognized (Martin, 2002). The influencer here is most likely the teacher, which could ultimately effect students' learning. Therefore, it is important to examine the teachers' perspectives about redesigned classroom spaces to better understand whether teachers consider students' potential learning, reactions, and engagement levels when designing the classroom space. These marginalized views will help make decisions or gain insight into other redesigned classroom spaces. This proposed research will target teachers' perceptions related to classroom spaces and redesigned classroom spaces. Specifically, this research will consult key participants (i.e., teachers) to gain knowledge regarding their perspectives of classroom space.

### **Problem Statement**

Children spend a large amount of time and years in an educational classroom space (Kellock & Sexton, 2018). Recently, researchers are finding that a student's physical classroom space can influence the learning and success of education. Barrett et al. (2013) found that lighting, CO2 levels, temperature, noise levels, and the humidity in a classroom environment can affect a child's academic progress by as much as 25%. Also, when classrooms redesigned their space with U shaped tables and comfortable chairs, collaboration increased between peers and teachers, which positively influenced student learning, engagement, and enjoyment (Adedokun et al., 2017; Kariippanon et al., 2017). With this in mind teachers, designers, and policymakers are spending time and money redesigning spaces to better help students. Nevertheless, even though students are the sole focus of classrooms, much of the physical space is normally decided and understood from an adults' perspective (Kellock & Sexton, 2018). Although, in general, the beliefs and perspectives of teachers in regard to classroom spaces are not well understood.

Particularly in elementary grades, where classroom spaces are often more flexible, it is important to gain insight into how teachers design spaces for learning and whether they consider their students' needs. Also, teachers are spending significant amounts of money transforming their educational environments to help facilitate collaborative spaces and transform traditional settings into creative and supportive learning opportunities without considering the students who learn and thrive in this environment. The question remains, are the teachers' perspectives of the benefits of such classrooms driving these redesigned decisions without recognizing how students will learn, react, and engage? For example, Kariippanon et al. (2017) found that primary students described the redesigned classroom to be noisier, while teachers perceived the new space to be more enjoyable and comfortable. Teachers and building designers have good intentions to

present a productive learning environment for students, yet students may have different needs or views. The findings may also provide information for how teachers can improve their learning environments to support instruction and student learning.

### **Purpose of the Study**

The primary purpose of this study is to examine teachers' perceptions about redesigned classroom spaces and understand the decisions behind their design. This case study (Yin, 2018) will consider in depth, how teachers perceive their classroom environments. I will examine teachers' perceptions of their classroom space to better understand if they consider their students learning needs, engagement levels, and reactions when designing their classrooms. Furthermore, I intend to understand the features (i.e. desks, chairs, plants, technology) teachers perceive to be important in their redesigned classroom spaces. The research questions that will be used to guide the study are as follows:

- 1) What are the features of elementary teachers' conceptualizations of redesigned classroom spaces?
- 2) How do teachers perceive and rationalize the design and features of these classroom spaces?
- 3) How do teachers consider students' potential learning, reactions, and engagement level when designing classroom spaces?

### **Theoretical Framework**

Nicolson (1971) stated most environments, including schools, do not work in terms of human interaction and involvement, instead, they are static and impossible to engage in creativity. It is during this setting that children's social identities, health, well-being, and personal development are molded (Collins & Coleman, 2008); thus, the environment should



support both the teacher's and the student's needs. The theoretical framework for this study draws from the theory of loose parts, which states that environments need to be constructed with openness and flexibility to allow children the freedom to be builders and engage in creativity (Nicholson, 1971). The theory refers to 'loose parts' as objects and materials that are open-ended and can be easily manipulated (Daly & Beloglovsky, 2015). The idea is to introduce moveable materials to spaces, so students have the opportunity for creativity and discovery with little or no adult interaction. The environment should allow for a change to meet children's creative lifestyles (Nicolson, 1971). Nicolson's theory proposes a need for understanding this redesigned space in classrooms. Currently, the redesigning of learning spaces has increased the number of loose parts seen in classrooms (e.g. desks, chairs, rugs, couches, stools, electronics). And one person, the teacher, is mostly the decision maker when it comes to which loose parts are introduced. Indeed, it is important for the teachers' perceptions of loose parts in redesigned classrooms to be examined as a part of the rationale behind these classrooms. In my study, I will use Nicolson's theory to examine the teachers' perspectives about redesigned classroom spaces that entail moveable materials otherwise known as 'loose parts' (i.e. furniture, amenities) and ground their perceptions of these environments to inform redesigned classroom spaces.

### **Background and Context**

This case study will be taken place in a full-day suburban Mid-Atlantic, U.S. public school, Eastland Elementary school (Pseudonym). This school accommodates students from Pre-Kindergarten thru 5<sup>th</sup> grade. Classroom sizes in this school consist of approximately 20 students to one teacher. Currently, there are approximately 560 students in the whole school, with 35 regular education teachers and six special education teachers. The students' ethnicities consist of 42% African American, 14% Hispanic, 14% multiple races, 24% Caucasian, and 5% Asian.

There is also a population of 12% students with identified disabilities and 6% English learners. Additionally, 4% of the teachers have less than one-year classroom experience with all teachers holding a professional licensure (Virginia Department of Education, 2020).

Specifically, this school is a Title I school, which means that a high percentage of the school population is home to low income families. To help ensure that all students are getting an equitable education the state provides Title I schools with financial assistance through local state educational agencies (U.S. Department of Education, 2018). Currently, 85% of students are eligible for the free and reduced meal program (Virginia Department of Education, 2020). The teachers and students at this school are also provided with additional resources including 1:1 technological tools (i.e. Chromebook, iPad). The 1:1 program means each student in the building is provided with a technology device (Sauers & McLeod, 2018). Using this additional income, teachers are also given the chance to propose possible programs or additional materials they believe would be useful for teaching and/or student learning. This allows teachers the option to redesign their classrooms, while schools with less funding would be forced to seek outside grants or support.

The school was originally opened in 1967 and was renovated in 2007 by adding additional classrooms and spaces to accommodate an influx of students. Even though the building is dated, the teachers at this school have chosen to redesign their classroom space with creative, open, flexible materials and designs. Furthermore, the teachers are responsible for designing their own classroom spaces based on their personal interests. Teachers may collaborate with specialists including gifted, special education, and assistant classroom teachers when designing classroom spaces to ensure their students or personal needs are met. Although, teachers who do not co-teach with these specialists can design their classroom space freely. The

only commonality required by the school is that each room must contain at least one U shaped table to allow for small group instruction.

### **Overview of Methodology**

The purpose of a qualitative study is to seek a deeper understanding of classroom teachers' perspectives of redesigned classroom space. A case study (Yin, 2018) research design is selected for this study to expand more on the "why" and "how" questions through a constructivist lens. To gain an understanding of the participants' perspectives, I will collect multiple types of data described in subsections that follow.

### **Proposed Participants**

Data will be collected from participating teachers. I intend to include at least 10 teachers from grades K-2 and 4-5. I intend to exclude 3<sup>rd</sup> grade teachers to limit bias since I collaborate with these teachers daily. Participants will be teachers from multiple classroom models (i.e. gifted, special education, inclusion, or general education settings). Due to Covid-19 some participants might be teaching digitally, while others are teaching instruction face to face. I will also exclude specialists (i.e. P.E., Art, Music) since my study specifically focuses on classroom teachers. All participating teachers will have utilized redesigned classroom spaces or intend to in the future.

### **Drawings**

To address my first research question, I plan on using teachers' drawings as one of my data sources. Participants will be asked to draw a picture of a classroom they believe will be an effective environment for students to learn. Haney et al. (2004) stated drawings offer multiple glimpses into sensemaking by expressing what is not easily put into words such as the not-yet thought, subconsciousness, and the inexpressible. By using teachers drawing in my research I

hope to gain an understanding of how the teachers perceive their classroom space and accurately depict what they find important in their classroom.

### **Individual Interviews**

Haney et al. (2004) found that when using drawings as a means of data it is best to interview the artists about what was drawn. Therefore, to address my second research question, I plan on holding individual interviews after participants are finished drawing their perceived classroom space. The individual interview will allow for teachers to explain their interpretations and give a better understanding of what they found important to include in a classroom space, rather than have the researcher's interpretation.

### **Group Interview**

I intend to hold a group interview containing the same participants from the individual interviews. Depending on the number of participants I may need to hold two small group interviews because I do not want more than five people each group interview. Allowing no more than five participants in each group interview will help me gain a deeper understanding of each participants perspectives and limit interruptions. It is intended that the group interview will provide data from which I can probe into the teachers' perspectives of classroom spaces. Therefore, I will use this time to ask clarifying questions and extend off what was discussed in the individual interview. It will also allow teachers another opportunity to express and extend their thoughts and perspectives. The group interview will give me new insights and a deeper understanding of the phenomenon (Breen, 2006).

### **Significance of Research**

This study intends to explore classroom environments that foster and inhibit learning from the perspectives of teachers who engage in the spaces. The significance of this study lay in

its ability to anticipate and plan for future classroom designs because educators can gain information regarding what other teachers perceive as important in a classroom space. This study will also tease out possible agreements and/or disparities among the ideas and perceptions of teachers and whether they consider their students' needs when designing the classroom space.

Additionally, results of this study will assist in countering the problems of aging and in despair schools who may not have the resources to reconstruct the entire class environment. Based on the National Center for Educational Statistics (2016), "State of Our Schools," the average age of school buildings in the United States, at the time of the survey was 44 years old since construction and 12 years since the renovation. Therefore, there is a large gap in the construction of schools and renovation of schools, which indicates many buildings are not being changed to meet the needs of students and teachers. After considering the teachers' perceptions of classroom space, educators can incorporate key findings into their environments and refocus their design around the students' needs. The ideas generated may also lead to more practical uses of classroom space and effectively capture the child's interest to learn. The goal of this study is to identify the views of the teacher's classroom spaces so; educators can gain needed information that would lead to the reconstruction of their classroom environments.

### **Key Terms and Concepts**

The following terms will be used throughout the study. The definitions are intended to clarify words in the context of the case study.

- Classroom space: A formal learning environment located in a classroom designed to facilitate and support student learning (*Journal of Learning Spaces*, 2020).
- Learning space: Locations within the classroom designed to facilitate, support, stimulate, and reinforce learning and teaching (*Journal of Learning Spaces*, 2020).

- Loose parts – Any open-ended play materials, natural or manufactured, that children can move, manipulate, and generally use in a variety of ways (Nicolson, 1971). Examples include natural materials, such as sunlight, plants, and manufactured materials such as blocks, chairs, and rugs.
- Perceptions: Teachers' views, opinions, and experiences regarding classroom space (Dag, Şumuer, & Durdu, 2019).
- Redesigned classroom spaces: Modified environments containing a variety of furniture options in an open space, which can be configured in various ways to allow for learning experiences and collaboration (Kariippanon et al., 2017).
- Traditional classroom space: Lecture style classrooms where students are seating in desks arranged in rows facing the front of the room to listen to the facilitator transfer knowledge (Beichner, 2014).

### **Conclusion**

Chapter 1 briefly introduces the case study and background information. This chapter reviewed the purpose of the study, the research questions, and the significance of the research along with key definitions. This study plans on addressing teacher's perspectives regarding their redesigned classroom space. To obtain data, drawings, individual interviews, and group interviews will be used with teacher participants.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Students and teachers spend a considerable amount of their waking hours in a classroom space. It is in this setting that children's social identities, health, well-being, and personal development are molded (Collins & Coleman, 2008). At the same time, the teacher's role is to constantly adapt the classroom space for the students, while planning and organizing learning experiences (Martin, 2002). Therefore, the physical space becomes a significant ingredient in achievement and success. Due to researcher's recognition of classroom spaces impacting children's development and learning (Dotterer & Lowe, 2011), there has been a call for a redesigning of classroom spaces and practices. Instead of seeing traditional classroom spaces where students are learning while seated in rows facing the front of the room, classrooms are beginning to be arranged in multiple ways to support differential learning (Freeman et al., 2017). Redesigned classroom spaces are equipped with comfortable and moveable chairs, high top tables, couches, rugs, pillows, and more to make students feel welcome and at home (Dillon et al., 2016). Importantly, the physical environment can be a powerful teaching instrument (Martin, 2002) and changes need to be managed carefully (Kellock & Sexton, 2018), preferably from the perspectives of the students and the teachers. However, it is important to understand the teachers' perspectives of the redesigned classroom space and if they consider their students' needs when designing the classroom space. Furthermore, as teachers and students may view the environment differently (Fraser & Walberg, 2005), the insights to how teachers perceive the redesigned classroom space will better help understand how their perspectives could influence students' learning. By evaluating these perspectives, I will be provided with information that may improve future redesigned classroom spaces for students and teachers.

In this paper the term *redesigned classroom space* will be used to describe research regarding classrooms that have been designed in nontraditional ways. I choose to use the term *redesigned classroom space* to emphasize the change beyond the classroom four walls to an adaptable room designed for students and teachers to learn. Additionally, since the term space is open to many interpretations and meanings (Harvey, 2009), I choose to define *space* as the openness within a classroom.

The purpose of this literature review is to provide an overview of past research that has contributed to the redesigning of classrooms in the 21<sup>st</sup>-century and examine the teachers' and students' perspectives regarding their redesigned classroom space. Although this research focuses on teacher perspectives, as noted previously, student perspectives represented in the literature are also important to consider to inform the importance of understanding teacher perspectives. I use the theory of loose parts to guide my study, while specifically looking at the empirical literature involving redesigned classroom space design and perspectives. I also review the literature on classroom teachers' perceptions and students' perceptions regarding redesigned classroom space. Due to limited research I will include research on both higher education students' and PreK-12 students' perspectives of redesigned classroom spaces. The research questions that will be used to guide the study and the review of literature are as follows:

- 1) What are the features of elementary teachers' conceptualizations of redesigned classroom spaces?
- 2) How do teachers perceive and rationalize the design and features of these classroom spaces?
- 3) How do teachers consider students' potential learning, reactions, and engagement level when designing classroom spaces?



### **Search and Screening Process**

To identify research from redesigned classroom spaces including students' and teachers' perspective regarding redesigned classroom spaces, seven online academic search engines were used: ProQuest, SAGE Journals, DOAJ, JSTOR, ERIC, Springer, and ODU Library. Search key words were "student's perspective redesigned spaces," "redesigned spaces," "redesigned environment," "classroom space," "redesigned learning spaces," and "teachers' perspective of redesigned spaces." Articles were further limited to peer-reviewed and empirical articles. Research was gained from multiple countries and included material from pre-primary, elementary, secondary, and higher educational settings. Due to limited research there was no limitations to the country, age of participants, specifications of environment, and year of publication when searching articles. The focus of this review was on the redesigned classroom spaces.

### **Theoretical Framework**

The theoretical lens I will use to situate my study focuses on broader theories of constructivism. However, I will specifically use the theory of loose parts to ground my study. Hein (1991) explained constructivism as learners who construct meaning for themselves both individually and through social interactions. Additionally, students are developing new knowledge through active learning environments (Good & Brophy, 1994). The constructionist learning theory stems from the beliefs of John Dewey, Lev Vygotsky, and Jean Piaget, (Hein, 1991). John Dewey and Jean Piaget explained learning was no longer gained from students sitting serenely while knowledge is passed from the teacher to them, but instead through the construction of doing and engaging in oneself (Hein, 1991). Lev Vygotsky supported these beliefs while explaining that learning is also inherited by social interactions and encounters

(Hein, 1991; Powell & Kalina, 2009), which would require a redesigned classroom instead of the traditional seating in rows.

Stemming from the constructivist lens is the theory of loose parts, which states “in any environment, both the degree of inventiveness and creativity and the possibility of discovery, are directly proportional to the number and kind of variables in it” (Nicholson, 1971, p. 30). Otherwise, the more objects or materials in a room the more possibility for creativity and self-discovery, which results in learning. The term “loose parts,” as presented in the theory of loose parts refers to multiple objects and materials that are in the classroom space. These “loose parts” or materials in the classroom should be moveable and easily manipulatable for students to use in a variety of ways (Flannigan & Dietze, 2017). What is traditionally found in classroom environments are that things are stationary, orderly, and restricting to children (Nicolson, 1971). Students cannot interact with the variables, such as materials, music, plants, furniture, other peers, and ideas unless instructed by the teacher. Although, when children do have exposure and flexibility with various loose parts, they become curious, which triggers exploration and learning experiences (Flannigan & Dietze, 2017). According to Nicolson (1971) adults, in particular teachers, have had all the fun playing with the materials, planning, and choosing concepts using their perspective, which leaves the students’ creativity and perspective limited. This limitation teachers place on students in a classroom environment influences their learning because children learn more easily when they can experiment and find things out for themselves (Nicholson, 1971).

In the past, the theory of loose parts was mostly applied to research regarding playgrounds in which moveable materials would be introduced and children would take advantage to explore and discover (Bundy et al., 2011). Currently, the theory has been applied to

multiple educational settings from exploring play with children and the importance of child-led play (Maxwell et al., 2008). Similarly, however not grounded by the theory of loose parts, the Montessori Method and the Reggio Emilia Approach are two more philosophies who acknowledged the importance of educational settings. Montessori urged teachers to view a classroom as “a room in which all the children move about usefully, intelligently, and voluntarily, without committing any rough or rude act...” (Montessori, 2004, p. 48). Similar to the theory of loose parts, she further explained that environments should be made to function from a child’s level and made available through exploration and multiple choices to learn independently. The classroom and all the materials and contents in it are to facilitate learning (Greene, 2000; Montessori, 2002). Translated to current classrooms, are redesigned classrooms in which chairs have been reinvented into stools, stability balls, or wobble seats to promote movement and flexibility (Dillon et al., 2016).

The environment as the third teacher, in the Reggio Emilia Approach also identifies the environment as a key learning tool. The classroom is the third teacher when it allows for easy, transitional exploration. If the room is too cluttered or does not allow for student creativity the classroom becomes a place and not a learning tool (Stoudt, n.d.). Furthermore, Klein (2004) stated that the setup of the environment is an inviting message to students to explore and take part in learning opportunities and investigations, which ultimately helps them problem solve. The 21<sup>st</sup>-century redesigned classroom space, as in the Montessori Method and the Reggio Emilia Approach features less clutter and openness, which allows students and teachers multiple options for learning, collaboration, and exploration (Dillon et al., 2016; Fernandes et, al. 2011). In my study, I will use the theory of loose parts as it pertains to classrooms that are conducted in a face

to face setting. Face to face classrooms are explained as instruction is taken place between students and teachers in a shared classroom space (Paul & Jefferson, 2019).

The theory of loose parts relates to my study because a redesigned classroom space incorporates numerous loose parts (e.g., desks, chairs, board, computers). It is mostly the teacher who chooses which loose parts will be acceptable for the classroom space and whether the students are allowed to freely engage in these loose parts. Furthermore, the loose parts that teachers perceive to be important might differ from the child's perspective, which limits the students' self-discovery and learning in the classroom space due to the teachers' perspective. My goal is to examine the loose parts that teachers perceive to be important to their classroom space and analyze whether they consider how students might engage with one another, react to, or be supported in learning when designing the classroom when designing the classroom.

### **Review of Empirical Literature**

In the following section, I will review empirical literature regarding the influence of redesigned classroom spaces. I will also evaluate studies in which students and teachers explain their perspectives regarding redesigned classroom spaces. Due to limited research, students' perspectives will be divided into students from higher education settings and students from PreK thru 12 grades.

### **Benefits of Redesigned Classroom Spaces**

The classroom space is important in that it supports the roles and relationships that form in it, along with modifying pedagogical practices and influencing the lives of students and teachers (Clement, 2019). The classroom space starts as an empty room but soon changes to include fixed items (e.g., windows, doors, shelves) and moveable furniture (e.g., desks, chairs, storage bins). Historically, classrooms have been designed to transfer knowledge from the

teacher to the student through rows of student desks all facing the instructor (Clinton & Wilson, 2019). However, numerous studies have indicated that this method is less effective (Freeman et al., 2014), and teachers and institutions are redesigning their classroom spaces. It is within these studies that the foundation for a redesigning of classroom space was built.

Studies have concluded that certain classroom spaces affect students' success and achievement. For example, the University of Salford and architects, Nightingale Associates, conducted a year-long pilot study that found that a classroom environment can affect a child's academic progress by as much as 25% (Barrett et al., 2013). Well before this work, the Heschong Mahone Group (1999) suggested that students with the most daylight in their classrooms progressed 20 percent faster in math and 26 percent faster on reading tests than students situated in classrooms with less daylight. This study which consisted of 21,000 students from California, Washington, and Colorado also found students in rooms with large window areas progressed more in reading and math than students in classrooms with smaller windows. Poorly lit or windowless classrooms affect students and teachers since they are the ones spending an adequate amount of their day in the rooms. Even some forms of fluorescent light may negatively influence teachers and students, such as mild seizures (Tanner & Lackney, 2006).

Additionally, Tanner (2009) found that students in classrooms with ample space for movement and circulation achieved better test scores in reading, math, and science. This finding indicates that students who learn in rooms with a greater amount of open space have higher standardized test scores than in classrooms with less space because more room means may promote learning around the room to collaborate, problem solve, and communicate openly (Duncanson & Volpe, 2009). Spacious classrooms, or rooms with less clutter and more open areas, allow for more interaction between students and teachers while also increasing hands on

activities and student lead creativity (Lasky & Yoon, 2011). Along with openness, Wargocki et al. (2019) reported evidence that temperatures in the classroom space may affect student performance. They stated that in temperate climates classroom temperatures lower than 72 degrees Fahrenheit allowed for more optimal performance from students.

Fisher et al. (2014) also conducted studies on the effect of environmental print and external stimulus in classrooms. They found that children in the minimalistic classroom environment outperformed the children in the classroom that was heavy on environmental print and external stimuli. This study concluded that too much material in a classroom was overwhelming to students and affected their achievement and focus (Fisher et al., 2014). Therefore, this study intends to review teachers' perspectives about redesigned classroom spaces to better identify if teachers consider students' needs and preferences when designing their classroom spaces.

### **Seating Arrangements in Redesigned Classroom Spaces**

Contrary to the traditional classroom seating pattern of rows and columns, much research has been conducted on classroom seating arrangements in a redesigned classroom space. According to Dunn and Dunn (1975), a successful seating arrangement in a classroom can result in an increase in students' self-esteem, enjoyment for learning, basic skills, creativity, academic achievement, and independence to learn. Among the numerous seating arrangements researched, the most recommended are the horseshoe (U Shaped), clusters, rows and columns, and circles (Malik, 2016). Indeed, Marzano (2003) declared a classroom arrangement should have the following: teachers and presentations easily visible to students, appropriate materials readily available, easy accessibility for people to move around, and students working in pairs, quads, or triads.

A well-designed classroom is a critical piece when students are participating in various forms of interactions (Bullard, 2014). Also, the arrangement of seating in a classroom space has been found to allow for different outcomes of learning and teaching styles. For example, traditional style classrooms allowed for more lecturer style teaching, while circle or cluster style seating allowed for more collaborative activities (Brooks, 2012). When children are placed face to face with one another in a group setting, it encourages the sharing of information and cooperative interaction (Proshansky & Wolfe, 1974).

Furthermore, different seating arrangements were found to influence the interactions and communication between teachers and peers and/or peers and peers (Fernandes et al., 2011; Szejnberg & Finch, 2006; Wannarka & Ruhl, 2008). Fernandes and colleagues (2011) stated that desks in rows and columns lessened students' interactions with peers and promoted more teacher-centered instruction, whereas desks arranged in small groups allowed for more peer to peer interaction and a student-centered classroom. The authors also reported that teachers were the sole dictator of the classroom arrangement based on their teaching styles and preferences, instead of students' needs (Fernandes et al., 2011). Therefore, teachers may design the classroom environment around their perspectives, which could ultimately counteract the social interactions in the classroom that are essential to students' success. This research aims to consider teachers' perspectives about redesigned classrooms to better understand if teachers consider the potential for student learning, interaction, and their needs in a classroom space.

