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Development Of An Instrument To Measure Faculty Adherence To The Norms Of Science

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DEVELOPMENT OF AN INSTRUMENT TO ASSESS CULTURAL INCLUSIVENESS WITHIN A PHYSICAL CLASSROOM ENVIRONMENT

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by

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ABSTRACT

The purpose of this quantitative study was to determine the criteria of a culturally inclusive classroom for the development of an environmental instrument. A classroom is a pedagogical site for learning (Jacobs & Leo, 2004). The physical space of environments contributes to our absorption of knowledge (Greenman, 2005). Before learning initiates through direct instruction or social interactions, individuals intrinsically understand the functionality of an environment based on how it is designed (Greenman, 2005).

Critical race theory and Lewin's field theory served as theoretical bases for this quantitative study. The field theory revealed that behavior is a function of personality interacting with the environment. Culturally-responsive pedagogy is enhanced when the classroom design and physical features reflect constructs of inclusivity.

The critical race theory and research of environmental theorists were used to develop a measurement model for a confirmatory factorial analysis. The theoretical constructs that were formed included: *identity validation, cultural congruence, authenticity, brain compatibility, and spatial intentionality*. A survey pertaining to classroom environments was created and distributed to nearly 1,000 educators throughout the Midwest. Data were collected for a factor analysis. Through the process of instrumentation, five factors resulted from the statistical analysis that included three out of the five original constructs. A new instrument was developed from the results of the factor analysis. This study will help educators who want a guide for designing an inclusive classroom environment.

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My research findings are the start of a new beginning. I am eager to see the revelations that will emerge with time and look forward to promotion of more inclusive classroom environments through this work. This has been an incredible journey!

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CHAPTER 1

INTRODUCTION

The criteria of culturally inclusive pedagogy will be examined in this quantitative study in order to develop an environmental instrument for the physical space of a classroom. Chapter one describes the purpose of space within educational settings. The relationship between pedagogy and environment will become transparent through the introductory section. In the following sections, the importance of culturally responsive pedagogy will be discussed as well as the need to measure inclusivity within the physical environment.

The physical space of environments contributes to our absorption of knowledge (Carter & Curtis, 2003; Greenman, 2005). Before learning initiates through direct instruction or social interactions, individuals intrinsically understand the functionality of an environment based on how it is designed (Carter & Curtis, 2003; Greenman, 2005). The spaces within an environment reflect a distinct purpose enhanced through visual imagery (i.e., colors, wall decor, symbols, etc.) and the arrangement of tangible materials (Carter & Curtis, 2003; Greenman, 2005).

Each environment transmits a message that exposes the value systems or beliefs of the individual who created the space (Carter & Curtis, 2003). The layout of the physical environment indicates the owner's desired mode of operation within the space (Carter & Curtis, 2003). If the owner of the space intends to foster intrapersonal relationships, conversations, and fellowship, tables may be evident within the environment as opposed to isolated chairs in a

scatter formation (Rothstein-Fisch & Trumbull, 2008). Cleanliness may imply that an individual values organization, control or exhibits a strong disposition of care (Carter & Curtis, 2003). Conversely, disorganization alludes to a potentially chaotic, apprehensive environment (Carter & Curtis, 2003). The environment reflects the values of the owner that in turn molds the response of individuals who inhabit the space (Carter & Curtis, 2003; Illinois Facilities Fund, 2000).

American schools are structures for learning (Jacobs & Leo, 2004). In the timespan of a year, elementary, school-bound children in the United States spend at least 1,000 hours in an instructional setting (Jackson, 1990). Children devote an adequate amount of their time in a space outlined by an instructor. The educator has the challenge of creating an environment with meaningful spaces that inspire student learning as well as a sense of community (Carter & Curtis, 2003). Educators not only communicate through verbal and non-verbal directives, but also convey understandings through the configurations and instructional objects placed within a classroom (Ladson-Billings, 1994; Gay, 1999). American teachers must question their educational philosophies in order to demonstrate the congruence between their values and classroom arrangements (Carter & Curtis, 2003; Isabell & Exelby, 2001).

The physical spaces within classrooms can promote an aura of inquiry, inclusiveness or identity through the lens of a child (Edwards, Gandini & Forman, 1993). Educators have the ability to generate spaces that directly reflect their beliefs (Carter & Curtis, 2003; Edwards, Gandini, & Forman, 1993). If an educator believes that children learn best through exploration, then the physicality of the room must comprise of objects that instigate student provocations (Carter & Curtis, 2003). Montessori (1995) stated that “the teacher’s first duty is therefore to watch over the environment, and this takes precedence over all the rest” (p. 277).

The experiences that we intend to provide to children are contingent upon the spaces that are created to support the practice (Carter & Curtis, 2003; Greenman, 2005). Educators have the ability to organize instructional materials in deliberate ways that evoke collaboration, independence, and intellectual work among learners (Montessori, 1995). As reflective practitioners, we must commit to a process of reflection that empowers us to think about the environment as being synonymous to the role of an educator (Wurm, 2005). Gandini (2012) described the classroom environment as "a place where adults have thought about the quality and the instructive power of space" (p. 340).

In addition to implementation of environmental factors that support and sustain beliefs, responsive educators examine the physical arrangements or materials that negate their values (Edwards, Gandini & Forman, 1993). The mandates from federal and state legislators place emphasis on standards, evaluations, assessments and student achievement that focus more on the responsibilities of school personnel than the educational rights of children (Carter & Curtis, 2003). Educators' internalizations of mandates may manifest through the physical designs of environments that amplify a simulation of order in ways that discard the voice of learners (Carter & Curtis, 2003).

In order to condition acquiescence among a student body, the classroom arrangement of desks or chairs may directionally align toward the location of the instructor (Rothstein-Fisch & Trumbull, 2008). Although the arrangement provides a sense of control for the educator, the needs of the diverse learning community may be obsolete. For example, rows of desks purposefully aligned in the direction of an instructor might be an inappropriate arrangement for the learner who requires modeling and peer socialization (Rothstein-Fisch & Trumbull, 2008). However, the arrangement remains to honor the personal interests of the educator, which does

not necessarily mirror the image of the learner. The culturally responsive educator is responsible for discerning an alignment between inclusive practices and the usage of classroom space (Thomas, Walker, & Webb, 1998).

Statement of the Problem

The classroom environment sheds light on educational values that exemplify how and where children should learn (Carter & Curtis, 2003). Importantly, our learning environments demonstrate values that are known as well as unconscious to the self (Carter & Curtis, 2003). Whether meticulously designed or not, each classroom conveys a message to a targeted audience (Wurm, 2005).

The student audience has become progressively culturally diverse (Gollnick & Chinn, 1998; Pai, Alder, & Shadiow, 2006). "Demographic data on birthrates and immigration indicate that there will be inexorably more children who are Asian American, Latino (but not Cuban American), and African American but fewer children who are European American" (Gollnick & Chinn, 1998, p. 2). Pai, Alder, and Shadiow (2006) provided similar findings regarding the influx of minority groups in generations to come:

> The Population Reference Bureau also predicts that by 2025 the percentage of Hispanics in the United States will rise to 18 percent, while the population of whites will decline to about 62 percent. Only about 13 percent of the population is projected to be African American. If current trends continue, by 2050 nearly half of the U.S. population will be composed of today's minority groups. (p. 5)

Cultural differences are inevitable in classroom environments (Gay, 1999). The cultural dynamics of students including *language, class, ethnicity, race, and religion* among students may differ from the contextual experiences of the educator (Gollnick & Chinn, 1998; Pai, Alder,

& Shadiow, 2006). While determining intentional spaces that promote learning among diverse children, educators must also examine the cultural values conveyed within their environments (Thomas, Walker, & Webb, 1998).

Individuals operate through a lens of their living, cultural experiences (Hickman & Alexander, 1988). Our actions and responses to others derive from our personal understandings of how the world works (Rogers & Farson, 1957). Ethnocentrism emerges when one believes that his or her cultural values are superior in comparison to other groups (Gollnick & Chinn, 1998). Although elements of ethnocentrism exist in deliberate ways throughout society, American classrooms may unintentionally mirror the narrow-minded views of culturally-unconscious educators (Gay, 1998; Gollnick & Chinn, 1998; Ladson-Billings, 1994). Gollnick and Chinn (1998) stated that in order "to make our classrooms multicultural, we need to learn the cultures of our students" (p. 298). Spindler and Spindler (1994) also echoed similar insights impact of culture within classroom environments through the following:

> Teachers carry into the classroom their personal cultural background. They perceive students, all of whom are cultural agents, with inevitable prejudice and preconception. Students likewise come to school with personal cultural backgrounds that influences their perceptions of teachers, other students, and the school itself. Together students and teachers construct, mostly without being conscious of doing it, and environment of meanings . . . (p. xii)

Culturally responsive teaching emerged in the 1970s in response to *racial and social* injustice (Gay, 1999). Prior to the application of cultural pedagogy, educators must evaluate their personal sensitivities regarding the social construct of *race, gender, sexual orientation* as well as the assumptions or barriers that inhibit cultural exchange (Gollnick & Chinn, 1998;

Singleton & Linton, 2006). Gay (1999) defined culturally responsive teaching as using the cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective. The educator that employs cultural responsive teaching affirms the cultural differences that exist in a heterogeneous student population (Gay, 1999).

Although culture is inclusive of many aspects (i.e., religion, gender, etc.), race relations and efforts toward equality tend to be a focal point within American schools (Singleton & Linton, 2006). The lack of cultural validations within the classroom environment projects an aura of inequality among minority students who are racially conscious (Thomas, Walker, & Webb, 1998). Students who have a strong sense of their own racial and ethnic identities are prone to seek out individuals or materials that acknowledge their views of the self (Tatum, 1997). Educators that teach from a Eurocentric curriculum may not have textbooks, literature, or instructional materials that honor the racial or ethnic identities of students (Ladson-Billings, 1994; Gay, 1999). Students embrace global consciousness when the educator delivers instruction in a physical space that is conducive for cross-cultural interactions (Bireda, 2002).

Accountability measures within education require educators to understand the complexities of each learner (Singleton & Linton, 2006). Cultural competency teachings have commenced in schools across the country as a means to dismantle misconceptions as well as stereotypes pertaining to the construct of race (Bireda, 2002). Participants, whether receptive to information or not, are typically offered research, tools, and guidelines for culturally relevant classrooms. However, the takeaways from cultural sensitivity discussions may not necessarily convey the conditions of the physical space that would yield the effectiveness of the pedagogy.

To administer practices aligned with cultural pedagogy, an educator must devise spaces that validate cultural identity (Thomas, Walker, & Webb, 1998). Bireda (2002) stated that

"creating an environment that is characterized by culturally responsive and culturally responsible behaviors is an ongoing process" (p. 83). Consequently, educators need to understand the components of cultural responsiveness in order to design a physical environment that intentionally mirrors the pedagogy (Ladson-Billings, 1994; Gay, 1999).

Existing environmental instruments, such as the *Learning Environment Inventory* (LEI) *and My Classroom Inventory* (MCI) tool devised by theorists, inspire an educator to rethink about their classroom space (Fraser, 2012). Although the environmental assessments integrate elements of inclusion in terms of collaboration, explicit terms pertaining to race and racial identity are omitted. The instruments also do not measure the growth or development of the individual who strives for proficiency in cultural pedagogy. Instrument ratings provide a baseline of environmental scales that do not indicate recommendations for the educational space.

Instructional practices that perpetuate cultural connectivity cause a paradigm shift in the values internalized by students as well as educators (Singleton & Linton, 2006). As the level of cultural awareness heightens, students become more cognizant of their surroundings as well as the materials used to bridge understandings (Gollnick & Chinn, 1998). The racial perspectives as well as cultural experiences that are discarded from literature, classroom layouts, and learning representations need to come to light in a culturally inclusive environment (Gollnick & Chinn, 1998). An instrument that measures cultural inclusiveness within the classroom environment would help the educator to determine the intentionality behind the spaces that are created (Carter & Curtis, 2003).

Purpose of Study

The purpose of this quantitative study is to determine the criteria of a culturally inclusive, physical environment for the development of an instrument. Existing environmental tools

measure the culture and climate, yet lack in the examination of physical attributes (Fraser, 2012). I intend to research environmental studies that delve into the intentional usage of space within classrooms. The study of pioneers who have paved the way for environmental research including John Dewey, Maria Montessori, and Loris Malaguzzi, will provide insights regarding the rationale behind the designs and materials within a space.

In order to distinguish the components of the instrument, I will examine the historical role of the classroom environment, the emergence of multicultural education, and inclusion studies. The Critical Race Theory (CRT) and Kurt Lewin's Field Theory will be incorporated as theoretical bases for the study. Furthermore, I intend to investigate existing environmental instruments as well as the methodology behind the tools.

The review of literature will determine themes for an initial classroom environment survey. The criteria for a culturally inclusive environment will derive from a factor analysis based on the results of the classroom environment survey. Importantly, the tool will demonstrate how an educator who employs inclusive instructional practices can progress in the development of a culturally responsive classroom environment.

Research Questions

This study is guided by two primary questions that intertwine the role of the environment and cultural inclusiveness.

1. What are the criteria for a culturally inclusive environment that should be considered for the development of an instrument?
2. What physical aspects of a culturally inclusive environment denote authenticity?

Significance of Study

School personnel that recognize the sense of urgency for inclusivity need to know how to develop environments that build on the cultural strengths of learners (Ladson-Billings, 1994; Singleton & Linton, 2006). An instrument with a comprehensive scale that rates the evolution of a culturally inclusive classroom would help educators to set the tone for equitable instruction. If an environmental instrument classified specific scales for inclusive spaces with incremental measures within each category, educators could determine the transformative progression of their culturally responsive classrooms. The intent of instrument is to prompt educators to reflect continuously and reinvent their environment in correspondence to the cultural dynamics (i.e., values, beliefs, experiences, race, ethnicity, etc.) within the classroom walls. Consequently, the instrument would incorporate criteria that intentionally acknowledge the cultural identities of learners.

Challenges and Limitations

Cultural competency teachings heighten the level of racial and social awareness of educators while working with diverse learners (Singleton & Linton, 2006). Although equity discussions in educational settings typically promote critical thinking, the insights may not change the cultural beliefs or values of the educators who participate in such professional development (Singleton & Linton). Test subjects or educators who do not hold cultural competency with a high regard despite professional development, research, and literature may not understand or adhere to the criteria devised for the instrument. Therefore, I cannot control the level of understandings that an individual has pertaining to culture, race, and identity. Importantly, I will have to examine my own bias throughout this study due to my experiences as a minority woman.

Delimitations

The purpose of this study is to develop an instrument that measures cultural inclusivity in a physical classroom environment. Public and charter schools will be included in this study. Private school personnel will not be invited to participate. Additionally, only K-12 educators who own a classroom space and have a cohort of students will be participants. Although there are many certified educator who serve in various capacities, this study is designed to inform educators who are the custodians of their environments. Therefore, support staff members who do not own a space for student instruction would not be qualified to participate in this study.

Personal Statement

Our experiences, whether positively or negatively charged, shape our identity and the values that frame our purpose. While pondering the purpose of education, I often reflect on the impact of educational leaders within my personal school experience. I attended a private, elementary institution that lacked ethnic diversity and cultural competency. Diversification of literature and topics pertaining to cultural awareness were rarely introduced into the learning environment.

Although the educational setting prepared students for the rigor echoed in higher education, it did not equip learners with viable lessons to navigate through diversity. Inherent stereotypes were evident through dialogues that occasionally created a sense of humiliation and shame towards my own cultural values. Therefore, as a young learner, many household conversations emphasized the importance of diversity, empathy, and the process of self-actualization. I learned how to own and nurture my strengths despite adversity as well as prejudice.

As a school leader, I recognize that my educational values correlate to my experiences. I want to produce critical thinkers who are globally conscious and internationally minded. Societal advancements are contingent upon the collaboration of individuals. Students must learn how to function in a world with many hidden norms and cultural differences. The work of theorist, Carl Rogers, expounds upon the principles of a fully function person which incorporates the acceptance of others (Rogers & Farson, 1957). Individuals are wired to handle situations differently based on their experiences and social contexts. Through education, individuals acquire tools for responsiveness while learning how to understand the construct of others.

I want to raise children who are comfortable with their racial identities due to the makings of their classroom environments. The classroom serves a vehicle to make our beliefs overt. I believe that children are spiritual, intellectual beings who consistently try to make sense of the world around them. They portray and have an inherent aura of innocence, which unconsciously enables them to embrace the values of acceptance, trust, and diversity. Children investigate their curiosities and dare to take risks before pondering the consequences. Through interactions, children simultaneously learn about their values and boundaries, which enable them to see themselves as unique individuals. The physical spaces within classrooms should reflect our values of what we believe children can do through their cultural strengths.

Definition of Terms

Authenticity refers to the validation of the self (Nair, Fielding, & Lackney, 2013).

Critical Race Theory: The examination of the evolving "relationships among race, racism, and power" (Delgado & Stefancic, 2001, p. 2).

Culture: The adopted systems, values and beliefs that influence the lives of individuals in a changing society (Rothstein-Fisch & Trumbull, 2008).

Culturally-Relevant Pedagogy is teaching that pairs the "contextual conditions for learning to the cultural experience of the learner" (Allen & Butler, 1996, p. 317).

Educator: The evaluator of student learning (Hattie, 2012).

Environment: The way the physical space is defined and refined via its ornamentation (Wurm, 2005).

Identity Safe Classrooms acknowledge the living experiences of the individual learner including race, gender, and class (Steele & Cohn-Vargas, 2013).

Inclusiveness is a term that will be used to describe the embracement as well as acknowledgement of diverse individuals (Steele & Cohn-Vargas, 2013).

Instrument refers to a tool that is used to measure a variable (Creswell, 2009).

Instructor: See Educator.

Space is defined as "the physical, unchanging features of the place in which one lives and works with children—doors, windows, access to the outdoors, and so on—and the inherent values about children and education these features reveal" (Wurm, 2005, p. 26).

Student approximations refer to the ways children convey their thinking in a learning environment (Christensen, 2000).

Summary

The first chapter describes the purpose of the environmental study. Space is designed for a distinct function. The objects, embellishments, and layouts within a space allude to the values of owner. Educators have the autonomy to create intentional classroom spaces. The environment conditions the response of individuals within the space. Although educators are responsible for nurturing the strengths of all children, their environments may inadvertently fail to recognize the diverse capabilities, cultural identity, or interests of students. Educators send a

conflicting message to students when their core values contradict with the physical elements within a classroom. Therefore, the development an instrument that measures cultural inclusivity will help educators and students to exist in a space that yields a sense of belonging and purpose.

The second chapter will delve into a review of literature pertaining to the historical role of the classroom environment, multicultural education, inclusionary theories, and the intention behind space. Criteria for the initial classroom environment survey should emerge through an in-depth study of culturally relevant pedagogy, CRT, Lewin's field theory, and pioneers of environmental studies. The intent of the literature review is to develop constructs for an initial environment survey.

After the development of constructs, the third chapter will describe methodology and the process of instrumentation. The statistical method, participants, hypotheses, and procedures will be discussed. Chapter 4 will reveal the data and implications from the factor analysis that will be used the development of the instrument. The final chapter will unveil additional revelations and reflections pertaining to the research study.

CHAPTER 2

LITERATURE REVIEW

The second chapter addresses a review of literature that examines the connection between the role of environment and culturally relevant pedagogy. This section reveals the reconfigurations of the American classroom. The classroom is described as a site for cultural preservation that transcends into a safeguard of pedagogy. Theorists of environmental and inclusion studies will emerge throughout this chapter; which will uncover intentional themes for the development of the instrument.

Past and Present Reconfigurations of American Classrooms

The classroom is historically recognized as a pedagogical site for learning (Jacobs & Leo, 2004). Spaces within educational environments set the tone for instructional practices (Jacobs & Leo, 2004). As innovations in education continue to emerge in American schools, the design and purpose of space will continue to change (Jacobs & Leo, 2004). Throughout the century, the physical spaces within classrooms have been reconfigured to represent educational values and learning objectives modeled by educators (Jacobs & Leo, 2004). Although environmental transformations inspired by researchers such as Loris Malaguzzi and Maria Montessori convey the story behind space, the emphasis on cultural values has been evident since precolonial America (Edwards, Forman, & Gandini, 1993; Greenman, 2005; Urban & Wagoner, 2014).

In the early 1600s, educational leaders from diverse geographical locations used education as a means to build cultural icons (Urban & Wagoner, 2014). Societal values were explicitly revealed through the teachings of elders (Urban & Wagoner, 2014). The Puritans viewed literacy as a key to cultural preservation (Urban & Wagoner, 2014). Literary teachings emphasized religious tenets in order to sustain the Puritan spirit (Bell, 1930). Puritans based their survival on parishioners who were able to instill the interpretations of laws and doctrines amongst societal members (Pai, Adler, & Shadiow, 2006; Rocheleau, 2003). The classroom was a pedagogical site for learning religious principles embedded in Puritan culture (Cremin, 1970).

The convergence of Puritanism and tribalism solidified the role of education as a bulwark for cultural values (Bayor, 2003; Urban & Wagoner, 2014). Native Americans employed teachings with the understanding that societal growth was contingent upon the retention of wisdom and knowledge. Tribal members demonstrated instructional practices through the technique of storytelling (Urban & Wagoner, 2014). Native Americans referred to youth who upheld the foundations of storytelling as *culture bearers* (Urban & Wagoner, 2014). The promising youth, who were receptive to the lessons of elders and mastered the art of storytelling, became prominent leaders within society (Urban & Wagoner, 2014). Tribal governance, including the "ceremonial leaders among the Hopi, the medicine men among the Navajo, or the ritual leaders among the Seneca" (Urban & Wagoner, 2014, p. 4) endured climatic changes attributed to European pioneers due to the educational guidance of culture bearers.

The Great Migration occurred from 1600 to 1630 in which nearly 295, 000 people fled from Britain to establish their roots in new developments (Urban & Wagoner, 2014). Approximately 25,000 additional English people ventured into Massachusetts Bay including colonies in Connecticut and Rhode Island (Urban &Wagoner, 2014). Colonists strived to

develop relations with native inhabitants through means of imposing their customs and religious beliefs on tribal members (Pai, Alder, & Shadiow, 2006). The Virginia Company of London required each region to provide education and the underlying principles of citizenship to Native American children (Urban & Wagoner, 2014).

Early attempts to foster schools among settlers and natives shortly ceased in 1622 due to the collision of cultural values between groups (Urban & Wagoner, 2014). Native Americans who fought to protect their pedagogical sites from immersion killed nearly 350 European settlers (Urban & Wagoner, 2014). The progression and regression of American schools in the colonial period reflected undertakings of leaders who strived to safeguard cultural values (Pai Alder, & Shadiow, 2006).

In 1642, the Massachusetts Bay colonists initiated the first enactment of laws pertaining to literacy which penetrated teachings of Colonial culture within education (Rocheleau, 2003; Pai, Alder, & Shadiow, 2006; Urban & Wagoner, 2014). The first law mandated for all children within the colony to receive an education (Rocheleu, 2003; Urban & Wagoner, 2014). Children were required to learn doctrines of their society (Pai, Alder, & Shadiow, 2006). Any form of educational neglect would yield to a penalty bestowed upon the guardian of the child.

The law of 1647 “established the need for structural space” (Rocheleau, 2003, p. 14) in promotion of educational practices. Massachusetts Bay governance devised laws that impacted all colonies within region (Urban & Wagoner, 2014). Consequently, in southern colonies educational laws fractionalized by territories due to the diversity of members who did not share similar religious backgrounds (Rocheleu, 2003). The emergence of education laws placed the development of structural buildings for instruction at the forefront of school innovations (Pai, Alder, & Shadiow, 2006).

School facilities populated throughout the mid and late 1600s (Urban & Wagoner, 2014). The pendulum of education shifted from an emphasis of cultural and religious beliefs to academic content areas of focus (Pai, Alder, & Shadiow, 2006). Classical literacy schools surfaced to address the growing demands in grammar proficiency (Urban & Wagoner, 2014). The Boston Latin School, known as the first public secondary school in the British colonies, established in 1635 (Urban & Wagoner, 2014). Dame schools for females as well as structures for higher education became prevalent during the Colonial era (Urban & Wagoner, 2014). Colonial leaders constructed utilitarian spaces for the instruction of pupils (Urban & Wagoner, 2014).

One-room schoolhouses also became a common, multi-purpose site for learning during the Colonial era throughout the age of the Enlightenment (Rocheleu, 2003). Schoolhouses served as community centers, spaces for worship and religious rituals, or destinations for local forums among stakeholders (Rocheleu, 2003). Colonial members established pedagogical sites within the heart of communities that limited traveling to a walking distance (Hille, 2011). The American schoolhouses accommodated 50 to 100 students (Hille, 2011). Neither educators nor students owned the spaces within the classroom environment. The architectural design of schoolhouses neglected to mirror the intent of education while open for public usage (Rocheleu, 2003).

During the Jacksonian era of the mid 1800s, President Andrew Jackson's political influence ignited the rise of the Common Man, which referred to the recognition of underrepresented groups (Urban &Wagoner, 2014). The Whig political party generated platforms for education during the Common Man movement (Urban & Wagoner, 2014). Whig advocates, Horace Mann and Henry Barnard, promoted the idea of the *common school*, which

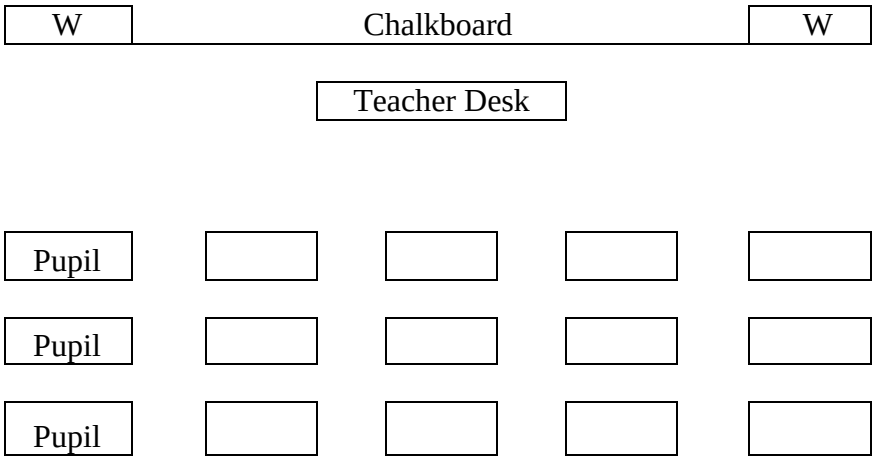
emphasized the development of non-sectarian, public institutions with uniformity in curriculum (Kirst & Wirt, 2009; Urban & Wagner, 2014). Curricular subjects under the common school movement were diversified to include music and art, physical education, science, and language development (Hille, 2011). The reforms, anchored in moral development were Mann's "conscious attempt to broaden and liberalize the academic program in schools" (Hille, 2011, p. 13).

Horace Mann was the secretary of the Massachusetts Board of Education (Weisser, 2006). The implementation of pedagogy became a focal point of interest for Mann throughout his commitment to the Board (Urban & Wagoner, 2014). Mann revered the pedagogical work of theorist, Johhann Heinrich Pestalozzi, who conducted an instructional method known as *object teaching* (Urban & Wagoner, 2014). The educator aligned in the pedagogy of *object thinking* used concrete materials at the start of the lesson to captivate the student audience (Urban & Wagoner, 2014). Pedagogy advancements caused reformers to draw their attention towards the design of buildings (Weisser, 2006). The architects of school buildings were inspired to think beyond the maximization of classroom space in terms of pupil capacity (Weisser, 2006). Reformers were determined to design spaces that distinguished the interactions between educators and students (Weisser, 2006).

Horace Mann led reforms that challenged educational leaders to reflect on the layout of space in classrooms (Weisser, 2006). Mann's standard design for schoolhouses included rows of desks that faced the direction of an instructor (Weisser, 2006). The proposal of school design under Mann's leadership also required the blackboard positioned in the front of the classroom with windows on two sides of the room (Weisser, 2006). Educators raised their desks on platforms, which allowed them to maintain visibility throughout the room (Weisser, 2006). The

spatial organization of the room distinguished the role of the educator as an authoritative figure (Weisser, 2006).

Figure 1. Horace Mann's Classroom Layout



Note. From Weisser, A. S. (2006, August). *Journal of Planning History, 5*(3), 196—217.

Reformers, Horace Mann and Henry Barnard, proclaimed that the spatial organization of a classroom should intrinsically narrate the purpose of the program (Weisser, 2006). Accordingly, an observer should understand the role of individuals within the classroom space based on its layout (Weisser, 2006). Barnard's reforms throughout the Northeast in the mid-1800s also revealed the importance of the architectural shell of a building (Weisser, 2006). As the populations grew within cities and towns, societal reformers focused their efforts on infrastructural developments and school buildings. The belief of reformers was that a well-designed building conveyed the community's investment in the education of youth (Weisser).

The Industrial Revolution progressed in the midst of school design reforms of the 1800s (Weisser, 2006). Child labor laws mandated school attendance, which led to overcrowded

educational institutions (Wagoner & Urban, 2014). The standardization of school designs became a necessity due to the upsurge in student enrollment (Pai, Alder, & Shadiow, 2006). Building designs disclosed an enlargement of structural dimensions to meet societal demands (Weisser, 2006). The former wave of one-room schoolhouses evolved into larger facilities with purposeful spaces including cafeterias, laboratories, gymnasiums, and auditoriums (Weisser, 2006). Reforms in New York City and various metropolitan areas focused on the modernization of outdated facilities (Weisser, 2006).

In the 1900s, architects published many books regarding the standards, evaluations, and construction of school buildings (Hamlin, 1910). Publications not only described layout suggestions but also focused heavily on the ventilation and lighting of classrooms. Hamlin (1910), author of a series of articles that addressed the blueprints of school buildings asserted the following:

> Abundant quantities of warmed fresh air should be introduced through ducts to each schoolroom, and care must be taken that the ducts are of sufficient area and directness for passing the required amount. Ducts should also be provided for removing the vitiated air. (p. 8)

Hamlin (1910) emphasized the importance of outdoor air and natural lighting within building design plans. Due the lack of electricity in the early 1900s, architects meticulously researched the location of sites to determine if the area was conducive for natural lighting. Classroom design standards called for light to project over the left shoulder of each student within the environment. The directionality of light acknowledged the dexterity of right-handed individuals. The common belief was that pupils should write with their right hard. Light that

projected over the left shoulder would serve as a shield of visibility for instructional tasks that required penmanship. Hamlin (1910) noted the following standards for lighting:

> The total window area should equal from 40 to 50 percent of the total wall area of the long side of the room, and in general, one-quarter the floor area of the classroom. The windows should extend up to within 6 inches of the ceiling; the window stools should be from 3 to 3 ½ feet from the floor. Light from below that level is useless; it is the height of the top of the window that determines its lighting efficiency. The sill should, however not be higher than 3 ½ feet from the floor, as it is desirable that the pupils should be able to rest their eyes at times by looking out at more or less distant object, which is impossible for many with a sill 4 ½ or even 4 feet high. (p. 8)

The designs of mixed gendered schools required at least three entrances (Hamlin, 1910). One entrance of the mix-gendered schools accommodated the general-public. Designers constructed additional entryways for each gender. In addition to gender precautions, safety considerations were also apparent through the development of split-level buildings. During inclement weather, pupils could seek immediate refuge within the basements of facilities as opposed to designs that required individuals venture for shelter outside of buildings. By the time of the Great Depression in the 1930s, architects established guidelines for lighting, safety (i.e., inclement weather, square footage per pupil), ventilation, and sanitation for school design reforms (Hamlin, 1910).

> Let the school building, then be solidly constructed, thoroughly fireproof, abundantly lighted, with adequate, straight halls and ample stairways, having sunshine and access for the outer air in every room besides abundant forced ventilation; let it be cheerful and attractive without and within, well placed and supplied with adequate playgrounds and

> pleasant surroundings, and it will be not only a source of pride, but a blessing to the community, as well as a credit to its designer. (Hamlin, 1910, p. 11)

The Public Works Administration (PWA) utilized funding to build schools in response to the Great Depression (Weisser, 2006). Although many architects adhered to standards devised by Hamlin and the Illumination Engineering Society, the Progressive movement of the 1920s sparked innovative revelations that reigned throughout the design of newer school models (Weisser, 2006). Educational designs of newer models emphasized the role of environment and space in relation to the learning responses of students (McDermott, 1981).

Reformer, John Dewey, perpetuated the concept of child-centered environments (McDermott, 1981; Hickman & Alexander, 1998). The child-centered approach embraced the notion that individuals learn in accordance to their unique learning styles (Hickman & Alexander, 1998; Hille, 2011). Pedagogical sites under the premise of the child-centered concept were designed to validate the different learning pathways of children (Hille, 2011). Dewey's work influenced the research of many theorists including Maria Montessori and Loris Malaguzzi who also created environments to sustain the interests of children (Greenman, 2005).

During the 1930s, architects in support of child-centered environments designed educational facilities known as the open-air school movement (Hille, 2011). The archetype of open-air schools demonstrated the mapping of outdoor learning environments (Hille, 2011). Designers also incorporated ventilation and lighting into the architectural plans of open-air schools (Hille, 2011). Reformers acclaimed that adequate building conditions guarded the well-being of the whole child (Hille, 2011). The open-air concept transcended into a mainstream initiative that thrived throughout the late 1940s (Hille, 2011).

During the same era, German theorist Kurt Lewin (1935) developed the field theory, which shifted the study of environment from a technical standpoint (i.e., standardization, ventilation, etc.) to a psychological concept. The field theory examined the role of the environment in relation to one's behavior (Lewin, 1997; Fraser, 2012). Lewin (1935) theorized that behavior was a function of one's life space or the influential stimuli that causes one to respond. The influx of growing diversity also prompted Lewin to engage in studies pertaining to social equity. Lewin promoted group belongingness and initiated cultural reconstructions that entailed reeducation of democratic environments (Lewin, 1997).

In the late 19th and early 20th centuries, immigration became a matter of concern for reformers steeped in efforts of socialization (Urban & Wagoner, 2014). Lewin's notion of cultural reconstruction was evident via the pilot of large, urban public schools (Lewin, 1997; Urban & Wagoner, 2014). School reform designers developed educational facilities as a means to address the growing population of immigrants as well as other urban citizens (Hille, 2011). One of the most notable developments was the Hull House in Chicago, Illinois, which served immigrants in multifaceted ways (Urban & Wagoner, 2014).

Jane Addams spearheaded the initiatives within the Hull House (Urban & Wagoner, 2014). Educational leaders provided professional offerings to immigrant families that included vocational and language trainings (Urban & Wagoner, 2014). The service fostered core values of citizenship (Urban & Wagoner, 2014). Public schools in alignment with the tenets of the Hull House became sites for Americanization (Pai, Alder, & Shadiow, 2006). School personnel discarded the cultural values of immigrants in pedagogical sites in order to assimilate individuals into American culture (Urban & Wagoner). Conformity was a key value immersed in instructional practices in order to produce contributing American citizens (Hille, 2011).

Urban schools varied in quality based on the expertise of the architect (Hille, 2011). Similar to the proposed environmental framework of Horace Mann, desks were arranged in rows and two windows were placed on the opposite sides of the classroom (Hille, 2011; Weisser, 2006). Ventilation, sanitation, and other safety precautions did not necessarily meet the standards of schools in mainstreamed, societal circles (Hille, 2011).

By the end of World War II through 1968, school personnel faced additional challenges related to growing enrollments (Urban & Wagoner, 2014). The student population increased by nearly two million pupils between 1958 and 1968 (Hille, 2011). Government officials dispersed approximately $20 billion for the construction of school facilities (Hille, 2011). The blueprints for newer models reflected modern designs that strayed from the archetypes of colonial structures (Hille, 2011). Diversification of growing communities led to a collision in societal norms in the 1960s (Urban & Wagoner, 2014). Riots disseminated among racial groups, which caused a state of crisis within education (Urban & Wagoner, 2014). Reformers in pursuit of equality engaged in potent forms activism to redefine the role of equity within American schools (Urban & Wagoner, 2014). The *Brown vs. Board of Education* (1954) decision embarked a movement that dismantled racial segregation within public education. Racial integration compelled scholars and social advocates to investigate instructional practices of American schools (Gay, 1999).

The 1970s marked the onset of multicultural education, which promoted culturally inclusive pedagogy, as well as bilingual education (Gay, 1999). Cultural reconstruction and tenets of Lewin's (1935) research emerged within American classrooms. Educators strived to use the cultural knowledge of diverse populations in their pedagogy (Gay, 1999; Ladson-Billings, 1994). Classrooms ingrained in culturally responsive teachings honored the

backgrounds of students through the usage of instructional materials that extended beyond Eurocentric views (Gay, 1999).

Toward the end of the twentieth century, many research developments emerged that measured the purpose and perceptions of classroom environments (Fraser, 2012). Theorists formulated classroom inventories such as the Learning Environment Inventory (LEI) in efforts to determine the correlations between environments and the learning of pupils (Fraser, 1998). Behavioral studies aligned with Lewin's (1935) field theory revealed the relationship between human consciousness and environment. Environmental instruments have continued to emerge within educational settings (Curtis & Carter, 2003). The environmental findings of theorists conveyed the educator's role in the reconfiguration of American classrooms (MacAulay, 1990).

Due to environmental research, contemporary educators are empowered to reflect on the layout of classroom space for the promotion of positive cognitive and affective experiences among student learners (MacAulay, 1990). "A democratic world order does not require or even favor cultural uniformity all over the world" (Lewin, 1997, p. 36). Furthermore, "to encourage change toward democracy a change of values in a vast realm would have to be accomplished" (Lewin, 1997, p. 36). The American classroom is a vast realm of learning with many cultural values and implications demonstrated through its physical space (Carter & Curtis, 2003; Greenman, 2005). Educators are the custodians of the American classroom (Montessori, 1995). The pedagogical site that preserved cultural values of individuals groups in the Colonial Era, must protect the identities of pupils in the present (Ladson-Billings, 1994).

Theoretical Framework

The field theory and critical race theory (CRT) will serve as theoretical bases for this environmental quantitative study. In the following section, the implications of both theories will

be discussed as well as the theorists behind them. Initially, the theoretical section will outline the work of Kurt Lewin before delving into CRT tenets. The theories will set the tone for the role of the environment and pupil identity within American classrooms.

Kurt Lewin's Field Theory

German theorist, Kurt Lewin, developed the field theory in the 1940s (Fraser, 2012; Lewin, 1935). Lewin (1935) studied the relationship between an individual and the environment. He theorized that behavioral responses were contingent upon the stimuli in an individual's surroundings. Lewin (1935) referred to stimuli or influential factors that alter behavior as *life space.* "The development of experimental psychology shows more and more definitely that a person and what might be called his psychological environment cannot be treated as separate entities but are dynamically one field" (Lewin, 1997, p. 125). Lewin's life space concept conveys how the individual and environment are a forceful entity that drives behavior (Lewin, 1935).

Lewin characterized the field theory as a "method of analyzing causal relations and of building scientific constructs" (Lewin, 1997, p. 201). Lewin (1935) analyzed the function of behavior as directly related to one's *life space*. The formula that derived from the study of *life space* (LS), behavior (B), the interface of person (P) , and environment (E) was expressed as, B=*f* (LS)=F(P,E) (Lewin, 1997). Lewin demonstrated behavior as the function of *life space*, which derives from an individual's interaction with the environment (Fraser, 2012; Lewin, 1997).

The properties of life space also depend on the state of the individual as a product of lived experiences (Lewin, 1935). Individuals perceive situations differently based on their social contexts (Moos, 1979). The environment (E) aspect of the theory correlates to the situation that

involves humanistic interactions (Lewin, 1935). In correlation to classroom environment, Lewin (1997) provided the connection between theory and practice:

> Every child is sensitive, even to small changes in social atmosphere, such as the degree of friendliness or security. The teacher knows that success in teaching French, or any subject, depends largely on the atmosphere he is able to create. That these problems have not been properly dealt with in psychology until now is due neither to their unimportance nor to any specific difficulty in the empirical determination of atmosphere, but mainly to certain philosophical prejudices in the direction of physicalistic behaviorism. (p. 214)

The thriving individual must identify a connection with the environment. Each individual possesses a unique set of psychological needs. The combination of needs and experiences set the perceptual tone in how one receives their surroundings (1997). As individuals reinvent themselves due to new understandings, shifts may occur within their *life space* (Lewin, 1935). If the properties of one's life space reflect instability, then dysfunctionalities may exist within the individual or environment (Lewin, 1997).

Lewin's theory linked the environment to the actions of individuals (Fraser, 2012). In a classroom setting, the act of learning is a product of the pupil and the environment (Lewin, 1997). "The environment can exert a potential influence on the extent and kind of change that occurs in human characteristics" (Moos, 1979, p. 3). Cultural identities of students as well as their self-worth are predicated on physical spaces (Moos, 1979). Lewin's (1935) seminal work has inspired many other theorists to investigate spaces that occupy the time of children, including classrooms and social groups (Fraser, 2012; Moos, 1979).

The Critical Race Theory

Critical race theory or CRT is a theoretical framework that provides an in-depth analysis of race jurisprudence (Delgado & Stefancic, 2001; Milner & Ross, 2006). In the 1970s, a group of interdisciplinary scholars and activists embarked on a movement to address components of the Civil Rights movement that remained undeveloped (Delgado & Stefancic, 2001). The destabilization of racial advancements caused activists to question the practicality in methods used to engender social justice (Delgado & Stefancic, 2001; Milner & Ross, 2006).

Social advocates needed new strategies to combat the hidden layers of racism engrained within societal norms (Delgado & Stefancic, 2001). Scholars in pursuit of racial equity intentionally examined the intricate dynamics and evolving relationships among race, power, and racism (Delgado & Stefancic, 200; Singleton & Linton, 2006). The theory encompasses a comprehensive interpretation of race including historical contexts, levels of racial consciousness, and constructs of self (Delgado & Stefancic, 2001).

Derrick Bell was the widely acclaimed frontrunner of the Critical Race Theory (Delgado & Stefancic, 2001). His career pathway intertwined activism, law, and education as professor of law at New York University. In partnership with Richard Delgado (2001) and Allan Freeman, Bell initiated a movement that fostered the study of power differentials within race. Bell, Delgado, and Freeman met in a conference held in Madison, Wisconsin in 1989 to discuss ameliorative efforts that evolved into the CRT. Theorists were determined to trace the origins of systemic racism as well as unveil the structures that steward discriminatory practices within political systems.

CRT acknowledges that racism is a normality acutely engrained in American systems (Singleton & Linton, 2006). People of color are exposed to racial injustice in the form of

colorblindness and discrimination (Delgado & Stefancic, 2001). CRT asserts the premise that racial progressions are contingent upon the self-interest of White elites or a theme known as interest convergence (Delgado & Stefancic, 2001; Milner & Ross, 2006). Social justice prevails when behaviors are aligned with the motives of the dominate group (Delgado & Stefancic, 2001).

Another theme of CRT described by Delgado and Stefanic (2001) is social construction. Race is a social construct deriving from the product of interactions and perceptions. Individuals connect pseudo attributes to races, which strengthen stereotypical views. The CRT recognizes the concept of differential racialization that "each race has its own origins and ever involving history" (Delgado & Stefancic, 2001, p. 8).

Each individual exists in a different living experience (Singleton & Linton, 2006). A unitary identity of individuals within a race is a null concept (Delgado & Stefancic, 2001). The CRT affirms an individual's identity, cultural encounters, and affiliation to a specific gender, nation, or class drives behavior (Delgado & Stefancic, 2001). Therefore, the CRT elicits narratives or counterstories from people of color in order to understand the oppression that arises from systemic racism (Delgado & Stefancic, 2001).

Hallmark themes of the CRT also include the critique of liberalism, whiteness as a property, and revisionist history (Delgado & Stefancic, 2001). The critique of liberalism addresses the issue of colorblindness that is steeped within our educational, judicial, and political systems (Delgado & Stefancic, 2001; Milner & Ross, 2006). Colorblindness is defined as the disregard for an individual's racial identity or characteristics (Milner & Ross, 2006). The colorblind concept is guised as a form of equality that promotes equal opportunities for all (Milner & Ross, 2006). However, colorblindness perpetuates the permanence of systemic and

institutionalized racism (Delgado & Stefancic, 2001; Gay, 1999). "CRT scholars argue that color blindness has been used in conservative circles to justify ignoring and dismantling of race-based policies designed to address societal inequity" (Milner & Ross, 2006, p. 24).

The colorblind mentality is divisive within American schools (Wise, 2010). Preservice educators receive minimal or no training at all regarding the best practices that disassemble racial inequality within schools (Milner & Ross, 2006). The lack of equity preparations within higher education intrinsically nudges educators to develop a blind eye to the racial and ethnic identities of students that affect engagement (Milner & Ross, 2006). Therefore, unresponsive educators project Eurocentric curriculum upon students without perspectives from cultural revisionists (Wise, 2010). Literature classics that are course requirements within elementary and secondary settings omit literary works by authors of color (Ladson-Billings, 1994; Millner & Ross, 2006). The subliminal message of equity within American schools conveys that race and identity do not have a space within education (Wise, 2010).

Colorblindness widens the gap of racial disparities (Wise, 2010). Zero tolerance policies that enforce removal for disciplinary violations serve as a catalyst for racial inequities within educational and judicial systems (Losen & Skiba, 2010; Wise, 2010). The notion that punishment via punitive measures ameliorates behavioral outcomes is a fallacy that harbors no substantial evidence (Losen & Skiba, 2010). Suspension rates since the 1970s have doubled for minorities, with a high concentration of African—American students represented (Losen & Skiba). Exclusionary methods have evoked an alarm for educational reformers to thoroughly scrutinize disciplinary polices as the racial lens of educators (Losen & Skiba).

Educational tracking also reveals traces of colorblindness with schools (Wise, 2010). African Americans are more than likely diagnosed with a mental or emotional disability in

comparison to White counterparts (Wise, 2010). The labeling of students allows others including the child to stigmatize his self-worth. Students labeled with a learning disability are 20% more likely to abstain from education and contribute to school dropout rates (Wise, 2010). Conversely, not enough African Americans and Latinos are labeled high ability or placed within advanced placement (AP) courses (Wise, 2010). The disparity may emerge due to culturally biased entrance examinations or the paucity of advance courses offered in urban regions (Wise, 2010).

Wise (2010) described the inequalities within California schools in his book, *Colorblind. In California*, "There are more than 125 high schools without a single AP class" (Wise, 2010, p. 107). The high schools were predominantly comprised of Black and Brown children. Due to the scarcity of offered advance courses, the students were at a disadvantage while in pursuit of higher education (2010).

The median grade point average for a first-year UCLA student in the 1990s was 4.15 on a four-point scale (2010). In order achieve a grade point average of 4.15, applicants were required to have a background with AP coursework. The typical grade point average for a White student a UCLA was unattainable for thousands of African Americans and Latinos due to the unavailability of AP coursework. Despite the intentional efforts and work ethic of students of color, the ULCA grade point average was not a realistic measure (2010). When educators do not recognize the racial disparities within policies, regulations, and systems, colorblindness manifests into institutionalized racism (Singleton & Linton, 2006; Wise, 2010).

Colorblindness also reigns through educational curriculum in another CRT theme called revisionist history (Delgado & Stefancic, 2001; Wise, 2010). Textbooks are the source of classroom instruction (Apple, 1985; Gay, 1999). As elementary students matriculate into

secondary settings, the dominance of textbooks increases (Gay, 1999). Students who are trying to construct their knowledge via the usage of textbooks operate under the premise that the nonfictional texts are incontestable (Gay, 1999; Milner & Ross, 2006).

Historical information presented in an educational setting is valid in the eyes of the learner (Gay, 1999). However, numerous textbooks neglect to acknowledge the multicultural perspectives outside of mainstreamed American interpretations (Delgado & Stefancic, 2001; Gay, 1999). Gay (1999) asserted that textbooks present an imbalance of ethnic groups with a narrow focus on African Americans in comparison to other ethnic groups. The information is conservative in nature, highlighting the contrived road to equality including the slave trade and social activism. Contemporary issues are overshadowed by the historical perspectives of White males (1999).

The revisionist history concept analyzes American interpretations engrained within historical records (Delgado & Stefancic, 2001). Revisionists challenge the Eurocentric views and threads of ethnocentrism that resounds in historical texts (Delgado & Stefancic, 2001). "Moreover, when multicultural material is included in the curriculum, the treatments are generally superficial or teachers are either unwilling, unprepared, or both to substantively engage in the material" (Milner & Ross, 2006, p. 26). CRT revisionists intentionally acknowledge and replace misconceptions of historical events with accounts that validate the experiences of minorities (Delgado & Stefancic, 2001).

Derrick Bell argued that the CRT tenet, interest convergence, embarked the advancements recognized through the Civil Rights Movement including the prominent *Brown vs. Board of Education* (Delgado & Stefancic, 2001). During the Korean Conflict and the Second World War, African—American servicemen worked in collaboration with White counterparts

despite the racial discrimination that thrived outside the fight for democracy (Delgado & Stefancic, 2001). Bell declared that minority servicemen would not subject themselves to social vilification upon return from war. Therefore, the United States government recognized the need to soften regulations pertaining to inclusivity. However, Bell's counterstory is omitted from the thousands of textbooks that emphasize the intricacies of the pivotal *Brown vs. Board of Education* case (Delgado & Stefancic, 2001).

Throughout the years, theorists have conducted research pertaining to the work of historical revisionists (Gay, 1999). Culturally responsive theorists study the exploitation of diversity, racial issues, and representation of stories presented within educational textbooks (Gay, 1999). Gordy and Pritchard (1995) analyzed 17 fifth-grade historical texts proliferated throughout the curriculum of Connecticut schools. The purpose of the study was to investigate the documented narratives of slavery from diverse men and women. Conclusions deriving from the study indicated a lack of thorough cultural critiques. The textbooks used to provide a knowledge base for learners did not explicitly address the exploitation of slaves, justifications for slavery, or the correlations between the slave trade and the present living experiences of racial groups (Gordy & Pritchard, 1995).

Gay (1999) stated that the "omissions and myopic analyses of ethnically diverse peoples, issues, cultures, and experiences imply that they are irrelevant and even expendable" (p. 117). Educational theorists have also scrutinized children's fictional literature. In literary work, depictions of minority characters vanish from books or the portrayals of minorities are apparent in derogatory ways. Deane (1989) conducted a study that allowed him to review 300 widespread fiction books for children. He focused on the depiction of African—American characters within classic series (i.e., Nancy Drew, Hardy Boys, Sweet Valley Twins, etc.). Although the findings

did not demonstrate disparaging images of African-Americans, the presence of diverse racial groups within texts was unfounded (Deane, 1989).

CRT revisionists empower individuals within the field of education to remove misconceptions, discriminatory views, and inequitable language out of the learning tools the impact the social growth of youth (Delgado & Stefancic, 2001). Gay (1999) asserted that the "inadequacies of textbook coverage of cultural diversity can be avoided by including accurate, wide-ranging, and appropriately contextualized content about different ethnic groups' histories, cultures, and experiences in classroom instruction on a regular basis" (p. 117). Educators have the authority to replace misrepresentations with authentic stories (Gay, 1999).