Additionally, seating in redesigned classrooms was also found to increase student collaboration with peers along with strengthening communication between teachers and students (Adedokun, et al., 2017; Kariippanon, et. al., 2017; Rands & Gansemer-Topf, 2017; Zimmerman et al., 2018). Collaboration is defined as a situation in which peers of two or more learn or pursue

to learn something together, which is important in an educational setting (Dillenbourg, 1999). Parsons (2018) found the round table design of seating arrangements promoted more socialization and exchange of feedback between students and instructors. A grouped table layout or larger tables helped facilitate discussions and group work between students which increased peer teaching (Kariippanon et al., 2017). The horseshoe style seating arrangement was found by Rogers (2020) to increase students' pre- to post-test scores along with higher participation in the classroom when compared to small group tables and pairs of desks. These studies provided suggestions that the arrangement of the physical space allowed for different positive outcomes of learning and teaching styles (Brooks, 2012).

Further, different arrangements also encourage certain behaviors. For example, the physical classroom environment has been shown to influence student behavior or misbehavior, and achievement (Susi, 1989; Weinstein, 1979). In their review of empirical research on seating arrangements in the classroom, Wannarka and Ruhl (2008) noted traditional rows of seating were successful at reducing talking and communication between students. The eight studies investigated in their summary supported the idea that students displayed a higher level of undistruptive behavior during independent tasks while seated in rows. Hastings and Schwiesso (1995) reported similar results. In their study, primary students who were more disruptive were found to be least distracting to others in a row's seating arrangement. However, contradicting this research Rosenfield et al. (1985) found the rows of seating to be least conducive to on-task behaviors because students performed better in groups and circles. The difference in this study was that students were engaged in a peer interaction activity instead of individual work. Different seating arrangements resulted in different behaviors, while also influencing instructional activities and learning outcomes. While rows of seating might benefit the teacher



with less disruptive behavior from students, peers could be experiencing a drawback because they are unable to communicate with each other and collaborate, which affects their academic performance. A redesigned classroom space is important because it allows for more collaboration between peers and increases the communication between teachers and students to possibly enhance students' success.

Research has also addressed the relationship between redesigned classroom spaces and engagement levels from students. Hasting and Schwiesso (1995) found that primary students sitting in rows were more engaged than when sitting in cluster style seating because they were more on-task. Similar findings concluded that college students in the traditional classroom setting were more engaged with classroom tasks. However, they did not outperform the students in a redesigned classroom with circular tables (Brooks, 2012). Therefore, even though they were seen to be more on a task in the traditional classroom, the students performed better academically in the other classroom due to the circular table arrangement. A study conducted by Barrett et al. (2017) might explain these findings. The authors measured how well a classroom space is designed for different age groups. They found that younger age groups worked better when spaces were complex and divided. The older students worked best in an open and large space to allow for flexibility and group work. This study strives to understand whether teachers consider students' needs regarding classroom spaces by analyzing teachers' perspectives about redesigned classroom spaces.

### **Perceptions of Redesigned Classroom Spaces in Higher Education**

One of the more highly researched perspectives of learning space is from higher education students. In fact, the traditional setting of lecture halls has existed as early as 1079, as a means to provide religious education to clergy members (Beichner, 2014). Now that research

has shown that learning spaces are more than physical buildings but are also the foundation of heterogeneous relationships where student-centered learning and personalized learning manifest (Mulcahy et al., 2015), college lecture halls are being redesigned. This transition signals the need for their perspective towards the changing classroom to be heard and analyzed since they are the individuals learning in this environment.

After evaluation, researchers found students in a higher education setting perceived redesigned learning spaces to be more motivating to attend class regularly (Adoedokun, et al., 2017), which has been linked to students' success (Gottfried, 2010). When examining the difference between students' perceptions of a 21<sup>st</sup>-century learning space and a traditional classroom, Adoedokun et al (2017) found that more than two-thirds of the students felt that the 21<sup>st</sup>-century space was better than a traditional classroom. Students claimed they had more motivation to learn and a greater interest in attending the class. Based on this study students in a redesigned class achieved greater success since they felt more motivated to attend school.

A redesigned classroom was also perceived by students to provide more peer to peer interactions and collaborations (Adoedokun, et al., 2017; Lee et al., 2017; Morrone et al., 2014; Parsons, 2017; Zimmermann et al, 2018). After redesigning a classroom to model a coffee house, with circle tables, sofa seating around small coffee tables, natural light, and colorful seating, students reported feeling more connected to peers and having a sense of community in the space (Morrone et al., 2014). The enhanced interaction of the room also ignited more collaborative activities to be corroborated. Furthermore, Parsons (2017) found students arranged in a round table setting were provided with more opportunities for socialization and collaboration with peers, which is consistent with Proshansky & Wolfe's (1974) findings that group workspaces increase group collaboration.

Similar to more peer interaction is the perceived influence of more interaction between students and faculty in the classroom (Adoedokun, et al., 2017; Casanova & Mitchell, 2017; Morrone et al., 2014; Zimmermann et al., 2018). Students reported that the barrier between faculty and students was eliminated, and a community of learners was developed when placed in a redesigned learning space (Brooks, 2012; Odum et al., 2020; Rands & Gansemer-Topf, 2017). Feedback is more easily communicated from faculty to students in a redesigned classroom because of the ease of moving from group to group (Morrone, et al., 2014; Parsons, 2017). Students also expressed a room with flexible grouped seating design made them feel valued and respected because instructors were able to dictate away from the front of the room and interact solely with students compared to the traditional layout (Rands & Gansemer-Topf, 2017). Therefore, to better understand if teachers consider students' needs and perceptions when designing their classrooms, I will examine teacher's perspectives about redesigned classrooms.

In addition, redesigned classrooms were perceived as more advantageous to learning and collaboration than traditional classrooms (Morrone, et al., 2014; Rands & Gansemer-Topf, 2017, Zimmermann et al., 2018). After supplying a redesigned room with moveable chairs and desks, students found that the ability to quickly and quietly reconfigure the room to meet their needs was a great advantage over traditional classroom settings. For example, during small group or large circle discussions and activities students were able to move effortlessly and naturally (Zimmermann et al., 2018). Additionally, university students perceived a redesigned classroom as open, engaging, and interactive, while traditional classrooms were viewed as intimidating, isolating, and restricting (Parsons, 2017).

Student satisfaction was also found to be greater in redesigned classrooms. Undergraduate students claimed that a classroom containing U shaped group tables, swivel

chairs, and an open space design was more enjoyable and appealing than traditional classrooms (Lee et al., 2017). This could ultimately increase attendance, which leads to an increase in achievement (Gottfried, 2010). Similarly, when Choi et al. (2013) redesigned a classroom with natural lighting and flexible furnishings students found it to be more satisfying than the traditional classroom. Students in a science course also had more positive attitudes about moveable chairs than the fixed auditorium seating style (Young et al., 2017). Based on these research studies involving the perceptions of higher education students, a redesigned classroom is essential for class attendance and success, as well as being more engaging and enjoyable to students.

When given photographs of various classrooms and encouraged to rate their preference of the rooms higher education students preferred the classroom with natural lighting, outdoor views, comfortable seating, and seating arrangements that allowed more interaction among peers (Douglas & Gifford, 2001). Similar findings were found by Casanova & Mitchell (2017) when students were asked to design a classroom space using sketches. Students preferred drawing spaces with curved-shaped equipment and materials that would allow for more interaction with peers and engagement. Both studies suggested that higher education students value peer discussion and cozy seating arrangements. Considering these findings, I aim to analyze PreK-5 teachers' perspectives of redesigned classroom space to better understand if teachers consider what students may prefer in a classroom space.

### **K-12 Student Perspectives of Classroom Space**

My study focuses on primary grades (i.e., PreK-5). However, because research in this area is limited, the following will examine research on PreK-12 students' perceptions of redesigned classroom spaces. When listening to the voices of a child researchers can understand

their thinking and meanings about their lives (Ferreira et al., 2018). Furthermore, educators will be provided with concrete information to better guide their instruction toward improving children's learning experience (Colliver & Fleer, 2016). For example, while studying students' perceptions in learning spaces, Woolner and colleagues (2012) found that students disliked carpet time and often felt it was uncomfortable. The teacher, after learning her perspective of carpet time, as being engaging and enjoyable, was not shared with her students decided to change her instruction to meet her students' needs. Therefore, the purpose of this study will be to examine teachers' perspectives about redesigned classroom spaces to gain an understanding regarding if teachers reflect on their students' needs when redesigning a classroom space.

Research has shown that students perceived the classroom space as a place for enjoyment and friendship (Farmer et al., 2018; Kellock & Sexton, 2018; Makela et al., 2018). When Kellock and Sexton (2018) asked a student in 6<sup>th</sup> grade to photograph and annotate their view of their preferred educational space, the participant chose to depict pictures of 1<sup>st</sup> grade because she valued meeting her best friend for the first time and explained the experience was fun and stress free, unlike her current room. The same was seen when two 4<sup>th</sup> graders photographed the playground and discussed the space as being a place where their friends can play together for fun (Kellock & Sexton, 2018). These findings are consistent with research that depicted students' friendships and classroom community as meaningful to their environment (Famer et al., 2018).

Another finding that was also noted in higher education-focused research was the perception that redesigned classrooms are more engaging than traditional rooms (Farmer et al., 2018). When students in grades 2-5 were asked to draw a picture of their class on a regular school day, students' drawings included multiple examples of positive engagement. For example, students drew dialog with other students and teachers in the room, the handling of papers and

materials with peers, and teachers in close proximity to students (Farmer et al., 2018). The result of this study suggested that students viewed the classroom space as a place to engage with peers and teachers while learning. In addition, when students were given the choice of classroom seating arrangements from their perspective, Rogers (2020) found fourth-grade students preferred the U shaped or horseshoe style seating over small groups and pairs, potentially due to an increase in student socialization with multiple peers and their enjoyment of classroom peers, engagement, and friendship.

In their study of upper secondary students, Makela et al. (2018) found students suggested the importance of comfortable socializing areas such as sofas and additional cushions to be added to the classroom space. Students were also found to encourage pleasantness as a major factor in the classroom environment, asking for different colors, improved lighting, and optimal indoor air. In this study, student's contributions acknowledged their need for comfort and a pleasurable environment, which would ultimately lead to more participation and higher achievement. Although, contrary to this finding, Ferreira et al. (2018) found that the appearance (e.g. wall color and details of toys) and characteristics of objects (e.g. comfortable seats and new desks) were never mentioned by the participants. Instead, the students revealed that their peers and teachers, along with experiences were the more essential part of the learning environment. This finding is important because previous research has found that a students' learning environment is vital to their learning (Farmer et al, 2018). However, an environment embedded with multiple materials may not be necessary in primary grades because students perceive supportive peers and teachers as well as experiences imperative. This may also be because different age groups work better in different spaces (Barrett et al., 2017).

McHatton et al. (2014) explored through student drawings and narratives, middle school students' perceptions of their classroom space and how they may differ based on classroom model (i.e. gifted, special education, or general education settings). Their findings suggested that students in the gifted setting perceived the classroom space as positive and a place for learning and engaging in instruction with teachers. However, students in the special education classroom perceived the classroom space as a place for teacher-led instruction and emphasized behavior management from teachers (McHatton et al., 2014). This study revealed a difference in the perception of the classroom environment based on student population (i.e., gifted students or students in special education). Also, how different classroom spaces influence students' perceptions regarding their experiences in the classroom space. In an effort to analyze teachers' perceptions from various classroom models (i.e. gifted, special education, or general education settings) regarding redesigned classroom spaces, this study aims to better examine if teachers consider their students' necessities when designing the classroom space.

One study evaluated four primary schools and four secondary schools that had been transitioned to flexible learning environments (Kariippanon et al., 2018). Some students perceived that they had higher work engagement, increased motivation, and were invited to move around more in the redesigned learning space, while they believed teachers were more at ease. Yet, students also found the redesigned classroom to be distracting by excessive noise and interrupting peers. They also stated that in the environment teachers were less likely to observe them, so they could easily get away with breaking the rules (Kariippanon et al., 2018). Therefore, it is important to note that while redesigned learning spaces can be perceived by students as necessary for motivation and movement, some students may find the new environment negative and not beneficial. Therefore, a redesigned learning space may only be perceived positively by

certain students and thus context must be carefully considered when planning a redesigned classroom space.

Going beyond the classroom itself, research on redesigned learning spaces include areas outside the school building (e.g. gardens and playgrounds) (Dillon et al., 2016). One study focused on children's opinions of the physical environments by analyzing an indoor and outdoor classroom. Findings suggested that students perceived the outdoor classroom to be better than the indoor classroom due to its natural lighting, acoustics (i.e. sound), and opportunities for exploration, experimentation, and collaboration (Khan et al., 2019). Based on this study, students perceived a redesigned outdoor classroom as beneficial because the aspect of nature was intertwined with learning. In relation, Li (2017) studied primary school classroom spaces in Singapore. In that study, one school, Westwood Primary School, redesigned their learning space by adding an outdoor eco-aquarium to allow for students to learn more about ecology. Students perceived the aquarium, which included freshwater animal species and plant life, as a gateway to collaborate, research, and explore through hands-on interactions. Another school Li studied, Junyuan Secondary School, designed a musical jamming studio using various musical instruments (i.e. electric guitar, keyboard, microphones, drum set, and piano). Students stated this innovative environment allowed them to express their feelings, make new friends, and learn a new skill (Li, 2017). Thus, the outdoor environments had positive perspectives from students, although this could be due to the students' change in location and excitement for the outdoors, so the evidence to support this notion is weak (Barrett et al., 2013). It is also important to acknowledge that an outdoor classroom is not permanent and depends heavily on the weather and geographical locations of the school. Although this research is important to note in the



general study of classroom space design, my study will focus on the indoor face to face classroom environment as this is the common context of U.S. school classroom spaces.

### **Teachers' Perspective of Classroom Space**

In an effort to improve classroom environments, the teacher's voice has the potential to contribute to understanding classroom redesign and clarify the uses of classroom space (Barrett & Zhang, 2012). The teacher, like children, must adapt and mold to the environment around them, but the teacher has the power to manipulate the environment for others, often before the students even enter the building. It is their perspective and understanding that leads them to design their classroom to fit their requirements and educational goals (Martin, 2002). Yet, teachers' views on their perceptions of school space have been highly under-represented (Barrett & Zhang, 2012). In one study focusing on classroom space among public school teachers, Owens and LaForce (2009) found that out of 21 educators each teacher used their space differently according to their perspective, which influenced students learning. Therefore, the teachers' perspective of learning space is important to analyze, as is the goal of this study, because teachers bring nuanced ideas to planning and designing their classroom spaces that may inform understandings of why teachers make the decisions they do in redesigning their classrooms.

Similar to my proposed research design, Szejnberg and Finch (2006) conducted a study through drawings to investigate how secondary teachers used their learning environments to support their teaching goals, either student-centered or teacher-centered. Teacher-centered meant space is often arranged in a row and column layout, while student-centered permitted students to work together in groups. Teachers were generally found to perceive their learning environments as more teacher-centered, by drawing students facing the board in traditional row and column layouts and the teacher in the front as facilitator. Interestingly, even teachers who claimed to be

more student-centered when teaching showed they perceived the classroom arrangement to be more teacher-centered by drawing similar traditional layouts. Szejnberg and Finch (2006) found seven out of ten classroom seating arrangements were respectively traditional. Therefore, teachers were choosing the arrangement of classroom space regarding their perspective, which impinged on the students' success of learning. Even teachers who imply they are student-centered are configuring classrooms in the traditional layout and influencing students learning. My study will further examine the teachers' perspective about redesigned classroom spaces to consider if students' potential learning, reactions, and engagement are acknowledged by the teacher when designing classroom spaces.

In addition to seating arrangement in a redesigned space, teachers stated the grouped table layout allowed for more movement in the classroom compared to traditional settings (Haines & Maurice-Takerei, 2019; Walker et al., 2011). In a university setting, Haines & Maurice-Takerei (2019) found that teachers in higher education settings perceived the change to group seating allowed them the option to walk around and observe students more easily, whereas in the traditional setting students could hide from instructors. Kariippanon et al. (2017) also discovered that primary and secondary teachers found group seating to be easier when aiding individual groups of students. The group style classroom arrangement also influenced students' ability to speak and interact with their instructor, while also easily engaging in immediate feedback (Parsons, 2017).

Barrett et al. (2013) argued a classroom is for students and should be designed to make them feel welcome, excited, and able to learn without interruptions. Yet, when professors at a university were asked to evaluate a physical classroom, Douglas and Gifford (2001) found that seating arrangements and comfort levels of students were largely absent from their perceptions.

The lack of importance for these certain physical properties is worth noting since students in the study notably preferred classrooms with comfortable seating and seating arrangements that encouraged more interaction among students.

Concerning teachers' perspectives of their classroom environment, Barrett and Zhang (2012) discovered teachers from five schools in the same geographical area were overall satisfied with their current school design or layout and stated it provided well-functioning learning spaces. Although, the teachers highlighted some environmental issues in the building such as poor air quality, uncomfortable temperatures in hot weather, and high noise levels, which could influence teachers' and students' success. Teachers also perceived the furniture in the classrooms (i.e. desks and chairs) as flexible and well-functioned to provide learning. Interestingly, teachers did not mention a specific color theme even though research suggests students prefer classrooms with brighter color schemes (Barrett et al., 2011). Therefore, the results suggest that teachers might not consult with students regarding their classroom space and instead use their perceptions to redesign classrooms. This study will elaborate on this topic regarding the teachers' perspectives about redesigned classrooms to better understand if teachers consider students' perspectives and needs in a classroom space.

Stemming from the following study, Barrett and colleagues (2016) viewed perceptions of 222 teachers regarding their perspectives of their 193 primary classroom environments. Surprisingly, the schools built in the 1950's scored less on environmental problem areas (i.e. air quality, size, glare, noise level) when compared to schools built in the 1990's. Also, teachers showed less ownership of the classroom space, meaning they were not aware of their importance to the physical classroom space. This is crucial since the environment has the potential to teach students through creativity and discovery (Nicholson, 1971). Therefore, if teachers are not

apprehensive to the influences of the environment, they are doing a disservice to their students. Furthermore, as Weinstein (1981) noted early, the classroom space tends to come second to curriculum development and instruction, yet all are detrimental to the teachers' and students' success.

### **Teacher's Power in the Classroom Space**

In an effort to discuss teachers' perspective of a redesigned classroom space it is important to review research regarding teachers' power within the classroom space because, as mentioned earlier, teachers are often the key modifiers to the classroom space (Martin, 2002). Specifically, teachers are considered the main figure for children in the school setting. They are expected to support student's emotional wellness along with academic achievement (Zhang et al., 2019). Among that is also their control over the arrangement of the classroom space. Teachers have the authority to decide the physical setup, rules, routines, and structure of their classes, all of which influence the students learning (Metz, 1978). Teacher power refers to the influence or control the teachers have over their students (Koutrouba et al., 2012). Teacher power, such as reward, coercive, referent, legitimate, and expert power has many advantages and disadvantages to the classroom space (Elias & Mace, 2005).

One study that measured teacher power by using children's' drawings found that the higher level of teacher power the children perceived, the higher level of loneliness the children also experienced (Zhang et al., 2019). Therefore, individuals with lower power are closely correlated with negative emotions, which supports the idea that if teachers' have higher power in the classroom, students are going to experience an increase in negative feelings. However, another study by Sjiuroso et al. (2019) examined teacher control and warmth in correlation to bullying using student's perspectives. The researchers discovered that students who perceived

their classroom teacher as either lacking or low on control in the room experienced an increase in bullying. This finding indicates that teachers' control in the classroom space has the power to influence protection for students against possible bullying. Therefore, teachers' classroom control over the room may not always produce negative effects for students.

An ideal authority in schools results in many assumptions and values based on the individual's views (Macleod et al., 2012). In fact, Erickson (1987) stated that in order for learning to take place in the classroom teachers must establish dominance to persuade students to cooperate and students' must be willing to give their assent. Erickson also explained how teachers can use their unfair use of power or authority in the classroom to result in the students' feelings of mistrust and insurgency. Contrary, Freire (1970) advocates for equalization in classrooms between teachers and students, in which teachers educate students and students engage in educating the teachers. The experience of learning in the room is mutual. Therefore, this study will identify teachers' perspectives of redesigned classroom spaces and examine their rationalizations for their classroom design to better understand whether teachers perceive their students' needs and accommodations.

### **Conclusion**

This chapter discussed the theoretical foundations of the research and provides a literature review regarding the influences of redesigned classroom spaces and students' and teachers' perspectives of the classroom space. Based on those, there is a need for more research regarding the perspectives of primary grade teachers' views of a redesigned classroom space and whether teachers consider students' perspectives in designing the classroom space. In chapter three, the methods of my study will be discussed.

## **CHAPTER THREE**

### **METHODOLOGY**

Classrooms are being redesigned to give students more flexible learning options, increased collaboration, and self-directed creativity (Adedokun et al., 2017; Kariippanon et al., 2017). It is in these newly redesigned classroom spaces that teachers are experiencing the overwhelming need to transform their classrooms for their students to experience optimal learning opportunities. The objective of my research was to seek a deeper understanding of classroom teachers' perspectives about redesigned classroom space. Furthermore, I examined the teachers' rationale behind their design and features of their classroom space. I also intended to identify if teachers consider their students' interests and needs when designing the classroom. The following research questions were used to guide my study:

- 1) What are the features of elementary teachers' conceptualizations of redesigned classroom spaces?
- 2) How do teachers perceive and rationalize the design and features of these classroom spaces?
- 3) How do teachers consider students' potential learning, reactions, and engagement level when designing classroom spaces?

#### **Research Design**

A qualitative research design will be used for this study. Qualitative designs are useful in exploring "what" or "how" questions in order to gain an in-depth understanding of what is occurring (Yin, 2018). Merriam and Tisdell (2016) explained more specifically that qualitative researchers are curious about understanding how people experience certain situations, and in turn, how they interpret these experiences. By choosing to conduct a qualitative research study I

attempted to make sense of, or interpret, the phenomenon of how teachers perceive and rationalize redesigned classroom spaces.

In particular, a case study (Yin, 2018) research design was selected for this study. Creswell (2013) explained a case study as, “a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case-based themes ” (2013, p. 97). During a case study, Merriam and Tisdell (2016) explained that first, the researcher needs to identify the case that will be investigated. Regarding my study, the case that was evaluated are Elementary school teachers. The case study was bounded by the fact that participants’ must be (a) elementary teachers, (b) teaching at Eastland Elementary School, and (c) utilize redesigned classroom spaces. A single group of classroom teachers who teach at Eastland Elementary school and who use a redesigned classroom space was studied; therefore, a single case study will be used (Yin, 2018). An exploratory case study design was used in my study. An exploratory design allowed me to use multiple sources of data to inform my findings (Yin, 2018). For this study, data was collected from sources that includes individual interviews, drawings and written responses, and group interviews. An exploratory case study design also allowed me the flexibility to gain an understanding of the phenomenon of how classroom teachers perceive and rationalize redesigned classroom spaces.

### **Setting**

This case study was taken place in a full-day suburban Mid-Atlantic, U.S. public school, Eastland Elementary school (Pseudonym). This school accommodates students from Pre-Kindergarten (Pre-K) thru 5<sup>th</sup> grade. Classroom sizes in this school consist of approximately 20

students to one teacher. Currently, there are approximately 560 students in the whole school, with 35 regular education teachers and six special education teachers. The students' ethnicities consist of 42% Black/African American, 14% Hispanic/Latino, 14% Multiracial, 24% Caucasian, and 5% Asian. There is also a population of 12% of students with identified disabilities and 6% English learners. Additionally, 4% of the teachers have less than one-year classroom experience but with all teachers holding professional licensure (Virginia Department of Education, 2020).

Specifically, this school is a Title I school, which means that a high percentage of the school population are from low-income families. To help ensure that all students are getting an equitable education the state provides Title I schools with financial assistance through local state educational agencies (U.S. Department of Education, 2018). Currently, 85% of students are eligible for the free and reduced meal program (Virginia Department of Education, 2020). The teachers and students at this school are also provided with additional resources, including 1:1 technological tools (i.e. Chromebook, iPad). The 1:1 program means each student in the building is provided with a technology device (Sauers & McLeod, 2018). Using this additional income, teachers are also given the chance to propose possible programs or additional materials they believe would be useful for teaching and/or student learning. This allows teachers the option to redesign their classrooms, while schools with less funding would be forced to seek outside grants or support.