The final CRT tenet of focus for this environmental study is whiteness as a property (Milner & Ross, 2006). Theorists adhering to the property principle accept the notion that whiteness or the construct of the White racial identity encompasses privilege and rights that exclude people of color (Milner & Ross, 2006). CRT theorists essentially view the field of education as a property of whiteness given the lack of racially diverse educators in primary, secondary, and collegiate settings. Murrell (2007) stated that "cultural learners are reading the inscription of identity of participants in human interactions, including themselves and including multiple perspectives" (p. 69). Therefore, educators must engage in best practices that address identity, responsiveness, and diversity within American schools (Murrell, 2007).

Synthesis of Field Theory and CRT in Relation to Study

Lewin's (1935) construct of *life space* (LS) encompassed the situations that occur within an environment (E). The classroom serves as a *life space* for students who spend a majority of their time in an instructional setting. Lewin (1935) expressed behavior (B) as a function of *life space*. Similarly, the stimuli within the environment influence how people respond to their

surroundings. People perceive the classroom space differently based on their cultural autobiographies and lived experiences. Perceptual, diverse individuals will connect to their environments via different entry points or perhaps, with no connectivity at all. Therefore, field theory lends to the importance of culturally responsive teaching which intentionally focuses on the *life space* of students in ways to optimize their learning experiences (Lewin, 1935).

People are not born with a definitive identity (Milner & Ross, 2006). The identity develops due to the *life space* and constructs that individuals adopt (Lewin, 1935; Milner & Ross, 2006). Environments make constructs overt based on the materials within the physical space. "Architecture and physical design can influence psychological states and social behavior" (Moos, 1979, p. 20). The *life space* describes the living situations of students inclusive of teachable moments that yield to a sense of self-worth (Lewin, 1935). If the life space or instructional pedagogy reflects instability, the field of environment reflects dysfunctionality. Therefore, pedagogy and environment must strategically align in order to elicit an advantageous behavioral response from learners. Fields, environment and pedagogy, become an entity that drives how a student performs (Lewin, 1997).

Culturally responsive teaching is a pedagogy that yields to cultural understandings and connectivity (Gay, 1999). Responsive educators strive to understand the role of culture within their own lives as well as in the experiences of the children they serve. "Strengths are dynamic, contextual, and culturally expressed" (Milner & Ross, 2006, p. 50). The value of strengths varies across cultures. Responsive educators validate the social contexts of students and cultivate relationships that surpass barriers of discrimination (Gay, 1999). Responsive educators who also teach students how to ascertain multiple perspectives challenge the hidden curriculum of textbooks (Gay, 1999). Thus, educators create space for courageous conversations regarding

social justice that creates a democratic aura within the classroom environment (Steele & Cohn-Vargas, 2013).

Responsive teaching validates, which is a foundational principle of the CRT (Delgado & Stefancic, 2001; Ladson-Billings, 1994). The revisionist history concept exemplifies the importance of identity validation within American schools (Delgado & Stefancic, 2001). Ethnically diverse students must see themselves reflected in the curriculum in order to develop self-worth (Steele & Cohn-Vargas, 2013). Unintentional omissions of racial issues, social inequities, and cultural representations may become a penetrating force within one's *life space*.

Culturally responsive educators also examine their role in the perpetuation of institutionalized racism (Gay, 1999; Singleton & Linton, 2006). Educators intentionally study the complexities of race including how various constructs contribute to behavioral responses (Singleton & Linton, 2006). As custodians of the environment, responsive educators continuously assess the audibility of voice and thoroughly note the underrepresentation of minorities to dissemble the property principle.

The field theory united with CRT yields an equation that expresses behavior as a function of the entity, pedagogy and environment (Delgado & Stefancic, 2001; Lewin, 1935). In relation to the study, the pedagogy of focus is cultural inclusivity. The entity of pedagogy and environment is a synonymous relationship. If the pedagogy is culturally responsive, then the environment must steward the pedagogy. Conversely, if the spaces within a classroom promote inclusivity, then the pedagogy must mirror the intention of the environment.

Table 1

Implications of the Critical Race Theory and Field Theory (Delgado & Stefancic, 2001)

Theory	Tenets	Definition	Implications for Modern Education
Critical Race Theory (Bell, Freeman, and Delgado)	Ordinariness of racism	Racism is real and exists in overt as well as hidden societal structures	Emphasizes the need for educators to examine and dismantle institutionalized racism
	Colorblindness	The disregard for racial and ethnic differences which allows one to see everyone in the same way	Pedagogy that acknowledges the individual strengths and differences of students as assets within the learning environments
	Interest convergence	Social justice is contingent upon the self-interest of white elites	Emphasis on student interest that drives instruction to eliminate teacher bias
	Differential racialization	Each race has its own origins	Acknowledgement that each student has a unique identity that does not necessarily reflect the experiences of others within the same racial group
	Voice of color	Lessons learned via storytelling	Emphasizes the importance of multiracial perspectives in a learning environment
	Revisionist history	Revising history to reflect voices of the oppressed	Dismantlement of Eurocentric curriculum that does not acknowledge makings of history with multiracial perspectives
Field Theory (Lewin)	Behavior is a function of environment	Individuals respond based on the stimuli within an environment	The creation of physical environments that enhance what is being taught by an educator

Early Pathfinders of Environmental Studies

Prior to the development of the Critical Race Theory and Lewin's field theory, a variation of theorists examined the role of pedagogy and environment. Dewey (1902) and Steiner (2003) introduced new forms of pedagogy grounded in inquiry and imagination, which transformed primary and secondary levels of education. The work of Maria Montessori (1995) and Loris Malaguzzi demonstrated the relationship among pedagogy, educators, students, and physical space (Wurm, 2005). Montessori conveyed that educators were custodians of space, while Malaguzzi emphasized the metaphorical concept *environment as a third teacher* (Wurm, 2005). The criteria of the instrument will reflect philosophies of pathfinders specified in the following section.

John Dewey

The Progressive Movement of the late 19th century marked an era of refinement within educational environments (Urban & Wagoner, 2014). Traditional Euro—American curricula emphasized preparatory courses for higher education differentiated by social class (Urban & Wagoner, 2014). The traditional model of education focused on the role of the educator and curricular content rooted in classical studies (Urban & Wagoner, 2014). Conversely, the Progressive Movement addressed the rights of pupils and curriculum steeped in the social experiences of learners (Pai, Alder, & Shadiow, 2006). Pedagogical progressivism emphasized the significance of child-centered best practices (Mooney, 2000; Pai, Alder & Shadiow, 2006). Programs that exhibited progressive ideas incorporated cooperative learning, the promotion of critical thinking, and evaluative tools for the individual learner (Mooney, 2000).

John Dewey was an exemplar of progressive education (Mooney, 2000). He studied philosophy at the University of Vermont (Mooney, 2000). In 1884, Dewey earned a doctorate

degree from Johns Hopkins University (Mooney, 2000). Dewey was determined to examine the correlations between societal problems and education (Mooney, 2000; Pai, Alder, & Shadiow, 2006). He viewed school as an institution for socialization (Hickman & Alexander, 1998). Dewey accepted a teaching position at the University of Chicago in 1894 that allowed him to intertwine psychology and educational theory (Mooney, 2000). Education, in accordance to Dewey's philosophy, was a process of living rather than a means to prepare individuals for living (Hickman & Alexander, 1998).

Progressive education emerged as an alternative to formalized standards for teaching (Hickman & Alexander, 1998). The University of Chicago became the center of thought on progressive education with the inception of Dewey's Laboratory School in the late 1800s (Mooney, 2000). Dewey believed that curricular innovations should improve schools as well as communities (Pai, Alder, & Shaidow, 2006). He articulated his educational philosophies in a series of books and articles, including The *School and Society* and *The Child and the Curriculum* (Urban & Wagoner, 2014). Publications in favor of progressive education outlined a democratic approach to teaching (Urban & Wagoner, 2014). Educators under the progressive movement, devised a curriculum based on real-world experiences (Urban & Wagoner, 2014).

Dewey's educational beliefs posed controversy among leaders who valued the traditional era of education (Urban & Wagoner). The opposition disagreed with the democratic approach to teaching (Mooney, 2000). Democratic pedagogy allowed students to have an influential role in their learning that defied disciplinary principles of the traditional model (Wagoner & Urban, 2014). Students no longer remained stationary nor received information in ways that casted an educator as a primary tool for learning (Pai, Alder, & Shadiow, 2006). Conversely, an educator

was responsible for pedagogy that linked to the child's level of interest (Wagoner & Urban, 2014).

Educators had to know their content area of focus and understand the cultural dynamics of each learner (Pai, Alder, & Shadiow, 2006). The cultural identities of students were an integral part of curriculum development (Pai, Alder, & Shadiow, 2006). Dewey insisted for educators to eliminate racial and cultural barriers that prohibited the growth of a democratic community (Pai, Alder, & Shadiow, 2006). Educational leaders against progressive education disapproved of the degree of student autonomy and lack of structure from authoritative figures (Mooney, 2000).

Dewey (1902) conveyed that learning was contingent upon the stimuli that surrounded pupils. He believed that memory retrieval occurred through productive struggle and extensive investigations. Dewey wanted the traditional subjects of education to transform in ways that would nurture the growth of children and societal needs (McDermott, 1981; Pai, Alder, Shadiow, 2006). He sought to create student-driven environments within schools to promote inquiry based learning (Mooney, 2000). Dewey (1902) believed that educators needed to build curriculum from the background knowledge of students as well as their living experiences.

Pedagogical Influences of Dewey

Dewey (1944) emphasized that children understand societal contexts through their living experiences. Humanistic interactions and literary language in educational settings encourage the child to fractionize his understandings of the world (Hickman & Alexander, 1998). Dewey valued education as "the fundamental method of social progress and reform" (McDermott, 1981, p. 452).

The student-oriented pedagogy involved methods of documentation (Mooney, 2000). Dewey (1902) conveyed the importance of observations and student records of learning. Educators strived to note the motivations behind student engagement and incorporate their insights of students within their preparation (Dewey, 1902). School personnel utilized materials and curricular tools to create representations of classroom experiences (Mooney, 2000).

Dewey's (1944) methodology inspired educators to individualize curriculum. Educators aligned in this philosophy honored the cultural strengths, background knowledge, and social constructs adopted by the child (Hickman & Alexander, 1998). Dewey promoted purposeful learning that allowed for students to understand curricular applications outside of classroom settings (Hickman & Alexander, 1998). The classroom evolved as an experiential site for learning (Hickman & Alexander, 1998).

Inquiry-Based Environments

Dewey's (1902) philosophy reflected the importance of an inquiry-based environment. The classroom environment "secures the full use of intelligence" (McDermott, 1981, p. 491). Dewey wanted to create a space where students could develop questions and unravel solutions through manual labor (Hickman & Alexander, 1998; McDermott, 1981). Instructional materials were essential to aid students in their self-discoveries (Mooney, 2000). Dewey believed the environment consisted of conditions that stimulated or stifled the behavioral responses of individuals.

Rudolf Steiner

Rudolf Steiner (2003) was the founder of Waldorf education. The first school opened in Germany during the early 1900s with the intent to serve the children of working class families. Emil Molt, director of Waldorf-Astoria Cigarette Company, was inspired to develop a school for

the children of his employees (Steiner, 2003; Masters, 2005). Molt strived to steward humanity amidst societal hardships (Steiner, 2003). In partnership with Rudolf Steiner, the Waldorf School became the first co-educational facility in Germany that accommodated children with variances in economic and social backgrounds (Steiner, 2003).

Steiner (2003) believed the "educational system of the future is a new understanding of humanity" (p. 39). He embraced anthroposophy, the study of spirituality. Waldorf emphasized the importance of imagination within learning environments independent of sensory experiences. The school divided into a kindergarten division, lower school, and upper school for secondary students. Steiner (2003) promoted his philosophy fluidly throughout all divisions:

> Children are to learn to work in the right way; they are to be introduced to life in the world in a full human sense. This demands work for the social reasons and also that, as human beings, the students should learn to face one another and, above all, themselves in the right way. (p. 81)

The upper school educators emphasized creative thinking in the form of the arts and humanity studies (Masters, 2005). Curriculum was designed "to strengthen the independence of thought and judgment as a basis for taking responsibility" (Masters, 2005, p. 200). The environment was a space that educators used to cultivate the ideas of individuality and self-determination (Masters, 2005). Steiner studied the arts in correlation to neuroscience and the development of adolescents:

> The arts compliment the left-brained pursuit of knowledge, but they also have to measure up to the adolescent's growing awareness, increasing self-respect, advance self-objectivity . . . the uncovering of the aesthetic validity of each artistic creation is what will add right-brain weight to balance. (Masters, 2005, p. 189)

Waldorf schools did not reflect the saturation of exams visible in other educational systems (Masters, 2005). Educators assessed students via authentic measures or qualitative studies (Masters, 2005). The aesthetically appealing environments supported the emotionality of the learner.

Maria Montessori

Analogous to John Dewey, Maria Montessori did not take a traditional path into the field of education (Mooney, 2000). Montessori attended medical school despite societal norms pertaining to the gender roles of women (Mooney, 2000). In 1896, Montessori was recognized as the first woman in Italy to obtain a degree from medical school (Mooney, 2000). Following her graduation, Montessori became an assistant doctor at the University of Rome (Standing, 1998).

Montessori initially worked in insane asylums in order to select suitable patients for a psychiatric clinic within the university (Standing, 1998). She took an interest in administering treatments to children (Mooney, 2000). Patients in Montessori's care were deemed as unresponsive individuals who were not adequately equipped to function in social contexts (Standing, 1998). In modern times, the children Montessori served equate to students with behavioral challenges, disciplinary referrals, or emotional trauma.

As a scientist, Montessori (1964) engaged in behavioral studies in which she observed the interactions among children within their environments. The asylums were spatially dysfunctional settings with no stimuli to further educational growth or social development (Standing, 1998). Children assembled in spaces that resembled the architectural structures within prisons (Standing, 1998). The additional adults who also served patients overtly

disrespected children (Standing, 1998). Montessori meticulously studied subjects, analyzed the conditions of patients, and documented the response to treatment.

The conclusion of the study conveyed that behavioral deficiencies exhibited within subjects attributed to pedagogical concerns (Mooney, 2000). Montessori determined that the mental state of subjects could improve if the environments and practices of adults were patient-oriented (Mooney, 2000). Environments should be conducive for intellectual work (Montessori, 1965). Montessori led a series of lectures in the early 1900s that portrayed the educational rights of defective children (Standing, 1998). In partnership with colleagues, Montessori prepared educators with methods steeped in environmental transformations to address mentally unstable students (Standing, 1998).

Montessori (1964) strived to develop school environments that nudged pupils to engage in authentic learning opportunities. While serving in impoverished conditions, Montessori valued clean, orderly facilities with beautiful adornments for sensory experiences. Montessori believed the environment should evoke the potentialities of pupils. Child-centered environments mirrored the physical dimensions and needs of learners in accordance to Montessori's methodology. Therefore, Montessori invested in child-sized furnishings and sensorial materials conducive for exploration as well as cultural connectivity when she opened her first school in 1907 (Montessori, 1964; Mooney, 2000).

Montessori (1965) adhered to the premise that the educator was the custodian of the classroom environment. Her research conveyed that "the child absorbed knowledge from his environment simply by living" (Standing, 1998, p. 263). The traditional model of education, prior to the Progressive Movement, revealed the relationship between educators and students (Standing, 1998). Consequently, the instructor distributed information while the pupil obeyed

(Standing, 1998). Montessori's (1965) methodology evaluated the connectivity among educators, students, and the classroom environment. The child has the freedom to live within his classroom space and absorb what he discovers alongside of his educator. Montessori defined the environment as a space for development that allows a child to direct his own experiences (Standing, 1998).

Pedagogical Influences of Montessori

The educator in a Montessori school serves as the bridge between the child and their environment (Montessori, 1965; Montessori, 1995; Standing, 1998). Instructors model their expectations of learning activities (Montessori, 1965; Montessori, 1995). However, the educator presumes the role of an observer when the child partakes in independent work (Montessori, 1965). The student is encouraged to participate in experiences that yield to self-discoveries (Montessori, 1965; Montessori, 1995). Meanwhile, the educator internalizes the responses, body language, and social exchanges amongst children (Standing, 1998). The recordings of student interactions are the heart of the curriculum (Mooney, 2000). Montessori, similar to Steiner, believed that an educator should aid in the preservation of individuality (Montessori, 1965; Steiner, 2003).

Educators introduce lessons with brevity (Montessori, 1995). The teaching point or objective is explicit and concise (Montessori, 1995). Students receive an adequate of information that internally triggers them to make sense of their new understandings (Montessori, 1995). The educator guides a student when appropriate but does not disrupt the thought process of the child (Mooney, 2000).

Custodians of Environment

Montessori (1965) believed that a rapport should exist between children and their educational environments. Designers constructed furnishings to appeal to the physicality of children. Furniture, chairs, and tables, calculated in proportion to the child's stature and intellectual needs, were transportable to accommodate children's spaces for learning initiatives. Classroom designers developed tables of various shapes were out of wood, which allowed educators to reassign the location of furniture throughout the room (Montessori, 1965).

Child-sized proportions also applied to the structural aspects of the building (Montessori, 1965). Architects created windows at the height of a child's peripheral view. Designers also constructed other fixtures, including door handles, bathroom equipment, and kitchenettes, to align with the dimensions of learners. Importantly, all materials and furniture reflected the authenticity viewed in one's home (Montessori, 1965). Montessori envisioned for students to reside in comfortable settings that generated a sense of belonging (Standing).

Montessori (1965) conveyed that educators were the custodians of the environment. It was responsibility of the instructor to maintain order and cleanliness within instructional spaces. Students were taught how upkeep the order within their space as model by educators. The environment was a space for students to develop their craft in areas of interest. Gardens, parlors, and rooms for manual work were established a means to foster interactions as well as cognitive development (Montessori, 1965). Gathering areas or large spaces on the floor existed in classrooms for cultural connectivity. Educators adorned spaces for gatherings with beautiful rugs and colorful carpet. Students were encouraged to play games and engage in peer conversations in designated areas for gathering.

Montessori schools demonstrate a value in aesthetics as well as organization (Montessori, 1995). Instructional materials reside in a purposeful place that elicits wonder and curiosity from learners. The actions of educators including the arrangement of space must signal an invitation for learning (Montessori, 1964). When a child embraces a provocation, the educator is encouraged to allow the exploration with minimal intervention. The "environment is a place where children are to be increasingly active, the teacher increasingly passive" (Standing, 1998, p. 267). Montessori (1995) believed that "children unaided can construct an orderly society" (p. 285).

Loris Malaguzzi

Loris Malaguzzi was the founder of the Reggio approach (Edwards, Gandini & Forman, 1993). Reggio Emilia is a city in northern Italy. Reggio schools initiated following World War II. Communities needed restoration after the war. Therefore, the Italian government provided funding that allowed inhabitants to restore the cultural order and connectivity of the community. The decision to build a school derived from the belief that the children would advance the future. Malaguzzi alongside of citizens built a school via manual labor, brick by brick. Loris developed the Reggio approach, which "fosters children's intellectual development through a systematic focus on symbolic representation" (Edwards, Gandini & Forman, 1993, p. 3). The Hundred Languages of Children is a traveling exhibit that conveys the pedagogy of Reggio schools.

Pedagogical Influences of Malaguzzi

In Reggio, educators view the child as a competent, capable being. Educational practices correlate with the potential of the child (Wurm, 2005). The image of the child is a concept that accentuates the innate strengths of the learner (Wurm, 2005). Educators embrace the mindset that the child is powerful and wants to thrive. Children have the right to learn, imagine, and

question their surroundings. Educators define and internalize their image of the child before students enter the environment. All Reggio classrooms mirror the image of the child through tangible items and layouts of space (Edwards, Gandini & Forman, 1993).

Leaders hold educators accountable for their belief systems pertaining to children. If educators believe a child is capable, they create an environment to foster exploration (Wurm, 2005). The educator invites the child to learn via provocations. Inquiry-based learning sets the tone for the Reggio environment. The educator gives children an opportunity to construct thier own knowledge and make connections regarding the world around them (Edwards, Gandini & Forman, 1993).

The Reggio curriculum reflects the interest of children. Project-based learning supports the premise that children are capable of conceptualizing their experiences. Children engage in extensive students that derive from their curiosity (Edwards, Gandini & Forman, 1993). Curriculum within the United States focuses on academic standards as mandated by state officials. However, the educators of Reggio schools embed learning objectives within the framework of projects. The educator nudges the child to embrace the role of a scientist. Children are inspired to learn through experiences likewise to Dewey's philosophy of education.

Environment as the Third Teacher

The environment of Reggio schools is known as the third teacher. Children grow not only from direct instruction, but also thrive in conditions that optimize their understanding of teachings. The classroom is the driving force for learning. Educators design Reggio environments to support the interest of children. Therefore, every space has a distinct purpose. Reggio educators examine their classroom space to construct areas for movement, play, and exploration. Similar to Montessori schools, the environments are clean and uncluttered to elicit a

sense of comfort among children (Edwards, Gandini & Forman, 1993). The layout or design of the space may change based on the needs of children. Educators are responsive to the intellectual work of learners.

Reggio educators adorn the classroom with real-life or authentic materials (Edwards, Gandini, & Forman, 1993). Teachers support the notion that children can care for their environments and the materials within the space. Synthetic materials such as worksheets and pre-made representations of learning (i.e., items bought in stores) are not evident within Reggio environments. The educator encourages students to create their own depictions of learning experiences. Students may develop their own questionnaires as opposed to answering questions from contrived, paper templates. The Reggio philosophy acknowledges the power of authenticity (Edwards, Gandini, & Forman, 1993).

Photography is a technique that documents the work ethic and values of students (Edwards, Gandini & Forman, 1993). Family involvement is a strand of Italian culture. Pictures of children with families reside through Reggio environments. Other methods of documentation including panels, displays, student work samples, or artifacts are also used to display how students learn. The studio, known as atelier in Italian, is a place where instructors work with children to produce representations of learning (Gandini, Hill, Cadwell, & Schwall, 2005). Children work in small groups and openly voice their imaginative thoughts. Educators personalize the work of children through visual images. Documentation is a means to demonstrate the unique stories behind learning.

Contributions to Modern Education

Dewey, Steiner, Montessori, and Malaguzzi devoted their educational efforts toward child-centered pedagogy. Steiner emphasized the importance of imagination in the cultivation of

identity, while Dewey conveyed the development of self through experience. Dewey and Steiner focused pedagogical methods that promoted individualized growth. Both theorists devised learning opportunities to ignite critical thinking.

Table 2

Pathfinder Contributions of Modern Education

Environmental Pathfinder	Key Concepts	Contributions to the Education
John Dewey	Inquiry-based learning Socialization	Pedagogy that reflects inquiry-based approaches and spaces that foster cooperative learning.
Rudolf Steiner	Pedagogy grounded in individuality and imagination	Pedagogy that focuses on individualized learning, arts, and self-worth.
Maria Montessori	Educators as custodians of the environment; Child-size furnishing	Student-centered environments that reflect child development with an intentional design for learning.
Loris Malaguzzi	Environment as the third teacher Image of the child Project-based learning Documentation	Student-centered environments designed to amplify the strengths of learners, enhance critical thinking via inquiry-based approaches, and demonstrate learning through visual imagery that tells a story.

Note. This is a synthesis of the work of theorists as noted in the literature review.

Montessori and Malaguzzi viewed the classroom environment as an integral component of student learning. They created a physical infrastructure to support pedagogical methods of Dewey. Montessori conveyed the importance of child-centered environments. She believed that learning environments should reflect interests and the development of learners. Similarly, Malaguzzi determined the role of the environment as a teacher. The physical layouts,

furnishings, and instructional materials in Reggio and Montessori classrooms were designed to foster social and cognitive development.

In modern education, the research of Montessori and Malaguzzi is evident within American schools. More educators of contemporary times design their classrooms for a distinct purpose. Educators have also become more conscientious of classroom space. The learning environment "is the best physical manifestation of good educational practice" (Nair, Fielding, & Lackney, 2010, p. 217).

Culturally responsive pedagogy incorporates the identities and stories of learners into instructional practices. The work of Montessori and Malaguzzi demonstrated the effectiveness of educational practices when environments mirror pedagogy. Therefore, an educator who employs responsive best practices needs to have an educational environment that nurtures cultural connectivity.

The following section will describe the emergence of multicultural education. Historical aspects of race relations will reveal the importance of responsive practices within classrooms. Culturally relevant pedagogy and inclusionary studies will be examined. Importantly, the disposition of culturally responsive educators will be acknowledged in the next section.

The Emergence of Multicultural Education

Elements of cultural responsive teaching were evident during the 17th century (Urban & Wagoner, 2014). The Middle colonies became heavily populated due to an influx of diversity. "An array of separate ethnic and religious groups maintained self-contained and self-supporting communities and endeavored, within varying degrees of success, to follow their religious and ethnic customs in relative isolation" (Urban & Wagoner, 2014, p. 43). As cultural interactions intensified, colonists acknowledged the need for civility. The colonists of Delaware, New

Jersey, and Pennsylvania promoted pluralism (Urban & Wagoner, 2014). Residents of the Middle colonies demonstrated tolerance toward individuals of different religious and ethnic factions. The Middle Colonies evolved into a heterogeneous society.

In the 1700s, German schoolmaster, Christopher Dock, opened an educational facility that housed pupils of various religious backgrounds (Urban & Wagoner, 2014). The cultural experiences of students did not represent the religious origins of educators (Urban & Wagoner, 2014). Dock taught educators how to transcend and embrace individual differences. He perpetuated disciplinary methods rooted in empathy (Urban & Wagoner, 2014). Instructors were required to learn pedagogies that repudiated insensitivities out of the learning environment. Dock recorded his methodology of sensitivity training in his book, *Schulordnung*. The book emphasized researched methods of school management. *Schulordnung* also became the first pedagogical book for educators printed in America (Wagoner & Urban 2014). Dock's pedagogy opened the doors for collaboration and cross-cultural interactions.