The school was originally opened in 1967 and was renovated in 2007 by adding additional classrooms and spaces to accommodate an influx of students. Even though the building is dated, most of the teachers at this school have chosen to redesign their classroom space with creative, open, flexible materials, and designs. Furthermore, the teachers are



responsible for designing their own classroom spaces based on their professional interests. Teachers may collaborate with specialists including gifted, special education, and assistant classroom teachers when designing classroom spaces to ensure their students professional needs are met. However, teachers who do not co-teach with these specialists can design their classroom space freely. The only school requirement for classroom design is that each room must contain at least one U shaped table to allow for small group instruction. A typical Pre-K thru 3<sup>rd</sup> grade classrooms at Eastland feature two windows, one built in cabinet, one fixed bookshelf, one large whiteboard, three rows of fluorescent lights, one ViewSonic board, and a clothing rack for backpacks. The renovated classrooms containing 4<sup>th</sup> and 5<sup>th</sup> grade classes feature four windows, two built in cabinets, two fixed bookshelves, three rows of fluorescent lights, one ViewSonic board, one large whiteboard, and clothing rack. Additionally, some rooms in the school consist of one bathroom and a door to the outside.

### **Participants & Sampling**

The selection of my participants for this study was determined by using the purposeful sampling technique (Merriam & Tisdell, 2016; Patton, 2014). Data was collected from classroom teachers from one 1<sup>st</sup> grade teacher, two 2<sup>nd</sup> grade teachers, three 4<sup>th</sup> grade teachers, and two 5<sup>th</sup> grade teachers for a total of eight participants who completed the drawing and written responses. I excluded 3<sup>rd</sup> grade teachers to limit bias since I collaborate with these teachers daily. Even though all participants who were independently interviewed were contacted, only four out of the eight original participants attended the group interview. Information on each participant can be summarized below in Table 1.

**Table 1**

*Case Descriptions*

Pseudonym	Degree	Grade Level	Race	Gender
Anna	Master of Science in Education, PreK-3	2 <sup>nd</sup>	Caucasian	Female
Barbara	Master of Science in Education, K-5	4 <sup>th</sup>	Caucasian	Female
Corey	Doctorate of Science in Education	2 <sup>nd</sup>	African American	Female
Devan	Master of Science in Education, PreK-6	5 <sup>th</sup>	Caucasian	Female
Esther	Master of Science in Education, PreK-6	4 <sup>th</sup>	Caucasian	Female
Flora	Master of Science in Education, PreK-6	5 <sup>th</sup>	Caucasian	Female
Gloria	Master of Science in Education, K-5	4 <sup>th</sup>	Caucasian	Female
Hebba	Master of Science in Education, K-5	1 <sup>st</sup>	Caucasian	Female

*Note.* The teachers' names have been changed for confidentiality purposes.

Participation was voluntary, and participants were teachers from multiple classroom models (i.e. gifted, special education, inclusion, or general education settings). Participants did not receive monetary compensation for their time. Additionally, all participants have utilized redesigned classroom spaces in the past or plan to redesign their spaces in the future. Due to Covid-19, some participants were teaching digitally, while others were teaching instruction face to face. However, I asked questions specifically related to face to face redesigned classroom

spaces in data collection for this study. I intentionally exclude specialists (i.e. P.E., Art, Music) and administration since my study specifically focused on classroom teachers.

The site for my study was chosen based on convenience, due to time, location, and on-site respondents. I am also aware that most teachers at Eastland Elementary school (Pseudonym) utilized redesigned classroom spaces before Covid-19. Patton (2014) suggests starting with one sampling strategy and then add a second to further identify the sample. Therefore, once permission was granted from administration and the district research committee, I used purposeful sampling and began interviewing with key informants (Merriam & Tisdell, 2016, Patton, 2014). After engaging in purposeful sampling, I found five teachers who were willing to participate in the study. Since I intended to understand and gain insight into classroom teachers' perspectives, purposeful sampling (Patton, 2014) was important because only the perspectives of elementary teachers who use redesigned classroom spaces were pertinent to this study. Qualities I was looking for regarding participants included a demonstration or understanding of redesigned classrooms spaces or a willingness or desire to consider redesigned classroom spaces. Additional requirements included being a classroom teacher with teaching licensure. Teachers who did not ideally utilize redesigned classroom spaces but were found to follow a more traditional classroom layout were omitted as possible participants. Teachers were not selected based on years of classroom experience or based on the selection of equal participants from each grade level (two teachers from each grade). After purposeful sampling, I relied on the snowball sampling technique, where participants recommended other teachers to participate in the study based on the fact that they utilized redesigned classroom spaces in their classrooms. The snowball sampling technique resulted in three more participants, for a total of eight participants.

### **Positionality Statement**

Patton (2014) stated, “qualitative inquiry, because the human being is the instrument of data collection, requires that the investigator carefully reflect on, deal with, and report potential sources of bias and error” (p. 58). Therefore, it is important to acknowledge my biases regarding that I am currently an elementary school teacher. I have been teaching for eight years at Eastland Elementary school (Pseudonym) and have utilized redesigned classroom spaces in my classrooms. In my opinion redesigned classroom spaces are beneficial to student learning. Although, I believe teachers are redesigning the classroom space as a fad and not as an attempt to increase student knowledge and engagement to learn. I attempted to mitigate any biases that may be a result of my background and perspective by using systematic data collection procedures, multiple data sources, and triangulation to produce high-quality data (Patton, 2014). I also used empathetic neutrality (Patton, 2014), which the researcher remains nonjudgmental and open to multiple perspectives by understanding the participants feelings, position, stance, and experiences.

It is important to acknowledge that I knew all participants prior to the study. This relationship allowed participants to trust and identify with me as a fellow teacher and as a researcher. My role as a teacher also benefited my position in this research study because I was better able to contextualize data. During the data collection process, I was responsive to the teachers’ questions but only served as a guide or facilitator. I remained neutral by not voicing my opinions about classroom environments to the teachers. Since teachers could have potentially viewed my questions regarding their drawings negatively, I responded to teachers’ drawings with, “explain what your drawing means, or why did you decide to include those images” (Punch, 2002, p.332). I explained to teachers that I was recording the individual interviews and group interviews, so I could go back and listen to them later for accuracy.

### **Data Collection Methods and Procedures**

Data collection is about asking, observing, and reviewing (Merriam & Tisdell, 2016). More importantly, the methods used when collecting data are vital to the study to gain an in-depth analysis and understanding (Simons, 2009). Yin (2018) stated that when conducting a case study, a careful collection of data from multiple methods should be used in order to reach an abundance of findings. Specifically, triangulation or data corroboration to increase credibility in a case study is fundamental (Yin, 2018). In my research study, the primary sources of data collection were drawings, individual interviews, and group interviews. Furthermore, data analysis consisted of a three-step process. Which resulted in recurring themes and subthemes using my research questions.

#### **Step One Data Collection: Drawings and Written Responses**

To address my first research question, I used teachers' drawings along with written responses as one of my data sources. Haney et al. (2004) stated drawings offer multiple glimpses into sensemaking by expressing what is not easily put into words such as the not-yet thought, subconsciousness, and the inexpressible. Therefore, I had teacher participants visually express their ideas and perspectives about classroom spaces. Written responses were added to the drawing section in order for participants to elaborate on their drawing and explain in detail the features of their ideal classroom space (See Figure 2). Participants were asked to draw a design of an ideal classroom they believe will be an effective environment for students to learn, while also answering questions to explain their drawing (see Appendix A). Guillemin (2001) explained adult participants are sometimes hesitate and nervous when asked to draw during a research study. Therefore, I allowed participants to choose from a free rein of mediums when they completed this task. For example, they could have drawn by hand, used digital tools, cutouts, or

digital graphics to portray their design. The numerous options were to potentially increase responses and give me their most representative work. Two participants chose to use digital tools to design and portray their ideal classroom, while five participants chose to hand draw their classroom spaces. One participant decided to draw on a whiteboard using an expo marker. Five of the eight participants were communicating through a computer mediated communication tool (Zoom); therefore, they were asked to take a photo of their final drawings and email it to me or share it by using the share screen feature. Three teachers chose to participate in a face-to-face setting and had their drawings on hand.

The use of drawings in research is not new. In fact, Mead and Metraux (1957) began using drawings with American high school students to investigate the image of a scientist. This study eventually became a phenomenon by initiating many more studies utilizing drawings to provide information regarding children's perceptions of scientists, the Draw-A-Scientist Test (DAST) (Chambers, 1983; Moseley & Norris, 1999). Furthermore, Martikainen (2019) analyzed students' and teachers' drawings with their verbal accounts after having them draw their idea of a typical teacher. Their results suggested that drawings are a functional way to express experiences, conceptions, and social phenomena that may be undetected from using only interviews. By using teachers drawing and written responses in my research, I hoped to gain an understanding of how the teachers perceive their classroom space and accurately depict what they find important in their classroom space.

### **Step Two Data Collection: Individual Interviews**

In qualitative studies, interviews are the most common data collection technique (Merriam & Tisdell, 2016). Interviews can be used to find out what's "in or on someone else's mind" (Patton, 2015, p.426). Haney and colleagues (2004) found that when using drawings as a

means of data it is best to interview the artists about what was drawn. Therefore, to address my second research question, I held eight individual interviews after participants were finished drawing their perceived ideal classroom space and adding written responses. The individual interview allowed teachers to explain their interpretations and provided a better understanding of what they found important to include in a classroom space, rather than rely on my interpretation as the researcher.

Independent interviews were semi-structured and consisted of thirteen questions (See Appendix B). During the semi-structured interview, most of the questions were guided by a list of questions or ideas to be explored. A semi-structured interview offered flexibility to deepen responses, engage in dialog, and uncover the participants' feelings (Merriam & Tisdell, 2016; Simons, 2009). I aimed to discover the participants' perspectives about redesigned classroom spaces and engage in their classroom design. As I interviewed the teachers, an interview guide with pre-determined questions was set for the purpose of probing for deeper understandings (Yin, 2018). All interviews were audio-recorded and transcribed by a professional transcription service. The five Zoom meetings were transcribed using the Zoom transcription service and the three face to face interviews were transcribed using the Application Temi. Simons (2009) stated audio-recordings help ensure the accuracy of reportage and help aid the researcher from writing down everything being discussed in the interview.

Merriam and Tisdell (2016) explained that interviews are necessary when we cannot observe certain behaviors, interpretations, and feelings. Due to Covid-19, some teachers were experiencing a change in their classroom space that they could not control. For example, teaching online instead of face to face instruction, wearing a face mask, and the removal of fabric objects from the classroom. Therefore, through the process of interviewing, especially

independent interviews, I allowed participants the ability to speak about past designs that may be impossible to replicate today. It is also important to note that due to this change, interview questions were focused around past or future classroom designs, as not all participants were teaching face-to-face. The influence of Covid-19 was impossible to disregard therefore, current situations might have influenced teacher perspectives and responses.

### **Step Three Data Collection: Group Interview**

In my study, the group interview consisted of four participants, all of which originally participated in the individual interviews and drawings. Even though, all participants were repeatedly contacted, approximately four times, for the group interview, only four teachers were available to attend. A group interview offers multiple advantages, such as it may seem less threatening to participants. They also allow a cross-check between perspectives and statements from certain individuals (Simons, 2009). For example, Haines and Maurice-Takerei (2019) utilized group interviews with teachers to give them an opportunity to reflect through discussions with other peers. Therefore, I used the group interview to check consistency and ascription of teachers' perspectives about redesigned classroom spaces.

Semi-structured interviews consisting of four questions were used during the group interview (see Appendix C). Since this meeting was held using Zoom transcriptions were transcribed using the Zoom transcription service. The combination of a group teacher interview following individual interviews was complementary to provide an opportunity for me to ask clarifying questions and gain group understandings of classroom space that might otherwise not have been available from the individual interview.

### **Computer Mediated Communication (CMC) Tool**



Qualitative online interviews are becoming more and more common (Salmons, 2015). As recently stated, the independent interviews (with five participants) and group interview were conducted using a computer mediated communication (CMC) tool, Zoom (Salmons, 2015). As Merriam and Tisdell (2016) explained, the use of a CMC tool to interview participants is similar to a face to face interview format. Typically, participants synchronously explain topics verbally while they are displayed on a video component. For confidentiality purposes, I instructed participants to turn off the video feature, which will result in only hearing their responses. I also recorded all Zoom sessions and made the CMC tool password sensitive, so only participants with the password could attend the online meeting. This helped alleviate confidentiality being compromised over the internet. However, I allowed the screen share function so that either participants or I could display their drawings during discussion.

There were many strengths when using a CMC tool to interview participants. One was the flexibility and convenience of time that it allowed me to connect with individual participants. Also, the CMC allowed video recordings to be made, which helps in analyzing data (Merriam & Tisdell, 2016). I chose to use a CMC tool to conduct interviews with participants due to COVID-19. Archibald, Ambagtsheer, Casey, and Lawless (2019) found that Zoom, a CMC tool, was effective at obtaining qualitative research data due to its cost effectiveness, features, and security options. Therefore, I used a CMC tool, Zoom, to interview five participants individually and four participants in a group setting.

### **Research Steps**

I followed a set protocol to ensure that data collection was consistent and aligned with the research questions.

1. The administration approved the research proposal at the site.

2. Institutional Review Board approved the research proposal.
3. Participants were invited to participate in the study.
4. Participants were emailed the interview schedule.
5. Participants completed the consent form.
6. Participants completed the drawing and written response.
7. Independent semi-structured interviews were completed with all participants.
8. Audio recordings of interviews were reviewed and submitted for transcription.
9. Group semi-structured interview was conducted.
10. Participants reviewed individual transcripts for member checking.
11. Audio-recordings of the group interview were reviewed and submitted for transcription.
12. Data analysis began.
13. Participants reviewed transcripts from the group interview for member checking.
14. Data analysis and coding of data for emerging themes and subthemes.

### **Data Analysis and Procedures**

Data analysis began after the completion of individual interviews, drawings and written responses, and group interviews. I used Saldana's (2016) coding process for qualitative research to ensure the organization of the data and coding. First, as recommended by Saldana (2016), I collected and read through all the data including written responses, interview transcripts, and group interview without coding. Next, I started reading each participants' interviewed transcripts one by one to complete the first cycle coding using In Vivo coding (Saldana, 2016). I chose In Vivo coding because Saldana (2016) explained In Vivo codes are more efficient at getting at the actual language of the participant and it can be used to offer the participants perspectives. Therefore, since I was examining teachers' perspectives it was important for me to not change or

manipulate the participants' thoughts. To begin, I chose to print off participants' individual interviewed transcripts and handwrite the participants' key words by using short phrases or words. For example, after reading a line I compiled key words and phrases from the transcripts and wrote it next to the sentence (See Figure 1). Once I finished first cycle coding with all interviews, I transferred the key words into a Google Sheet document (see Appendix M), making sure I organized them row by row for each participant. I repeated this process with every independent interview transcript line by line.

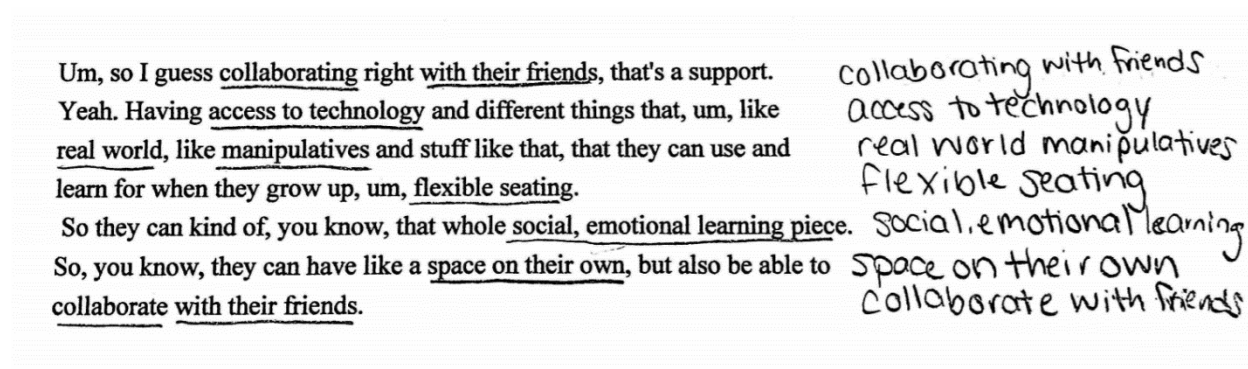


Figure 1: Example of first cycle coding line by line using original transcript.

Next, I completed the second cycle of coding, pattern coding (Saldana, 2016). Pattern coding allowed me to group key findings into smaller themes across all interviews (Miles & Huberman, 1994). I used the short phrases and words which were previously inputted into the Google Sheet to find patterns within each participant's interview. Saldana (2016) suggested using an internet tool such as Wordle ([www.wordle.net](http://www.wordle.net)) to assist in organizing codes and subcodes. This program allows you to cut and paste large amounts of text into a field, which then it analyzes its frequency of word count and displays it with the more frequent words in larger font size (see Figure 2). Therefore, to further check my second cycle of codes I used Wordle. Finally, I was able to look across the participants interviews and notice recurring themes and subthemes.



answers to each question for every participant's drawing. I used the written responses to assist in answering each question. For example, if I could not figure out the components of the image, I looked at the written responses for clarification. Next, I inputted the answers to each question into a Google Sheet, again making sure to place each participant in a new column to help with organization and separating the data. After inputting all data into the Google Sheet, I identified common patterns among the participants' pictures, which involved finding repeated words across the answers to the questions in Appendix D. After evaluating the repeated words, I generated common themes from the images and written responses produced.

The group interview was the last form of data analyzed since it was used as a reflection piece for participating teachers to discuss with their peers their ideas and conceptions regarding classroom space. I followed the same coding process with the group interview as I did with the individual interviews. First, I read through the group interview. Then I printed off the transcript to manually code line by line using In Vivo coding (Saldana, 2016), which codes based on the participants' actual words to understand their perspective. After, I inputted the codes into a Google Sheet. Next, I used those codes from the first cycle to start my second cycle of coding. Again, I used pattern coding (Saldana, 2016) to group the codes into a smaller number of themes.

### **Triangulation into Themes and Subthemes**

To ensure trustworthiness, the triangulation of data from multiple sources including drawings and written responses, interviews, and group interview was conducted to produce robust data for the case study. These codes were then thematically grouped using direct interpretation of data and the codes, four themes emerged. These themes included collaboration, the importance of learning resources, students' seating arrangements in the classroom, and the influence of personal significance.

### *Thematic Codes*

The theme perceived benefits of collaboration within the classroom space included the codes of *peer-interaction* along with *adult and student relationships*. When describing their ideal classroom space, the eight interviewed participants identified the importance of peer-interaction within the classroom space. The code of adult and student relationship were ultimately combined because the interviewees tended to discuss them jointly. I chose to use adult and student relationship versus teacher and student relationship because participants addressed the importance of other adult specialists who also interacted with students in the classroom spaces. Collaboration practices were central to this group of teachers. They provided opportunities for students to interact throughout their drawings and written descriptions and individual interviews.

The second theme, the importance of learning resources included the codes of *manipulatives*, *digital tools*, and *additional materials*. Learning resources were chosen as the theme for these codes because it is an overarching term to encompass different objects in the classroom that are intended to increase students learning. As participants described their ideal classroom space all eight included the need for manipulatives in the classroom to potentially increase student learning. I choose to leave the participants' exact wording of manipulatives as a code to personify their voice. Each participant also included the use of a digital tool in their classroom. For example, Corey included a large interactive whiteboard. Additional materials were included to consolidate different objects also mentioned by the teacher's drawings and written responses, interviews, and group interview into one code. However, all additional materials were included with the goal of increasing students' learning. The additional materials that were described by participants were whiteboards, plants, and lighting.

Additionally, students' seating arrangements in the classroom was found as a theme and included the codes of *location of desks*, *flexible seating options*, and *comfort*. Seating arrangements were chosen as a theme because participants identified both the student's and teacher's placement within the classroom to be a key component to students' learning. All participants acknowledged the importance of desk location in their drawing of an ideal classroom space. During individual interviews, all teachers used the phrase "flexible seating" to describe the materials they drew in their ideal classroom to support students' learning. In addition to flexible seating, teachers' mentioned options and choices for students when it came to seating arrangements; therefore, I combined flexible seating and options to form the code of flexible seating options. Comfort was also mentioned by participants when explaining the choice behind the seating materials. The codes under the theme of seating arrangements were present in the teachers' individual interviews, drawings, written responses, and group interview.

Finally, the influence of personal significance was chosen as a theme for the following codes: *teachers' personal significance* and *experience with past students*. This theme was established because it was an overarching term to describe how teachers perceived and rationalized the design of their ideal classroom space. It also describes how teachers consider students' potential learning, reactions, and engagement level in the classroom space. Each teacher I interviewed reflected that their personal experiences from teaching previous years had influenced their classroom design. Students' considerations were also acknowledged as an influencer in the design process of the classroom space. The codes under the theme of personal significance were present in the teachers' written responses, interviews, and group interview. The codes from the first and second round of coding and themes are presented in Table 2.

**Table 2**

*Example: Progression of Codes*

Sample of participants' text	First round coding	Second round coding	Theme
Um to support their learning will definitely each other, is a big support. A lot of collaborative learning in my classroom so that they can kind of hear it from each other's points of views. Different specialists coming in to help support them with either extensions or remediation and then different technology options were maybe if they like to learn Via reading or seeing different videos and different websites like Kahoots or Nearpods kind of really taking whatever path they need to help best support their learning.	Each other for learning		
	Collaborative learning		
	Hear from one another		
	Specialists to help	Collaborative learning	
	Help support		
	Different technology		The perceived benefits of collaboration
	Options	Options for technology	
	Difference		
	Website's differential		
To make it realistic but still I'm kind of letting kids you know use their voice and choice and have an opportunity to feel allowed to be responsible for their own learning.	Taking whatever path	Support learning	
	Support their learning		The importance of learning resources
	Realistic		
Um yes, the library area and the different seating options, I think, would promote collaboration among the kids.	Kids use their voices	Students' choices	
	Responsible for their learning		Students' seating arrangements in the classroom
	Different seating options	Seating options for collaborations	
I'm definitely personal experience what of what I had in my own classroom and then what I've seen in other colleagues' classrooms. And there's also that social media aspect where you see all of these things, like why can't I have that, too, I want that.	Promote collaboration		
	Personal experience	Personal experience in space	The influence of personal significance
	My own classroom		
	Colleagues' classrooms		
	Social media	Outside influences	
	Why can't I have that		



### **Credibility, Dependability, and Trustworthiness**

To increase the credibility of my findings, I offered participants opportunities to member check both their individual interviews and group interview. According to Lincoln and Guba (1985), member checking, or allowing the participants to review the written transcripts of their recorded interviews, is the most important step in ensuring credibility. Therefore, I asked participants to review written transcripts of their recordings, as well as provide suggestions for adding, removing, or changing original testimony. However, no participants requested to review or modify their transcripts when provided the opportunity.

Also as stated earlier, Yin (2018) declared that in order for a case study to provide robust information, the triangulation of data should occur from multiple sources. In this study, the primary sources of data that were triangulated were individual interviews, the group interview, and drawings with written responses. Creswell (2013) explained that triangulating data occurs when researchers “locate evidence to document a code or theme in different sources of data” (p. 251). Trustworthiness was also increased after the triangulation of data, to provide a detailed understanding of the teachers’ perceptions of classroom space. Next, I verified initial categories and codes through the use of [www.Wordle.net](http://www.Wordle.net), a computer website which highlights key words that participants say repetitively.

Dependability was maintained by using a consistent data collection procedure and analysis for my case study (Yin, 2018). The documentation of all interviews, drawing, communication, and transcripts were stored on a password protected computer as well as a physical file, which was locked in a file cabinet. This ensured that another researcher can repeat

the research procedure and the results are likely to be consistent with the data collected (Merriam & Tisdell, 2016).

### **Ethical Considerations**

IRB approval was accepted before conducting this research study. I obtained approval from all participants as well as informed them of all aspects of the study before having them sign consent forms. I also informed participants of their voluntary participation and if they choose to leave the study and/or not participate there will be no stipulations. Pseudonyms were assigned to protect the participants' identities, and school name, location, and district were changed to ensure participants could not be linked to their classroom assignments. All data was stored in password-protected computer file and hard copies were kept in a locked file drawer in my home office.

### **Conclusion**

In summary, the case study explored teachers' perspectives about redesigned classrooms. This chapter outlined the study's research methodology including the sampling, location of study, and participants. Data collection methods and procedures were introduced and explained. Data analysis along with credibility, dependability, and trustworthiness were also justified. Finally, ethical considerations were addressed. Chapter four will discuss specific themes and subthemes that provide a better understanding of the findings.

## **CHAPTER FOUR**

### **RESULTS AND FINDINGS**

The purpose of this study was to examine teacher's perspectives about redesigned classroom spaces to better understand if and how teachers consider students' perspectives when designing their classroom space. Also, this study evaluated whether teachers consider their students learning needs, engagement levels, and reactions when designing their classrooms. I intended to understand the features (e.g., desks, chairs, plants, technology) teachers perceived to be important in their redesigned classroom spaces. In this chapter, the results and findings are presented in an exploratory case study, and the guiding research questions are addressed. The research questions are as follows:

- 1) What are the features of elementary teachers' conceptualizations of redesigned classroom spaces?
- 2) How do teachers perceive and rationalize the design and features of these classroom spaces?
- 3) How do teachers consider students' potential learning, reactions, and engagement level when designing classroom spaces?

Chapter four is divided into two sections. First, an overview of the context of the study and an overview of the case. The second section presents the study's results and findings that emerged from the data analysis. Four themes were found after the analyses from this study, and they were used to organize the case presentation. The themes that arose throughout the data analysis assisted in addressing the research questions.

#### **Overview of Context**

Teachers are redesigning their classroom spaces from more traditional students-as-empty-vessel methods where students sit in rows of desks facing the front of the room, while the teacher pours or imparts knowledge. Instead, classrooms are being designed to incorporate collaboration, creativity, technology, and self-learning (Freeman et al., 2017). Therefore, it is important to understand and examine the teachers' perspectives about redesigned classroom spaces to better understand if teachers consider students' perspectives and necessities to learning. As redesigned classroom space is a key term in this research study, it was necessary to define this term and situate the present study in the field. For this study, the term *redesigned classroom space* will be used to describe classrooms that have been designed in nontraditional ways. I choose to use the term *redesigned classroom space* to emphasize the change beyond the classroom's four walls to an adaptable room designed for students and teachers to learn. The study was conducted at Eastland Elementary school (Pseudonym), which accommodates students from Pre-Kindergarten (Pre-K) thru 5<sup>th</sup> grade. Specifically, this school is a Title I school, which means that a high percentage of the school population are from low-income families. Additional information about the breakdown of the student body during the time of this study is shown below (Table 3).

**Table 3**

*Enrollment – Eastland Public School*

Subgroup	Percent of Students
American Indian	Less than 1%
Asian	4.8%
Black	38.7%
Hispanic	14.5%
Native Hawaiian	Less than 1%

White	25.9%
Multiple Races	15.8%
Students with Disabilities	13.0%
English Learners	5.4%
Economically Disadvantaged	81.7%

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*Note.* This information was collected from the Virginia Department of Education School Quality Profiles, 2019.

I collected data in the form of drawings with written responses, individual interviews, and a focus group. I collected hand-drawn and computer-enhanced drawings of participants' ideal classroom spaces. The eight participants also provided written responses to four questions to assist with the understanding of their drawing. Then using their drawing of an ideal classroom as a communication tool, I interviewed each participant individually. Next, I conducted a group interview with four teachers, who were previously interviewed independently. First, I coded the data using In Vivo codes, and then during the second cycle coding I used pattern coding (Saldana, 2016). An evaluation of the drawings consisted of finding similar patterns among all participants' pictures. To analyze and find common themes, I employed a modification of Rose's (2001) critical visual methodological framework to focus more specifically on the drawing itself. Ultimately, the codes from the drawings and written responses, independent interviews, and group interview were triangulated into the following themes: collaboration, the relevance of learning resources, students' seating arrangements in the classroom, and the influence of personal significance. Below I present a discussion of each of the primary themes using teachers' voices, as well as transcriptions from their drawings and written responses. In the description that

follows, I will refer to the participants by an assigned pseudonym, which I assigned. The same name was used to describe and discuss participants' drawings, written responses, independent interviews, and group interview. Table 4 below shows a breakdown of themes and subthemes.

**Table 4**

*Breakdown of Themes and Subthemes*

Theme	Subtheme
The Perceived Benefits of Collaboration	Peer-interaction
	Adult and student relationships
The Importance of Learning Resources	Manipulatives
	Digital tools
	Additional materials
Students' Seating Arrangements in the Classroom	Location of desks
	Flexible seating options
	Comfort
The Influence of Personal Significance	Teachers' personal experience
	Experience with past students

An explanation of the themes and subsequent subthemes are outlined below.

### **Overview of Case**

A case study (Yin, 2018) was used in this study to make sense of, or interpret, the phenomenon of how teachers perceive and rationalize redesigned classroom spaces. The case that was evaluated was elementary classroom teachers. Furthermore, the case study was bounded by the fact that participants must be (a) elementary teachers, (b) teaching at Eastland Elementary school, and (c) utilize redesigned classroom spaces. Due to Covid-19 safety regulations,

classrooms have experienced design changes, (Yale School of Public Health, 2021) therefore, if teachers had utilized redesigned classroom spaces in the past, they were able to participate.

Participants were first selected by purposeful sampling and then snowball sampling (Merriam & Tisdell, 2016; Patton, 2014). A total of eight participants participated in the individual interview. To protect participants' confidentiality teachers were given pseudonyms (See table 1). Data was collected from one 1<sup>st</sup> grade teacher, two 2<sup>nd</sup> grade teachers, three 4<sup>th</sup> grade teachers, and two 5<sup>th</sup> grade teachers for a total of eight participants who completed the drawing and written responses. Third grade teachers were eliminated from the study to reduce bias since I work closely with them every day. Additionally, those eight participants also completed independent interviews. Even though all participants who were independently interviewed were contacted, only four out of the eight original participants attended the group interview. Information on each participant can be summarized in Chapter 3 (Table 1).

## **Results by Themes**

### **Theme 1: Perceived Benefits of Collaboration**

The perceived benefits of collaboration within the classroom space emerged as a major theme in data analysis. In particular, peer-interaction and relationships, both peer to peer and adult to peer, were identified as important in teachers' conceptions of ideal classroom space. Multiple data sources, including drawings, written descriptions and interviews, indicated the perceived benefit of a variety of collaboration practices across participants. For example, Esther described a typical student in her classroom space has the ability to "collaborate with one another and learn from each other" (written statement). Another participant, Hebba, echoed this sentiment and described "I like for you to work in groups of three or four kids considering a

place and work together” (interview, 2/18/21). The following sub-sections highlight different aspects of collaboration as they emerged from data analysis.

### ***Peer-Interaction***

The merged analysis of the data from multiple sources (drawings, written responses, interviews, and group interview) identified peer-interaction as an important component for teachers when designing their ideal classroom space to increase student learning. The term “peer-interaction” was used to describe the interplay and communication between students in the classroom space. Teachers also used peer-interaction to rationalize the features in the classroom to promote social development or interaction between students. Barbara explained:

I think it would be the partner space, just encouraging them to work together and then eventually throughout the year, once they’ve got comfortable with the idea of what they’re doing, they try to... find a partner today you’ve never worked with (interview, 2/3/21).

The partner space, ultimately an open space in the classroom with no furniture, was where Barbara would encourage students to work together and collaborate. Similarly, Corey stated she would also encourage students to create their own groups, however, at the beginning of the year, she would use the designated areas in the room to place groups of students together “so they can work together and interact” (interview, 2/3/21). Furthermore, Flora explained the peer tutoring section of her classroom space, a large table, was intended to promote students learning from one another and assist with developing their own lessons collaboratively. According to these teachers, the classroom space should offer students opportunities to interact and collaborate in group work to learn from one another.



Five out of the eight participants stated they included the groups of desks and other furniture in the classroom to promote interaction between students. Flora described, “the desks here are arranged in groups to promote group work, problem-solving, communication, and collaboration” (interview, 2/9/21). She believed that after placing students in groups of four, her students would interact and freely communicate with one another to increase learning. Another teacher, Anna, acknowledged her large carpet as a place for students to interact and build relationships within the classroom. Additionally, Esther described her inclusion of a library section as a “coffee shop experience” (interview, 2/3/21) where students can sit and chat about their work together. Such statements were made consistently throughout to highlight the emphasis teachers placed on collaboration in the classroom space and their rationalization for their design.

Subsequently, when explaining in the written response question, what does a typical student do in this space, Devan stated, “students will get to learn with peers” (written statement). She explained further in her interview by describing peer collaboration as support in place to increase students’ learning. She noted, “having the kids put together and collaborating, that’s kind of like me teaching. I love for them to work together whenever possible. And just be together” (interview, 2/15/21). Devan perceived proximity to peers in the classroom as an accommodation to increase learning. Esther had a similar response when she explained peers as a support system by saying, “to support their learning, well definitely each other, is a big support. [I support] a lot of collaborative learning in my classroom so that they can kind of hear it from each other’s points of view” (interview, 2/3/21). Collaboration was consistently emphasized as a key support in increasing students’ knowledge and learning. Another collaboration piece that was mentioned was the consistent relationship between adults in the classroom and students.

### *Adult and Student Relationships*

Collaboration between students and adults was also acknowledged by teachers as a rationalization for their classroom design. Also, teachers considered this relationship with their students when designing their classroom spaces as an important aspect of their learning. For example, Corey acknowledged how she designed her classroom where she can easily see all her students and be close in proximity to reach them. She continued to explain how:

“Support is going to come from staff, we need a guidance counselor. We need a nurse.

And we need a place where kids can go when they’re in the middle of a meltdown and sit with somebody and just bring themselves back down” (interview, 2/3/21).

This statement demonstrates Corey’s acknowledgment of how valuable adult and student relationships can be when designing the classroom space. Furthermore, Devan explained the need for multiple kidney tables so students would have space to work with specialists in the room and create equity:

So like I said, having multiple kidney tables so that they don’t feel like, just because I’m working with the Gifted Resource Teacher (GRT) or the Special Education teacher, whoever, that I have to leave the room, you know, some kids don’t like that. They like to stay in the classroom. So having multiple workspaces for everybody to be able to work within the same classroom community” (interview, 2/15/21).

The idea regarding how essential collaboration between adults, other than the classroom teacher, and students in the classroom space was seen throughout interviews and written responses.

Additionally, Flora discussed during her interview how she wanted her class to have a sense of community and close relationships with one another. She said, “I like them to feel like a big family, and because we spend most of the time together. So I like to develop that culture in

my classroom that we're here" (interview, 2/9/21). She also went on to say she wants her students to feel valued, loved, and heard:

We'll have family meetings. If there was a problem that erupted, I would stop everything (in) class, (and say) meeting time right here on the carpet. Let's talk about it. Sometimes we even do like a little jury thing too, so they could (or) can have the judges, the jury, and the two lawyers to figure out what we should do" (interview, 2/9/21).

Flora described the classroom as a family and perceived the space as a community where relationships are built between student's peers and teachers. Participants continued to comment on the importance of the adult and student relationship in the classroom, which opens communication and builds respect.

Another common relationship ideal that was mentioned by three participants was the inclusion of social and emotional learning spaces. Social and Emotional Learning (SEL) are interventions put into place to increase students' social-emotional ability of self-awareness, self-management, relationship skills, decision making, and social awareness by providing students a safe and caring environment to learn (Humphrey, et al., 2016). For example, Anna stated in her interview that she drew the whole group carpet in the front of the room to support social-emotional lessons. She explained further by saying, "being able to have that space where everyone can better feel welcome, that definitely is something that I think social, emotional learning and like relationship development [should occur]" (interview, 2/13/21). Anna evaluated the carpet area as an open space where students can build on their SEL needs. This insight is valuable because teachers seemed to value spaces that meet their student's emotional wellbeing.

Furthermore, in her written response regarding the specific materials she drew in her ideal classroom space, Devan said the inclusion of flexible seating was to "meet SEL needs

(written statement).” She elaborated more in her interview when she described the additional materials in her room to support SEL, “we have very low socio-economic [status students at Eastland elementary, which means they live in a low economic household] and a big majority of African Americans. So being able to reflect their culture in the classroom, whether it’s by books, or um, by activities or by providing them with resources that they may not have at home...books about people that look like them” (interview, 2/25/21). According to Devan, differential books showing equity are supporting student’s SEL. Another teacher, Flora, explained she used a peer tutoring program in her classroom to support students’ SEL needs and increase “students’ learning and self-esteem” (interview 2/9/21) which she found, “that the scores really went up higher. There was a great impact with it” (2/9/21). These statements regarding SEL were highlighted that the teachers were considering students’ emotional and emotional needs when designing the classroom space.

## **Theme 2: The Importance of Learning Resources**

The importance of learning resources was another major theme found after data analysis. Specifically, teachers emphasized manipulatives, digital tools, and additional materials as critical amenities to increase students learning, engagement, and provide equity in the classroom space. Through the use of multiple data sources (drawings, written responses, interviews, and group interview) participants identified learning resources as an important accommodation in classroom spaces. For example, Corey included a large interactive whiteboard in her drawing. She explained, “the board being interactive [so] more than one child can be up there at a time. And once again being big, even the kids [who are] short, they can still get to it” (interview, 2/3/21). Similarly, Esther discussed the reasoning behind her classroom learning resources as:

I think that a lot of the kids don't have a lot of these opportunities at home, especially the technology aspect of it, and maybe some books, and having a big library section. I think where we're located in the district and kind of our demographic the kids in our school don't see much of this, so providing it in the classrooms [is] important for them to be exposed to it" (interview, 2/3/21).

Participants continuously addressed similar perspectives. The following sub-sections highlight different aspects to the relevance of learning resources as they emerged from data analysis.

### ***Manipulatives***

The term manipulatives can be described as physical objects that students and teachers use to support their learning using engaging hands-on tools. These tools come in a variety of forms including store-bought or homemade objects (Boggan et al., 2010). All eight teachers included manipulatives in their drawings of ideal classroom spaces. More specifically, all teachers identified the reason for including manipulatives was to increase students' knowledge of math, science, and reading. Two teachers included the use of manipulatives in other content areas. Such as, Devan who added in her written response to explain the kind of tools the students and teachers use, mentioned science models, experiment supplies, math manipulatives, and "interactive stuff for all contents, not just math or a little bit for science" (written statement).

Devan elaborated more in her interview by saying:

I would love to have, like, when we talk about cells, I would love to have an example of a like animal cell and plant cell that the kids can manipulate and kind of really see the, um, parts of the cell rather and just a drawing on a picture... So, kind of like bringing science to life with actual models that they can manipulate.

Devan perceived the importance of hands-on manipulatives as beneficial in order to assist students with comprehension of unknown objectives. These comments were shared among many participants when they described their manipulatives in the classroom space.

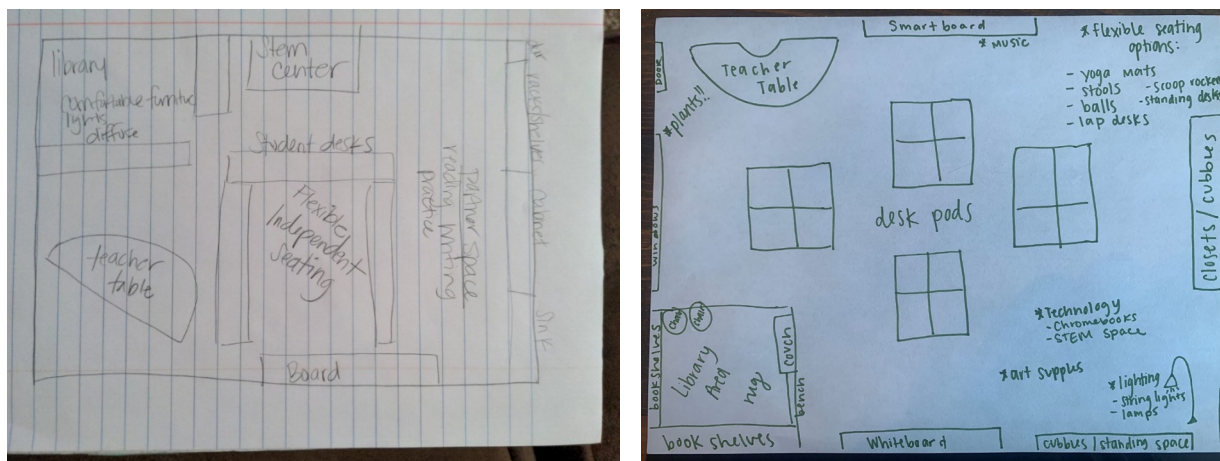
Teachers repeatedly mentioned manipulates such as Science, Technology, Engineering, and Mathematics (STEM) or science and math centers, art materials, and books to increase students' learning. Two teachers drew STEM centers or spaces in their ideal classroom drawing (see Figure 3). One Participant, Esther explained the STEM space was included for students' interests because a student might be motivated to learn through STEM, so the space allows them the opportunity to show their learning in multiple ways. Research shows STEM spaces have been found to increase student engagement and curiosity to learn, while also displaying richer discussions in the classroom space (Tippett & Milford, 2017). When asked to explain what kind of materials would be found in her STEM center, Barbara expressed her knowledge of other manipulatives she has seen other teachers use, but explained the obstacles of time restraints in the classroom:

I know there's been a thing with like Legos. I have not had the chance to try with my class. I just haven't had a class where we've had a time slot able to explore that, just because typically in my classroom environment is very behind on things. So it's hard to squeeze it in (interview, 2/3/21).

Therefore, even though Barbara acknowledged the possible advantages of manipulatives, such as Legos, she has not implemented such manipulatives in her classroom design because she has not found the time.

### **Figure 3**

*Example Drawings of Participant's Inclusion of STEM Spaces*



*Note.* Left picture: This drawing was made by Barbara. Right picture: This drawing was made by Esther. Both show STEM centers or spaces.

The inclusion of art materials in their classroom space was mentioned by three teachers as a way of providing students opportunities to represent their learning. Esther included art supplies in her drawing and explained that her classroom accommodates students' needs and interests because if she has an artistic student they can "show their understanding through an art project" (written statement). She went on to explain "there's that opportunity, some art supplies, whether you want to show your learning through a poster or something like that... individualize how they want to show their learning" (interview, 2/3/21). Esther allowed students the option to express their learning through multiple outlets, which could potentially increase their engagement level and accurately display their understanding. Additionally, Barbara also incorporated drawing materials for students who have the urge to write or draw:

Doing things...that [students] get to experience, like art, because I have so many that like to draw and I feel like there should be a part of their day, where they can do that and do what they want to do versus when they go to art" (interview, 2/3/21).

Moreover, Barbara also explained including art into her classroom as an engaging activity that students enjoy. Another participant, Gloria discussed her design of the creation station in her

classroom design by explaining “I want the kids to be able to make things and show them off. I know sometimes that’s not always what they have going on at home” (interview, 2/8/21). The creation station would also provide equity in the classroom and allow students differential learning opportunities.

All eight participants incorporated books in their classroom spaces to support students’ reading, which would promote students’ achievement. Furthermore, participants also mentioned books were included to stimulate students’ interests in activities. I choose to incorporate books as a manipulative because teachers expressed their students’ increased engagement and enjoyment to learn when using the books in their space. For instance, Barbara expressed her thoughts behind providing students with chapter books, nonfiction books, and fiction books without separating them into individual reading levels. She explained “I don’t feel like kids pick by level so mine are by interest instead. I’ve just seen the students enjoy it more” (interview 2/3/21). Gloria stated during her interview that she picks certain books based on the students’ interests “I do try to get some, if I know ahead of time, we really like dinosaurs, things like that, then we’re going to pump them [students] full with dinosaurs” (interview, 2/8/21). A common goal found among participants was if students were interested in their manipulatives, they would more likely be engaged, which would lead to an increase in their learning and understanding. Agreeably, Renninger & Hidi (2015) declared that when a person is interested in a topic the result is an increase in the possibility of achievement.

### ***Digital Tools***

Each of the eight participants considered including digital tools as a source for students learning in their written responses and interviews. Four participants included digital tools in their drawings of ideal classroom space. The digital tools that were mentioned by teachers included



Chromebooks, Google slides, and ViewSonic Boards. Devan, specifically mentioned “I would have more than one ViewSonic board. That way I can have one when I’m doing small group, but also the kids or another teacher could have another board for them to be interactive” (interview, 2/15/21). Throughout participants’ conversations, a common sentiment was found and discussed.

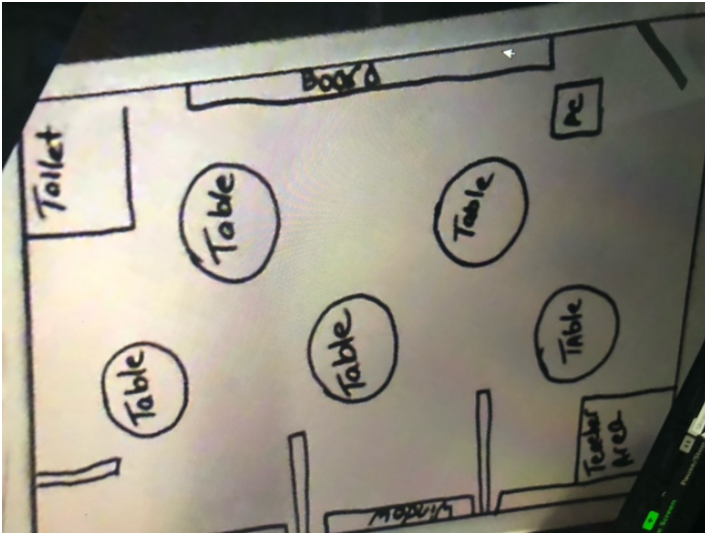
Numerous digital tools were also mentioned by teachers when explaining learning supports that are in place for students. For example, Corey identified laptops and individual headphones as support in place for students to help eliminate distractive sounds between students. She also included a “PC” on her classroom drawing (see Figure 4), which indicated this was her personal computer and it was not to be shared with students. This finding was notable because it showed her possession of the space and how digital tools can also be limited by the teacher. On the other hand, Esther shared examples of how numerous digital tools can be used to support her students:

Different technology options where maybe if they like to learn via reading or seeing different videos and different websites like Kahoot’s or Nearpod’s, kind of really taking whatever path they need to help best support their learning (interview, 2/3/21).

Incorporating digital tools was seen as a vital resource to boost students’ learning in Esther’s classroom space.

#### **Figure 4**

*Example of Drawing*



*Note.* Participant Corey included a Personal Computer (PC) in her classroom space.

Similarly, in her interview, Devan also said, “having access to technology” (interview, 2/15/21) would support her students’ learning. Although she did not specify how access to technology would increase her students learning, she did mention students should be provided “with resources that they may not have at home, um, whether that’s technology. So let’s have lots of technology in the classroom” (interview, 2/15/21). Digital tools were repetitively included in the classroom’s spaces by all participants to possibly increase students learning. Previous research has identified that digital tools encourage students to share their knowledge with their peers and help them monitor their own learning (Rands & Gansemer-Topf, 2017).

One teacher, Esther, mentioned the addition of a green screen in her classroom to allow students an opportunity to individualize their learning, “the green screen if they wanted to show their learning in sort of a presentation, using a green screen and talking about something behind them” (interview 2/3/21). She continued to explain by saying “having their Chromebook if they wanted to do something like Google slide so really individualize how they want to show their learning.” Individualization in learning is important because has been shown to tailor to the

students' needs and increase achievement (Connor, et. al., 2018). Subsequently, participants Anne, Corey, and Devan also acknowledged technology as a way to provide students opportunities to individualize their learning in the classroom. Therefore, including digital tools in their classroom design was perceived by teachers as a way to provide students with individualized learning and increase engagement.

### ***Additional Materials***

After data analysis, additional materials, also considered manipulatives, were specified by teachers in their drawings and written descriptions, individual interviews, and group interview. The additional materials that were discussed by teachers were whiteboards, lighting, and plants. For instance, after asking the four participants in the group interview whether they would adapt their drawings from their original design now that they had time to reflect, Devan discussed she would add more whiteboards around the room. Specifically, she said:

I think I would add more like stations with like whiteboards, or something like that so like when we do exemplars, they can actually write their thinking down and not have to use like so much paper. Just to cut down on paper, so maybe like on top of, in front of my cabinet where they used to put their backpacks. I [will] have like big whiteboards just kind of like glued on them, or whatever, so we add a couple more of those around the room. To still keep distance, but still cooperate" (group interview).