Quakers of the early 1700s fostered the growth of parochial elementary schools that were inclusive of Blacks and Indians (Sowell, 1981; Urban & Wagoner, 2014). Local congregations funded the Quaker schools (Urban & Wagoner, 2014). Educators provided literacy instruction to children despite societal norms that banned the educational rights of minorities. The Quakers adopted principles of inclusivity while offering free education to all children (Urban & Wagoner, 2014).

Quaker abolitionists, such as Robert Pleasants and Anthony Benezet, established schools for African Americans in the late 1700s (Horton & Horton, 2001; Urban & Wagoner, 2014). The efforts of Quakers temporarily diminished due to political tensions in the South. Although

the pedagogy of Dock and Quaker groups exhibited the foundations of equity, the ideal of a pluralistic society remained abstract (Urban & Wagoner, 2014).

During the Antebellum years of the 1800s, the ideology of the common school evoked resistance within the South. Educational foundations and progression relied on community, church, and parental initiatives (Urban & Wagoner, 2014). Class and caste divisions increased disparities within education as the socioeconomic status of citizens determined the quality of learning. The establishment of private academies, which served as a cornerstone for children of middle and upper class families, perpetuated the exploitation of disadvantaged societal members (Urban & Wagoner, 2014). Additionally, schools lacked a systematic approach in the development of standards, accreditation methods, operations and evaluative criteria for educators. The instructional practices lacked the intentionality of Dock's methodology that blurred the lines of cultural barriers.

John Chavis, an African-American schoolmaster, commenced a school during the antebellum period in Raleigh (Urban & Wagoner, 2014). School personnel instructed White pupils during the day and free Black scholars in the evening. Sunday schools also served as another portal for literacy instruction (Urban & Wagoner, 2014). Emancipationists aimed to generate pedagogical sites that supported the education of African American children (Horton & Horton, 2001). However, individuals in favor of culturally inclusive schools faced opposition from White legislatures of the South (Urban & Wagoner, 2014).

After the slave uprisings of 1831 orchestrated by Nate Turner, the government established laws that forbid literacy instruction to Blacks in captivity (Sowell, 1981). The restrictive laws known as Black codes also limited the teaching of freed Blacks including their access to Sunday school (Sowell, 1981). Despite the existing codes in the South, free Blacks

continued to receive literacy instruction via private teachings. The census report of 1850 in Gates County, North Carolina conveyed that more than half of freed Black males could read and write (Urban & Wagoner, 2014).

During the Reconstruction and New Social Order of the late 1800s, the Army paved the way for literacy advancements among freedmen. The Union army generated school districts, curriculum, instructional materials, and actively recruited educators with the intent to support freedman as well as educate black soldiers (Urban & Wagoner, 2014). The military movement provoked the Freedmen's Bureau, which initiated substantial advancements in education (Urban & Wagoner, 2014). Several institutions of higher education that are modernly known as historically Black colleges and universities (HBCUs) were developed under the lead of Freedmen's Bureau (Sowell, 1981; Urban & Wagoner, 2014).

Constitutional amendments yielded to public education within the South. Slavery abolished due to the 13th Amendment. The amendment ruled emancipation for nearly 4,000,000 slaves. African Americans presumed rights to an education. Congress passed the Fourteenth Amendment in 1866, which "provided for due process and extended full citizenship rights to former slaves" (Urban & Wagoner, 2014, p. 126). African Americans were granted voting rights via the 15th Amendment. Although the amendments cemented strands of equality in political systems, racial segregation strengthened throughout states and permeated in educational settings.

African Americans disclosed different approaches to address social inequality with society and education (Horton & Horton, 2001; Sowell, 1981). Booker T. Washington empowered Blacks to work conventionally in their pursuit to improve conditions for African Americans (Horton & Horton, 2001). The Atlanta Compromise of 1895 was an agreement that persuaded Blacks to embrace the value of skilled trades and submit to societal constructs of race

(Wagoner & Urban, 2014). Washington insisted that the African—American population remained indifferent regarding issues of social injustice and rather sought opportunities to improve themselves via basic educational skills (Bayor, 2003; Horton & Horton, 2001). Critics of the Atlanta Compromise, including W.E.B. DuBois did not adhere to Washington's conservative approach to addressing social inequalities (Bayor, 2003; Horton & Horton, 2001; Wagoner & Urban, 2014). DuBois exposed insensitivities and recruited leaders who were equipped to articulate the need for equity (Sowell, 1981).

The *Plessy vs. Ferguson* (1896) case was a pivotal litigation that unveiled racial injustice. Officials arrested Homer Plessy for sitting in the car of the East Louisiana Railroad designated for Whites while identifying himself as a Black man. The Separate Car Act of 1892 conveyed provisions for the segregation of common carriers. Plessy's attorney challenged that the Separate Car Act violated the 13th and 14th. The trials and proceedings occurred in the Supreme Court. In 1896, the Plessy verdict ruled that separate racial facilities were constitutional considering evidence of equality.

The separate but equal doctrine dismantled after the ruling of the *Brown vs. Board of Education* (1954) of Topeka, Kansas. In 1954, the government declared legalized segregation within schools unconstitutional. The inequities within educational facilities violated the declarations within the 14th Amendment. Prosecutors alleged that the sense of inferiority affected the ability of children of color to grow mentally and academically. The Brown ruling was one of five cases that addressed racial inequality in education.

Although the government banned segregation in educational settings, the language of the Brown (1954) ruling did not declare desegregation within public facilities outside of education. The 1964 Civil Rights Act barred segregation and discrimination based on race, gender, religion

or national origin (Horton & Horton, 2001). Minorities were no longer denied access to services or education based on the color of their skin. Bilingual education also became an integral part of schools in the 1960s in response to the influx of language learners immersed in an all-English curriculum (Urban & Wagoner, 2014). Congress passed the Bilingual Education Act in 1968, which opened the doors to bilingual instruction and theorists who have paved the way for best practices in language learning (Urban & Wagoner, 2014).

Public education transformed into racially integrated pedagogical sites (Gollnick & Chinn, 1998). However, racial integration did not necessarily equate to inclusivity among educators and students. Segregation manifested in the practices of educators, which set the precedent for institutionalized racism (Murell, 2007). The teaching practices reflected methods of assimilation (Murrell, 2007). Students with a different culture outside of the dominant group adhered to norms and instruction aligned with mainstream America (Gollnick & Chinn, 1998). The cultural backgrounds of Latino, Asian, African, and Native—American students were not acknowledged within the curricular frameworks of racially heterogeneous schools (Gay, 1999). Eurocentric teachings perpetuated racial discrimination (Gay, 1999).

Culturally Responsive Pedagogy

Educators responsible for diverse learners needed to understand their own biases that contributed to social injustice (Gay, 1999). Multicultural education materialized in the 1970s as an instructional catalyst to combat institutional discrimination (Gollnick & Chinn, 1998). The pedagogy continues to reign throughout modern education. Pedagogy engrained in multiculturalism discards methods and language of assimilation (Ladson-Billings, 1994). The educator retires the role of an assimilationist to develop global consciousness (Ladson-Billings,

1994). Responsive educators intend to construct cultural convergence among students (Gay, 1999).

Multicultural education emphasizes the micro-cultures of the individual learner (Gollnick & Chinn, 1998). Gollnick and Chinn (1998) conveyed that "culture provides the blueprint that determines the way an individual thinks, feels, and behaves in society" (p. 29). The complexities of race, gender, ethnicity, and class intertwined in curricular content validate the identities of learners (Gollnick & Chinn, 1998). Multiple cultural, pupil perspectives are invited into discussions as a means to remove ethnocentric barriers. Students examine the functions of norms including the power differential among cultural groups. Racial perspectives omitted from historical texts are recognized via multicultural content (Gollnick & Chinn, 1998). Students are no longer subjected to misinformation regarding equality issues (Au Eds, 2009).

Gay (1999) described culturally responsive teaching as a pedagogy that refines instructional techniques employed within a multicultural environment. Educators incorporate the cultural experiences, perspectives, and background knowledge of ethnically diverse pupils into learning objectives. Culturally responsive teaching legitimizes heritages of ethnic groups. Curriculum becomes meaningful in the eyes of children when individualized strengths are affirmed and validated within the classroom environments (Gay, 1999).

Instructional strategies reflect the diverse learning styles of students in order to promote a brain compatible space for cognitive development. Culturally responsive teaching emphasizes cooperative learning. Students are encouraged to engage discussions and share multicultural perspectives for the promotion of inclusivity. Instructional materials also acknowledge the ethnically diverse perspectives that may vary from the social norms of students and teachers

(Gay, 1999). Therefore, responsive teaching is a reciprocal process in which educators and students learn simultaneously (Ladson-Billings, 1994).

Bridging Cultures Project

The Bridging Cultures Project was funded through a grant from the U.S. Department of Education and other educational research organizations (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001). Elise Trumbull was the manager of the project who researched culturally responsive practices in schools. Trumbull recognized the cross-cultural conflicts between Latino immigrant families and school settings. She affirmed that the collision of norms was the source of educational problems within schools. Trumbull and a team of researchers developed the Bridging Cultures Project as a means to examine the effects of culturally responsive strategies in classroom environments (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001).

Researchers selected seven teachers for the project. Each teacher learned about frameworks of individualism and collectivism as a guide for responsive teaching. The researchers observed, interviewed, and recorded the efforts of educators over the course of five years (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001). Although the teachers received a theoretical framework, they were not provided a compendium of strategies to use within the classroom. Culturally responsive teaching varies from each classroom due to the cultural dynamics that exist within the classroom. Therefore, the selected educators had to become reflective practitioners who employed practices based on the culture of learners (Rothstein-Fisch & Trumbull, 2008).

Five of the seven classroom teachers adopted a collectivist approach while creating their environments. Participating educators arranged in desks clusters of four to promote collaboration. Additionally, educators designated spaces for whole group instruction as defined

by area rugs. Materials for individualism included carpet squares that allowed students to identify their own areas within the classrooms. All educators used a combination of collectivist and individualist methods in order to reshape and reorganize their environments the due to the shifts in student needs.

In order to build continuity among cultures, educators of the Bridging Cultures classrooms used their walls and displays to reflect the personal lives of students. Selected educators highlighted photographs of families, illustrations, and student on bulletin boards (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001). Families and participating educators also created murals in some of the classrooms to demonstrate the strengths that derive from diversity. As teachers gained a deeper sense of each learner, the environments evolved to reflect their cultural understandings. Students devised norms, pledges, and expectations in partnership with educators (Rothstein-Fisch & Trumbull, 2008).

Through the project, Bridging Cultures teachers learned more about themselves and how to connect with their students. The background knowledge of student learners informed instructional decisions. In context to this study, the cultural complexities of learners also transpired the reconceptualization of classroom environments. Educators transformed the environments in innovative ways for the promotion of learning. Rothstein-Fisch and Trumbull (2008) conveyed the following about the project:

> Classroom management and organization are a function not only of teachers' values, beliefs, and expectation, but also of their knowledge about possibilities. A single cultural point of view can blind teachers to the potential right before their eyes. If teachers do not even see the different skills that students have, but only gaps in the expected skills, they

> will waste or damage precious human resources. This is why learning about culture- one's own culture, the culture of school, and the culture of home- is essential. (p. 176)

Educators learned the importance of individualism and collectivism. They recognized that each concept has an applicable place within the learning environment. Bridging Cultures teachers also learned that many children needed a different approach or pathway for learning. Importantly, the educators learned that instructional strategies must align with the context of environment (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001).

The Disposition of Responsive Educators

Culturally responsive pedagogy focuses on the disposition of educators. Prior to learning about the culture of others, educators are required to learn and reflect on their own cultural autobiographies. Educators examine their own cultural values, assumptions, and biases in order to make sense of their personal identities. Furthermore, they determine how their beliefs influence cross-cultural interactions.

Similar to the Reggio concept, image of the child, educators in pursuit of responsiveness validate the unique strengths of students. Educators examine capabilities of students as opposed to shortcomings (Gay, 1999). Educators study the cultural differences of students to improve instructional practices. They intentionally immerse themselves in the social context of others or ethnically diverse experiences to gain an understanding of a world beyond their personalized lens (Ladson-Billings, 1994).

Responsive educators understand how educational systems perpetuate discriminatory practices (Ladson-Billings, 1994). They develop empathy toward others and learn how to acknowledge cultural differences in nonjudgmental ways. Culturally responsive educators are also trained to decipher the voices that are heard and unheard throughout texts of American

history. They value education as a means to combat system racism and strive to cultivate globally-minded individuals who will impact the larger society (Ladson-Billings, 1994).

Table 3

Pathfinders and Their Connections to Culturally-Responsive (DR) Pedagogy

Environmental Pathfinder	Key Concepts	Relation to CR Pedagogy
John Dewey	Inquiry methods Cultural identity	Pedagogy that encourages students collaborate and learn from each other
Rudolf Steiner	Pedagogy grounded in individuality and imagination	Connectedness of individualized strengths
Maria Montessori	Educators as custodians of the environment Child-size furnishing	Student-centered environments that reflect the importance of identity development via physical features and artifacts intentionally arranged by the educator to honor diversity
Loris Malaguzzi	Environment as the third teacher Image of the child Project Documentation	Student-centered environments designed to validate the cultural strengths and racial diversity of students in ways that tell a story of each learner

Note. CR tenets from Gay (1999) *Culturally Responsive Teaching*

Classroom Environmental Evaluations and Methodology

Pioneers of purposeful space affirm that the classroom environment is a compelling determinant of learning outcomes. Maria Montessori and Loris Malaguzzi devoted their professionalism to the stewardship of child-centered environments (Greenman, 2005). The research of archetypal designers convey the correlations between the environment and the response of individuals who reside within the space. If an educator constructs an environment

for a distinct purpose, the layout of the space should elicit an aura that conditions users to respond in intentional ways (Greenman, 2005). The following section will delve into the research behind environmental assessments prior to the next segment that will incorporate dimensions of a culturally responsive environment.

Assessing the Environment

Theorists continually examine environmental studies in terms of how one evaluates a pedagogical site (Fraser, 2012). Classroom assessments may characterize the perceptions of students. An outside observer could document the responses of individuals, behaviors, or stimuli that engage students.

The perceptions of educators may also serve as a basis for an environmental tool (Fraser, 2012). Perceptual measures expose the experiences of individuals within specified environments. Evaluations conducted by trained professionals are less economical than self-managed tools. Although perceptual measures do not necessarily convey the actual realities of classroom dynamics, the tools do offer clear indicators of qualms that need to be addressed.

Asiyai (2014) conducted a study that investigated the perceptions of secondary school students on the condition of the physical learning environment. Asiyai intended to research the perceptual differences that existed between students in rural and private schools, secondary male and female students, and students in rural and urban school settings. Furthermore, Asiyai wanted to measure the perceptions surrounding learning environments in relation to student learning. The study involved 800 students and 16 schools in Nigeria. Eight of the schools were public, while the other eight schools in the study were private (Asiyai, 2014).

Asiyai (2014) developed a questionnaire pertaining to school type and gender, demographic data, and the perceptions of physical classroom conditions in relation to learning

(Asiyai). She administered the questionnaire to participants over a span of two months. Eight hundred copies of the questionnaire were distributed among participants, yet only 760 copies were utilized in the data collection. The questionnaire had a four point scale (i.e., strongly agree, agree, disagree, and strongly disagree).

Asiyai (2014) concluded that perceptual differences did not vary between secondary males and females. However, the study revealed significant differences between the perceptual views of students in public and private school settings. Public school students conveyed how their physical environments were undesirable, while students within private settings asserted their level of comfortability due to classroom design. Asiyai's (2014) study in Nigeria is one of many studies that demonstrated the importance of perceptual tools. Table 4 demonstrates an example of questionnaire items and findings from Asiyai's study.

Table 4

Example of Findings From Asiyai's (2014) Environment Study

Questionnaire Items	Private School Mean	Private School *SD*	Public School Mean	Public School *SD*
My classroom walls are beautiful.	2.76	0.62	2.500	0.98
Lighting condition of my classroom is adequate.	2.66	0.78	2.58	0.79
There is adequate spatial arrangement in my classroom.	3.40	0.65	2.00	0.90
The classroom floor is in good condition.	2.80	0.82	2.46	0.92
Desks and seats are adequate in my classroom.	3.25	0.44	2.32	1.16
My classroom size is adequate.	3.50	0.59	2.2	1.00
My classroom ceiling is in good condition.	2.96	0.55	2.60	0.68
My classroom is well ventilated.	2.90	0.33	2.62	0.88
I am pleased with my classroom physical condition.	3.42	0.40	2.18	1.16
Weighted Mean	3.44	0.65	2.68	1.05

Note. From environment study of Asiyai (2014) in *College Student Journal*, *48*(4), 716—726.

Assessments that reflect solely the observations of researcher reveal a narrow scope of the environment as a third teacher (Fraser, 2012). An observer collects evidence under restrictive conditions. The evaluator tends to be a neutral participant who has no prior knowledge of students, educators, or the relationships that exist within the educational setting. Furthermore, the evaluator may collect evidence that may not exhibit the normality of an instructional day. Researcher, Barry Fraser (2012), articulated the significance of incorporating both quantitative and qualitative methods in an excerpt from, *Classroom Environment*.

> Although objective indexes of directly observed behavior in classroom settings certainly have their place in educational research, they do not tell the whole story about the complex, weighed, subjective judgments made by students and other who have an important influence on learning. (Fraser, 2012, p. 2)

Theorists of environmental studies are scrutinized for their meticulous approach to research. Henry Murray, psychologist and Harvard professor, conveyed that environmental forces impacted the psychogenic needs of individuals. He renamed the term, force, as *press* for the purpose of his study. Murray's terminology referred to the pressure one encounters that influences a behavioral response (Fraser, 2012). The term alpha press describes the environment through the lens of an observer, while beta press conveys one's perception of their surroundings. Murray's underlying idea is "that the consensus among individuals characterizing their environment defines the social, normative, climate, which exerts a powerful influence on the students' attitudes and behaviors" (Moos, 1979, p. 26).

Rudolf Moos (1979) claimed that environmental instruments should assess three specific dimensions. The relationship dimension identifies the intensity of human interactions within the environment. This dimension includes the individual's involvement within his or her surrounding and the extent to which individuals support one another. The personal development dimension reflects the direction of personal growth as tied to the environment. Moos (1979) drew from the work of Jonathan Kozol (2005) who described the impact of dilapidated environments on Black children. Kozol's (2005) research in alignment with Lewin's field theory concluded that an individual's environment influence his behavior.

The system maintenance and system change dimensions measure the degree order within the environment. Moos (1979) wanted to determine "the extent to which the environment is

orderly and clear in its expectations, maintains control, and responds to change" (p. 16). For instance, clarity in a professional environment indicates how effectively expectations, regulations, and policies are expressed and internalized by employees. "Orderly supervision in the administration and in class work is a central aspect of practicality, which falls into the system maintenance domain" (Moos, 1979, p. 17).

Myrick and Marx (1968) categorized school designs as either cohesive or isolating. They denoted cohesive designs as schools with only one or two classroom buildings. Conversely, Myrick and Marx characterized isolated schools as one school with several detached buildings. The study included two schools with a cohesive design and one school with an isolated designed (Myrick & Marx, 1968). Educators and students within the cohesive layout encountered more interactions than those who functioned within an isolated design. The lengthy corridors and extended layouts of isolated designs discouraged connectivity due to more time spent on traveling than conversational engagement. Myrick and Marx (1968) concluded that the layout of cohesive designs promoted interactions due to provisions that fostered the congregation of groups.

Getzels (1974) studied the implications deriving from architectural arrangements within classrooms. Based on the study, the alignment of uniformed desks marked an educator as the focal point. The arrangement indicated the imagery of an *empty organism* or a pupil who only learned from an instructor. Classrooms with moveable chairs and an educator's desk within the corner of a room indicated an *active organism* or a participative learning community. Desks arranged in trapezoidal format that elicited peer collaboration specified a classroom image known as the *social organism*. Classrooms denoted as *social organisms* did not consist of desks or work spaces for instructors. Layouts without furniture fit the image of the *stimulus-seeking*

organism in which students engaged in hands-on learning experiences. Getzels' study concluded that classroom arrangements convey values pertaining to learning and guides how students learn (Getzels).

Kritchevsky and Prescott (1969) engaged in a study to analyze the physical spaces of young children as a means to construct early childhood environments. The study emerged due to the belief that space limited educational opportunities for students and educators. Kritchevsky and Prescott defined space as two components known as play units and potential units.

Play units described tangible boundaries retrospective for activity, while potential units denoted empty spaces (1969). Kritchevsky and Prescott (1969) studied the amount of activities and quantity of potential units per child. Additionally, they researched the organization of play space including the layouts and pathways within learning environments. The study revealed that given adequate space for play and content with strategic organization, children could respond in goal-oriented ways. Kritchevesky and Prescott (1969) asserted the following:

> Physical space cannot be considered apart from other dimensions of program such as scheduling, grouping procedures, and the teacher's choice of activities. We have found, however, that an examination of program along with the dimension of space provides an objective tool for analyzing program and enables the staff to engage in group problem solving with a minimum of personal criticism. (p. 7)

The environmental work of theorists continues to evolve in contemporary literature. Publications offer resources that help educators to develop a conscious for their learning environments (Fraser, 2012). Moos (1979) conveyed the importance of assessing and developing a framework for functional environments. He encouraged for educators to examine the micro-settings of students as well as the perceptions of space. The research of Moos, Marx

and Myrick, Prescott and Kritchevsky, Getzels and Murray indicated the importance of environmental assessment procedures within educational settings. Educators need to understand the environmental variables that impact learning (Moos, 1979). Moos (1979) asserted that "such information can be related directly to policy decisions affecting the classroom and other school, home, and community resources" (p. 225).

Environment Evaluation Tools

The following section will examine six environmental tools commonly used in primary and secondary education. Each tool serves a unique purpose and consists of scales that measure a variety of aspects within the classroom (Fraser, 2012; Moos, 1979). The research of Rudolf Moos was (1979) transparent in the Classroom Environment Scale (CES). Moos' influence reflected in the work of Barry Fraser (2012) who participated in the development of the Learning Environment Inventory (LEI) and My Classroom Inventory (MCI). The tools described below offer comprehensive information regarding environmental perceptions from both students and educators. Moos and other theorists believed inhabitants of space should own the responsibility of characterizing their living experiences within an environment (Moos, 1979).

Classroom Climate Questionnaire

Walberg (1976) developed the Classroom Climate Questionnaire. The instrument consisted of 18 scales that were determined by factor analysis (Fraser, 2012). Climate scores in several studies correlated to the personality of the educator and to the behavioral attributes of pupils within the classroom setting (Fraser, 2012). Walberg (1976) emphasized educational accountability to assess the preferences and responses of students. Therefore, he advocated for the promotion of perceptually oriented tools that measured classrooms including the Learning Environment Inventory (LEI).

Learning Environment Inventory

The development of the Learning Environment Inventory (LEI) initiated in the late 1960s (Fraser, 2012). Fraser (2012), Walberg, and other researchers involved in the Harvard Physics Evaluation group intended to validate an environmental tool for secondary education. The tool was targeted for teacher administration in order to avoid the expenses of outside consultants. Developers of the LEI were determined to investigate the interpersonal relationships and structural characteristics of secondary learning environments (Fraser, 2012).

Fraser (2012) developed the LEI in order to measure the perceptions of the individual learner as well as the environment of the class as a body (Fraser, 2012). In 1969, the revised LEI consisted of 15 scales that described climate conditions (Fraser, 2012). Each scale contains approximately seven descriptive statements pertaining to classroom environments yielding to 105 statements total. The respondent is required to distinguish the degree of agreement or disagreement with each written statement via a four-point response format (i.e., Strongly Disagree, Disagree, Agree, and Strongly Agree; Fraser, 2012).

Scales of the Learning Environment Inventory

- *Cohesiveness* refers to the property that overtly demonstrates group membership. In validity studies, the size of classrooms determined the level of cohesiveness. Smaller classes of pupils were found to be more cohesive than larger class sizes. History and English courses also exhibited elements of cohesiveness that were not overt in science courses. The degree of learning within the classroom is contingent upon the level of cohesiveness (Anderson, 1971).

- *Diversity* describes the broad range of pupil interest and learning activities. The concept of diversity for the LEI does not pertain to the cultural aspects the individual learner, including race, ethnicity, and identity (Fraser, 2012).
- *Formality* refers to the extent in which behavior is guided by rules and regulations (Fraser, 2012).
- *Speed* describes the rate of student progression within a classroom (Fraser, 2012). Statements within the scale require the respondent to share their perceptions regarding the delivery of instruction. Class ratings also reveal the adaptability level of the educator.
- *Material environment* regards the physical environment of a classroom, including the physical spaces and the materials utilized by participants (Fraser, 2012). Studies pertaining to the physicality of classroom designs demonstrate positive correlations between the environment and the learning of students.
- *Fiction* scales measure "the amounts of tension and quarreling among students" (Fraser, 2012, p. 18).
- *Goal direction* refers to "the degree of goal clarity in the class" (Fraser, 2012, p. 18).
- *Favoritism* describes the educator and pupil relationship in terms of the treatment demonstrated by the authoritative figure (Fraser, 2012).
- *Difficulty* refers to the extent of challenging work as perceived by the student (Fraser, 2012).
- *Apathy* is the "extent to which the class feels no affinity with the class activities" (Fraser, 2012, p. 18).
- *Democracy* reflects the decision-making among students (Fraser, 2012).

- *Cliqueness* refers to how students integrate into social settings within the classroom (Fraser, 2012).
- *Satisfaction* denotes the level of enjoyment demonstrated by a pupil in regard to his work (Fraser, 2012).
- *Disorganization* represents "the extent to which classroom activities are confusing and poorly organized" (Fraser, 2012, p. 18).
- *Competitiveness* emphases the level of competition among students (Fraser, 2012).