Therefore, Devan would use whiteboards as a tool for students to show their learning. Similarly, Rands and Gansemer-Topt (2017) believed whiteboards were able to help promote higher thinking skills and integrated group discussions into the space.

Whiteboards were also mentioned by Corey and Flora in the individual interviews. Corey explained the use of whiteboards was to help students individualize their learning, but she did not



*Note.* Flora included two Dry Erase boards behind her small group tables to provide reading instruction.

Another item mentioned after data analysis by five participants in their individual interviews and drawings was lighting. Anna, Corey, and Gloria mentioned in their interviews how natural lighting was an important addition to their classroom spaces, which is consistent with Barrett and Zhang's (2012) findings. One participant recognized certain lighting in the classroom as a component of students' emotional wellbeing. "I've got three large windows, because I love sunlight and it's good for you," declared Corey when explaining her drawing. She interpreted further by saying, "The first thing that came to my mind, windows. Like I said, the sunshine... Sunshine makes the room warmer. Physically warmer so it's, it's good in that it keeps them from feeling low." This statement highlights how teachers are considering students' emotions and feelings when they are designing the classroom space.

Furthermore, participants included specific lighting specifications based on their personal perspectives. For instance, Anna wrote on her drawing (see Appendix E) "as much natural light as possible, no fluorescent lighting" (interview, 2/13/21). She also included in her written response, "also nonfluorescent lighting" (written statement). Anna then explained that her current classroom only has two windows, but ultimately, she would like a lot more windows to add natural light. Therefore, Anna was envisioning more natural light in her ideal classroom because she does not particularly like the fluorescent lights she has currently. Similarly, Gloria explained "I really love natural lighting. So if I could have windows all the way around or as many as possible, um, I would prefer that over harsh, overhead lighting" (interview, 2/8/21). Another participant Esther included in her drawing and written response "various lighting

options” (drawing) such as string lights, fluorescent covers, and lots of natural light from windows. Even though Tanner (2009) found natural, daylighting as a significant factor in increasing Science and Reading scores, these additions to the classroom were not specified by participants as to whether they were a result of what students might appreciate or if they were adapted in hopes of increased students’ success. Notably, Barbara stated “my students never liked having the lights on, so they have access to a flashlight, and we’ve had lanterns.” This statement emphasized Barbara’s past students’ perspectives as to why she chose to use no overhead lighting. Overall, participants chose to include numerous lighting options based on their perspectives and past students’ preferences.

Finally, the inclusion of plants around the classroom space to increase life and air quality was noted as a final additional material. I chose to label plants as a learning resource because teachers recognized this object as a possible learning tool. Also, plants have been shown to influence the air quality in the room, which affects students’ learning (Barrett & Zhang, 2012). Esther stated in her written response that plants were incorporated to bring life to the classroom. She further expressed that “plants are important to me because, you know, bring some life in there” (interview, 2/3/21). However, she never disclosed how this addition would benefit her students’ necessities in the classroom. Additionally, Gloria shared this belief by saying her room would have “an area with things where we can have plants growing, fish, living things, things like that, telescopes, things that they don’t really get exposed to a lot” (interview, 2/8/21). This quote highlights how Gloria was considering her personal perspective while also acknowledging the students’ needs and supports as she was designing the classroom space. Additionally, Corey commented how the idea of adding plants to the classroom might seem odd to others but can make the room feel more like home when she said “and on the windowsills, this is gonna sound

crazy but they're going to have plants and things like that to give it a more homey atmosphere.” Therefore, according to these teachers’ plants should be added to the classroom space to expose students to otherwise overlooked materials and to create a more comfortable atmosphere, while also encompassing the teachers’ perspective.

### **Theme 3: Student Seating Arrangements in the Classroom**

Student seating arrangements in the classroom emerged as a major theme in data analysis. In particular, students’ desks arranged in groups, both flexible seating and comfortable seating, were identified as important in teachers’ conceptions of ideal classroom space. Data analysis indicated the perceived benefit of a variety of students’ seating arrangements across participants. For example, Anna described a typical student in her classroom space has the ability to have “flexible seating choices that promote comfort, learning, and community building” (written statement). Another participant, Hebba, reflected this sentiment and described, “I like students to feel comfortable in their surroundings. I also like for them to have a choice, but I like for them to have a space for them to go if they cannot handle that [seating] choice (written statement). The following sub-sections highlight different aspects of students’ seating arrangements in the classroom as they emerged from data analysis.

#### ***Location of Desks***

All teachers included student desks or tables in their drawings, however, the arrangement or location of the desks in the classroom was different amongst teachers. Teachers rationalized their design for many purposes. For instance, Barbara explained during her interview, “I like my student desks as being in a U shape in front of the board because then everyone can see it” (interview, 2/3/21). Therefore, proximity to the board was perceived to be important to Barbara. The other participants placed the student desks in the middle of the room in groups of three

through six students. Corey was the only teacher who used circle tables in her drawing and explained “the kids are going to be grouped to [a] table, so maybe three or four [students] at a table” (interview, 2/3/21). Corey did not specify why she chose to group students to a circle table, but she did mention she wanted to be able to touch all her students. Overall, the placement of the student desks was considered based on possibly grouping students in the middle of the room to allow teachers easy access to all students.

Participants Devan and Esther both referred to the group arrangements in their drawings and interviews as “pods.” Esther stated, “I still like to have desk pods, desk pods in my classroom just for whole group learning. I kinda like everyone to be seating in the same area” (2/15/21). Other participants mentioned the idea of desks as a place to have whole group lessons, personal areas for students, or break time by using the term “home base.” For example, Hebba explained:

I like having desks for every student. I like them to kind of have a home base and a place for me to say hey, you know what, you need a break from the classroom, go to your desk, and work (interview, 2/15/21).

Sharing similar beliefs was Barbara when she described her preference “personally, I like them to sit at a desk or what we’re doing, like whole group instruction, and then they can be flexible, independent” (interview, 2/3/21). These participants rationalized student desks as a place for whole group learning, where students can be seated together in order for the teacher to communicate knowledge to one whole group, which allows students to hear not only their partner’s thoughts but the entire class (Smetana & Bell, 2014).

Desks arranged in groups were also mentioned by participants to increase collaboration in the classroom, particularly in peer interaction and between teachers and students. For



inference, Flora discussed the groups of four desk arrangement helps to promote group work, problem-solving, communication, and collaboration. She went on to mention:

The arrangement of the desks also helps me to have room to flow freely throughout the room, offering help and quick descriptive feedback to the students. This room arrangement also helps me to build relationships and trust so that the children will feel comfortable and safe (written statement).

Devan stated in her written response that pods of desks help students collaborate and allow students to be “close together with their classmates” (interview, 2/15/21). The participants perceived justification was supported by findings by Adedokun et. al. (2017), which stated grouped tables increased collaboration amongst teachers and students and their peers.

It is also important to acknowledge the existence of a teacher table, desk, or area in the drawings, especially since six out of eight participants included it in their design of ideal classroom space. For instance, Corey stated in the individual interview that she does not have a “real desk” (interview, 2/3/21) because she is “walking around all the time” (interview, 2/3/21). Instead, in her drawing (see Appendix G), she placed the “teacher area” (drawing) in the corner of the room and interpreted it in her interview as, “this is my area” (interview, 2/3/21). Her indication of “my area” suggests students are not allowed to enter this area and it is only used by herself. Additionally, Anna used a circle table to represent her teacher’s table in her drawing, however, she did not mention an explanation or her reasoning behind this table during the interview. These statements expressed the participants’ perspectives about classroom spaces and highlighted the teachers’ consideration of themselves in the space.

Four participants included horseshoe/U shaped teacher desks or tables in their drawings and placed them in the corners of the room facing outwards. These desks are interesting because

they have the ability for students to work in groups around the outside edges while the teacher sits in the middle of the U. In fact, Rogers, (2020) found that students selected the horseshoe/U shaped desk as their favorite seating position because it allowed them to participate more in the classroom. One teacher, for example, Esther placed her horseshoe/U shaped teacher table in the corner of the room, facing outward and specified her consideration of design was:

The teacher table is like off to the side and not the center of attention is a big part of the idea for me where the teacher is not like, it's not a lecture-based classroom, or the teacher is not standing in front of the students and talking at them, but it's more of a student-centered classroom. And I think that appears in my drawing where it's, you know, the teachers just a small portion of it" (interview, 2/3/21).

Therefore, because Esther used a horseshoe/U shaped teacher table and placed it off to the side she was found to perceive the classroom space as more student-centered. Another participant, Gloria, included two personal horseshoe-shaped/U shaped desks, both in the corners of the room facing outward (see Figure 6). She explained the need for two teacher tables as:

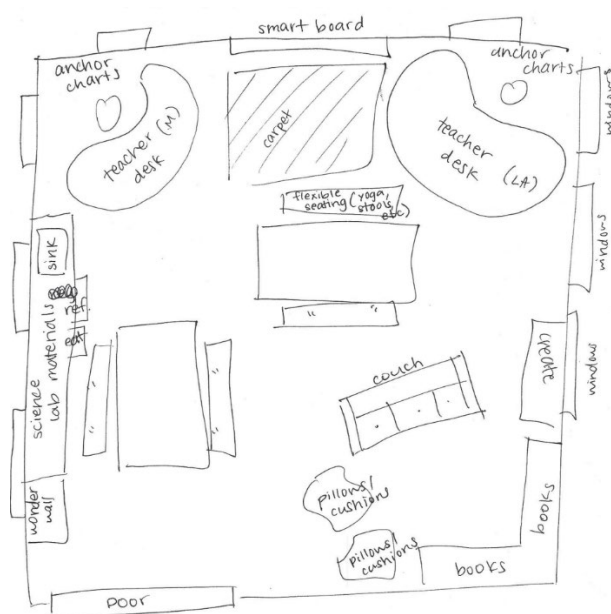
I know we're taught to kind of overlap as much as possible, but for me, at least thinking of things, it's really hard for me to teach math if my language arts materials are out. So having those different areas really helps me focus more and go more in-depth still while trying to overlap at least subject matter (interview, 2/8/21).

Even though content areas are known to be interconnected in elementary teaching Gloria explained this was a struggle for her. One way she overcomes this obstacle was to think of reading and math as two separate subjects and organize those materials in separate locations. Therefore, differentiating each desk for the content taught, one for reading and the other for math, this participant disclosed her design was for her personal organization. She expressed

further by stating, “I know some people don’t have teacher desks. I like teacher desks. I do like kind of more teacher-led instruction at least to begin the unit” (interview, 2/8/21). This evidence suggests that teachers rationalize the location of students’ desks as a place for whole group learning along with collaboration with teachers and peers. They also perceive their personal desk as an important feature in the classroom space for their personal selves.

**Figure 6**

*Two Horseshoe/U shaped Teacher Tables*



*Note.* Gloria’s inclusion of two horseshoe/U shaped teacher desks. One labeled M for math and the other labeled LA for language arts.

***Flexible Seating Options***

During the independent interviews, the term “flexible seating” was mentioned by six of the eight participants. Flexible seating means incorporating multiple seating options for students that provide them with more opportunities to move and physically change positions (Schilling & Schwartz, 2004). In addition, the teachers also incorporated the word “flexible seating” into their written responses to explain the kinds of materials they would have in their ideal classroom.

Participants included examples of flexible seating options that would be seen in their ideal classrooms such as yoga balls, wobble stools, pillows, couch, rugs, bouncy bands, surf desks, scoop rockers, lap desks, standing desks, and stools. Teachers argued the inclusion of flexible seating options was to give students seating options during independent work. For instance, in her written response, Devan explained materials she drew were, “flexible seating for students to work independently.”

Interviewees also discussed how incorporating flexible seating options in their classrooms can influence students’ learning. Esther stated in her written response, “My ideal classroom has lots of flexible seating options for students who may learn better somewhere other than a desk. Flexible seating in my classroom would promote collaboration for students throughout the day” (interview, 2/3/21). She elaborated by explaining why she included flexible seating in her classroom:

Not every kid learns one way, so providing all different options, so they can choose and even test out which way they like learning best. I know a lot of kids like just see all the fun seating options and they want to sit on them, but then might quickly realize that this isn’t the best one for them. And so kind of a bunch of different opportunities to allow them to figure out what works best for them (interview, 2/3/21).

Movement was another consideration that was mentioned by participants when describing the flexible seating options in the classroom space. For example, Corey stated:

There’s going to be a lot of comfortable seating, comfortable seating for both sitting at the table and sitting on the floor so that they [students] can move back and forth. Um, the lap desks that I got from Donors Choose would be used that they call them the surfer desks, it’s shaped like this [shows a Z with hands]. The kid sits on the bottom of the Z

and then the arm comes up and the desk is here, and any size kid can fit in it (interview, 2/3/21).

Additionally, Anna stated in her interview that she included flexible seating choices like bouncy bands, wiggle seats, couches, gaming chairs, yoga mats, and bike peddles to help students who are more active and need to move. She continued to state how flexible seating options can supports students in their learning:

There is the support to have them choose, [seating] what's the best choice for their learning. There's a bunch of different [flexible seating] options because obviously if you pick one then hopefully if it isn't successful, then they're able to pick a different choice, a different day to figure out what is their best choice for their learning style and being able to stay focused and complete their work and learn from wherever they're picking (interview, 2/13/21).

Therefore, multiple participants echoed the idea of flexible seating options as a way to provide students with opportunities to increase learning and allow movement around the classroom.

On the other hand, Hebba stated that even though she would provide different flexible seating options, she prefers to use desks for whole group lessons and collaborative learning opportunities. For example, she said, "I may have like one set place if you're doing task cards then you're going to be by the rug by me, otherwise it's if you're doing your independent work, then you can sit how you want to sit as long as you're working" (interview, 2/18/21). Similarly, Corey also discussed her dislike of flexible seating all day long:

I've always had a flexible, independent area just because personally I like them to sit at a desk or what we're doing, like a whole group instruction, and then they can be flexible, independently. I've never dove into the whole idea of flexible seating all day long. I just

think they're a little too young. They're just not mature enough to do it. So, I like flexible seating in the middle. They can sit there and do their independent work and be comfortable.

According to these two participants, flexible seating has its advantages in the classroom space, but the teachers control the options and times which they find acceptable to use. Two different opinions arose on flexible seating. Either teachers welcomed flexible seating in their spaces every day and all day or teachers choose to minimize flexible seating choices in their classroom based on the specific learning instruction. Teachers' perceptions regarding the dislike of flexible seating all day long stems from their previous teaching experience and their personal beliefs of students, which has the potential to influence students learning.

### ***Comfort***

Comfort was another subtheme found after data analysis regarding students' seating arrangement in the classroom. More specifically, the term "comfort" indicated seating options that allow the students to feel more physically comfortable in the classroom to learn. Participants explained comfort in the classroom was important because it would lead to students' increase in knowledge and enjoyment. For example, Gloria stated, "I think that a lot of kiddos, the flexible seating kind of helps just if they're comfortable physically, they're going to be more comfortable mentally and open to learning" (interview, 2/8/21). This statement is supported by research from Morrone et. al. (2014) when researchers found that comfortable seating was appreciated by students and viewed as making the environment more conducive to learning because the room was less stressful and provided a cozy atmosphere. Students also stated the comfortable seating helped them stay awake and pay closer attention.

Moreover, Gloria also acknowledged her intention in the design of her ideal classroom was comfort and a feeling of more at home. Barbara expressed she wanted her students to be comfortable and relaxed when completing work. She wrote in her written response, “comfortable furniture to promote a relaxing component to reading. The library is for their independent reading or possible calm down area if needed” (written statement). Additionally, Corey also interpreted the classroom space as a place for comfort for students to learning when she stated, “My belief, it’s got to be, a place that is physically and emotionally comfortable. One kids don’t do well when they’re not comfortable.” This same teacher explained how she uses music in her classroom space to make the students feel comfortable and more at ease:

I encourage the kids to bop along with the music...One of my kids asked for our 15-minute recess, can we just have a dance party? Sure, yeah some of the kids were too shy. Right, so they just sat and watched, but some of them got up and really just turned loose. And we, were relaxed. It wasn’t, you have to learn this right now moment, it was a just be a kid moment (interview, 2/3/21).

Many teachers identified an area of the room as a place that would benefit from comfortable seating arrangements, but also increase relaxation. For example, Esther stated, “a library area that just has some comfortable [seating] options with lots and lots of books, just a different little comfortable corner for that.” In Anna’s drawing (see Appendix E), she included a “comfy couch area” (drawing) located in her library corner. She explained in her interview by saying:

I did add like a calm down corner or relaxation session, yoga mat, things like that, or especially if they’re having a harder time or even if it could be built into the day where

we could consistently use things like yoga or relaxation or even mindful meditation (interview, 2/13/21).

Indeed, participants conceptualized students' seating arrangements as comfortable options to increase relaxation and their potential to learn.

#### **Theme 4: The Influence of Personal Significance**

A final theme focused on the influence of personal significance on the design of their classroom spaces. Specifically, teachers' personal experience and their experience with past students were found to be important in teachers' perceived rationalization of ideal classroom space. For instance, Devan explained her source for the drawing as "it was more personal experience. I used to have pods in my classroom before Covid" (interview, 2/15/21). Anne also mirrored this sentiment and described her source as "I think from experience in my class in the last few years, some of these flexible seating styles that are located in my drawing had a lot to do with like, oh the kids were really drawn towards [them]" (interview, 2/13/21). In the following sub-sections, I describe the different aspects of the influence of personal significance that emerged after data analysis.

##### ***Teachers' Personal Experience***

All eight participants expressed how their experience as a teacher in past years had influenced their design decision of ideal classroom space. For example, Anne explained the source behind her drawing was from "firsthand knowledge about what has and hasn't worked in the classroom and how to be able to adapt it for what my student's needs are because obviously, it's not going to be a one size fits all classroom depending on them" (interview, 2/13/21). Furthermore, Corey explained the source of her classroom drawing was from her past personal experience as a teacher in another state:



So I had a classroom that I had when I was in New York, that had humongous windows, it was an old school. And the windows were huge, they went from maybe radiator height to the ceiling. So that room constantly had light in it, and I could open the windows and cross vent the room and we could get fresh air all that good stuff. And it was a big room. Once again, old building. There was space, the kids could move around, and that was when I was teaching Kindergarten. It was just so, they needed that room. So that's where I draw it from (interview, 2/3/21).

Specifically, Corey's memories and positive experiences of fresh air, space, and movement influenced her design because she incorporated those ideas in her drawing of ideal classroom space.

Two participants expressed other ways in which their personal experiences affected their drawing of an ideal classroom space. First, Hebba shared how her classroom design was reflected off her personal experience as a teacher, past student herself, and a parent:

I'm a people person and I don't like to be by myself. So I always try to have a group and I really don't really even like it to be with one person. I like to be with more than just two. So I try to have at least three seats together, and I feel like especially like growing up, I went to a small private school. And it was really hard, and the girls were really mean, like mean, and I think about this all the time with school. John (pseudo) is going through some stuff with kids at his school and you know kids can just be mean, um, so I try to not make it to where two kids can pair up.

The second teacher, Barbara explained how her personal disability with Attention Deficit Disorder (ADD) influenced her classroom design to be more flexible:

I know with me being personally like ADD and having the same thing, doing the same thing every day, I need a chance to kind of, do different things each day to keep my focus. If it's the same monogamy every day, then I'm less likely to focus and do things because then I'm just ready for it to be over, because my mind is going crazy.

Therefore, Barbara allows her students the ability to move to new locations around the room. She also chose to separate spaces in her classroom for students to see and do things differently each day. The following responses are important because each teacher is examining their perspective of past experiences when designing the space. Teacher experiences with students in the past is important but should not be the only thing we consider when designing spaces or planning instruction.

### ***Experience with Past Students***

When designing their ideal classroom, participants acknowledged their experience with past students as a rationalization for their classroom space. For instance, Anne shared "I'm usually an inclusion teacher, so I think that played more of a part in my drawing than being a Title 1 school. It was more of I know my students have a lot more needs and accommodations" (interview, 2/13/21). Echoing this sentiment was Barbara when she explained her design:

I've for the most of my years been inclusion, so, we've had people, when they come in they shouldn't be able to tell who [the] special education children are. So, it's the same opportunity, because special education doesn't mean you don't know anything, it just usually means one area your weak in ... So just knowing that all of them kind of have the same opportunity (interview, 2/3/21).

The following participants used their knowledge and experience with inclusion students to impact their ideal classroom design.

Flora also explained that her classroom design was recreated from a previous year of teaching and explained it as her “all-time favorite” (written statement). She continued to clarify why her design of an ideal classroom was influenced by past students:

This theme was actually created by my second-grade classroom when I able to loop with them into third grade. They helped me to design the layout, create the decorations, and come up with a theme. The students came in before school started in the summer and helped me to decorate the classroom and put up the bulletin boards... They were very proud of themselves, and I found that they took ownership of taking care of the classroom since they created it and make sure that they kept it clean and organized throughout the year (written statement).

Flora chose to recreate this setting as her ideal classroom design because she felt like her students had ownership over the classroom and she was able to converse with her students regarding their needs and wants. Again, a positive experience in a past classroom was seen as a rationalization for design.

Gloria included a fridge and snack section in her classroom space. She described “as far as the fridge and the food, no matter where you’re at kids can be hungry and some of them feel embarrassed to ask. So I kind of just have a, don’t ask, don’t tell, grab a snack if you’re hungry” (interview, 2/8/21). She used her past experience of hungry students to influence her decision to include necessities for the students in her space, which is a physiological consideration. Therefore, participants were found to consider their past students’ accommodations and needs when creating their ideal classroom space.

## **Conclusion**

This chapter provided detailed information about the four themes (the perceived benefit of collaboration, the importance of learning resources, students' seating arrangements in the classroom, and the influence of personal significance) that were found after analyzing the data from drawings and written responses, individual interviews, and group interview. In addition, each subtheme was discussed to show the overall categorization for each theme. In the next chapter, I will explain the limitations in my study and the implications of the findings and discuss opportunities for future research.

## **CHAPTER FIVE**

### **DISCUSSION AND IMPLICATIONS**

In Chapter Five I discuss an overview of the purpose of the study including the research design and questions. Then I review and verify my findings of the case study including a summary of my key findings. Finally, I provide a discussion and implications of the findings of this study, the limitations, and opportunities for future research.

#### **Overview of the Study**

Classrooms are usually viewed as a room with four walls where students are sitting in desks and the teacher is lecturing students from the front of the room. However, recently classrooms have been redesigned to allow for more discussions, engagement, comfort, and flexibility (Lee, et. al., 2017). The classroom space is important in that it supports the roles and relationships that form in it, along with modifying pedagogical practices and influencing the lives of students and teachers (Clement, 2019). The physical environment can also be a powerful teaching instrument (Martin, 2002) and changes need to be managed carefully (Kellock & Sexton, 2018), preferably from the perspectives of the students and the teachers. However, it is important to understand the teachers' perspectives of the redesigned classroom space and if and how they consider their students' needs when designing the classroom space. Furthermore, as teachers and students may view the environment differently (Fraser & Walberg, 2005), the insights into how teachers perceive the redesigned classroom space will inform how their perspectives could influence students' learning. Yet, teachers' views on their perceptions of school space have been highly under-represented (Barrett & Zhang, 2012). The research questions that guided this study are:

- 1) What are the features of elementary teachers' conceptualizations of redesigned classroom spaces?
- 2) How do teachers perceive and rationalize the design and features of these classroom spaces?
- 3) How do teachers consider students' potential learning, reactions, and engagement level when designing classroom spaces?

As this research sought to develop a descriptive account of teachers' perspectives of redesigned classroom spaces, I collected data in the form of drawings and written responses, interviews, and group interview. Individual interviews including drawings and written responses were conducted with eight classroom teachers. The group interview consisted of four teachers who were previously interviewed during individual interviews. I coded interviews and focus groups using a two-step process. First, In Vivo coding was used, and then I used Pattern coding (Saldana, 2016). I used a modification of Rose's (2001) critical visual methodological framework to code participants' drawings and written responses. This framework allowed me to use questions to find similarities and differences between each drawing. Finally, I triangulated all data to result in four themes: the perceived benefits of collaboration, the importance of learning resources, students' seating arrangements in the classroom, and the influence of personal significance.

## **Discussion of Findings**

### **Features of Elementary Teachers' Classroom Design Conceptualizations including Teachers' use of Control**

Findings from this study indicate that elementary teachers perceived grouped desks, flexible seating, and manipulatives as important features in the classroom space. Below I will

present significant findings and closely tie them to the literature. I will also address the notion of teachers' using the environment to help control or manipulate students in the classroom space.

### *Grouped Desks Arrangement*

First, grouped desks consisting of either three or four students were found to be a significant feature of a redesigned space. Teachers saw grouping students into pods as an important contributor to the room to increase collaboration. Parsons (2018) found the round table design of seating arrangements promoted more socialization and exchange of feedback between students and instructors. Also grouped table layouts or larger tables were found to help facilitate discussions and group work between students which was proven to increase peer teaching (Kariippanon et al., 2017). Similar perceptions were discussed by Patton et al. (2001) which also found elementary classroom teachers to typically employ small group cluster seating designs in their spaces. Researchers argued that teachers believed this type of seating arrangement contributes to students' learning and growth through socialization between peers. However, one teacher chose to group students into a U shape surrounding the board, which has also been shown to promote communication between students (Sztejnberg & Finch, 2006) and perceived by students as their preferred seating style (Rogers, 2020).

Commonly, the classroom teachers' style of teaching can also be depicted by the design of the seating arrangements in the space (Fernandes et al., 2011). In this study, teachers dictated a student-centered classroom by arranging students' desks in their classroom spaces in groups. Esther explained, "it's not a lecture-based classroom or the teacher is not standing in front of the students and talking at them, but it's more of a student-centered classroom" (interview, 2/3/21). Research illustrates that small group seating arrangements are often preferred when teachers focus on student-centered learning. While the row and column arrangements are often

emphasized in teacher-centered classrooms (Sztejnberg & Finch, 2006). Even though participants in the study were found to implement student-centered arrangements this does not always describe how they always perceive their teaching style. As Martin (2002) notes, teachers often perceived their teaching style as student-centered but were found to create more teacher-centered learning opportunities.

In general, teachers in this study perceived student desks as an influential feature of the classroom space. One suggestion might be that students are easily accessible to the teachers if they are seated in one location. Students are accessible for feedback (Morrone, et al., 2014), behavior modifications, and/or learning experiences (Rands & Gansemer-Topf, 2017). Supporting this claim is Marzano (2003) who declared a classroom arrangement should have the following: teachers and presentations easily visible to students, appropriate materials readily available, easy accessibility for people to move around, and students working in pairs, quads, or triads. Also, Harden (2012) expressed, the classroom arrangement should allow teachers maximum mobility and proximity to students, which teachers in this study were found to portray in their ideal classroom designs.

An assigned seating location in desks may also reveal how teachers wish to control students. As Foucault (1972) explained, control over others exists without physical implications. One can further apply this concept to teachers as they are keeping a visible line of sight on students to have additional input on their activities and engagement level in the classroom through seating arrangements (Fernandes et al., 2011). Marx (2000) and researchers explained seating arrangements as a subtle form of control by teachers because they can encourage desirable behaviors and interaction while also limiting certain opportunities and misbehavior. In fact, different seating arrangements have been found to encourage certain behaviors such as



limiting disruptive and distracted students (Wannarka & Ruhl, 2008). Therefore, teachers may be using desks to control the desired behavior they perceive is acceptable in the classroom space. This study suggests teachers are considering features of the classroom space that can influence students' learning but also maintain proximity to control power over the space.

### *Flexible Seating*

Similar to seating arrangements in the classroom space is flexible seating options. Participants also perceived flexible seating as a substantial feature of their classroom's designed space. Examples of flexible seating specified by teachers included yoga balls, wobble stools, pillows, couches, rugs, bouncy bands, surf desks, scoop rockers, lap desks, standing desks, and stools. Teachers explained that the use of flexible seating was to increase students' comfort and moveability options around the room, which is similar to previous research which found flexible seating was able to increase students' movement and create a comfortable student-centered classroom (Schilling et al., 2003).

However, what seems to be controversial among teachers is their perception of control over different flexible seating options in the room and whether this option was acceptable all day, every day. In particular, two teachers stated they only used flexible seating in their classrooms for independent activities and chose to not allow students the option unless they were given permission by the teacher. One participant explained she did not think the students were mature enough to make this decision. This finding was informed by Martin's (2002) study, which found teachers to have mixed perceptions between flexible features in the classroom. As mentioned above, one explanation for this finding could be teachers' perception of control over their students. Teachers find they need to manage students' allowed time and seating style to effectively control social interaction within the classroom space (Pace & Hemmings, 2007).

Studies have demonstrated that students' location within the classroom can influence the amount of off task behaviors and non-academic activities which affects students' behavior and engagement to learn (Perkins & Wieman, 2005). Whereas if teachers are controlling the flexible seating opportunities, students are less likely to engage in non-academic behaviors and actions. Though the goal is to not constrain students' freedom in the classroom space (Wannarka & Ruhl, 2008), some teachers in this study were found to use this form of control as a way to influence students' learning by limiting their use of flexible seating options. Whether students are selecting their locations in the space, or the teacher selects the student's seating options, different understandings of student engagement and behaviors may be at play in the decision process (Kaya & Burgess, 2007).

### *Manipulatives*

Further, classroom manipulatives were perceived as important in teachers' conceptualizations of classrooms. Manipulatives that were mentioned by the participants included STEM centers or spaces, and objects that students can handle physically like books and art supplies. As previously stated in Chapter 4, manipulatives can be described as physical objects that students and teachers use to support their learning using engaging hands-on tools and objects (Boggan et al., 2010). Specifically, manipulatives to increase reading, math, and science were perceived as key features in the classroom space by all participants. Ironically, only one teacher mentioned using manipulatives in the classroom space to increase all content areas, including social studies. The inclusion of manipulatives as a feature in the classroom space was a significant finding because teachers acknowledged hands-on tools as an important contributor to students' learning and engagement level. Teachers' perceptions support previous findings in that manipulatives provide positive learning and teaching environment in which students can

discover and comprehend ideas tactfully and creatively (Gecu-Parmaksiz, & Delialioglu, 2019). Indeed, including these materials in their ideal classroom space was an important consideration regarding students' potential learning.

Another significant manipulative that was included in the classroom space by all teachers were digital tools. I chose to include digital tools as manipulatives because teachers described using technology such as ViewSonic boards, Chromebooks, and Applications as an engaging tool to support students' learning. This finding is consistent with previous research which describes digital tools as a way to increase students' engagement levels and collaborative learning in the classroom space (Zimmerman et al., 2018). One rationale for this finding could be that teachers have experienced students' enjoyment with technology and wish to include it as a classroom feature so students' learning can be more enjoyable. This finding is also consistent with research that found students to perceive technology as an important contributor to the classroom space (Barrett et al., 2011) and more pleasurable because it enhanced collaboration, creativity, and feedback (Kariippanon et al, 2017). Suleman and Hussain (2014) explained classrooms should be equipped with instructional technology choices to ensure the teaching and learning process is more successful, favorable, and conducive for students.

Teachers also perceived digital tools as a way for students to individualize their learning. However, it is important to acknowledge that teachers did not visualize the opportunity for the student to have the freedom to choose which digital tool they may use to individualize their learning. These options should still be mediated and controlled from the teachers' perspectives. What manipulatives students can use and how they use them depends on the teachers' perspective regarding their beliefs and experiences. Furthermore, research on teacher use of manipulatives suggests if teachers inadvertently use manipulatives in their classroom because

they perceive them unessential then students learning will be diminished (Moyer & Jones, 2004). Therefore, in this study teachers perceived manipulatives as important features in the space, however, they have the potential to use their control over these manipulates to unknowingly affect students' learning. Moyer and Jones (2004) found that teacher used their control over the manipulates to either use or not use certain types of manipulatives based on the amount of control they believed they would be able to maintain. Therefore, teachers exhibited control of the manipulatives by limiting use during instruction, restricting access, assigning group leaders to monitor the manipulatives, and eliminate manipulatives based on the student's behaviors. Yet, King (2012) suggests adults should be tasked with the responsibility to oversee digital tools to protect them from online danger, while also allowing children a reasonable amount of freedom. This study corroborates the findings of Matterson et al. (2012), who found preservice teachers' beliefs in the importance of engaging students in instructional activities through the use of manipulatives, technology, and student groupings. The perception of control over the classroom design is important to consider in elementary grades because while teachers may dismiss certain features as inconsequential to learning, this kind of restraint can lead to students' delay in learning.

### **Collaboration, Engagement, and Support for Various Aspects of Student Learning**

Findings indicated that elementary classroom teachers justified their classroom design as a means to increase students' collaboration, engagement, and support for students' learning. The perceived benefit of a variety of collaboration practices across participants was found to be a rationalization for classroom designs. As mentioned earlier, pod grouped tables and U shapes were acknowledged by all participants to increase students' collaboration between peers. This finding is consistent with Casanova et al. (2018) that found teachers perceived the idea of

learning pods to enable interaction and better sound conditions for group work. One suggestion for this finding could be that teachers realize the benefits of student interaction with peers in the classroom space. While teachers are important, participants understood that students need to interact, communicate, and learn from one another. One participant expressed the need for a peer tutoring space, where students tutor other students in different content areas. Peer tutoring has been shown to increase learning and social relationships (Thurston et al., 2020). Additionally, students are also more likely to collaborate with one another when they are placed face to face with one another (Proshansky & Wolfe, 1974), which is how all the participants in this study arranged their desks.

Academic engagement level in the classroom space was another rationalization found among participants. All teachers created drawings that included both community features and student academic engagement. Their drawings often illustrated community classrooms as those in which everyone in the environment would be grouped in tables or pods for collaboration. Teachers also included open spaces or carpets in their spaces to increase students' academic engagement with peers. By assisting students into collaborative groups or open spaces students are more likely to be engaged in discussion with other peers which is conducive to students' learning and development (Parsons, 2018, Zimmerman, et al., 2018). This finding is consistent with research that demonstrates engagement and groups increase learning opportunities, whereas student isolation negatively affects academic achievement (Osterman, 2000). However, Woolner and researchers (2012) found that students experienced the carpet area as a time for passive listening and physically being uncomfortable. Therefore, even though this study found teachers to consider the grouped tables or carpet areas as a means for student engagement it is important to note that students could perceive the space differently. This raises an interesting juxtaposition

of ideas that teachers want control over the space, but they also aim for students to collaborate and be engaged. Cook (2012) explored the differences in teachers' perceptions of their control including their personal control and their student's academic and behavioral outcomes. She found that teachers who believe they have more control over the outcomes of their students' behavior were more flexible and accommodating to students in the classroom space, but teachers who explained they did not have control were less likely to modify instruction to meet student's needs. Therefore, the teachers' classroom design is also influenced by their perception of control (Cook, 2012). Teachers in this study felt they had control over the space, so they were more willing to adjust their teaching strategies to accommodate collaboration and engagement.

This research also revealed that teachers prioritized supporting students' learning through their classroom designs. A commonly held view among many teachers was that support for students learning should include movement, flexibility, and creativity. This perspective was similar to research by Haines & Maurice-Takerei (2019) which found that teachers identified movement as a valuable asset to the classroom space because it allowed access to students, small group conversations, and students' migration around the room. Teachers who have incorporated fewer materials and furniture in their room to allow for more movement recognized the benefits of the student organization that is copied from the teacher, students can read with or without partners around the room, less distractions between students, and students are more independent to choose learning materials (Duncanson et al., 2009).

Similarly, in this study, it was important for students and teachers to have flexibility in the classroom space to adapt the space, move to different areas of the room, and allow students to select which seating option helps them succeed. Flexible environments allow for different kinds of learning activities and are viewed as positive spaces for students (Casson, 2013).

Indeed, teachers placed a high priority on having an appropriate amount of space so they can rearrange and move furniture to accommodate certain needs and activities of students (Lang, 2003). Flexibility in the classroom space can also help teachers to increase the number of teaching methods they use including, hands-on learning, collaboration, and student performances (Duncanson, 2014). As every classroom is different and includes fixed structures teachers identified flexibility in the classroom space as a way to better serve the needs of students as well as themselves.

Additionally, creativity as a support for student learning was discussed as a rationalization by teachers when they described how allowing students to individualize their learning through art supplies was a need. Furthermore, creativity was also explained as a way for students to enjoy themselves during the learning process (Thorne, 2007). This finding is essential because allowing creativity in the classroom has been shown to support students' critical thinking and productivity levels and limiting students' curiosity has the potential to hinder these life skills (Luna et al., 2018). However, according to Kettler et al., (2018) teachers perceived creativity as valuable, but find creative characteristics in students as undesirable. Sometimes teachers perceive highly creative students as disruptive in the classroom space (Scott, 1999). Therefore, relating to this study, even though teachers perceived creativity as a support for students learning they may find creative characteristics in students as unacceptable and choose to limit the use of creativity in the space. Further research regarding this concept could be considered to better understand if or how teachers find creativity as desirable or undesirable in the classroom space. The data identifies teachers' perceptions and rationalizations for classroom design to increase students' collaboration, engagement, and support for students' individualized learning.

## **Teachers' Considerations of Physiological Needs, Personal Experience, Multicultural Awareness, and Equity**

This dissertation research indicates that most teachers significantly considered student's physiological needs when designing their classroom spaces. Specifically, teachers mentioned students' Social and Emotional Learning (SEL) as well as cognitive learning as a concern when implementing materials to the classroom space. This finding is consistent with Maslow's (1964) theory of a hierarchy of needs which suggests that only upon fulfilling the needs of food, rest, belonging, safety, and security, can a person realize growth, or achievement. For example, one teacher mentioned including food and a fridge in her space for hungry students. This notation displayed her awareness of satisfying her students' physiological needs before they can engage in learning in her classroom space. Another participant personified the student's feeling of belongingness and care when she explained her development of the classroom space.

Additionally, Social and Emotional Learning (SEL) was mentioned by three participants, which is critical when analyzing students' physiological needs. Research suggests that time spent on SEL in the classroom can promote students' academic learning, improvements to psychological needs, and behavior (Durlak et al., 2011). It is important for teachers to focus on SEL during the designing of their classroom spaces because children with strong social skills are more likely to have positive relationships with teachers, participate in class discussions, make friendships, and be engaged in learning (Denham, 2006). This study supports findings from Dyson et al. (2019) which also found teachers to show awareness of SEL in the classroom space and the value it has for students learning. Therefore, when participants were designing their classroom space, they acknowledged the importance of students' social behaviors and skills along with fulfilling their physiological needs.



### *Personal Experiences*

Additionally, teachers considered students' potential learning, reactions, and engagement level by using their personal experiences. Specifically, teachers' personal experiences and their experience with past students were found to be a significant consideration when designing their classroom space. Sigel (1978) explained teachers' theoretical perspectives are frequently being developed throughout school environments and outside school experiences. In this study, all participants mentioned personal experiences as a method for deciding which items and materials they should include in their ideal classroom. The teachers were able to use their personal and professional experiences to influence their beliefs about inequalities in the classroom. After participants explained personal struggles, they experienced during their schooling years, for example, bullying and ADHD, they were able to identify the disparities in the classroom and adapt their space accordingly. Teachers in this study experienced their own challenges, which, in turn, helped them develop into teachers who recognize inequality as an important component of their classroom design. In addition, as Martell and Stevens (2017) found teachers who use both personal and professional experiences are able to emphasize the importance of teaching their students about others and express more opportunities for diverse contexts, which increases students' learning. They connect with their own experiences and adjust their classrooms regarding their beliefs, which could ultimately influence students' learning.

### *Multicultural Awareness*

It is important to note that while every teacher has their own unique teaching experiences it is also essential for them to acquire multicultural awareness and understanding of students within their spaces (Norris, 2016) as they consider their classroom design. According to Banks (2008), multiculturalism is an acknowledgment of different cultural traits such as social class,

religion, ethnicity, language, age, sexual orientation, and disability. In this study, participants' perceptions displayed multicultural awareness in their drawings as a consideration for their design. In fact, teachers explained items in their classroom spaces that would ultimately help culturally diverse learners to achieve and provide them with equal opportunities. For example, teachers implemented multicultural books into their classroom libraries for students. However, teachers did not specify how they would use these books in the classroom. Whereas this is a positive first step to achieving multiculturalism in the classroom space, but it is somewhat a superficial "fix." Teachers can promote multiculturalism by helping them make connections between themselves and their community and ethnic origins by allowing open social interactions between all students. Teachers should build on students' strengths that they bring to the classroom and make connections to real life situations (Ladson-Billing, 1992).

Today, teachers are starting to shape their educational curriculums with a multicultural mindset to provide students with an equal education (Debbag & Fidan, 2020). Indeed, teachers have been found to influence acceptance, respect, and affirmation in the classroom space when they emphasize the importance of multiculturalism within classrooms (Abacioglu et al., 2019). According to Erturk (1993), teachers who do not demonstrate multicultural awareness are more likely to discriminate among students and cause a negative classroom environment. Therefore, even though there is evidence from this study that teachers included different cultural characteristics as an important component of their classroom space, teachers need to make explicit cultural connections and provide outlets for students to recognize, comprehend, and critique culture while making their own connections to promote cultural responsiveness (Ladson-Billings, 1995).

*Equity*

Lastly, participants in this study designed their classroom spaces from an equity perspective, to offer support and resources in their classrooms for every child's unique needs (Scholastic Team, 2016). For example, Devan identified multiple U shaped tables in her space as a way to eliminate students who might be pulled out of the classroom, such as, for special education services. However, research has shown that neither pull-in nor pull-out instruction is more effective for students learning (Gelzheiser et al., 1992). Another teacher, Corey, explained how she does not label students as male and female in her classroom, instead, they are viewed as equal students. This explanation is interesting and valuable to the classroom space because schools have often been described as creators of femininities and masculinities (Mac & Ghail, 1994). It has been suggested that equity should be a national priority of all schools (Scholastic Team, 2016) and this research identified this key perspective as a conceptualization to the teachers' classroom design.

### **Implications**

The findings of this study suggested the following implications in the area of teacher educators, students as designers, and support for teacher redesign. Ultimately, the implications discussed below support different aspects containing the theory of loose parts, the framework of this study, that suggests, "in any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it" (Nicholson, 1971, p. 30). In particular, environments need to be constructed with openness and flexibility to allow children the freedom to be builders and engage in creativity (Nicholson, 1971).

### **Teacher Educators and Students as Designers**

All the participants in this study expressed the rationalization for their classroom design was to increase students' learning in the classroom space. Benefits discussed include the ability for the redesigned classroom space to expand collaboration, movement, and engagement for both teachers and students. Additional benefits noted by participants included the ease to give students options and multiple opportunities within a redesigned classroom to meet their needs as learners. The classroom space can be a powerful teaching instrument, or it can be undirected and unrecognized (Martin, 2002). In fact, Reggio Emilia identifies the classroom as the third teacher (Stoudt, n.d.). Therefore, acknowledging the classroom space as an important tool to increase students' learning has the potential to impact teacher educators' future designs and allow students to be co-designers of the space.

Additionally, teachers often hold considerable power in the classroom and this transition must begin with them. First, it is entirely possible that students, as well as teachers, can assist in designing the classroom space. Nicholson (1971) explains adults, in particular teachers, have had all the fun playing with the materials, planning, and choosing concepts using their perspective, which leaves the students' creativity and perspective limited. Instead, students should be included in the designing process of the classroom as a community project. Discussions about classroom designs do not need to operate outside course material but could fit within the curriculum. Once introduced, students could participate and engage with the teacher to research and design the space to better fit everyone's needs. In this study, Flora provided a great example of how incorporating students in the design process of a classroom space can affect the students. She explained students felt more ownership of the space and responsibility to keep it organized because they helped design it as a team. An acknowledgment of the classroom space as a learning tool would benefit students along with the teachers' implementation of learning

objectives. The idea of collaborating with students during the design process of the room is not new. In fact, Proshansky and Wolfe (1974) explained that having students take an active part in the classroom design helps in making the child's immediate surroundings a basis for learning. They continued to explain how this design process could involve evaluating and discussing what the teacher has already designed, set up an interest area in the room, designing bulletin boards, or as simple as moving the arrangements of the desks. What is vital is that students and teachers are addressing their needs collaboratively and creatively. Similarly, Casanova et al. (2018) suggest both teachers and students have the ability to formulate well-formed plans and opinions about the design of classroom spaces. They found when students and teachers worked as co-designers of the space it gave both parties a sense of agency, which, in turn, allowed more communication and interaction to learn from one another. When students and teachers contribute to the classroom space, they consider a variety of wishes and voices which ultimately creates harmony in the space (Makela et al, 2018).

### **Support for Teacher's Redesign**

Furthermore, it is important for policymakers and administrators to support teachers and students by providing them with the necessary materials in the classroom they perceive to increase students' learning. Whether that includes circle desks, 1:1 devices, flexible seating choices, or multi-cultural books, all supplies need to be available for students to create equity in the classrooms for all students to learn. On average teachers spend approximately \$530 of their own money on items for their classroom each year (Scholastic Team, 2016). Participants in this study acknowledged the expense of redesigned classrooms and explained that with all the money in the world they could achieve their ideal classroom. However, for most teachers that is not an option. Participants mentioned the use of DonorsChoose which is a non-profit corporation that

allows teachers to request supplies for their classroom. Then after teachers create a project, supporters volunteer different money amounts to the project of their choosing. Once the full amount is raised teachers receive the supplies they requested. While this organization is beneficial it is also weighed on the event that the project is fully funded, which could take an unknown amount of time or could be canceled. Therefore, with policymakers and administrators supporting teachers, money from the district could be used to assist teachers with their classroom designs and in connection support students' learning needs. However, it is important to acknowledge that even classrooms with the richest resources still might not promote the most beneficial learning. Classroom design is important; however, good teaching has the potential to accommodate for what the physical space is lacking.

### **Pre-Service Teacher Training and Professional Development**

Teachers need to understand how to plan classrooms to include constructive steps which aid in students' learning. For example, teachers should design the classroom as a teaching tool, allowing for more open space and flexibility to move, and identify that certain spaces do not work for all students (Duncanson, 2014). Training in the area of classroom design should start early on. One way to reach this goal would be to introduce the idea of classroom design and redesigned classroom spaces into teacher education programs. Pre-service teachers need a variety of professional experiences that allow them to reflect and observe upon their future classroom designs and redesigns to meet all learner's needs.

Additionally, pre-service teachers often have preconceived ideas concerning classroom designs and the nature of teaching and learning. They base their ideas of classroom design upon previous experiences during their years of schooling (Matterson et al., 2012). Moreover, classrooms are mostly designed prior to pre-service teachers starting their educational work,

which limits their understanding of the preparation. The usefulness in understanding classroom redesign while learning to teach is that this concept encompasses the belief of using the space as a teaching tool from the beginning. Such experiences make a difference in teachers' confidence, commitment, and practice (Darling-Hammond et al., 2005). The deeper analysis has the potential to help pre-service teachers identify classroom redesign from more than their perspective and experience but really consider the range of learners and opportunities that the classroom space can provide to all learners.

Current teachers also need opportunities to expand on their perceptions of a redesigned classroom space. Therefore, another example would be for teachers to participate in professional development opportunities throughout their years of teaching. Through these programs and learning opportunities, teachers will be able to acknowledge how redesigned spaces can best support all learners and perhaps how they can consider a variety of learners as they plan their classroom spaces. Many participants in this study spoke of using Google, other co-workers' ideas, and social media as a resource to designing their room. However, if teachers could attend a professional development seminar using research and other resources to inform them about redesigned classroom spaces, they would be provided with accurate and essential knowledge regarding classroom spaces. Additionally, these sessions would give teachers opportunities to work collaboratively together to reflect instruction, features, and learning strategies that they may have experienced through the use of a redesigned classroom space. This collaboration will also provide teachers a chance to create lessons and adapt designs that can be used in the classroom.