The LEI has been extensively used in classrooms within the United States and other countries including, India and Indonesia. Dimensions such as difficulty, speed, goal directions, and competition, and diversity demonstrated positive partial correlations to student achievement. Conversely, dimensions such as cliqueness and favoritism displayed negative partial correlations. Evidence from LEI studies within the United States and around the world impart that "the classroom learning environment mediates and interprets for the pupil a wide range of educational input and stimuli" (Moos, 1979, p. 225).

My Class Inventory (MCI)

My Class Inventory is a simplified version of the Learning Environment Inventory that is geared for elementary-aged pupils (Fraser, 2012). The inventory scales were reduced to minimize the fatigue that younger children experience while testing. MCI contains only five scales in comparison to the 15 extensive scales of the LEI. Respondents were given a two-point answer format as opposed the four-point setup that derived from the LEI (i.e., yes or no format). The scales of emphasis include *Cohesiveness, Friction, Satisfaction, Difficulty, and Competitiveness* (Fraser). Statements aligned with each scale were meticulously crafted to

enhance readability for emergent readers. Respondents must also write their answers directly on the questionnaire rather than a separate response sheet.

Classroom Environment Scale (CES)

Rudolf Moos and Edison Trickett (1974) developed the CES. The tool targeted secondary students. Moos (1979) conceptualized the environment as a social system inclusive of many relationship dynamics. He intended to study the behavior educators, peer interactions, and the connectivity between students and instructors as related to the environment. In order to select the dimensions for the tools, Moos conducted several interviews with students and educators that focused on perceptions of classroom settings. Moos delved into the teaching styles of educators and the environments they strived to produce.

Moos' (1979) dimensions for environmental assessments (i.e., relationship, personal development, and system maintenance) applied to the nine scales of the tool. Affiliation, teacher support, and involvement subscales assess relationship dimensions. These subscales measure the extent to which students support peers, participate in class, and how educators guide pupils within a classroom. The personal development dimension incorporates the subscales of task orientation and competition. Lastly, the final subscales of innovation, rule clarity, teacher control and organization fall under the system maintenance and change dimensions (Moos, 1979).

Each of the scales consists of 10 statements in which the respondent answers either true or false (Fraser, 2012). For example, statements that discussed the conduct of students concerning rules and regulations aligned with the teacher control subscale (Fraser, 2012). Moos (1979) also studied the physical characteristics of classrooms while administering the instrument.

He researched the amount of open space, furniture arrangements, and the use of space within classrooms.

Theorists have investigated the scales of CES to determine the predictability of learning outcomes from a student's perceptual insight of his or her classroom environment (Moos, 1979). Multiple correlation analyses indicated advantageous learning outcomes when high levels of magnitude were evident in relational scales. However, various scales also demonstrated different learning outcomes by academic subject (Moos). Educators have utilized the CES, similar to the LEI and MCI, internationally with varying results based on culture.

Individualized Classroom Environment Questionnaire

The LEI and CES, were widely used instruments in secondary settings that examined many aspects of classroom settings. However, both tools did not assess the criterion of nonconventional classrooms including inquiry-based environments. The Individualized Classroom Environment Questionnaire (ICEQ) was devised "to measure those dimensions which differentiate conventional classroom from individualized ones involving either open or inquiry-based approaches" (Fraser, 2012, p. 27). Instrument scales derived from the research and literature of individualized curriculum. Research also incorporated extensive interviews from teachers and students of secondary schools.

The ICEQ consisted of five scales. Personalization scales emphasized the opportunities of interaction between students and educators. The instrument also measured the participation of students and the level of independence student possessed in regards to their learning. Investigation scales focused on student inquiry skills and processes involved in problem solving. Lastly, the final scale of differentiation underlined "the selective treatment of students on the basis of ability, learning style, interests and rate of working" (Fraser, 2012, p. 20).

Each scale listed a series of statements. Respondents are required to provide feedback as related to each statement via a five-point scale (i.e., Almost Never, Seldom Sometimes, Often and Very Often; Fraser, 2012). The ICEQ in conjunction with the LEI or CES provide a vast range of classroom characteristics (Fraser, 2012). Fraser (2012) stated "in a recent study of outcome-environment relations, it was found that the CES and the ICEQ each made an important unique contribution to explaining student outcome variance" (p. 27). The ICEQ is currently published in the form of a handbook. Additionally, the ICEQ incorporates separate documents that assess the perceptions of the preferred and actual of environment (Fraser, 2012).

Cultural Learning Environment Questionnaire

The CLEQ was devised to measure culturally sensitive environments (Fisher & Waldrip, 1997). Instrument scales derived from environmental theories of Moos (1979), and Hofstede (1984) who identified four dimensions of culture (i.e., Power Distance, Uncertainty Avoidance, Individualism, and Masculinity/Feminism). The study targeted secondary schools. Developers of the tool intended to identify culturally sensitive factors within multicultural environments in order optimize instructional practices for ethnically diverse learners.

Eight scales were devised to assess cultural sensitivities (Fisher & Waldrip, 1997). Gender equity, collaboration, and risk involvement scales align with relationship dimension of Moos. The relational scales measure the extent of equality, cohesion, and expressive autonomy among students. Competition, teacher authority, and modeling correlate with the personal development dimension. The personal development scales measure the extent to which students are competitive, how pupils challenge one another, and the preference of learning via modeling (Fisher & Waldrip, 1997).

Moos' system change and maintenance dimension was reflected in the congruence and communication scales. The congruence scale assessed the connections between school and homes in terms of learning experiences. Sample items within the congruence scale inquire how classroom instruction fosters learning at home. The communication scale measures the level of interchange among students (Fisher & Waldrip, 1997). Relationships between the attitudes of students and their cultural environments were examined from results of all scales. The strongest correlations between attitude and environment were evident when students perceived high levels of congruence, gender equity, and communication within their classroom environments (Fisher & Waldrip, 1997).

Environmental Instruments in Relation to Study

The environmental scales of LEI, MCI, ICEQ, and CES measure the perceptual understandings of students and educators (Fraser, 2012). The diversity scale of the LEI assesses the range of interests and activity levels of students. MCI, the condensed version of the LEI, did not include the diversity scale in its questionnaire. The most commonly used environmental tools used within the United States and other countries evaluate perceptions that do not center on race, ethnicity, or identity. Importantly, the instruments were not designed to explicitly assess cultural sensitivities of students (Fisher & Waldrip, 1997).

The Cultural Learning Environment Questionnaire was created to include cultural criterion that was not evident in common classroom inventories (i.e., LEI, MCI, ICEQ, and CES). Gender equity, collaboration, and congruence scales of CLEQ reveal how one identifies their role within the classroom. Culturally sensitive factors expose perceptions based on behaviors within an environment. Students reflect on social interactions and their level of antimony to contribute towards the learning community. The power differential between educators and students are also examined via findings of the CLEQ (Fisher & Waldrip, 1997). However, the CLEQ and other tools, do not

intentionally examine the perceptions of race or cultural identity solely based on the physical design and arrangements of the environment

Instrument Dimensions

Culturally relevant pedagogy emerged as a means to validate diversity within classroom environments (Gay, 1999). Educators who employ culturally relevant practices strive to develop an aura of connectedness among members within a learning community. Responsive teaching fosters commonalities among learners that defy racial and class barriers. Educators intentionally invite multicultural perspectives into curricular discussions (Shad, Kelly, & Oberg, 1997; Steele & Cohn-Vargas, 2013).

Students under the guise of culturally responsive educators are taught how to collaborate with peers, advocate for the rights of self and others, and hold each accountable as contributing members (Ladson-Billings, 1994). Educators and students collectively engage in learning opportunities designed to combat social injustice and challenge belief systems that breed inequities (Ladson-Billings, 1994). The curricular lessons build from the cultural strengths of learners to optimize the educational experience for all participants. Educators, as the custodians of environment, are responsible for creating spaces that uphold instructional practices (Montessori, 1994).

Montessori (1964) determined that pedagogy, as an isolated entity does not nurture the social or developmental growth of learners. Learning occurs when an alignment exists among educators, students, and the environment. Culturally relevant pedagogy entails relational dynamics between students and educators that yield to inclusivity. However, Montessori's (1964) principle conveys that an enhancement of inclusivity will prevail when the physical environment embodies the pedagogy. The Reggio Emilia philosophy affirms the premise that learning directly ties to the synonymous relationship between pedagogy and environment

(Lewin-Benham, 2008). American classrooms serve as another *teacher* of culturally responsive practices.

The seminal work of Lewin (1997) aligned with the Reggio concept, *environment as a third teacher*. Each individual exists within a life space. The life space encompasses the stimuli and interactions in an individual's environment. Behavior is a function of the living experiences within the life space (Lewin, 1997). For the purpose of this study, the classroom environment is denoted as a student's life space. Environmental stimuli such as curricular materials, furniture arrangements, and wall décor, teach students how to respond to instruction. Nair et al. (2013) asserted, "The content of development cannot be thought of separately from the structure of development" (p. 16). Consequently, responsive teaching cannot be thought of separately from the physical aspects within the classroom that support the pedagogy.

Dimensions of culturally responsive pedagogy as derived through this research include identity validation, cultural congruence, methods for authentic recognition of strengths, conditions for courageous conversations and connectivity, and provocations that elicit diverse perspectives (Gay, 1999; Ladson-Billings, 1994). A classroom environment that serves as a teacher reinforces identified objectives of learning. The conversion of pedagogical dimensions to physical stimuli within the environments will strengthen responsive practices. The following sections will describe each environmental theme for the consideration of the instrument.

Environmental Inclusivity Dimensions

Themes of culturally responsive pedagogy will serve as scales for the classroom instrument. Environmental scales were based on extensive research of multicultural education and culturally responsive practices. The critical race theory tenets and environmental

philosophies of pathfinders will also intertwine with the scales. Each subsection below will describe the relevance of an environmental scale.

Identity Validation

The critical race theory and Steiner methodology demonstrate the importance of cultural identity (Delgado & Stefancic, 2001; Steiner, 2003). Culturally responsive pedagogy validates the individuality of learners (Gay, 1999). The educator is the architect of identity safe classrooms (Steele & Cohn-Vargas, 2013). "It is critical that educators help create environments were students feel empowered to select their own racial and ethnic identity" (Milner & Ross, 2006, p. 116).

Racial identity development enables individuals to build levels of consciousness pertaining to race (Milner & Ross). The life space of individuals fosters racial identity (Murphy, Steele, & Gross, 2007). Classrooms may also perpetuate racial development through instructional materials that validate race and ethnicity. Racially diverse individuals immersed in the dominant culture may not have a sense of ethnic awareness. The lack of awareness may transpire internal conflict with an individual who desires validation. Milner and Ross (2006) described racial identity development of Asian cultures to convey the importance of ethnic awareness:

> People realize at a young age that they are non-White, but they really do not know exactly what it means to be Asian, especially if immersed in a primarily White community. Presumably, Asians who live in an Asian community have greater awareness and knowledge about what it means to be Asian. (p. 97)

The multiracial experience presents complexities in racial identification. Root and Kelley (2003) conveyed that multiracial individuals embrace five types of racial identities. The first

type is assignment by hypodescent in which an individual identifies with a racial assignment based on societal standings. Conversely, the monoracial fit type describes a single race affiliation that derives from personal choice, not societal influence. The blended identity assigns more one classification to an individual, which is similar to the type, biracial. Lastly, the White with symbolic identity type describes an individual with a lack of ethnic awareness. Multiracial individuals who lack expose to ethnic diversity may identify more with class values (Root & Kelley).

Identity is also inclusive of culture, gender, and language. Cultural identity may supersede racial identity. For instance, Latino identity cannot be quantified solely by race due to the variance in cultural values among groups. Mexicans and Puerto Ricans are identified as Latinos based on the social construct of race, but cultural and language identities of both groups are vastly different. The critical race theory conveys that a unitary identity within a race is non-existent (Delgado & Stefancic, 2001). Therefore, responsive educators need to be mindful of the diverse identities attached to each learner.

Educators that promote identity safe classrooms organize space to reflect the interests, identities, and cultural values of learner (Steele & Cohn-Vargas, 2013). Classrooms embellished with décor prior to the arrival of students mirror the values of educator without the considerations of the diverse learners. The Reggio Emilia philosophy inspires educators to think of their classrooms as an empty canvas (Wurm, 2005). As the educator builds relationships and connectivity among learners, she evolves the space to reflect what is known about members in the community. Therefore, each learner has an entry point that allows him or her to identify with the environment (i.e., word wall in Spanish, literature books with racially diverse images, etc.).

Cultural Congruence

Identity development initiates at home (Carter & Curtis, 2003). When students enter an educational environment, they become members of a larger community that challenges familial connections (Carter & Curtis, 2003). The functionality of the student is contingent upon their levels of comfort and the beliefs that needs are met (Shade, Kelly, & Oberg, 1997). Responsive educators invite the cultural experience of learners into the classroom. Students are not expected to leave their cultural identities outside of the classroom and engage in methods of assimilation (Shade, Kelly, & Oberg, 1997; Gay, 1990). Cultural congruence refers to the minimization of transitions between institutionalized settings and homes (Nair, Feilding, & Lackney, 2013).

Culturally responsive pedagogy involves an intentional focus on the home-school connection. Educators help students to maintain their living experiences while encouraging students to cultivate new relationships in a different social context (Carter & Curtis, 2003). When congruence is apparent between the classroom and home, a sense of belonging and security garnishes the learning environment (Shade, Kelly, & Oberg, 1997).

Educators who approximate the home environment in schools may incorporate furnishings, lighting, colors, sounds, and objects to mirror the comfort of one's cultural context (Rothstein-Fisch & Trumbull, 2008). "For children of color and families of immigrants, their initial assessment of their acceptance depends on whether or not they perceive pictures, symbols, or other visual representation that remind them of their homes, communities, and values" (Shade, Kelly, & Oberg, 1997, p. 43). The physical environment perpetuates a sense of belonging in which student recognize the alignment between their cultural values and the classroom.

Photography is another way to demonstrate cultural congruence (Carter & Curtis, 2003; Greenman, 2005). Images of family serve as a constant reminder of the home-school

connection. Portable photos allow students to transport a piece of comfort throughout their space. If descriptions correspond with photography, then students are also exposed literary experiences. Photography is a window to cultural autobiographies or the living experiences of others (Carter & Curtis, 2003).

Carter and Curtis (2003) discussed how representational activities also foster the home-school connection. These opportunities involve families in the creation of cultural artifacts that are displayed within the classroom. Items such as murals, student generated books, and familial symbols highlight the strengths and values that students bring into the space of learning. The most effective schools welcome the presence of families (Gruenert & Whitaker, 2015).

Brain Compatibility

Inquiry or project based learning enables students to construct their own understandings through extensive research (Wurm, 2005). Culturally responsive educators recognize that each learner is an inquisitive being who is consistently trying to make sense of the phenomena in their life space. Student voice and identity are also validated through project-based approaches that reflect the diverse interests of learners. Therefore, the physical classroom must become a brain-compatible space with objects designed to elicit provocations (Wurm, 2005).

Desautels and McKnight (2016) studied neurological science in relation to learning. Imagination and exploration is necessary for a learning-focused classroom. Desautels and Mcknight (2016) described the importance of creating a space for neuro connectivity within their study. They challenged educators to transform their environments into sites of innovation. Desautels and McKnight (2016) conveyed that educators often neglect the creation of space for wonder, reflection, and renewal. The following excerpt from Unwritten: The Story of a Living System, demonstrates the importance of brain-compatible environments:

> In many ways, our education system is often experienced by educators and students as mechanistic. We move in lines, we sit in spaces that tell us when to think, how to think, and we move in lines listening for the bells. We feel a disconnected and hallow mindset that exudes a ubiquitous air of doing, going, accomplishing, assessing, and repeating it all the very next day. (p. 21)

Intellectually engaging environments are spaces in which children can develop deeper understandings of the world and formulate questions (Carter & Curtis, 2003). The responsive educator finds ways to stimulate intellectual and cross-cultural engagement. Materials are strategical placed within a room to ignite critical thinking and investigations. Brain—compatible spaces serve as catalysts for process-driven thinking in which students are given the opportunity to struggle in productive ways. Theme-based environmental décor, inclusive of caricatures and festive, commercialized designs, may overstimulate learners and diminish curiosity. Carter and Curtis (2003) affirmed the importance of inquiry designs as opposed to imagery and materials that solely portray the pedagogical site as a source of entertainment:

> Cartoon images and commercial figures suggest that learning should always be entertaining. When teachers fill classroom environments with these kinds of things, they disregard and disrespect children's innate eagerness to explore, inquire, and make meaning of what is around them. Instead, teachers can set up environments that engage this natural tendency to investigate and theorize about things that provoke a sense of magic and wonder. (p. 122)

The learning environment with strategic provocations invites students to think (Walberg et al., 1992). Instructional items may inspire students to analyze, invent hypotheses, share multiracial perspectives, or engage in intellectual debates. Carter and Curtis (2003) conveyed

that objects from the natural world such as rocks, shells, bird nests, and tree stumps may elicit a strong sense of exploration. The natural world appeals to our sensory needs. Classrooms that incorporate elements of nature intrinsically motivate students to utilize their senses. Students build schema through exploration and discoveries that involve sensory skills. Artifacts from nature demonstrate the importance of connectivity to the outside world (Carter & Curtis, 2003).

Cultural connectivity may also take the form of instructional materials that evoke multicultural perspectives. Students seek for clarifications when they discover materials that do not reflect their worldview (i.e., cultural garments, Chinese calligraphy, etc.). The omission of cultural artifacts may also spark provocations in terms of an educator's values. For instance, the lack of identity-validating materials might cause a student to think about the competency levels of educators and their ability to relate to ethnically diverse experiences. Consequently, empathy development for cultural connectivity may be obsolete in classrooms that do not acknowledge our global society and the rich values each learner brings into the environment. Therefore, responsive educators have the responsibility of examining the materials for purposeful provocations (Steele & Cohn-Vargas, 2013).

Brain—compatible spaces also incorporate appropriate lighting and colors (Nair, Felding, & Lackney, 2013). Nair et al. imparts that learning is connected to levels of lighting. The lighting within a classroom should define the intention of the space. Natural lighting positively correlates to memory retrieval. Furthermore, daylight is known to "have a calming effect on the human brain" (p. 189). "Research shows that in day-lit classrooms math scores improve by 20% and verbal scores by 22%" (p. 160). Therefore, it is ideal to have classrooms with windows for brain compatibility.

Colors also impact pathways for learning. Children emotionally respond to colors within classrooms. Warm colors generate a space where people feel secure, while primary colors may elicit sensitives. All colors have a thoughtful place for diverse learners. The cultural contexts of learners may evoke connections to specific colors. Responsive educators analyze how students respond to variations in lighting and color (Carter & Curtis, 2005; Nair, Felding, & Lackney, 2013).

Spatial Intentionality

Culturally responsive educators nurture the relationships of students for the promotion of connectedness (Steele & Cohn-Vargas, 2013). The layout of a classroom determines the degree of connectivity. Culturally relevant pedagogy distinctly focuses on collaboration as well as individuality. Rothstein-Fisch and Trumbull (2008) asserted that classroom environments must reflect a balance of individualism and collectivism. Individualistic leaning is describes how knowledge is constructed by an individual. Students, individually, are responsible for their developmental goals. The collectivist approach aligns with cooperative learning in which students craft their skills through socialization. Both approaches are reflected in responsive teaching, but intentional spatial layouts are needed to support each measure (Nair, Fielding, & Lackney, 2013).

Campell-Hill and Ekey (2010) described how workspaces correlate with learning and values of socialization. Classrooms with rows of desks facing the instructor reinforce Horace Mann's design of regimented, teacher-centered environment. The collectivist approach incorporates the clustering of desks or tables in order to promote partnerships, conversations, and collaboration (i.e., book clubs, co-authoring, group projects, etc.). Educators may also designate for whole-group instruction, group work, and individualized learning (Campell-Hill & Ekey,

2010). Culturally responsive educators focus on the needs of learners and optimize the physical space to position students for productivity (Gay, 1999).

Whole-group instruction refers to teaching that is inclusive of all learners. Educators can create gathering spaces of comfort that invite collaboration (Campell-Hill & Ekey, 2010). Gathering spaces provide students an area for conversation in which they can confer with peers (i.e., turn and talk, whisper what was learned to a peer, etc.). The space conveys a sense of community that is often defined by its square footage to accommodate all bodies and materials such as rugs, cushions, or benches that signal comfortability (Campell-Hill & Ekey). Storage for instructional materials is also a vital part of gathering spaces. Students need to see an educator who models and scaffolds learning. Importantly, learners should have the time to apply new knowledge which may require the use of clipboards, whiteboards, pencils, or sticky notes during the time of whole group-instruction.

Culturally responsive teaching focuses on the cultivation of strengths (Ladson-Billings, 1994). Some students may need another space to develop individualized skills outside of a gathering area. Responsive educators carve out areas where students can work in partners or smaller groups. Tables, desks, or small nooks are intentionally placed in areas to inspire small-group instruction. For the student who needs an individualist outlet, private space fosters independent work. A table, chair, or seat may remain in an isolated area to validate individuality. Learning conferences that requires an educator's devotion to a particular student are more effective individualized areas. The educator, who presumes the role of a custodian, teaches students the purpose of each space and the appropriate use of the area.

Shade et al. (1997) researched the cultural styles of racial groups as related to learning needs. The research conveyed that Mexican Americans and Asian—Americans demonstrate the

strong values pertaining to extended family. Support and loyalty toward family indicate the need for collaborative environments that provide a network of support. Native American cultural styles as denoted from the study reflect attentiveness to the natural world (Shade et al., 1997). The concept of time is symbolic of harmony in nature (i.e., life cycles) rather the Americanized sense of order and control. Structured environments that yield to isolated spaces may not be suitable based on the cultural styles of learners. This study of cultural styles also conveyed the importance of the individualism and collectivism within the physical environment (Rothstein-Fisch & Trumbull, 2008; Triandus, 1989).

Spatial intentionality also entails pathways for movement. As architects of space, educators must develop pathways for mobility. Prescott and Kritchevsky (1969) studied the organization of space determining that the importance of providing an adequate amount of space per child. Cultural studies of Allen and Boykin (1988) also demonstrated spatial mobility in terms of racial orientations. The study determined that African—American students performed learning tasks effectively in areas designed for mobility. Nair et al. (2013) reported that "movement is a stimulus for learning" (p. 157). Brain compatible spaces promote flexibility and movement for growth as well as identity development.

Authenticity

Culturally responsive pedagogy not only validates identity but also focuses on the development of one's authentic self (Steele & Cohn-Vargas, 2013). Educators who promote identity—safe practices intentionally ponder how learners internalize their actions and beliefs. The student work featured on walls is a mirror of our beliefs. Educators have the autonomy to select work for display, which directly correlates to what he or she deems as valuable and worthy.

When educators assert that students are capable, the belief should translate into the learning opportunities for students (Steel & Cohn-Vargas). For instance, if an educator communicates that students should see themselves as authors, an appropriate time for creative writing should be allotted within the classroom. Furthermore, the representations for a showcase should convey student authorship as opposed to an assignment that lacks the richness of innovative writing.

Authenticity refers to student work that reflects personal connections and individual strengths of learners (Nair, Fielding, & Lackney, 2013). Displays that highlight uniformity in written responses, commercialized crafts, and worksheets disregard the authentic ways a learner can express his or her applications of knowledge (Campbell-Hill & Ekey, 2010). Instructional sheets with scripted questions and directives condition how the learner should think. As an alternative to synthetic or store-bought materials, students can construct environmental print such as anchor charts, posters, and illustrations of learning concepts (Campbell-Hill & Ekey, 2010). Student work should also be showcased in attractive, orderly ways that entice cultural interactions. Patricia Tarr (2001) described the how commercialized materials are indicative of beliefs while also conveying the importance of cultural congruence:

> The flatly colored, outlined, stereotyped images of the posters and bulletin board borders talked down to children and assume that they are not capable of responding to the rich, diverse images and artifacts including images from popular media culture, which the world's culture have created. (p. 35)

Personalization within a learning task marks authenticity. Uniformity symbolizes a program that does not foster individualistic approaches to learning. There are many ways in which students can represent their individualized learning beyond paper-based materials.

Students can create artifacts (i.e., writing pieces, visual displays, structures, etc.) that signify their understandings. Technology enables students to create electronic media and publications that demonstrate high order applications of learning. Photography is another powerful tool for cultural congruency and authenticity. Brain—compatible spaces emphasize the process of scholarship rather than the product. Therefore, photography is used as authentic method of documentation for in-depth projects or experiences that highlights the process of learning. Photography demonstrates the cultural autobiographies of learners.

Culturally responsive educators reflect on the Reggio concept, image of the child (Ladson-Billings, 1994; Wurm, 2005). They strive to hold the belief that all students are capable of intellectual work. The instructional tasks of students correspond with the image of the child. Project work in Reggio Emilia stems from the idea that students can construct their own knowledge and representations of learning. When posters and wall imagery fails to embody the thoughts and voice of learners, a message is transmitted that the ownership of learning rests in the hands of educators rather in partnership with students. Authenticity conveys a space where student voice is transparent.

Summary of Literature Review

Historically, the classroom has been a pedagogical site for learning and cultural convergence. Ethnic and religiously diverse groups utilized the classroom as a means to safeguard culture in the colonial period. The influx of diversity led to social integration within schools. Prior to the Civil Rights Movement, Christopher Dock and John Dewey challenged educators to reinvent pedagogy in transformative ways that supported the individual learner. Lewin (1935) further examined cultural inequities determining that behavior is a function of

environment. Lewin's field theory became a foundational principle in environmental assessments.