Teachers in this study thought of their personal and professional experiences, mainstream learners, and minor cultural considerations when designing their ideal space. However, teachers

need more work in considering items like multiculturalism and student perspectives in their design. By incorporating these aspects into a professional development opportunity aligned around redesigned spaces may help expand teachers' understandings about these topics and how they can be used in their classroom design to support all students. During these sessions teachers can also learn more about how students can support the design process in the room to support students' perspectives. Weinstein (1979) stated now is the time to change classrooms from attractive and humane environments to appropriate spaces for various learning activities for everyone and one way to do this is to incorporate professional development sessions for teachers. Furthermore, professional development can help first-year teachers who may not be aware of the influence the classroom space has on students learning.

### **Limitations**

One limitation of this study is that it took place during the outbreak of Covid-19 in the United States. Participants were not in face to face environments with their students for the entirety of the school year, which resulted in teachers using a computer-mediated communication (CMC) tool such as Zoom or Google Meet for teaching and learning. Once schools were opened for face to face learning, per the Governor's orders, only a limited number of teachers were assigned as face to face instructors because families were given a choice as to whether they wanted their students to attend virtually or face to face. The virtual option meant students would be instructed to use a CMC tool, but continue to follow regular school hours. Thus, some teachers in this study had to imagine their classroom design based on what they would have liked it to look like.

Teachers who were appointed as face to face instructors also experienced changes to their classroom design due to the Covid-19 pandemic. Students were required to sit six feet apart from



one another, which resulted in student's confinement to desks. Desks were transformed into a more traditional layout, spaced out facing the front of the room. This also meant limited space in the classrooms, which resulted in the removal of extra tables and chairs. Furthermore, fabric objects such as futons, couches, pillows, and curtains were removed from all classrooms. The use of plexiglass was also added to classrooms to provide safe dividers from faculty and students. Students were allowed to use learning manipulatives in the classroom only if the teacher could supply each student with their own, sharing was not an option. Otherwise, the objects had to be sanitized between students. Therefore, teachers were forced to conceptualize, instead of physically create in a real classroom, their ideal classroom space for this study since their classrooms were no longer redesigned due to Covid-19.

A second limitation was the sample size. First, a larger sample size, more than eight, would have allowed for multiple perspectives from teachers across all elementary grade levels. Second, a larger sample size would have allowed me to view teachers' perspectives from multiple schools or districts. Although the study contained multiple views from different grade levels, multiple views may have resulted in a larger discrepancy between grade levels. For example, the difference between the classroom space of a Kindergarten room versus a 5<sup>th</sup> grade classroom. Furthermore, data from another school or district may have provided teachers with additional information and materials that they perceived to be important in a classroom space.

Lastly, it is important to acknowledge my role as the researcher in this study and how my perspectives on redesigned classroom spaces may have influenced the study. I have taught for seven years and continue to teach 3<sup>rd</sup> grade at the studies location, Eastland Elementary school (pseudonym). Therefore, even though I never worked in the same grade level as the participants I still knew them prior to the study. I found that since I had already developed a positive and

respectful relationship with my participants, they were more open and accepting to participate during data collection. I also found during my study that a lot of participants remarked during their interviews with “you know,” because they viewed me as an educator and equal contributor. During my teaching career, before Covid-19, I utilized redesigned classroom spaces and embraced the increased collaboration, flexibility, movement, and enjoyment in my classroom. Students were often encouraged to move, discuss, create, and engage in the classroom space. My beliefs surrounding redesigned classroom spaces as an important aspect of elementary education to provide students with different learning opportunities were the catalyst for this study. However, I attempted to distance myself from the research and provide an unbiased as possible analysis and interpretation of the data.

### **Future Research**

This qualitative case study shows promising results in elementary teachers’ perceived designs of their classroom spaces. It also shows whether teachers consider students’ learning needs and engagement when designing the classroom space. Further research could extend these findings to include a focus on classroom space and the effects on teachers and students as a result of the Covid-19 global pandemic classroom changes, virtual environments, and teachers’ abilities to transition between a virtual and face to face classroom setting. Additionally, future research should focus on teachers’ idea of control in the classroom space and how research with children could better inform this area of research. Finally, this research informs a needed explanation regarding teachers’ design of space while incorporating equity and multicultural awareness.

As a result of the Covid-19 pandemic, many schools have been providing instruction to students either through face to face instruction, virtually, or a mixture of both. Most importantly,

students and teachers that are receiving face to face instruction have experienced classroom changes, which resulted in a more traditional classroom setup. Therefore, future research could investigate the impact of the Covid-19 pandemic on both teachers and students concerning the changes in the classroom space. More specifically, the effect of students' learning in the newly constructed classroom space.

Students and teachers who are placed in a virtual learning environment have also experienced numerous changes to their learning space due to Covid-19. Also, many schools are choosing to continue to offer online learning as an option for future school years. Therefore, an extended research opportunity would be to focus on these virtual learning environments and how students and teachers perceive their influence on learning. Finally, future research to determine the influence on students and teachers who have experienced both the virtual learning classroom and a face to face classroom within the same school year would be beneficial. An examination of this transition between environments may reveal both positive and negative effects between students' and teachers' learning, engagement, and collaboration strategies.

Moving forward, more research should focus on teachers' control of the classroom space and their perceptions regarding control of the space. Much research has addressed how teachers use seating arrangements to control students' behavior and encourage desirable behavior (Wannarka & Ruhl, 2008). However, research needs to be extended to examine teachers' control over the classroom features other than desk arrangement, for example, flexible seating, collaboration, creativity, and the use of manipulatives in the classroom space. A better understanding of classroom authority is valuable and requires an integration of knowledge, especially in the contexts of K-12 public schools (Pace & Hemmings, 2007). Such research

might be used to justify the case for a broader understanding of teachers' conceptualizations for control over the classroom space.

This study found teachers to include SEL into their ideal classroom spaces, but then choose to teach whole group lessons in a group desk location because it was easier for teachers. This is one example of how teachers perceive control over the classroom space. The constant gives and take of control in the classroom space regarding teachers' beliefs was prominent in this study. Teachers were willing to give some control over the space to the students' needs but only in certain circumstances. Therefore, future research needs to evaluate more regarding teachers' beliefs of control over students' spaces.

Interestingly, given the current national focus on diversity and equity, teachers in this study minimally recognize equity and multicultural awareness as a rationalization for their classroom design. In fact, when asked about equity one participant explained, "I'm drawing a blank on that one (interview, 2/9/21)." Based on this finding, impending research should explore possibilities as to why teachers may or may not design their classrooms from an equity or multiculturalism viewpoint. Furthermore, how do teachers' perspectives about equity and multicultural awareness influence students' learning and classroom experiences.

Additionally, research regarding elementary students' perceptions of redesigned classroom spaces would better inform this area of study. Indeed, students of all ages are capable of designing and adding input into their classroom design (Casanova et al, 2018). The majority of the studies examine secondary and higher education students' perspectives, thus leading elementary level students out of the conversation regarding their perspective of the classroom space (Fernandes et al, 2011). Understanding elementary students' perspectives will better identify gaps between the teachers' perspective and the students' perspective, which would in

turn improve the classroom space for both teachers and students. Insite into students' perspectives can provide teachers with the knowledge that can be interrelated for a better classroom learning experience. In turn, students' perspectives could impact the design and construction of classroom spaces, bringing the space to a more amicable alignment (Casanova et al, 2018).

### **Conclusion**

In conclusion, this study contributed to the field of research in elementary teachers' perspectives of redesigned classroom spaces. The data from the qualitative case study revealed that teachers consider their students' learning, collaboration, and needs when designing the classroom space. Specifically, conceptualization included students' physiological needs, equity, and minor multicultural awareness. Classroom designs were perceived to support students learning through flexibility, movement, engagement, and creative spaces. Data collected through this research also supports the idea that teachers use their personal experience with students and their own experiences when constructing their classroom space. Lastly, elementary teachers perceived grouped desks, flexible seating options, and manipulatives as important features in the classroom space. Research findings from this study will inform teachers, administration, policymakers, and school building designers of elementary teachers' perspectives of a redesigned learning space and their considerations during classroom design.

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## **Appendix A**

### **Drawing Protocol**

Using a piece of paper, digital tools, cutouts, or digital graphics, draw or sketch a picture of your ideal classroom space that would best promote and support student learning. Below that, please provide the answers to the questions.



**Appendix A (Continued)**

## Drawing Protocol Questions

My ideal classroom is \_\_\_\_\_

\_\_\_\_\_

The materials I drew in my ideal classroom are: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What does a typical student do in this space? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What kind of tools do the students and teachers use in this space? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Appendix B

### Semi-structured Interview Protocol

After introduction and informed consent, the following bolded questions will be used as guides for semi-structured interviews. The items not bolded will be used as follow-up questions:

1. **Tell me about your drawing. [Interviewer uses this opportunity to have participant clarify aspects of the drawing that are unclear.]** Tell me more about \_\_\_\_.
1. **Describe the items/materials in your drawing.** What is the purpose for those items/materials?
2. **What supports are in place for students in your drawing?**
3. **Why did you include those items/materials in your ideal classroom?**
4. **What were your overarching goals when you were designing this space?**
5. **What did you think about while drawing/designing your ideal classroom?**
6. **Describe the source of your ideas for the drawing? (TV/films, magazines/books/internet/social media, personal experience, imagined/in my mind, or other)** Where you thinking of these sources before, during, or after your designing of an ideal classroom?
7. **What is your definition of a classroom space?**
8. **Thinking of the school, how did the physical location of the school in the district influence your classroom design?**
9. **Is there anything in this drawing that you specifically intended to include to promote social development or interaction between students in the classroom?**  
Explain what this item or tool is and how it will promote social development or interaction between students?

**Appendix B (Continued)**

- 10. How does your classroom space provide students opportunities to individualize their learning?** Are students' able to modify the space to fit their needs?
- 11. How did you create equity in the classroom space?** What materials did you include in your drawing that provides equality for your students?
- 12. How does your drawing of an ideal classroom space include students' interests in activities and successes?** How would you know what interests your students?
- 13. How are your personal, cultural, and/or social beliefs portrayed in your ideal classroom space?** How do you think this will affect the way students embrace or react to the space? If it affects them negatively are you willing to change your design?
- 14. Would you change or adapt your drawing for any reason?** Explain why or why not?

**Probing Questions:**

1. What do you mean when you say \_\_\_\_?
2. Why do you think that is?
3. How did you come to this conclusion?

In closing, participants will be thanked for their participation, reminded of the process of the study, and invited to ask questions of the researcher.

## Appendix C

### Focus Group Interview Protocol

After introduction, the following questions will be used as guides for focus group interviews:

1. In the individual interview, I asked you all to describe the items/materials in your drawing of your ideal classroom and explain their purpose. Now that you have had some time to further consider my question, do you have anything to add? Has anything changed about your response? Why?
2. I also asked about your goals and hesitations when designing your ideal classroom. Now that you have had some time to further consider my question, do you have anything to add? Has anything changed about your response? Why?
3. When students are back in the classroom and Covid-19 is in the past, what will your classrooms look like? Why?

## Appendix D

### Analysis of Drawings

The following is a list of some questions about the production of the image adapted from Rose's (2001) critical visual methodological framework.

The context of which the image is produced:

1. When was it made?
2. Where was the image made?
3. How did the participant choose to create the image? What technologies did the production depend on?

Some questions about the image are:

1. What is being shown? What are the components of the image? How are they arranged?
2. Where is the viewer's eye drawn to in the image? Why?
3. What relationships are established between the components of the image?
4. What is the genre of the image? (documentary, soap opera, melodrama)
5. Does the image comment critically to the classroom space?
6. Does the image disempower its subject?
7. What colors are being used? Is there a significance to the colors by the drawer?
8. What knowledges are being distributed?
9. Whose knowledges are excluded from the image?
10. Is this a contradictory image? (to individual interview and group interview)

Some questions that involve the relationship between the image and the audience are:

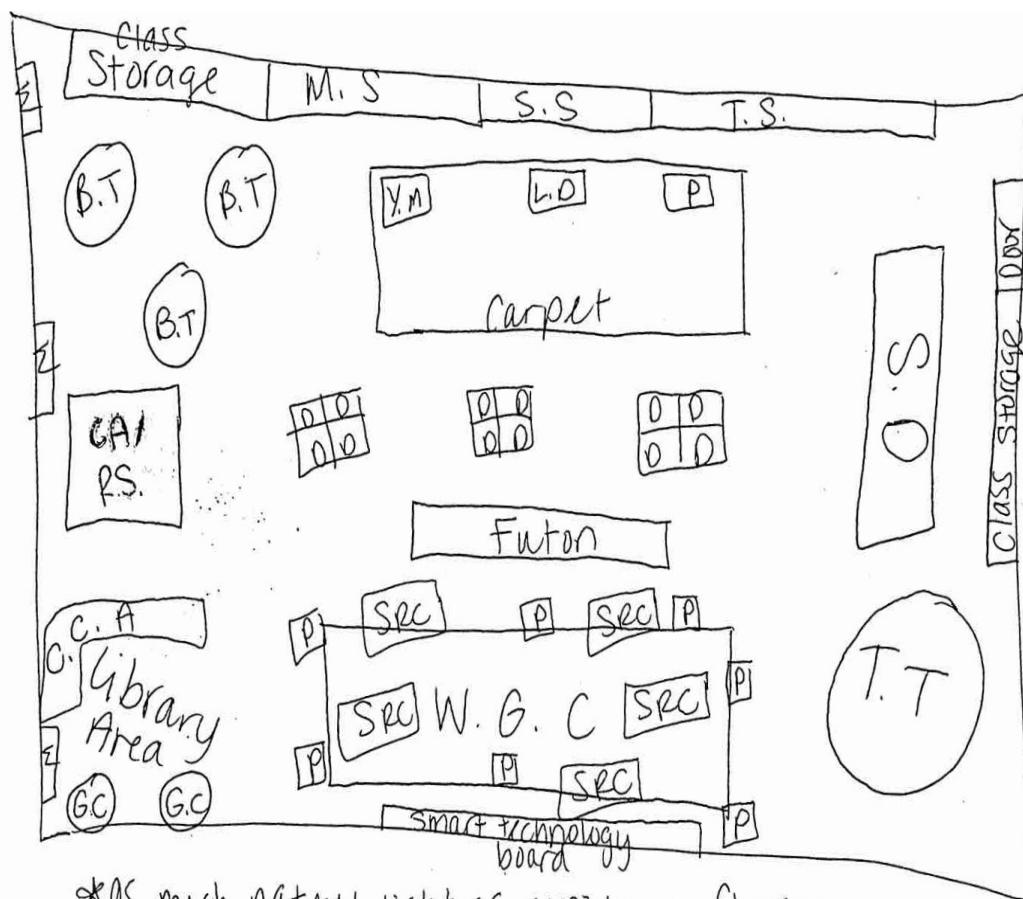
1. Who is the original audience for this image?
2. Where is the drawer or other people positioned in the image?

**Appendix D (Continued)**

3. What is the formal arrangement of the elements in the picture?
4. Is the image one of a series of images or tries?
5. Does the image have written text to guide its interpretation?
6. Is the image represented elsewhere? Replicated from a book?
7. Has the technology affected the audience's interpretation?

## Appendix E

### Anne Drawing Protocol



\*as much natural light as possible - no fluorescent lighting

key

[W] window

[T] Teacher Table

[G.C.] whole group carpet

[P] pillows

[R.C.] scooprocking chairs

[S] Technology Station

[M.S.] manipulative station

[S.S.] Supply Station

[B.T.] Bar Tables

[G.C.] gaming chairs

[C.C.A.] comfy Couch Area

[S.D.] Standing desk

[D] Disks (with bouncy bands, wiggly seats, etc options to go with them (bike pedals))

[C.A./P.S.] - Calm down Area / Relaxation

[Y.M.] yoga mat

## Appendix E (Continued)

My ideal classroom is one that has flexible seating choices  
that promotes comfort, learning and community building.

The materials I drew in my ideal classroom are: Flexible Seating Choices, technology resources, access any/all supplies needed also non fluorescent lighting & comfortable seating at small groups

What does a typical student do in this space? They get to pick their own seats daily, have access to all supplies needed and technology. They will be able to learn when needs are met.

What kind of tools do the students and teachers use in this space? technology,  
manipulatives, hands on resources for all subject areas  
↳ math                      ↳ content, math, L.A, S.S

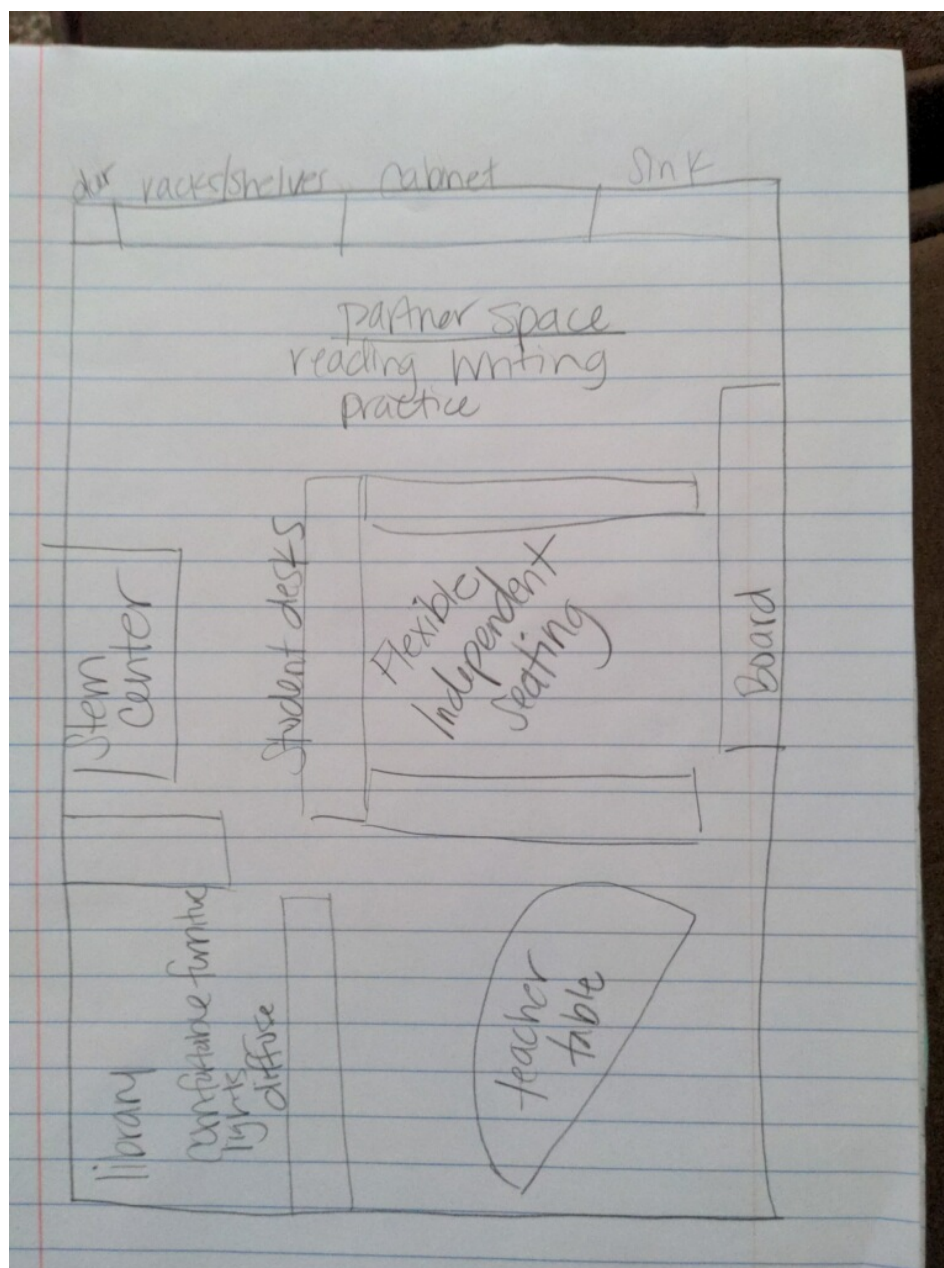
↳ math

↳ content, math, L.A, S.S



**Appendix F**

## Barbara Drawing Protocol



### **Appendix F (Continued)**

My ideal classroom is \_is separated into different usable spaces based on need.

The materials I drew in my ideal classroom are: A library with lighting, a diffuser, and comfortable furniture to promote a relaxing component to reading. Student desks I feel as still necessary to help with organization and focus. The middle area of the desks would be for completing independent work in an alternative seating. The STEM center would be for exploration in different STEM areas. The partner space would be for students to work together on various subjects to promote community.

What does a typical student do in this space? The library is for their independent reading or possible calm down area if needed. The partner space is to work with other students based on needs. The STEM is to have an area that isn't as structured and allows them to be creative. The independent area is a option to enjoy flexible seating while completing independent work. The student desks are so they have their own personal space.

What kind of tools do the students and teachers use in this space? STEM materials, flexible seating, lights, lap trays, and desks with materials.

## Appendix G

### Corey Drawing Protocol

Using a piece of paper, digital tools, cutouts, or digital graphics, draw or sketch a picture of your ideal classroom space that would best promote and support student learning. The questions below may help you to explain your drawing so please respond to each question.



**Appendix G (Continued)**

My ideal classroom has \_large windows comfortable seating (desk and floor) adjustable height desks a bathroom computer stations at the board and for the teacher coat hooks book shelves that hold books and define spaces closets that lock

The materials I drew in my ideal classroom are: books CD's interactive whiteboard

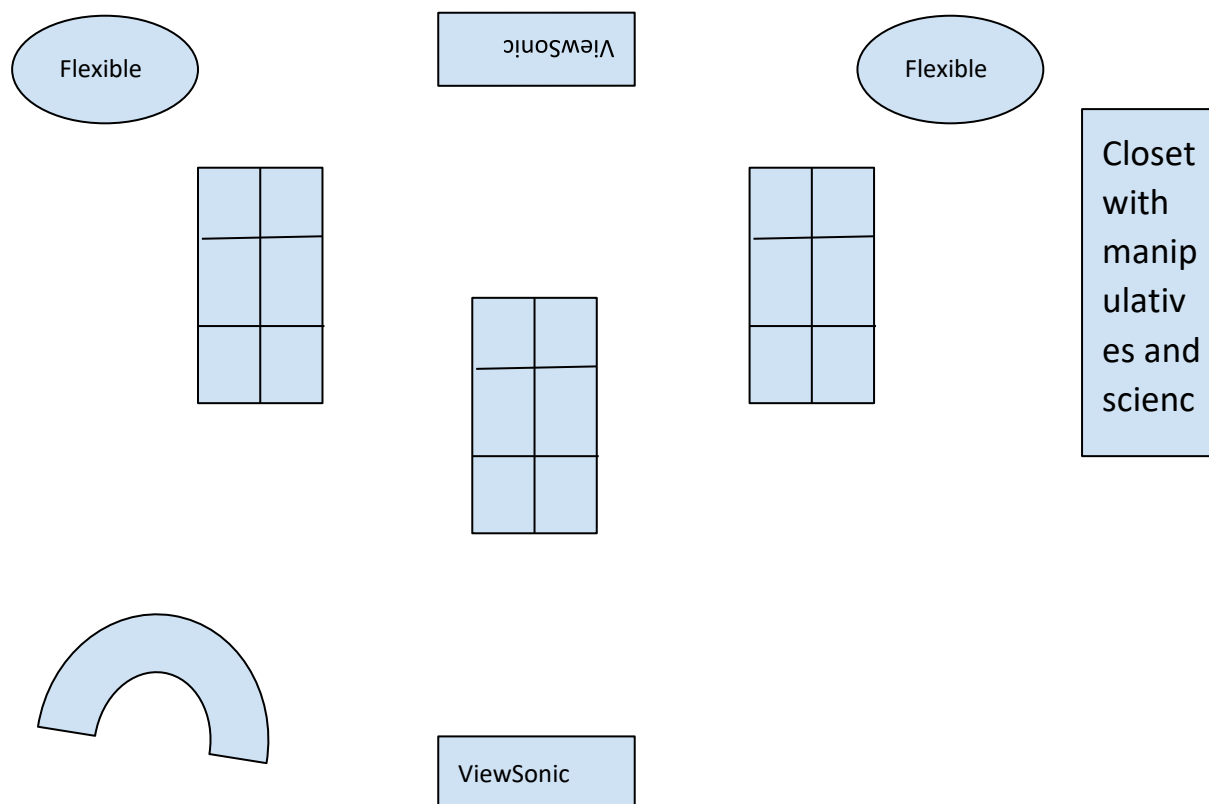
What does a typical student do in this space? \_\_\_\_ classwork assignments listen to music read books work on computers talk to classmates talk to the teacher

What kind of tools do the students and teachers use in this space? \_\_\_\_ laptops headphones cd player (I'm old) writing and art materials

## Appendix H

### Devan Drawing Protocol

Using a piece of paper, digital tools, cutouts, or digital graphics, draw or sketch a picture of your ideal classroom space that would best promote and support student learning. The questions below may help you to explain your drawing so please respond to each question.