The seminal work of Lewin conveyed the relationship between an individual and his environment. Maria Montessori and Loris Malaguzzi affirmed Lewin's theory through the development of physical spaces that enhanced the intellectual work of children (Lewin, 1935; Montessori, 1995). The Steiner (2003) movement incorporated the focus of spirituality and identity development within primary and secondary education. Pathfinders of environmental studies perpetuated the importance of purpose within educational spaces.

Cultural responsive pedagogy emerged decades after the Brown ruling as a means to dismantle institutionalized racism. Educators aligned with responsiveness acknowledged the strengths and stories of all learners in order to optimize instructional practices. The critical racial theory asserts that racism is a part of our fabric. However, the responsive educator makes an intentional effort to combat racial inequality and moves towards practices of inclusivity.

Although many environmental instruments based on Rudolf Moos and Lewin's research examined perceptions of inclusivity, the assessments have neglected to cultural responsiveness in terms of the physical space of a classroom (Lewin, 1935; Moos, 1979). Therefore, after a thorough synthesis of tools, theorists, and inclusion students, environmental scales were developed for the consideration of this study. The scales reflect physical aspects within the classroom space that promote cultural validation. Thus, the culturally responsive educator may establish an environment that fosters inclusivity (Gay, 1999).

Synthesis of Research in the Development of Themes

The following table of the literature review demonstrates the connectedness among themes, environment pathfinders, Moos' (1979) dimensions, and critical race theory as

embedded in responsive pedagogy. Early pathfinders created a foundation for cultural pedagogy. Classrooms designed for collaboration and inquiry-based approaches naturally encourage students to learn from each other (Desautels & McKnight, 2016; Dewey, 1902; Gay, 1999).

The dimensions of Moos (1979) outline researched-based criteria needed for any valid environmental tool. Furthermore, the implications of CRT tents for responsive teaching are also evident in the table summary. Each column describes an aspect that serves as an environmental stimulus that affects behavior as noted in Lewin's (1935) field theory. The field theory is intrinsically weaves throughout all categorizations since all aspects generate a response which is a function of one's environment (Lewin, 1935).

The following chapter delves into the methodology of instrumentation. In that chapter, I will describe the procedures, hypotheses, initial instrument, and the participants of the study. The initial instrument derives from the constructs that emerged after the synthesis of the review of literature.

Table 5

Synthesis of Themes in Relation to Theorists and Theories

Environment Theme	Descriptions	Pathfinder Connections	Moos Dimensions	CRT Tenant Embedded in Responsive Teaching
Identity validation	The extent to which identity (i.e. cultural, ethnic, race, class, and gender) is validated via physical features in classrooms	Malaguzzi; Image of the child	Personal Development Dimension	Diffusing colorblindness through the acknowledgment of cultural strengths
Cultural congruence	The extent to which the classroom environment connects to social contexts outside of school	John Dewey; Cooperative learning	Relationship Dimension	Connectedness of differential racialization among students
Brain compatibility	The structures within an environment that promote inquiry and exploration for identity development	Steiner; Individuality Malaguzzi; Project-based learning Dewey: Inquiry-based learning	Personal Development Dimension	Emphasis on identity development via exploration and collaboration
Spatial Intentionality	The extent to which space is designed for intentional learning measures to honor diverse learners	Montessori; Custodians of environment	System Maintenance and Change Dimension	Emphasis on justice that honors the needs of individuals and collective to perpetuate equity

Table 5 (continued)

Environment Theme	Descriptions	Pathfinder Connections	Moos Dimensions	CRT Tenet Embedded in Responsive Teaching
Authenticity	The degree to which students represent their individuality, learning, or cultural autobiographies in authentic ways	Montessori; Child-centered pedagogy Malaguzzi; Image of the child Steiner; Imaginative learning	Relationship Dimension	The importance of storytelling and the incorporation of multiple racial perspectives within the environment

Note. Matrix of pathfinders, theoretical constructs, dimensions, and CRT tenets.

CHAPTER 3

METHODOLOGY

Classroom environments reflect a progression of ethnically and culturally diverse learners (Gollnick & Chinn, 1998). The backgrounds, values, social contexts of students may not align with the educator's living experiences. Culturally responsive pedagogy emerged in the 1970s as a best practice to combat inequities due to racial and ethnic differences. The pedagogy initially requires educators to examine their personal disposition concerning racial and social injustice. Educators who employ responsive practices continually reflect on their beliefs that shape interactions with ethically and culturally diverse students. The pedagogy focuses on the educator's role in the dismantlement of institutionalized racism. Responsive educators validate student identity, foster collaboration, intentionally seek for multicultural perspectives, and incorporate the diverse strengths of learners into teaching practices.

The physicality of the American classroom serves as a life space for students, which shapes an individual's response to instruction (Lewin, 1935). Furniture arrangements, spatial layouts, and educational materials signal the instructional intent and values of the educator. Inquiry-based pedagogy is enhanced through environmental stimuli that evoke investigations among students in a cooperative space (Dewey, 1902). Literacy instruction is supported within an environment where libraries, reading nooks, and a variety of literary genres are evident (Carter & Curtis, 2003). When a relationship exists between pedagogy and the physical

classroom environment, the educator conditions the student to adhere to instructional practices and engage in purposeful work (Montessori, 1995).

Culturally responsive pedagogy, grounded in field theory (Lewin, 1935) and the Reggio philosophy, also requires a physical environment that supports individuality, socialization, and fosters critical thinking. The classroom environment communicates the value system of educators. Therefore, if the educator commits to teaching with a multicultural lens, the pedagogy enhances through the creation of a physical space that acknowledges the complexities of diverse learners.

Design of Research

The purpose of this quantitative study was to develop an instrument that measured cultural inclusivity within the physical classroom environment. Components of the instrument derived from the literature review of theories, environmental pathfinders, culturally responsive pedagogy, and existing classroom instruments. Most researched environmental tools incorporated the dimensions of Moos (1979). Theorists determined a series of analyses that Moos dimensions increased the validity of environmental instruments. Therefore, the measurement model and final instrument included Moos dimensions.

This study entailed the process of instrumentation. The initial instrument devised from the review of literature was completed by school faculty. Data findings from the initial instrument were used to develop a valid, reliable measure of cultural inclusivity within the physical environment. This chapter includes a sample of the instrument used for data collection, constructs stemmed from the review of literature, research questions and methods, and data procedures.

Research Questions

This study incorporated two questions that intertwine the role of the environment and cultural inclusiveness.

1. What are the criteria for a culturally inclusive environment that should be considered for the development of an instrument?
2. What physical aspects of a culturally-inclusive environment denote authenticity?

Hypotheses

$H_0$1: There are no criteria that can determine a culturally-inclusive physical environment for instrumentation.

$H_0$2: There are no physical aspects of a culturally-inclusive environment that denote authenticity.

Instrumentation

Barry Fraser (2012), developer of the Learning Environment Inventory (LEI), described the process of instrumentation in *Classroom Environment*. The initial step in instrumentation was the identification of salient dimensions that characterize aspects of the classroom environment. Dimensions derived from the literature review of the researcher. Trickett and Moos (1974) studied empirical data, organizational psychology, and responses from structured interviews in order to construct the dimensions for the Classroom Environment Scales (CES). In this study, the dimensions were based on theorists, existing instruments, and principles of culturally responsive pedagogy.

The second step in instrumentation involved the development of statements to measure the hypothetical constructs. Fraser (2012) asserted that each item should measure "only the dimension covered by is a priori assigned scale and not measuring the dimensions covered by

any of the other scales in the instrument" (p. 24). After the development of constructs and statements, a group of educators reviewed the measurement model or the initial instrument. "This group provides their opinions about each item's face validity, potential readability for the target population, scale allocation, and freedom from various item faults and ambiguities outlined in standard educational measurement texts" (Fraser, 2012, p. 24).

A sample of participants was identified in the third phase of instrumentation. The assessment was distributed randomly to nearly 1,000 educators across the Midwest. A factor analysis was conducted to determine items that need to be removed for the refinement of the instrument. The item analysis examined the contributions made to each construct which determined the factor.

Variables to be Studied

Table 6

Constructs for Instrumentation

Environment Concept	Definition
Identity Validation	The extent to which identity (i.e., cultural, ethnic, race, class, and gender) is validated via physical features in classrooms.
Cultural Congruence	The extent to which the classroom environment connects to social contexts outside of school.
Brain Compatibility	The structures within an environment that promote inquiry and exploration for identify development.
Spatial Intentionality	The extent to which space is designed for intentional learning measures to honor diverse learners.

Table 6 (continued)

Authenticity	The degree to which students represent their individuality, learning, or cultural autobiographies in authentic ways.

Note. Constructs derived from research of pathfinders and culturally responsive pedagogy.

Five concepts emerged from the review of literature. Themes of culturally responsive pedagogy as derived through this research include identity validation, cultural congruence, methods for authentic recognition of strengths, congruence between school and home, and provocations that elicit diverse perspectives (Gay, 1999; Ladson-Billings, 1994;). The following table outlines the concepts from the literature review.

Data Collection Procedures

The following procedures were used to develop the classroom environment survey:

1. Developed environmental concepts for an initial set of constructs from an extensive literature review.
2. Devised a questionnaire that incorporated the observed values within a classroom for educators.
3. Surveyed a population of teachers who were custodians of a classroom via a random selection using the IDOE database.
4. Conducted an item analysis in order to remove faulty items.
5. Conducted a scree test to ascertain an adequate number of factors.
6. Ran varimax rotations.
7. Determined criteria for factors and maintained factors that aligned with the criteria.
8. Labeled newly identified factors.
9. Refined and revised the instrument.
10. Validation of instrument.

Data Analysis

The sample was taken from K-12 public educators in the Midwest. All participants were educators who are responsible for a classroom space and cohort of students. Nearly 1,000 educators were randomly selected across K-12 public schools via the Indiana Department of Education database and the state department websites outside of Indiana.

Educators answered questions via a Likert rating scale based pedagogical beliefs and observed values within their classroom walls. The tool was an electronic instrument that educators anonymously submitted to the researcher. The data from the initial, theoretical environmental questionnaire was analyzed through a factor analysis.

Summary of Methodology

The purpose of this quantitative study was to develop a viable instrument for the data collection of physical environment factors that demonstrate cultural inclusivity. This chapter provided information regarding the process of instrumentation and procedures for the study. The next chapter will convey the findings from the factor analysis that will lead to the development of the final environmental instrument.

CHAPTR 4

DATA ANALYSIS AND FINDINGS

The purpose of this quantitative study was to determine the criteria of a culturally inclusive, physical environment for the development of a classroom instrument. An instrument that measures the progression of inclusivity within a physical space would serve as a tool for educators in need of guidance in the construction of equitable environments. If an environmental instrument identified specific constructs of inclusion, educators could generate a classroom that reflects the intellect, cultural backgrounds, and learning styles of the pupils they serve.

This study was guided by two primary questions that intertwine the role of the environment and cultural inclusiveness.

1. What are the criteria for a culturally inclusive environment that should be considered for the development of an instrument?
2. What physical aspects of a culturally-inclusive environment denote authenticity?

The intent of the research design was to develop a tool that would prompt educators to continuously reflect and reinvent their classroom space in accordance to the cultural dynamics of students (i.e., values, beliefs, experiences, race, ethnicity, etc.). Consequently, the constructs of the instrument would incorporate criteria that intentionally acknowledged the identities of learners.

In Chapter 2, the historical aspects of the past and present reconfigurations of the American classroom were thoroughly discussed. The American classroom, which symbolized cultural preservation in the colonial era, has transcended into a space where educators are encouraged to incorporate diversity, multiple perspectives, and methods of cultural competency. Pathfinders of environmental research and theories led to the development of existing tools that helped educators to develop a level of consciousness pertaining to classroom space. However, the research did not reveal any instruments that measured inclusivity within the physical space and design of a classroom.

Through this research, five dimensions of inclusivity were developed that served as the basis for an initial instrument. The dimensions included *identity validation, cultural congruence, authenticity, spatial intentionality, and brain compatibility*. A classroom space that is designed to mimic the role of a culturally responsive teacher reinforces the objectives of equitable pedagogy. This environmental study emphasized through research that the content and structure of classrooms must be synonymous.

Constructs were developed under each dimension of the initial instrument based on the research of pathfinders and culturally responsive teaching. The constructs were assembled into a survey for K-12 educators in the Midwest. Teachers could assess the observed values within their own classroom based on the constructs presented in the survey.

The constructs were not necessarily designed as a function of the specified dimension. For instance, Gay (2000) did not describe identity validation as a disregard for color differences among students. The survey was designed to provoke critical thinking, elicit diverse views, and provide empirical data that could be used for a factorial analysis. The process of factoring would identify an alignment between constructs and dimensions or perhaps, it would convey the need

for different environment themes that were not taken into consideration. Furthermore, such findings would serve as the basis for the refined instrument.

Descriptive Data

The survey consisted of 100 items representing five conceptual dimensions. Survey statements were created for a five-point, Likert-scale response format (i.e., Never, Rarely, Sometimes, Often, and Always). The survey was designed to measure the actual and preferred environmental values of educators who were responsible for a classroom space. Prior to the classroom environment survey, demographics were collected pertaining to an educator's years of teaching experience, exposure of cultural competency, and grade level responsibility.

On November 22, 2016 a final draft of the survey was submitted to approximately 1,256 K-12 educators across Indiana, Illinois, Wisconsin, and Michigan. Approximately, 984 selected participants were educators within Indiana who were solicited through a random selection of the Indiana Department of Education 2016-2017 teacher roster. The rosters derived from a request made to IDOE on November 3, 2016.

Participants of other Midwest schools were randomly selected through a self-search of each state's department of education website in order to fulfil the requirement of gaining regional perspectives. The distribution list represented approximately 45 elementary schools, 14 middle schools, and 10 high schools. Out of the 1,256 e-mails that were sent with a link to the Qualtrics survey, 136 e-mails were returned as invalid contact information. The invalid e-mails all derived from Indiana schools.

One hundred twenty people interacted with the survey. However, the number of recorded responses varied from the initial to last questions. Ninety-eight educators answered the demographics section of the survey. Out of the 98 recorded participants, nearly 46% were

elementary teachers, 25% worked in middle schools, and 39% served as high school instructors. The demographics section of the survey also indicated that nearly 24% of educators had zero to three years of teaching experiences, while nearly 40% of participants had taught for over 16 years.

The recorded responses dwindle from the beginning of the assessment to the end. For instance, 88 participants consistently answered 75% of the questions. However, the last 25 questions of the survey ranged from 84 to 65 participants. Three respondents also notified me personally of their test fatigue due to the length of the survey. Two of the three respondents also specifically emphasized how the questions were not applicable to secondary schools due to their caseload of students.

Table 7

Descriptive Statistics

Demographic	Percent of Teacher %	Count
Grade Assignment		
Elementary	45.85	45
Middle	25.00	25
High school	38.55	38
Years of Experience		
0 to 2 years	5.10	5
3 to 5 years	19.39	19
6 to 10 years	21.43	21
11 to 15 years	15.31	15
16 to 20 years	11.22	11
More than 21 years	27.55	27
Cultural Competency PD		
Yes	67.45	66
No experience	32.65	32
Total		98

Note. N=98

Factor Analysis

This quantitative study required a factor analysis to determine commonalities among items on the Classroom Environment Survey. A factor analysis reduces dimensionality through a process that assembles variables with a shared common variance into descriptive groupings. Kim and Muller (1978) defined factor analysis as "a variety of statistical techniques whose common objective is to represent a set of variables in terms of a smaller number of hypothetical variables" (p. 9). Large datasets that entail several observable variables can be reduced to specific categories through a factor analysis (Kim & Muller, 1978). To achieve the dimensions for the revised instrument, data from 88 teachers were analyzed. The 100 items of this study are listed in Table 8. An item analysis was conducted to obtain descriptive statistics.

Table 8

100 Items Analyzed in the Study

Survey Items
1. There are pathways for student mobility.
2. Students complete work in areas with natural lighting.
3. There are store-bought instructional posters mounted on the walls within my classroom.
4. I play a variety of music throughout the instructional day.
5. Students' names are evident on desks or tables.
6. I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.
7. My room includes many eclectic, miscellaneous items.
8. There is space for group gatherings or meetings.
9. I have a leveled library within my classroom.
10. The books displayed within my classroom are written by racially-diverse authors.
11. The books displayed within my classroom incorporate a wide variety of genres.
12. I display the interests of students within my classroom.
13. There are photographs of students in my classroom.
14. I display student artwork within my classroom.
15. I document learning experiences via photography.
16. There are spaces provided for peer collaboration.
17. There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the room.
18. I display behavior charts or positive reinforcement initiatives.

Table 8 (continued)

Survey Items
19. There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.
20. There is space provided for individualized work.
21. The desks within my classroom are aligned in rows.
22. There are tables in my classroom.
23. There is a combination of desks and tables in my classroom.
24. Students are encouraged to use their native language.
25. I spend more time lecturing than facilitating student-led discussions.
26. I cluster my desks into groups.
27. There is evidence of project-based learning within my classroom.
28. Languages outside of Standard English are displayed within my classroom.
29. I create anchor charts that incorporate the ideas of students.
30. I have distinct spaces within my room that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).
31. There is space provided for small-group instruction.
32. Technology is readily accessible in my classroom.
33. There is a visible map or globe in my classroom.
34. The classroom reflects my personal interests.
35. I have student accessible mirrors in my classroom.
36. I have pictures displayed of my family.
37. There is a variety of comfortable seating such as beanbags, cushions, or chairs.
38. The images featured on the cover of literary books and textbooks reflect multiracial individuals.
39. There are bright colors displayed within my classroom.
40. I decorate my room prior to receiving a class list.
41. I value children as individuals with different cultural experiences.
42. There are representations of current events relevant to the lives of students.
43. Parents could learn about school initiatives via the way I design my classroom.
44. I use neutral colors within my classroom.
45. I teach in a classroom that has at least one window.
46. I do not see color differences among students.
47. Tables or desks are arranged at different heights to accommodate the learner.
48. There are items intentionally placed in specific areas to evoke student inquiry and provocations.
49. Students' writing samples are evident in the classroom.
50. I have discussion boards within my classroom to evoke student dialogues.
51. My classroom is organized to my liking.
52. Students have adequate space to engage in instructional activities.
53. I believe that all students are capable of intellectual work.
54. Students represent their learning through media arts.
55. I use worksheets to assess the learning of students.
56. I display posters of inspirational leaders of racially-diverse backgrounds.

Table 8 (continued)

Survey Items
57. I assess student learning through paper-pencil assessments.
58. I try to incorporate instructional materials that appeal to the cultural backgrounds of students.
59. Students have the opportunity to collaborate with peers.
60. I have to think of my students as data points in order to be an intentional instructor.
61. My classroom has a variety of textures and sensory materials.
62. I have a space to conduct student conferences.
63. I make an extra effort to connect with the families of my students.
64. Furniture is intentionally arranged for peer socialization.
65. I celebrate each student's strengths throughout the instructional day within my classroom.
66. I display photographs and books that represent the native countries of students.
67. There are storage areas for instructional materials.
68. There are areas where at least two students can work quietly together.
69. Displays of students' work focus on the process of learning rather than the product.
70. It is important for me to create a sense of belonging among students within the classroom.
71. I research cultural studies to understand the complexities of diverse learners.
72. Students create individual goals.
73. My instructional materials spark student inquiry and curiosity.
74. Students construct collective class goals for display.
75. My classroom arrangement remains the same throughout the year.
76. The policies of the building mandate how I should arrange and organize my classroom space.
77. I prefer a quiet classroom in which students are engaged in silent work.
78. The noise level in my classroom is loud, yet productive work is taking place.
79. My classroom décor reflects a particular theme.
80. I think about the ethnicity and race of my student population while organizing the classroom.
81. I arrange my room in different ways throughout the year.
82. I typically mount learning standards on my classroom walls.
83. I think about the gender identities of students while delivering instruction.
84. I secure classroom materials in areas that are not accessible to students.
85. I am conscientious of the sexual orientation of students or families while planning instructional activities.
86. My classroom reflects items that I value.
87. When designing my classroom seating arrangements, I take the performance styles of students into consideration.
88. I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.
89. When I think of the term culture, I reflect on the construct of race.
90. When I rearrange my classroom, I take the input of students into consideration.

Table 8 (continued)

Survey Items
91. I have a variety of manipulatives in my classroom for problem-solving purposes.
92. Classroom materials are accessible for student use.
93. Classroom materials connect to the social contexts of students beyond the school environment.
94. I reflect on the behavioral responses of students in relation to my classroom environment.
95. My classroom mirrors the vision of the school corporation.
96. I view my classroom environment as another teacher.
97. I am aware of the religious backgrounds of my students.
98. The design and layout of my classroom is conducive for learning.
99. I invite families to participate in the learning experiences of students.
100. Classroom displays demonstrate uniformity in student work.

Note. N=100

In a confirmatory factor analysis, a researcher uses statistical procedure to assess how well measured variables represent the number of theoretical constructs. The methodology is a process that evaluates the measurement model or the preliminary constructs designed by the researcher. Initially, individual, theoretical constructs must be defined. In this study, five dimensions were derived from research including authenticity, cultural congruence, spatial intentionality, identity validation, and brain compatibility. Table 9 identifies the definition of dimensions as well as the correlating constructs of Moos (1979).

Table 9

Theoretical Constructs for Confirmatory Analysis

Environment Theme	Description	Moos Dimensions
Identity Validation	The extent to which identity (i.e. cultural, ethnic, race, class, and gender) is validated via physical features in classrooms	Personal Development Dimensions
Cultural Congruence	The extent to which the classroom environment connects to social contexts outside of school	Relationship Dimensions
Brain Compatibility	The structures within an environment that promote inquiry and exploration for identity development	Personal Development Dimension
Spatial Intentionality	The extent to which space is designed for intentional learning measures to honor diverse learners	System Maintenance and Change Dimension
Authenticity	The degree to which students represent their individuality, learning, or cultural autobiographies in authentic ways	Relationship Dimension

Note. Dimensions from *Evaluating Classroom Environments*, Moos (1979).

The measurement model should incorporate the concept of unidimensionality and include at least four dimensions with three items per constructs. There were 100 items allocated to five dimensions in the Classroom Environment Survey. Table 10 demonstrates the dimension and items from the initial survey that served as the measurement model.

Table 10

Measurement Model by Dimension and Items from the Initial Survey

Item	Dimension
	Identity Validation
12.	I display the interests of students within my classroom.
10.	The books displayed within my classroom are written by racially-diverse authors.
13.	There are photographs of students in my classroom.
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc. exhibited throughout room.
33.	There is a visible map or globe in my classroom.
34.	The classroom reflects my personal interests.
35.	I have student accessible mirrors in my classroom.
40.	I decorate my room prior to receiving a class list.
38.	The images featured on the cover of literary books and textbooks reflect multiracial individuals.
41.	I value children as individual with different cultural experiences.
46.	I do not see color differences among students.
53.	I believe that all students are capable of intellectual work.
56.	I display posters of inspiration leaders of racially diverse backgrounds.
58.	I try to incorporate instructional materials that appeal to the cultural backgrounds of students.
60.	I have to think of my students as data points in order to be an intentional instructor.
65.	I celebrate each student's strengths throughout the instructional day within my classroom.
71.	I research cultural studies to understand the complexities of diverse learners.
72.	Students create individual goals.
79.	My classroom décor reflects a particular theme.
80.	I think about ethnicity and race of my student population while organizing the classroom.
83.	I think about the gender identities of students while delivering instruction.
86.	My classroom reflects items that I value.
89.	When I think of the term culture, I reflect on the construct of race.
94.	I reflect on the behavioral responses of students in relation to my classroom environment.
97.	I am aware of the religious backgrounds of my students.
	Cultural Congruence
4.	I play a variety of music throughout the instructional day.
18.	I display behavior charts or positive reinforcement initiatives.
24.	Students are encouraged to use their native language.

Table 10 (continued)

Item	Dimension
28.	Languages outside of Standard English are displayed within my classroom.
36.	I have pictures displayed of my family.
42.	There are representations of current events relevant to the lives of students.
43.	Parents could learn about school initiatives via the way I design my classroom.
59.	Students have the opportunity to collaborate with peers.
63.	I make an extra effort to connect with the families of my students.
66.	I display photographs and books that represent the native countries of students.
70.	It is important for me to create a sense of belonging.
74.	Students construct collective class goals for display.
82.	I typically mount learning standards on my classroom walls.
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.
93.	Classroom materials connect to the social contexts of the students beyond the school environment.
99.	I invite families to participate in the learning experiences of students.
	Spatial Intentionality
1.	There are pathways for student mobility.
6.	I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.
7.	My room contains eclectic, miscellaneous items.
8.	There is space for group gatherings or meetings.
16.	There are spaces provided for peer collaboration.
20.	There is space provided for individualized work.
21.	The desks within my classroom are aligned in rows.
22.	There are tables in my classroom.
23.	There is a combination of desks and tables in my classroom.
26.	I cluster my desks into groups.
30.	I have distinct spaces within my room that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).
31.	There is space provided for small-group instruction.
51.	My classroom is organized to my liking.
52.	Students have adequate space to engage in instructional activities.
62.	I have a space to conduct student conferences.
64.	Furniture is intentionally arranged for peer socialization.
67.	There are storage areas for instructional materials.
68.	There are areas where at least two students can work together.
76.	The policies of the building mandate how I should arrange and organize my classroom space.
81.	I arrange my room in different ways throughout the year.

Table 10 (continued)

Item	Dimension
84.	I secure classroom materials in areas that are not accessible to students.
91.	I have a variety of manipulatives in my classroom for problem-solving purposes.
92.	Classroom materials are accessible for student use.
96.	I view my classroom environment as another teacher.
98.	The design and layout of my classroom is conducive for learning.
	Authenticity
3.	There are store-bought instructional posters mounted on the walls within my classroom.
5.	Students' names are evident on desks or tables.
14.	I display student artwork within my classroom.
15.	I document learning experiences via photography.
29.	I create anchor charts that incorporate the ideas of students.
49.	Students' writing samples are evident within the classroom.
50.	I have discussion boards within my classroom to evoke student dialogues.
54.	Students represent their learning through media arts.
55.	I use worksheets to assess the learning of students.
57.	I assess student learning through paper-pencil assessments.
69.	Displays of students' work focus on the process of learning rather than the product.
75.	My classroom arrangement remains the same throughout the year.
77.	I prefer a quiet classroom in which students are engaged in silent work.
78.	The noise level in my classroom is loud, yet productive work is taking place.
90.	When I rearrange my classroom, I take the input of students into consideration.
95.	My classroom mirrors the vison of the school corporation.
100.	Classroom displays demonstrate uniformity in student work.
	Brain Compatibility
2.	Students complete work in areas with natural lighting.
9.	I have a leveled library within my classroom.
11.	The books displayed within my classroom incorporate a wide variety of genres.
19.	There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.
25.	I spend more time lecturing than facilitating student-led discussions.
27.	There is evidence of project-based learning within my classroom.
32.	Technology is readily accessible in my classroom.
37.	There is a variety of comfortable seating such as beanbags, cushions, or chairs.
39.	There are bright colors displayed within my classroom.
44.	I use neutral colors within my classroom.
45.	I teach in a classroom that has at least one window.
47.	Tables or desks are arranged at different heights to accommodate the learner.

Table 10 (continued)

Item	Dimension
48.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.
61.	My classroom has a variety of textures and sensory materials.
73.	My instructional materials spark student inquiry and curiosity.
87.	When designing my classroom seating arrangements, I take the performance styles of students into consideration.

Note. N=100

In order to conduct a confirmatory analysis, the initial measurement model must be tested to produce empirical results (Kim & Muller, 1978). A factor analysis was conducted on the 100 items from the Classroom Environment Survey. The alpha is used to measure the unidimensionality of a set of variables and is commonly used as an index of reliability. Tests that are longer in length typically increase the scale of reliability. Table 11 demonstrates the reliability of the measurement model.

Table 11

Reliability Statistic

Cronbach's Alpha	Chronbach's Alpha Based on Standardized Items	*N* of Items
.944	.945	100

Note. Per Kim and Muller (1978), a reliable test latent variable is < than .07.

The theoretical measurement model is compared with the reality model via the Cronbach Alpha. A reliable test will have a factor loading latent variable larger than .07. In this study, the test had a reliability of .94 with an error variance of .12. When the reliability increases, the error variance will decrease.

An eigenvalue serves as “a criterion of determining the number of factors to extract and a measure of variance accounted for by a given dimension” (Kim & Mueller, 1978, p. 83). Typically, statistical analysis programs produce factors with an eigenvalue of greater than or equal to l. When the factor analysis was conducted for this study via SPSS, 29 factors were generated with an eigenvalue of greater than or equal to1.

The eigenvalue default standard of greater than or equal to1 produces more factors than the researcher may anticipate. Therefore, the researcher uses a scree plot as another option to determine the number of statistically significant factors to keep within the quantitative study. Table 12 demonstrates the 10 of the 29 eigenvalues that were produced through the factor analysis.

Table 12

Total Variance Explained – Items 1-10

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.750	19.750	19.750	19.750	19.750	19.750
2	6.185	6.185	25.935	6.185	6.185	25.935
3	4.579	4.579	30.514	4.579	4.579	30.514
4	3.915	3.915	34.429	3.915	3.915	34.429
5	3.534	3.534	37.963	3.534	3.534	37.963
6	3.299	3.299	41.262	3.299	3.299	41.262
7	3.0067	3.067	44.329	3.067	3.067	44.329
8	2.818	2.818	47.146	2.818	2.818	47.146
9	2.777	2.777	49.923	2.777	2.777	49.923

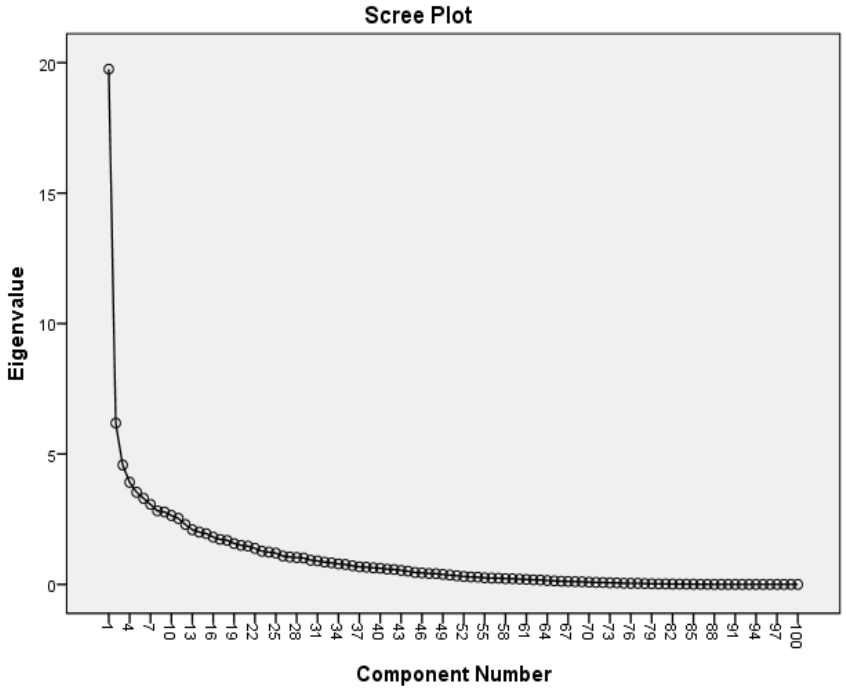
Table 12 (continued)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
10	2.641	2.641	52.565	2.641	2.641	52.565

Note. Demonstrates total variance for 10 out of 29 eigenvalues.

A scree plot determines the significant factors. The eigenvalues are located on the y-axis of the scree plot, while the number of factors is on the x-axis. Factors are ascertained by observing the number of eigenvalues on the elbow or downward curve of the scree plot. The point where the slope of the curve levels off indicated the number of factors that should be generated from the analysis.

Figure 2. Factor Scree Plot.



A Varimax rotation is a statistical method for loading items into a quantified fixed number of factors (Kim & Muller, 1978). The criteria for set for retaining specified factors and items were: (a) a loading of .40 or higher, (b) cross-loading items must have a difference greater than .10, (c) there must be a minimum of three factors per item. A five- and seven-factor Varimax rotation was performed based on the scree test. The five-factor run was the most suitable method in order to compare the measurement model to the actual test. Table 13 is a condensed set of items by factor with the loading and cross-loading values. The entire rotated component matrix is located in Appendix D.

Table 13

Condensed Set of Items by Factor with the Loading and Cross-Loading Values Partial Rotated

	Component				
	1	2	3	4	5
There are pathways for student mobility.	.404	.188	-.079	.101	-.139
Students complete work in areas with natural lighting	.378	.265	-.043	.226	-.208
There are store-bought instructional posters mounted on the walls within my classroom.	-.039	-.362	-.121	.184	.395
I play a variety of music throughout the instructional day.	-.002	.449	.088	.002	.173
Students' names are evident on desks or tables.	.526	.320	-.022	.264	-213
I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.	.249	.302	.147	.133	.192

Note. Entire partial rotated matrix located in Appendix D.

Based on the criteria, 26 items were removed that did not have a loading value of .40 or higher. Most of the eliminations were either items that specifically addressed dispositional aspects of the classroom teacher or specific features within the classroom. For example, the recognition of color differences among children is a dispositional question, while the amount of windows within a classroom refers to the feature of the room. Table 14 demonstrates the items that were removed due to the loading criteria.

Table 14

Removed Items Due to Loading Criteria

Item Number	Item	Loading Value
2.	Students complete work in areas with natural lighting	.378
3.	There are store-bought instructional posters mounted on the walls within my classroom	.395
6.	I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.	.302
9.	I have a leveled library within my classroom.	.369
18.	I display behavior charts or positive reinforcement initiatives.	.308
35.	I have student accessible mirrors in my classroom.	.236
36.	I have pictures displayed of my family.	.315
39.	There are bright colors displayed within my classroom.	.387
40.	I decorate my room prior to receiving a class list.	.326
41.	I value children as individuals with different cultural experiences.	.382
44.	I use neutral colors within my classroom.	.362
45.	I teach in a classroom that has at least one window.	.347
46.	I do not see color differences among students.	.199
50.	I have discussion boards within my classroom to evoke student dialogues.	.350
53.	I believe that all students are capable of intellectual work.	.371
59.	Students have the opportunity to collaborate with peers.	.292
60.	I have to think of my students as data points in order to be an intentional instructor.	.290
70.	It is important for me to create a sense of belonging among students within the classroom.	.384
73.	My instructional materials spark student inquiry and curiosity.	.396
77.	I prefer a quiet classroom in which students are engaged in silent work.	.368
89.	When I think of the term culture, I reflect on the construct of race.	.337

Table 14 (continued)

Item Number	Item	Loading Value
90.	When I rearrange my classroom, I take the input of students into consideration.	.344
93.	Classroom materials connect to the social contexts of students beyond the school environment.	.372
95.	My classroom mirrors the vision of the school corporation	.361
97.	I am aware of the religious backgrounds of my students.	.269
100.	Classroom displays demonstrate uniformity in student work.	.109

Note. N=26

The method of cross-loading led to 15 eliminations. Similarly, the items that were removed reflected educator disposition and specific environmental attributes. Table 15 shows the additional items that were removed through cross-loading.

Table 15

Removed Items via Cross-Loading

Item Number	Item	Difference
14.	I display student artwork within my classroom.	.081
37.	There is a variety of comfortable seating such as beanbags, cushions, or chairs.	.091
42.	There are representations of current events relevant to the lives of students.	.008
43.	Parents could learn about school initiatives via the way I design my classroom.	.035
47.	Tables or desks are arranged at different heights to accommodate the learner.	.020
58.	I try to incorporate instructional materials that appeal to the cultural backgrounds of students.	.054
61.	My classroom has a variety of textures and sensory materials.	.042
63.	I make an extra effort to connect with the families of my students.	.060
64.	Furniture is intentionally arranged for peer socialization.	.035

Table 15 (continued)

Item Number	Item	Difference
69.	Displays of student work focus on the process of learning rather than the products.	.051
74.	Students construct collective class goals.	.031
87.	When designing my classroom seating arrangements, I take the performance style of students into consideration.	.018
91.	I have a variety of manipulatives in my classroom for problem-solving purposes.	.087
93.	Classroom materials connect to the social contexts of students beyond the school environment.	.036
99.	I invite families to participate in the learning experiences of students.	.124

Note. N=15

The remaining factors had either strong factor loadings with small cross loadings. Out of the 100 items from the initial measurement model, 41 items did not meet the criteria. Therefore, the following 59 items were retained through the factor analysis (Table 16).

Table 16

Items Remaining After Factor Loading and Cross-Loading

Item Number	Item
1.	There are pathways for student mobility.
4.	I play a variety of music throughout the instructional day.
5.	Students' names are evident on desks or tables.
7.	My room contains eclectic, miscellaneous items.
8.	There is space for group gatherings or meetings.
10.	The books displayed within my classroom are written by racially diverse authors.
11.	The books displayed within my classroom incorporate a wide variety of genres.
12.	I display the interests of students within my classroom.
13.	There are photographs of students in my classroom.
16.	There are spaces provided for peer collaboration.

Table 16 (continued)

Item Number	Item
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc. exhibited throughout room.
19.	There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.
20.	There is space provided for individualized work.
21.	The desks within my classroom are aligned in rows.
22.	There are tables in my classroom.
23.	There is a combination of desks and tables in my classroom.
24.	Students are encouraged to use their native language.
25.	I spend more time lecturing than facilitating student-led discussions.
26.	I cluster my desks into groups.
27.	There is evidence of project-based learning within my classroom.
28.	Languages outside of Standard English are displayed within my classroom.
29.	I create anchor charts that incorporate the ideas of students.
30.	I have distinct spaces within my room that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).
31.	There is space provided for small-group instruction.
32.	Technology is readily accessible in my classroom.
33.	There is a visible map or globe in my classroom.
34.	The classroom reflects my personal interests.
38.	The images featured on the cover of literacy books and textbooks reflect multiracial individuals.
48.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.
49.	Students' writing samples are evident within the classroom.
51.	My classroom is organized to my liking.
52.	Students have adequate space to engage in instructional activities.
54.	Students represent their learning through media arts.
55.	I use worksheets to assess the learning of students.
56.	I display posters of inspiration leaders of racially diverse backgrounds.
57.	I assess student learning through paper-pencil assessments.
65.	I celebrate each student's strengths throughout the instructional day within my classroom.
66.	I display photographs and books that represent the native countries of students.
67.	There are storage areas for instructional materials.
68.	There are areas where at least two students can work together.
71.	I research cultural studies to understand the complexities of diverse learners.
72.	Students create individual goals.
75.	My classroom arrangement remains the same throughout the year.

Table 16 (continued)

Item Number	Item
76.	The policies of the building mandate how I should arrange and organize my classroom space.
78.	The noise level in my classroom is loud, yet productive work is taking place.
79.	My classroom décor reflects a particular theme.
80.	I think about ethnicity and race of my student population while organizing the classroom.
81.	I arrange my room in different ways throughout the year.
82.	I typically mount learning standards on my classroom walls.
83.	I think about the gender identities of students while delivering instruction.
84.	I secure classroom materials in areas that are not accessible to students.
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.
86.	My classroom reflects items that I value.
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.
91.	I have a variety of manipulatives in my classroom for problem-solving purposes.
92.	Classroom materials are accessible for student use.
94.	I reflect on the behavioral responses of students in relation to my classroom environment.
96.	I view my classroom environment as another teacher.
98.	The design and layout of my classroom is conducive for learning.

Note. N=59

In order to reduce more items (due to the instrument length of completion for participants), it was determined to change the criteria of the factor loading. The criterion set for retaining factors was changed to a loading value of 4.6 or higher. This change eliminated 11 more items (i.e., 1, 4, 13, 22, 24, 25, 51, 55, 65, 75, and 96). The reduced items also emphasized statements pertaining to the beliefs of educators and the implementation of responsive teaching (Table 17). The remaining 48 items are found in Table 18.

Table 17

11 Items Removed (> .46)

Item Number	Item	Loading Value
1.	There are pathways for student mobility.	.404
4.	I play a variety of music throughout the instructional day.	.449
13.	There are photographs of students in my classroom.	.428
22.	There are tables in my classroom.	.455
24.	Students are encouraged to use their native language.	.410
25.	I spend more time lecturing than facilitating student-led discussions.	.455
51.	My classroom is organized to my liking.	.409
55.	I use worksheets to assess the learning of students.	.450
65.	I celebrate each student's strengths throughout the instructional day within my classroom.	.438
75.	My classroom arrangement remains the same throughout the year.	.424
96.	I view my classroom environment as a third teacher.	.439

Note. Eliminated items after change in loading criteria to reduce more items.

Table 18

Remaining Items After Changed Criteria

Item Number	Item
5.	Students' names are evident on desks or tables.
7.	My room contains eclectic, miscellaneous items.
8.	There is space for group gatherings or meetings.
10.	The books displayed within my classroom are written by racially diverse authors.
11.	The books displayed within my classroom incorporate a wide variety of genres.

Table 18 (continued)

Item Number	Item
12.	I display the interests of students within my classroom.
16.	There are spaces provided for peer collaboration.
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc. exhibited throughout room.
19.	There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.
20.	There is space provided for individualized work.
21.	The desks within my classroom are aligned in rows.
23.	There is a combination of desks and tables in my classroom.
26.	I cluster my desks into groups.
27.	There is evidence of project-based learning within my classroom.
28.	Languages outside of Standard English are displayed within my classroom.
29.	I create anchor charts that incorporate the ideas of students.
30.	I have distinct spaces within my room that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).
31.	There is space provided for small-group instruction.
32.	Technology is readily accessible in my classroom.
33.	There is a visible map or globe in my classroom.
34.	The classroom reflects my personal interests.
38.	The images featured on the cover of literacy books and textbooks reflect multiracial individuals.
48.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.
49.	Students' writing samples are evident within the classroom.
52.	Students have adequate space to engage in instructional activities.
54.	Students represent their learning through media arts.
56.	I display posters of inspiration leaders of racially diverse backgrounds.
57.	I assess student learning through paper-pencil assessments.
66.	I display photographs and books that represent the native countries of students.
67.	There are storage areas for instructional materials.
68.	There are areas where at least two students can work together.
71.	I research cultural studies to understand the complexities of diverse learners.
72.	Students create individual goals.
76.	The policies of the building mandate how I should arrange and organize my classroom space.
78.	The noise level in my classroom is loud, yet productive work is taking place.
79.	My classroom décor reflects a particular theme.
80.	I think about ethnicity and race of my student population while organizing the classroom.
81.	I arrange my room in different ways throughout the year.

Table 18 (continued)

Item Number	Item
82.	I typically mount learning standards on my classroom walls.
83.	I think about the gender identities of students while delivering instruction.
84.	I secure classroom materials in areas that are not accessible to students.
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.
86.	My classroom reflects items that I value.
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.
91.	I have a variety of manipulatives in my classroom for problem-solving purposes.
92.	Classroom materials are accessible for student use.
94.	I reflect on the behavioral responses of students in relation to my classroom environment.
98.	The design and layout of my classroom is conducive for learning.

Note. N=48.

The Varimax rotation also results into a factor pattern. After the rotation, each variable or item is associated with a specific factor. Each factor represents a linear combination of variables with strong loadings. The following tables will demonstrate the resulting patterns and the concept each factor represents.

Factor 1 composed of a combination of variables that related to space. The variables described intention of classroom space as well as placement of instructional items. In reference to the measurement model (Table 18), Factor 1 identified most variables within the spatial intentionality dimension. Due to the loading criteria, several variables within the measurement model were removed from the spatial intentionality factor. However, the results of the rotation only added one variable (i.e., Item #5) that was not considered in the original model.

In the measurement model, Item #5 was placed in the factor known as authenticity. Since students can already identify their names and utilize their voice to make connections with others,

visible name tags may negate the image of the child. Therefore, the variable was placed in the dimension of authenticity to remind educators of meaningful ways to build identity and connections. The addition of Item 5 to Factor 1 indicated the need for the educator to think about the placement of instructional materials. Table 19 demonstrates the variables in the first factor.

Table 19

Variables in Factor 1 with Highest Loading and Next Highest Loading

Factor 1	Concept: Space	Highest Loading	Next Highest Loading
5.	Students' names are evident on desks or tables.	.526	.320
8.	There is pace for group gatherings or meetings.	.648	.322
16.	There are spaces provided for peer collaboration.	.479	.301
20.	There is space for individualized work.	.563	.121
23.	There is a combination of desks and tables in my classroom.	.474	.258
31.	There is space provide for small-group instruction in my classroom.	.747	.258
52.	Students have adequate space to engage in instructional activities.	.688	.134
62.	I have space to conduct student conferences.	.589	.208
67.	There are storage areas for instructional materials.	.503	.121
68.	There are areas where at least two students can work quietly together.	.698	.222
76.	The policies of the building mandate how I should arrange and organize my space.	.521	.176

Table 19 (continued)

Factor 1	Concept: Space	Highest Loading	Next Highest Loading
81.	I arrange my room in different ways throughout the year.	.547	.321
92.	Classroom materials are accessible for student use.	.474	.140
98.	The design and layout of my classroom is conducive for learning.	.602	.183

Note. Factor 1 = 14variables

Factor 2 demonstrated physical features within the classroom that promote student-centered practices and experiences. These items reflected pedagogy that incorporated student representations of learning, styles conducive for interaction, student voice, and accountability. Furthermore, the variables within this factor also correlated to the dimension of authenticity within the measurement model. Only three items from the authenticity dimension remained in the second factor. However, the definition and criteria of authenticity was an essential question of this quantitative study. Therefore, the relevance and meaning of variables serve as a foundation for defining authenticity. Table 20 displays the variables that comprise the second factor.

Table 20

Variables in Factor 2 with Highest Loading and Next Highest Loading

Factor 2	Concept: Authenticity	Highest Loading	Next Highest Loading
12.	I display the interests of students within my classroom.	.526	.320
15.	I document learning experiences via photography.	.624	.210
21.	The desks within my room are aligned in rows.	.619	.331
26.	I cluster my desks into groups.	.480	.223
27.	There is evidence of project based learning within my classroom.	.595	.176
29.	I create anchor charts that incorporate the ideas of students.	.590	.296
30.	I have distinct spaces within my classroom that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).	.525	.356
32.	Technology is readily accessible in my classroom.	.558	.353
54.	Students represent their learning through media arts.	.482	.290
82.	I typically mount learning standards on my classroom walls.	.479	.186

Note. Factor 2 = 10 variables

Factor 3 consists of variables that describe classroom materials and pedagogy that affirm the identity of the learner. The variables allude to the conscious effort of educators to organize a classroom based on the cultural autobiographies of students. Each student possesses his or her

own, unique identity. The responsive educator determines ways to validate the strengths and ambitions of each learner. Therefore, the educator embraces the role of being a reflective practitioner and intentionally evaluates the values as well as familial structures of learners.

The dimension in the measurement model that related to this factor was identity validation. Twenty items from the identity validation dimension were removed due to either the loading criteria or an item's association with another factor via the Varimax rotation. Only five items from the measurement model's identity dimension remained. Items 66, 71, and 88 were added to identity dimension, which all relate to an educator's role in validating the living experiences of learners. Table 21 demonstrates the items in third factor.

Table 21

Variables in Factor 3 with Highest Loading and Next Highest Loading

Factor 3	Concept: Identity	Highest Loading	Next Highest Loading
66.	I display photography and books that represent the native countries of students.	.566	.266
71.	I research cultural studies to understand the complexities of diverse learners.	.539	.382
72.	Students create individual goals.	.498	.293
80.	I think about the ethnicity and race of my student population while organizing the classroom.	.502	.337
83.	I think about the gender identities of students while delivering instruction.	.611	.116
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.	.822	.110

Table 21 (continued)

Factor 3	Concept: Identity	Highest Loading	Next Highest Loading
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	.751	.160
94.	I reflect on the behavioral responses of student in relation to my classroom environment.	.551	.286

Note. Factor 3 = 8 variables

The variables in Factor 4 describe items within the classroom that connect learners to either peers or individuals and cultural experiences outside of the educational environment. In other words, this factor conveys features that may elicit text to world connections within a classroom. In the measurement model, the cultural congruence dimension referred to connectivity between the learner's familial structure and school. However, the variables within this factor expand the meaning of connectivity.

For instance, items 19, 33, and 48, describe connections to the natural world. Items 10, 17, 11, 28, 38, and 56 refer to cultural connections that may strengthen one's self-image (i.e., racial identity, language validation, etc.), as reflected in Table 22. The last item regarding assessments may possibly convey how an educator connects to a learner from an evaluative standpoint. Although item 57 appears to be an outlier, it belongs to this factor due to its strong loading value of .617. Therefore, the assessment may allude to the teacher-to-student connection and the ways an educator evaluates what occurs within the life space of the classroom.

Table 22

Variables in Factor 4 with Highest Loading and Next Highest Loading

Factor 4	Concept: Connectivity	Highest Loading	Next Highest Loading
10.	The books displayed within my classroom are written by racially-diverse authors.	.605	.263
11.	The books displayed incorporate a wide variety of genres.	.533	.340
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited through the classroom.	.461	.328
19.	There are many natural materials (i.e., plants acorns, tree stumps, etc.) in my classroom.	.482	.220
28.	Languages outside Standard English are displayed in my classroom.	.495	.180
33.	There is a visible map or globe in my classroom.	.545	.188
38.	The images featured on the cover of literacy books and textbooks reflect multiracial individuals.	.559	.274
48.	There are items intentionally placed specific areas to evoke student inquiry and provocations.	.547	.283
56.	I display posters of inspirational leaders of racially diverse backgrounds.	.515	.278
57.	I assess student learning through paper pencil assessments.	.617	.326

Note. Factor 4 = 10 variables

Factor 5 consists of variables that reflect the preferences of educators as custodians of the environment. The items encourage educators to ponder themes, beliefs, organizational style, and materials that demonstrate their personal interests. Therefore, students may also have an insight

into the cultural experiences and values of educators. This factor did not reflect any of the dimensions from the measurement model (Table 23).

Table 23

Variables in Factor 5 with Highest Loading and Next Highest Loading

Factor 5	Concept: Preferences	Highest Loading	Next Highest Loading
7.	My room includes many eclectic, miscellaneous items.	.572	.184
34.	The classroom reflects my personal interests.	.588	.198
78.	The noise level in my classroom is loud, yet productive work is taking place.	.533	.308
79.	My classroom décor reflects a particular theme.	.580	.065
84.	I secure classroom materials in areas that are not accessible to students.	.549	.205
86.	My classroom reflects items that I value.	.822	.079

Note. Factor 5 = 6 variables.

Table 24 outlines all factors and corresponding variables resulting from the statistical analysis. Furthermore, it expresses the new name of each factor that derived from the description of the linear combination of variables. Out of the initial measurement model, only three of the five dimensions remained. Two out of the three remaining dimensions (i.e., identity validation and spatial intentionality) were renamed. The authenticity dimension was not renamed due to the research question of the quantitative study.