### **Appendix H (Continued)**

My ideal classroom has interactive boards to allow multiple students and teachers to use during small groups, interactive manipulatives for all content areas, flexible seating around the room and pods of desks so that students can collaborate.

The materials I drew in my ideal classroom are: multiple Viewsonic boards for interactive activities, multiple teacher tables so that students can work in class rather than having to be pulled out to work with a GRT, SPED, ESL, etc. Flexible seating for students to work independently and meet SEL needs.

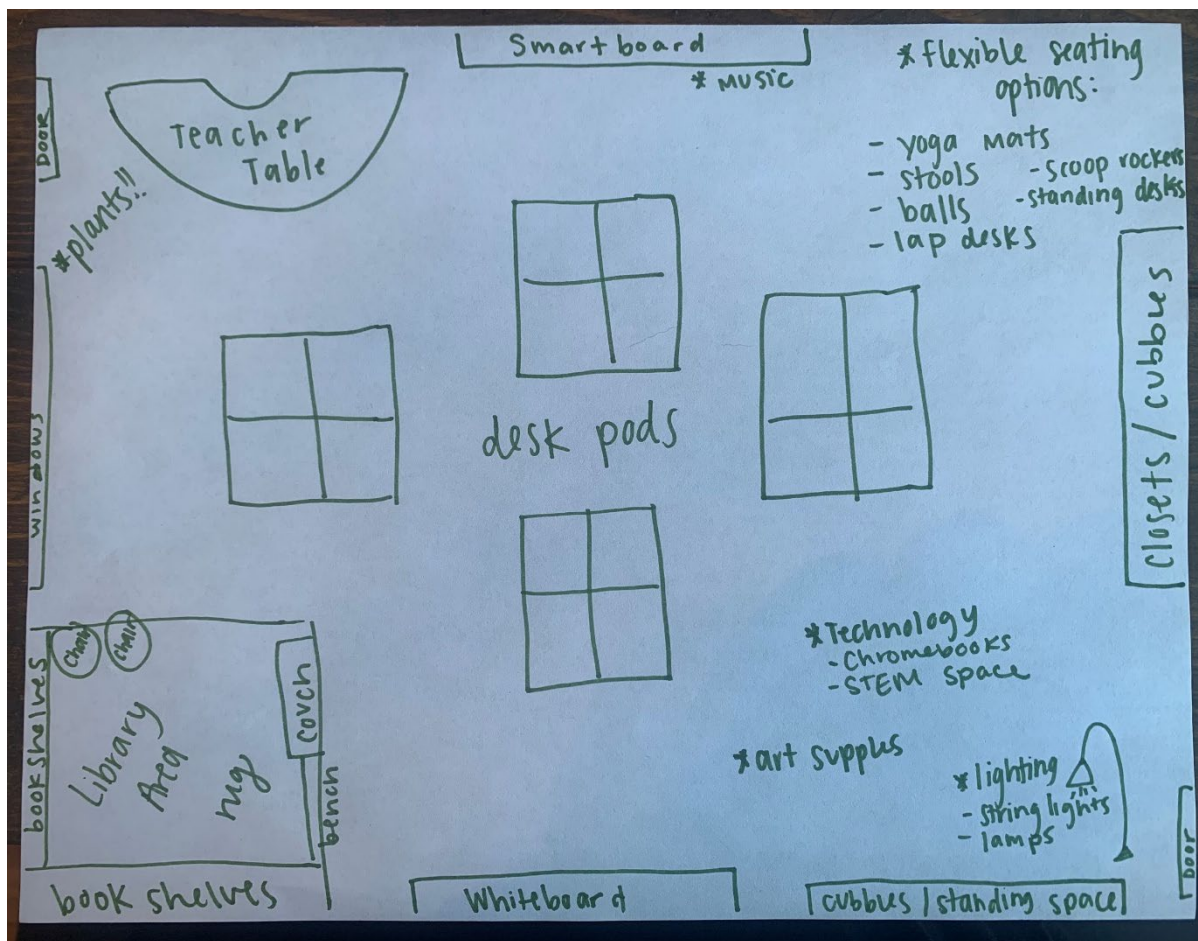
What does a typical student do in this space? Students will get to learn with peers, independently, and have access to technology and real-world manipulatives.

What kind of tools do the students and teachers use in this space? Science models and experiment supplies, math manipulatives, technology boards, teacher tables with slates and markers for interaction.

## Appendix I

### Esther Drawing Protocol

Using a piece of paper, digital tools, cutouts, or digital graphics, draw or sketch a picture of your ideal classroom space that would best promote and support student learning. The questions below may help you to explain your drawing so please respond to each question.



### **Appendix I (Continued)**

My ideal classroom has lots of flexible seating options for students who may learn better somewhere other than a desk. Flexible seating in my classroom would promote collaboration for students throughout the day. Though I would provide many options for seating, I still like to have desk pods for whole group learning and collaborative opportunities.

The materials I drew in my ideal classroom are: flexible seating options (yoga mats, stools, exercise balls, lap desks, scoop seats, and standing desks/areas), technology (Chromebooks, STEM space/Makerspace, green screen), art supplies, various lighting options (string lights, lamps, fluorescent covers, lots of natural light from windows), plants to bring life into the room, and a library area with comfortable seating arrangements.

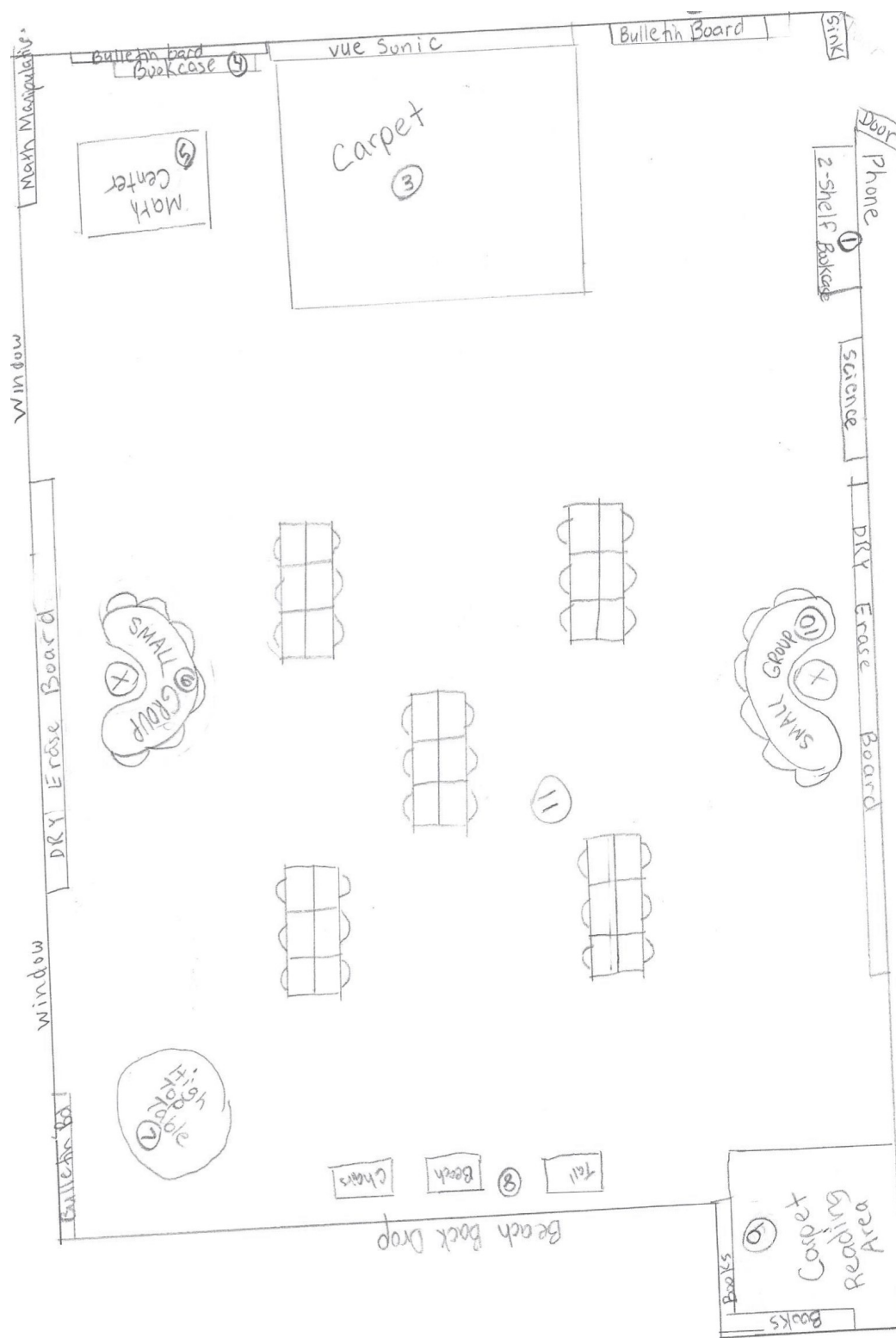
What does a typical student do in this space? Students in my ideal classroom space take responsibility for their learning. They are given opportunities to show their creativity and their understanding of material in a way that best suits them. They collaborate with one another and learn from each other. The teacher in my ideal classroom works with students, not in front of students. It is not a lecture-based classroom, but one in which the teacher promotes critical thinking in her students.

What kind of tools do the students and teachers use in this space? Students and teachers both use all of the tools noted above to display their learning in whichever way they see fit. If a student wants to show their understanding through an art project or through a Google Slides presentation, the tools are both available. Likewise, the teacher will use the tools to collaborate with students during independent time, sitting around the room with the students to hear their points of view during independent learning.



## Appendix J

## Flora Drawing Protocol



### Appendix J (Continued)

1. Bookcase - 2 shelf by door ● Children put homework
  - Peer tutoring supplies
  - Easily moves to barricade
2. Bulletin Board
  - Learning Targets
  - Shows students what success looks like o Students move their picture on target on where they feel that they ore at in achieving the target
3. Carpet
  - Facing Vue Sonic for Whole Group learning, morning meetings and closing meetings
4. Bookcase
  - Supplies
  - Anchor Charts posted above bookcase
5. Bookcase
  - Math manipulatives
  - Math center table for children to problem solve and work collaboratively together
6. Small Group Reading Table
  - Dry erase board to model word study
  - Bookcase by small group with students' book boxes and supplies for word study (sand, dry erase, magnetic letters)
7. High Top Table
  - Students' may work quietly here or use during group collaboration time, or literature book clubs
8. Tall Beach Chairs in front of Beach Backdrop
  - Students may choose to work quietly at these seats
9. Carpet Reading Area
  - Carpet area with beach like carpet
  - Palm Tree with lights in corner
  - Bookcases filled with books for students to read

### Appendix J (Continued)

10. Small Group area with dry erase board
  - Provides area for science lab and collaboration
  - Provides area for peer tutoring where students create remediation lessons for their "pupil" and then teach them the skill - this is done doily during last 20 minutes of school and I saw a great impact on student learning and self esteem.
  
11. Students' Desks
  - Arranged in groups to promote group work, problem solving, communication and collaboration
  - The arrangement of the desks Olso helps me to have room to flow freely throughout the room offering help and quick descriptive feedback to the students. This room arrangement also helps me to build relationships and trust so that the children will feel comfortable and safe.

The room decorations ore o beach theme with under the sea animals hanging from the ceiling, a beach umbrella top is hanging over both small group reading tables. Beach backdrop is hanging on the wall with high beach chairs for the children to sit in. A high top table has a gross skirt going around it to promote the beach theme. The reading corner has sand colored carpet with o palm tree in the corner containing lights.

\*\* This theme was actually created by my second grade classroom when I was able to loop with them into third grade. They helped me to design the layout, create the decorations, and came up with the theme. The students came in before school started in the summer and helped me to decorate the classroom and put up the bulletin boards. I then served them pizza and ice cream as o treat. They were very proud of themselves and I found that they took ownership of taking care of the classroom since they created it and mode sure that they kept it clean and organized throughout the year.

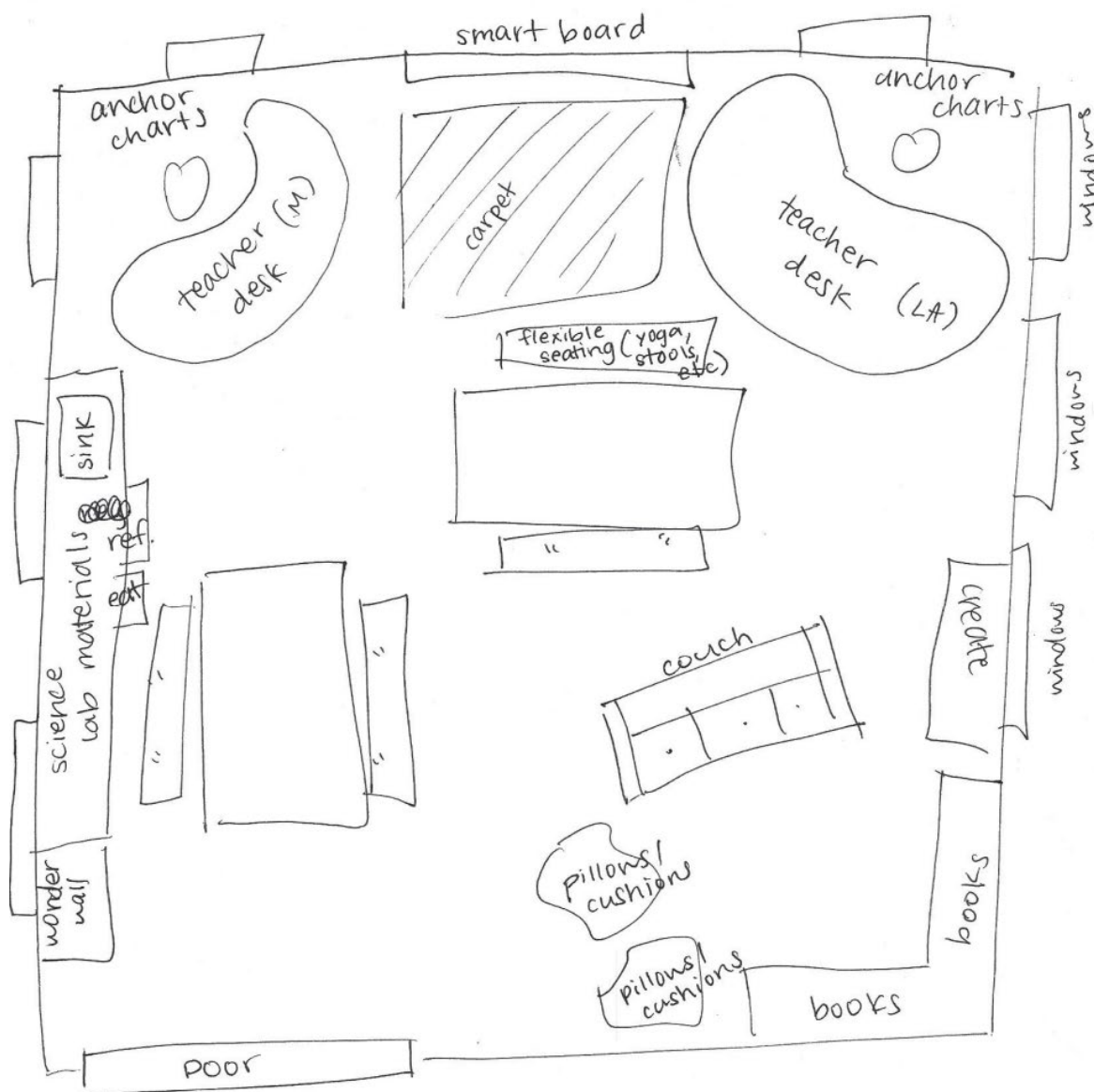
This room design was my all time favorite since it come directly from the students so I knew it was meeting their needs and wants. Watching them take ownership of the classroom and their learning is something I will always remember.

## Appendix K

### Gloria Drawing Protocol

#### Drawing Protocol

Using a piece of paper, digital tools, cutouts, or digital graphics, draw or sketch a picture of your ideal classroom space that would best promote and support student learning. The questions below may help you to explain your drawing so please respond to each question.



**Appendix K (Continued)**

My ideal classroom has enough space for teacher & student materials. sectioned spaces for different subjects.

The materials I drew in my ideal classroom are: Flexible seating options  
(yoga balls, <sup>wobble</sup> stools, pillows, couch, etc.). Lots of windows!

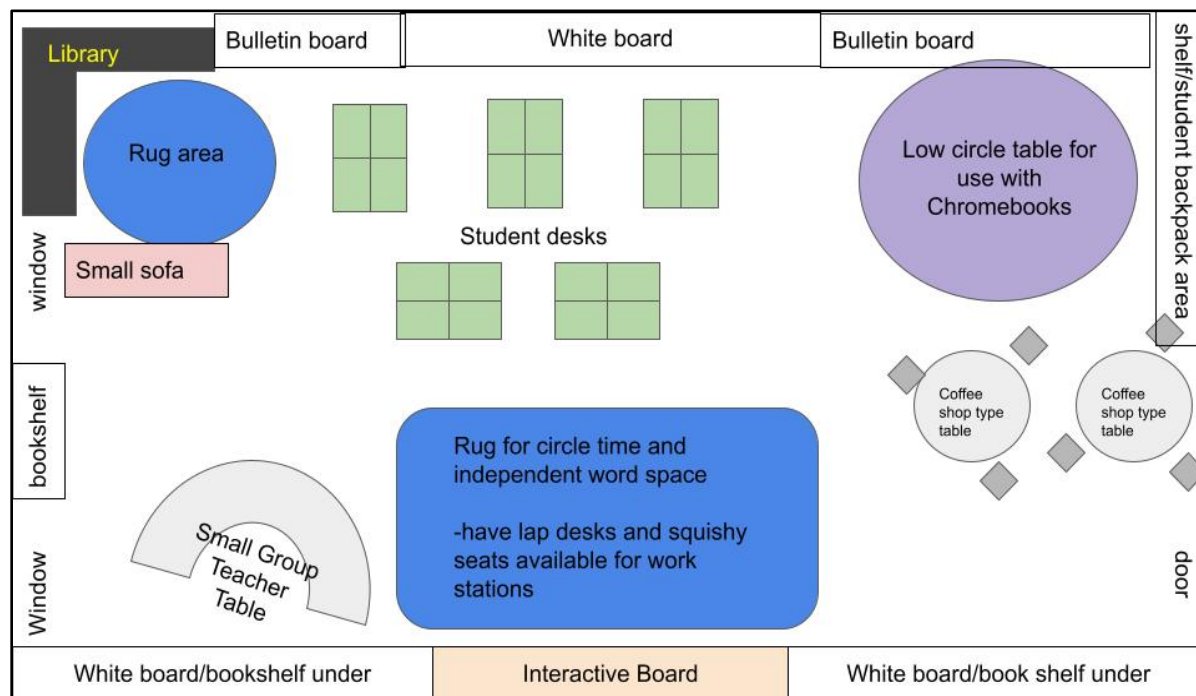
Big enough spaces to gather as a class.

What does a typical student do in this space? Float/rotate to wherever they needed to be. They can feel relaxed and still engaged.

What kind of tools do the students and teachers use in this space? Science lab materials, technology (smart board, chromebooks, etc).

## Appendix L

### Hebba Drawing Protocol



My ideal classroom has flexibility for the student workspace. I like having desks as a “home base” for students to store their work, come to the same place every morning and afternoon, and have a set group to work with when I want them to be more formal groups. I also like having enough options for every student to have space to work during independent stations.

The materials I drew in my ideal classroom are: a library, shelves for manipulatives and resources, floor space with rugs so students can sit around and work, plenty of options for work space.

**Appendix L (Continued)**

What does a typical student do in this space? I like students to feel comfortable in their surroundings. I also like for them to have a choice, but I like to have a space for them to go if they cannot handle that choice.

What kind of tools do the students and teachers use in this space? We have our books, materials, and resources available all day.

## Appendix M

### Analysis of Second Cycle Coding on Google Sheet

A	B	C	D	E	F	G	H	
flexible seating choices	my classroom	interactive	collaborative pod	organized everything	bookshelf	rectangular room	bulletin board	
futon, bar stools	in the past	define spaces	pod	teacher table	homework storage	natural light	stress me out	
manipulatives	U shaped	corner	close together with classmates	see entire room	barricade	windows	change them	
flexible seating	everyone can see	computer	table seating	Viewsomic board	peer tutoring supplies	learning	flexible seating	interactive board options
manipulatives	part time flexible seating close to teacher	door	interactive board	while group learning	own lesson plans	tutoring	pillows	books
natural light	flexible, independent area	my area	group collaboration	seated in same area	tutor others	peer-collaborative	cushions	science
natural light	sit at desk	bathroom	manipulatives	introducing lessons	bulletin board	visible	related	different
optional substitutes	whole group instruction	no wandering	movement	flexible seating options	learning target	ownership	engaged	interested
moving around	never	grouped to table	freedom to move	yoga mat	success looks like	learning target	two separate areas	materials
mindful meditation	too young	3-4 at table	rugs	flexible seating	choose your own adventure	learning target	science	home experiential
choose what's best	able	not mature	large windows	pillows	technology	explicitly different steps	compartmentalize	choose where they work
bunch of different options	choice	flexible seating	sunlight	collaborating	flexible	STEM space	science labs	different options
best choice for learning	opportunities	comfortable	laptop	technology	group seating arrangement	green screen	plants	bookshelves
their picking	technology	diffuser or lights	headphones	manipulatives	kidney table	display learning	living things	hands-on
flexible seating	love reading more	comfortable seating	windows/ sunlight	use and learn	classroom community	lights	small amount of students	carpet
traditional desks	natural light	relaxation	sitting at table	flexible seating	exposure	Library area	exposure	low circle table
choices	STEM center	time restraints	move back and forth	social-emotional learning	comfortable options	morning meetings	grouped desks	technology
inclusion teacher	manipulatives	fit it in	lap desks	collaborate with friends	levels and interests	student center supplies	flexible seating	personal kids
move and being focused	different	STEM center	structured independent area	donors choose	science examples	collaborate	math center	learning style
able to learn	open ended type area	do own thing	change	any kid any size	equality in physical size of storage	community of collaboration	open space	technology
nap	social-emotional	structured independent	effort, time restraints	give to people	open space	technology	small group	space for other teacher
learn	teacher's personal space	movement	pair up	comfortable	sit and listen to music	cool out	plants	honey atmosphere
able to stand	high students patience	get it quick	issue of confidence	STEM	COVID	rugs and pillows	movement	move around
maximize all learning	time slot able	very behind	part-time flexible seating	comfortable seating	sit somewhere else	come back when done	group of kids work together	bookshelves not tall
traditional classroom	movement	pair up	comfortable	sit and listen to music	open space	technology	small group	space for other teacher
accessible	student interaction	high students patience	get it quick	issue of confidence	STEM	COVID	rugs and pillows	movement
things I wish I had	that isn't feasible	issue of confidence	STEM	COVID	rugs and pillows	movement	move around	time slot able
natural light	Legos	not had chance	change	very behind	part-time flexible seating	comfortable seating	sit somewhere else	come back when done
ideal settings	accomplished	Donors choose	I wish	social media	successful	negative experience	flexible seating and choice	first hand knowledge
adapt it	make own songs	option	hit a bunch of different areas	resources	class I usually have	Title 1	I know my students	Needs and accommodations
able to learn	teaching styles	learn the best	resources	class I usually have	Title 1	I know my students	Needs and accommodations	IEPs
atypical learners	interest instead	similar chapter books	enjoy it more					
whole group carpet								



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