Table 24

5-Factor Rotation with Highest Loadings and Next Highest Loadings Per Item

Factor 1	Name: Intentional Spaces	Highest Loading	Next Highest Loading
5.	Students' names are evident on desks or tables.	.526	.320
8.	There is space for group gatherings or meetings.	.648	.322
16.	There are spaces provided for peer collaboration	.479	.301
20.	There is space for individualized work.	.563	.121
23.	There is a combination of desks and tables in my classroom.	.474	.258
31.	There is space to provide for small-group instruction in my classroom.	.747	.258
52.	Students have adequate space to engage in instructional activities.	.688	.134
62.	I have space to conduct student conferences.	.589	.208
67.	There are storage areas for instructional materials.	.503	.121
68.	There are areas where at least two students can work quietly together.	.698	.222
76.	The policies of the building mandate how I should arrange and organize my space.	.521	.176
81.	I arrange my room in different ways throughout the year.	.547	.321
92.	Classroom materials are accessible for student use.	.474	.140
98.	The design and layout of my classroom is conducive for learning.	.602	.183

Factor 2	Name: Authenticity	Highest Loading	Next Highest Loading
12.	I display the interests of students within my classroom.	.472	.214
15.	I document learning experiences via photography.	.624	.210
21.	The desks within my room are aligned in rows.	.619	.331
26.	I cluster my desks into groups.	.480	.223
27.	There is evidence of project-based learning within my classroom.	.595	.176

Table 24 (continued)

Factor 2	Name: Authenticity	Highest Loading	Next Highest Loading
29.	I create anchor charts that incorporate the ideas of students.	.590	.296
30.	I have distinct spaces within my classroom that indicate specific instructional activities (i.e., areas for reading, space for collaboration, etc.).	.525	.356
32.	Technology is readily accessible in my classroom.	.558	.353
54.	Students represent their learning through media arts.	.482	.290
82	I typically mount learning standards on my classroom walls.	.479	.186
Factor 3	Name: Identity Affirmations		
66.	I display photography and books that represent the native countries of students.	.566	.266
71.	I research cultural studies to understand the complexities of diverse learners.	.539	.382
72.	Students create individual goals.	.498	.293
80.	I think about the ethnicity and race of my student population while organization the classroom.	.502	.337
83.	I think about the gender identities of students while delivering instruction.	.611	.116
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.	.822.	.110
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	.751	.160
94.	I reflect on the behavioral responses of students in relation to my classroom environment.	.551	.286
Factor 4	Name: Connectivity		
10.	The books displayed within my classroom are written by racially-diverse authors.	.605.	.263

Table 24 (continued)

Factor 4	Name: Connectivity		
11.	The books displayed incorporate a wide variety of genres.	.533	.340
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the classroom.	.461	.328
19.	There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.	.482	.2200
28.	Languages outside standard English are displayed in my classroom.	.495	.180
33.	There is a visible map or globe in my classroom.	.545	.188
38.	The images featured on the cover of literacy books and textbooks reflect multiracial individuals.	.559	.274
48.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.	.547	.283
56.	I display posters of inspirational leaders of racially diverse backgrounds.	.515	.278
57.	I assess student learning through paper-pencil assessments.	.617	.326
Factor 5	Name: Personal Touch		
7.	My room includes many eclectic, miscellaneous items.	.572	.184
34.	The classroom reflects my personal interests.	.588	.198
78.	The noise level in my classroom is loud, yet productive work is taking place.	.533	.308
79.	The classroom décor reflects a particular theme.	.580	.065
84.	I secure classroom materials in areas that are not accessible to students.	.549	.205
86.	My classroom reflects items that I value.	.822	.079

Note. Five factors derived from scree test.

Description of Instrument Factors from Analysis

The five factors that derived from the linear combination of variables are as followed: *identity affirmations, authenticity, connectivity, intentional spaces, and personal touch.* Each dimension had at least three items, which satisfied the criteria of the factor analysis. The following will describe each factor:

- Identity affirmations are the extent to which the features within the classroom environment affirm the identity (i.e., cultural, ethnic, race, class, and gender) of learners. Delagdo and Stefancic (2001) conveyed through the critical race theory the lack of a unitary identity within race. The responsive teacher finds ways to validate the strengths of learners, which can occur through the incorporation of materials that enhance a learner's understanding of his or her identity.
- Connectivity is the extent to which the classroom environment connects to the natural world, cultural experiences, and inspires relationships.
- Personal touch describes the structures and features in a classroom environment that provides learners insight of the educator's disposition.
- Intentional spaces refer to the extent to which performance style is honored through the organization of space and placement of instructional materials.
- Authenticity is the degree to which physical features within the classroom promote student-centered practices and experiences.

Table 25 provides a matrix of the factors including correlating pathfinder connections, Moos dimensions, and critical race theory tenets. In the literature review, it was determined that effective tools incorporate the dimensions of Moos as part of the process of instrumentation. This provides content validity.

Table 25

Matrix of Environment Factors

Factor	Description	Pathfinder Connections	Moss Dimension	CRT tenet embedded in responsive teaching
Identity Affirmations	The extent to which the features within the classroom environment affirm the identity (i.e., cultural, ethnic, race, class, and gender) of learners.	*Malaguzzi; Image of the child*	Personal Development Dimension	Diffusing colorblindness through the acknowledgment of cultural strengths
Connectivity	The extent to which the classroom environment connects to the natural world, cultural experiences, and inspires relationships.	*John Dewey; Cooperative learning*	Relationship Dimension	Connectedness of differential racialization among students
Personal Touch	The structures and features in a classroom environment that provide learners insight of the educator's disposition.	*Steiner; Individuality*	Personal Development Dimension	Emphasis on identity development via exploration and collaboration
Intentional Spaces	The extent to which performance style is honored through the organization of space and placement of instructional materials.	*Montessori; Custodians of environment*	System Maintenance and Change Dimension	Emphasis on justice that honors the needs of individuals and collective to perpetuate equity

Table 25 (continued)

Factor	Description	Pathfinder Connections	Moss Dimension	CRT tenet embedded in responsive teaching
Authenticity	The degree to which students represent their individuality, learning, or cultural autobiographies in authentic ways.	*Montessori; Child-centered pedagogy* *Dewey; Inquiry-based learning* *Malaguzzi; Image of the child* *Steiner; imaginative learning*	Relationship Dimension	The importance of storytelling and the incorporation of multiple racial perspectives within the environment

Note. CRT= Critical Race Theory

Responsiveness Assessment for Classroom Environments

The Classroom Environment Survey was renamed the Responsiveness Assessment for Classroom Environments (RACE). Inclusive environments emerge under the leadership of a responsive educator. The classroom teacher, as an evaluator of his or her effect size on learning, should not only assess instructional practices, but the degree of responsiveness provided to diverse learners.

The term culture encompasses religion, gender, age, sexuality, and race (Gay, 1999). However, the acronym of the instrument (RACE) was intentionally created to remind educators of critical race theory, which served as a theoretical base for this research. It is important for educators to understand the critical race theory and its implications in modern education. Tatum (1997) conveyed that students with a racial consciousness are prone to adhere to instructional

materials and settings that validate identity. Educators have the power to set the tone of their environments through the layout, materials, and design featured within the space. If educational mandates and policies do not demand a watchful eye for responsive environments, then educators must assume that responsibility as the custodians of instructional space.

Appendix E displays the new instrument based on 48 remaining items from the factor analysis. Assessment statements were renumbered and purposefully aligned with the appropriate factor. Therefore, the educator could become familiarized with the dimensions and reflect on ways to progress in his or her level of responsiveness.

Summary of Factor Analysis

A factor analysis was conducted to determine the criteria for a culturally inclusive environment. The initial instrument incorporated 100 items associated with five dimensions. Each dimension derived from the research of pertaining to culturally responsive pedagogy, the work of Rudolf Moos, and critical race theory. The 100 items from the measurement model reduced to 48 variables due to the loading criteria of the factor analysis.

Based on the qualities of the linear combination of variables, five factors were identified: *intentional spaces, authenticity, connectivity, identity affirmations, and personal touch*. Three of the five factors mirrored the dimensions from the measurement model. The items were arranged into a new instrument named, Responsiveness Assessment for Classroom Environments (RACE).

CHAPTER 5

DISCUSSIONS OF FINDINGS, IMPLICATIONS, APPLICATIONS AND FURTHER RESEARCH

Four sections provide the structure for this chapter. The first section offers a discussion of findings in the summaries for the descriptive and factorial analysis along with conclusions deriving from results. Following, the second section conveys implications of findings regarding responsive teaching and the critical race theory in education. The third section describes how educators should apply the tool within a classroom setting. Finally, the last section delivers recommendations for further research pertaining to the environment tool and student achievement.

The purpose of this quantitative study was to develop an instrument that measured cultural inclusivity within the physical space, including instructional materials, of American classrooms. Each classroom conveys a distinct story of how students learn through its physical design. Furthermore, the American classroom reflects the educational values of the individual who manages the space. Historically, the classroom has evolved from a space of cultural preservation to integration. The student audience has become increasingly culturally and ethnically diverse which requires a responsive educator.

An inclusive educator understands the role of race, inquiry, and identity within a classroom space, yet it may be difficult to demonstrate understandings of cultural competency

through the physical attributes of an environment. Lewin's field theory conveyed that behavior was function of personality interactive with the environment, known as life space. Therefore, a physical environment that promotes inclusivity coupled with responsive pedagogy would indicatively engender connectedness among linguistically and culturally, diverse learners.

This study was guided by two primary questions that intertwined the role of the environment and cultural inclusiveness:

1. What are the criteria for a culturally inclusive environment that should be considered for the development of an instrument?
2. What physical aspects of a culturally-inclusive environment denote authenticity?

Critical race theory, environmental theorists, and culturally-responsive pedagogy were foundational elements of the initial classroom instrument. Through research of theories and pedagogy, the following dimensions were developed for an environment survey: *identity validation, cultural congruence, authenticity, spatial intentionality, and brain compatibility*. Constructs were developed under each dimension, which led to the conception of the classroom environment survey.

The survey consisted of 100 items representing the five dimensions derived through research. All constructs or statements were created for a five-point, Likert-scale response format (i.e., Never, Rarely, Sometimes, Often, and Always). The intent of the survey was to measure the actual and preferred environmental values of educators who were responsible for a classroom space as well as a cohort of students. Demographics were collected pertaining to an educator's years of teaching experience, exposure of cultural competency, and grade-level responsibility prior to the completion of the survey.

Approximately, 1,256 K-12 Midwest educators were invited to complete the classroom environment survey voluntarily through a random selection. The participants were given four weeks to complete the survey. I intentionally sent reminder notifications each week to selected participants. Only 136 e-mails were deemed as invalid contact information and all were educators from Indiana schools.

Discussion of Findings

Although 120 individuals interacted with the Classroom Environment Survey, only 98 participants recorded responses in the demographic section. Furthermore, the number of recorded responses altered from the initial to last questions. Forty-five percent of participants were elementary teachers, secondary teachers were the majority of participants. Additionally, more than 40% of the participants had taught for over 16 years. Sixty-seven percent of participants received a form of training in cultural competency. This study did not require an analysis of correlations between demographics and results. However, it was insightful to keep in mind for further research.

Test fatigue led to varied recorded responses among participants. Three educators made personal contact to inform me of the length of the test. One of the participants expressed a desire to assist in the effort but did not have the time to engage in assessment. By the design of a factor analysis, more variables are needed for the item reduction process. Therefore, the length of the survey correlated to the amount of participation.

The data findings of specific questions were also insightful. Half of the participants felt like their classroom environments were arranged to their liking. However, based on the results of other questions, the teacher arrangement of the environment did not necessarily reflect the likings or identities of students. Nearly 98% of participants recorded that they valued children as

individuals with different cultural experiences. However, nearly 50 % of participants conversely recorded that they do not see color differences among children nor think about the ethnicity of student populations while organizing a classroom environment. Forty-six percent of participants also recorded that they sometimes make an effort to research multicultural students to understand the complexities of diverse learners.

A factor analysis was conducted to determine commonalities among items on the Classroom Environment Survey. The procedure reduces dimensionality through a process that assembles a linear combination of variable into descriptive groupings (Kim & Muller, 1978). Consequently, more variables were needed in order to conduct an effective analysis. Prior to the analysis, a theoretical measurement model was created. Therefore, the factor analysis was conducted as a confirmatory process. The theoretical dimensions included spatial intentionality, cultural congruence, identity validation, brain compatibility, and authenticity.

The criteria set for retaining specified factors and items were: (a) a loading of .46 or higher, (b) cross-loading items must have a difference greater than .10, (c) there must be a minimum of three factors per item. Due to the loading criteria, 100 statements of the survey were reduced to 48 items. Each retained item is associated with a specific dimension through the factor analysis. In comparison to the theoretical measurement model, three of the five original dimensions remained valid and of the three factors, two were renamed for the new instrument (i.e., identity validation to identity affirmations, and spatial intentionality to intentional spaces). However, two new factors were discovered through the analysis that were not in the original model (i.e., connectivity and personal touch). The following is a list of the factors from the statistical analysis that were created from the loadings of variables:

- Identity Affirmations are the extent to which the features within the classroom environment affirm the identity (i.e., cultural, ethnic, race, class, and gender) of learners.
- Connectivity is the extent to which the classroom environment connects to the natural world, cultural experiences, and inspires relationships.
- Personal Touch describes the structures and features in a classroom environment that provides learners insight of the educator's disposition.
- Intentional spaces refer to the extent to which performance style is honored through the organization of space and placement of instructional materials.
- Authenticity is the degree to which physical features within the classroom promote student-centered practices and experiences.

Defining Authenticity

The factor analysis assembled a combination of variables that demonstrated physical features within the classroom that promoted student-centered practices and experiences. Nair, Fielding and Lackney (2013) defined authenticity as the validation of self. Therefore, an environment that reflects authenticity incorporates structures, pedagogy, and materials that allow students to *express* their identities. The variables associated with this factor produced several strands that define authenticity: *student voice and representations of learning, styles conducive for interaction, and accountability*.

Classrooms that incorporate student representations of learning demonstrate how students think and process information. Environments that are intellectually engaging encourage learners to wonder, inquire, and express their understandings of the world (Carter & Curtis, 2003; Desautels & Mcknight, 2016). Many instructional, paper-pencil materials condition learners

how to think and respond (Carter & Curtis). As an alternative to synthetic or worksheet related materials, students can demonstrate their learning via technology (i.e., videos, documentaries, presentations, websites, surveys, 3-D printing, etc.), anchor charts, posters, illustrations of learning concepts, sculptures, and various forms of art (Campbell-Hill & Ekey, 2010). Therefore, the authenticity factor requires educators to think about the instructional activities and experiences that do not limit the learner's imagination and ability to convey his or her knowledge.

Authenticity also entails rich dialogue, which requires environmental designs conducive for interaction. Certain classroom arrangements (i.e., tables, rugs, etc.) lend to connectivity. The work of Rogers (1957) described how we learn more about the self through our discourse with others. When educators give students the opportunity to connect with peers, they provide a space for learners to strengthen, challenge, and adopt beliefs in order to become fully-functioning individuals (Rogers).

In order to measure what students have learned, a level of authenticity must also emerge in assessments. Many assessments are culturally-biased and lack open-ended responses that delve into the ways learners think (Gay, 1999). Therefore, educators may need to look beyond paper-pencil assessments from a curriculum guide and think of creative ways to assess the delivery of their instruction (i.e., presentations, construction of models, oral assessments, etc.).

Implications

In a world where social injustice, racism, and a battle for cultural inclusivity persist, it is critical for in-service educators to understand the complexities of the critical race theory and its implications in the realm of education. Wise (2010) discussed racial disproportionality in discipline and student achievement in *Colorblind*. Furthermore, Kozol's (2005) research

referenced in *The Shame of a Nation*, portrayed his knowledge base from working with nearly 60 public, inner-city schools. Kozol documented his experiences as an educator and recorded the conditions of public education through the eyes of children. Through extensive visitations of schools, he discovered that the state of public education had worsened 50 years after the ruling of *Brown vs. Board* of Education. Schools not only reflected segregation, but obtained systems and environmental structures that hindered the learning of minority students (Kozol, 2005).

School environments of many urban communities continue to exploit the disadvantaged and provide evidence of systemic racism (Kozol, 2005). The environmental conditions of Detroit schools in 2016 portrayed on national media (i.e., dilapidated buildings, visible mold, broken ceiling tiles, and hazardous living conditions) further demonstrates the racial disparities in modern education. Kozol (2005) confronted the inequities in educational expenditures between inner city and suburban schools as well as disparities in the systems of property taxes. For instance, in New York City, the school officials of affluent communities budgeted nearly $22,000 per student in 2003, while urban schools reflected half of that amount per child. The disparities in funding sources between affluent and impoverished communities conveyed the values of political leaders in education (Kozol, 2005).

Although educational leaders debate standardized tests, evaluation systems, teacher shortages, and wages, many children of inner city schools continue to suffer in decrepit environments with limited resources (Kozol, 2005). Critical race theory asserts the need for more explicit discussions about race relations within educational systems and society. Educators should not subject linguistically and culturally diverse students to standards, policies, and environments steeped in colorblindness. As educators, we have a responsibility to recognize the unique identities of learners and assemble varied strengths in a formation that progresses societal

advancements. However, despite our responsibility, it is evident that certain factors hinder the pedagogy of responsiveness.

Three participants of the study responded that the survey content did not apply to secondary schools. When I received the feedback, I immediately thought about numerous research studies conveying the decline of student engagement from elementary and secondary schools. In elementary settings where a teacher has one cohort of students for a year, is there more opportunity for responsive pedagogy in comparison to secondary schools?

Understandably, certain statements of the classroom environment survey may not have been applicable to various educators based on the observed values within their settings. However, it is concerning if the premise of the five dimensions are obsolete within a classroom setting and were not considered relevant via an educator. The responsive educator provides educational spaces that allow students to wonder, think critically, collaborate, demonstrate strengths, and express themselves in authentic ways. Thus, could the lack of student engagement in many schools realistically signal a lack of educator responsiveness?

Ladson-Billings (1994) asserted the importance of teacher disposition as related to responsive pedagogy. Educators must see the potentiality within each learner. The Reggio concept, image of the child, conveys how an educator's disposition understands, embraces, and fosters the capabilities of all students. The educator emphasizes the importance of connectivity through the relationships. Gay (1999) described how the culturally responsive teacher intentionally investigates contexts beyond his or her own in order to develop empathy toward the living experiences of learners. The responsive disposition reflects connectedness as the educator understands that academic and social progression is contingent upon the interactions that take place within the learning environment.

Participant feedback conveyed that secondary teachers serve a large body of pupils throughout the instructional day with limited time to cover learning objectives. Therefore, the responses of test subjects implied that it is difficult for secondary teachers to build personal connections or alter an environment to adhere to the learning styles of students over the course of different periods throughout the day. If time is a factor for connectivity, then certain teachers are not able to capitalize on the discovery of students' strengths. Thus, the identity of students including what is needed to perform effectively is not being validated.

The responsive educator would note the possibilities within any roadblock or challenge. Due to the limited amount of time within periods, secondary educators have to be intentional in their level of responsiveness. Secondary educators may not have the capability of moving furniture around, but preferential seating (i.e., sitting on floor, standing, etc.) could certainly be an option for the learner who needs that opportunity. Collectively, students and teachers can determine classroom expectations for participation and work performance on the initial day of instruction. An educator who utilizes discussion protocols and high-level thinking questions creates an interactive space where voices are honored and connectivity is nurtured for cross-cultural interactions.

While preparing secondary students for higher education and future endeavors, the responsive teacher strives to create opportunities that elicit critical thinking. Students who are immersed in authentic experiences are exposed to instructional activities that allow text-to-world connections. Authenticity lends to representation of self. Educators of all levels are responsible for student learning, which indicates the need to understand how students process information as well as think. When educators provide avenues of scholarship that allow students to express their abilities, the effect size of learning can be measured (Hattie, 2009).

The CRT conveys that racism has *always* been deeply embedded into our systems and policies that condition human interactions. Dweck (2009) described challenges as opportunities for improvement. If racism exists within our American fabric, then educators must find ways to change the threads through the transformation of educational environments (Delgado & Stefancic, 2001). We have to see ourselves as evaluators of our effect size on student learning (Hattie, 2009) which starts through an examination of our beliefs. Importantly, we have to adopt a growth mindset while navigating through issues of social injustice (Dweck, 2009).

Applications of Environment Tool

The following describes the necessary steps an educator should follow while using the Responsiveness Assessment for Classroom Environments.:

1. Take the assessment (Appendix E).
2. If the educator records more answers in the *often* and *always* columns, he or she should take the time to intentionally identify the features with in the environment that align with each statement.
3. If the educator, records more answers in the *never* and *rarely* columns, he or she should view the version of the assessment with reflective questions (Appendix F). These questions were created by the researcher to evoke critical thinking based on survey statements.
4. In order to promote an inclusive environment, the educator must have an understanding of culturally-responsive pedagogy. If the understanding of cultural competency is lacking or a refresher is needed, the educator is encouraged to seek professional development, resources, or consult with the researcher to enhance his or her understanding of responsive teaching.

5. After the assessing the need for cultural competency development and receiving professional development, the educator should remove classroom posters, anchor charts, and items that ornate the room until the environment is a blank canvas. It would be best to initiate the environmental makeover near an instructional break (i.e., holiday break, summer months, post unit assessment, etc.).
6. Talk to your learners about their space. What aspects do they value? What makes an environment comfortable in the eyes of a learner? How can the environment promote a sense of belonging or connectivity? Do students perform better with certain layouts? It is important for both educators and students to make the best of their shared space.
7. Keep the perspectives of students in mind while revamping space, changing, and adding to the environment. Do the changes reflect the best interest of the learner? How do the features show students your values?
8. Know your students. An inclusive environment cannot exist with positive relationships between educators and students. In order to reflect the interests of learners within the classroom, the educator must have an understanding and connection with those he or she serves.
9. Put yourself in a position to be a researcher of other cultures. We operate and function based on our own living experiences. Therefore, it is critical to have culturally rich experiences to see the world and our students beyond our own bias.
10. Allow room for mistakes. Responsive teaching can be messy while navigating through the differences of diverse learners. The pedagogy can elicit cultural

connectivity among students and conflict. Try to work through issues that arise productively (i.e., developing agreements, decision-making protocols, etc.).

It is important for an educator to have an understanding of cultural competency. Furthermore, educators should check their level of cultural consciousness through an examination of human interactions. It is difficult to create an inclusive environment when one does not see differences among others. Differences within a classroom setting equip students for the challenging world around them. Educators must learn how to navigate through differences to create a space where people connect and learn through each other.

In order to establish an environment that values human connectedness, it is important for the owner of the space to evaluate his or her own beliefs about inclusivity. Reflections should not be limited to personal upbringing, biases, social contexts, cross-cultural relationships, stereotypical views, and growth mindsets. It is imperative for educators to know their cultural autobiographies prior to navigating through the complex, intricate stories of learners. When educators examine and identify their biases with means of self-improvement, they begin to embrace their roles researchers of cultural perspectives. Thus, educators seek for understandings of the world beyond their experiences, which fosters responsiveness within a classroom space.

The classroom environment should also be a blank canvas prior and during the arrival students at the inception of a school year. Reggio classrooms evolve as the learning objectives come to life through student representations. Similarly, the responsive teacher should incorporate the input, interests, and identities of students into the physical features of the classroom. Thus, the classroom design and layout would be unknown until the educator understood the social and learning dynamics within the classroom environment. The educator should maintain ongoing dialogue regarding space and learning, which may lead to continuous

alterations within the physical environment. Therefore, as the design and instructional resources may shift, an educator analyzes and determines the performance styles as well as needs of students. Meanwhile, the instrument will continue to serve as a guide throughout the changes of instructional space.

The educator who uses the environment instrument should also examine the progression of relationships within the classroom space. There are students who are naturally wired to excel in school due to a growth mindset, familial support, work ethic, or disposition of resiliency (Dweck, 2006; Hattie, 2009). However, in many circumstances students and educators may lack connectivity. The educator should reflect on factors that hinder connectedness and work toward a resolution where empathy is developed.

There will be conflict within any classroom environment. However, the responsive educator handles challenges productively. Students may not share the same consensus in environmental organization and redesign, yet conversation protocols that adhere to principles of compromise should be introduced for collective decision-making. In an inclusive classroom, the educator honors voices yet also functions in the best interest of all learners. Therefore, certain decisions pertaining to the environment may not appeal to everyone within the learning community and students need to understand that denial of interests does not necessarily indicate a lack of responsiveness.

The *personal touch* factor describes the structures and features in a classroom environment that provides learners insight of the educator's disposition. However, it is important to note that educators should find a balance between their personal interests and the values of students. The interests of an educator should not overshadow *identity affirmations* of

students or representations of their learning. If an educator ever questions the possibility of an imbalance, the simple solution would be to ask the learners how they perceive the environment.

Further Research

Steele and Cohn-Vargas (2013) conveyed that "few of the discussions about school improvement focus on what is going on in the classroom and how that affects students' daily experiences" (p. 3). When educators discuss the failure of American schools, many factors including parent involvement, discipline, funding, and policies are brought to the forefront of debates (Steele & Cohn-Vargas, 2013). However, there is minimal examination of failure through the perspectives of the students.

Kozol (2005) portrayed the disparities of education through the lens of children in his research. He validated the experiences of students and studied how they perceived the world around them. Through his accounts, students shared stories of transient educators and social inequities. At a young age, the minority children from Kozol's study realized that a variance in privilege and resources existed among racial groups. The students inquired about his life on the *other side* in reference to a world of opportunity and possibilities that were not perceptually seen in their own contexts. Kozol interviewed children to acknowledge their voice as integral components of public education:

> I have been criticized throughout the course of my career for placing too much faith in the reliability of children's narratives; but I have almost always found that children are a great deal more reliable in telling us what actually goes on in public school than many of the adult experts who develop policies that shape their destines. (p. 12)

Following the implementation of the environmental instrument, I would recommend a qualitative study to assess the affects and perceptions of student learners as related to physical

design as well as attribute of classroom space. Kozol's (2005) research shed light on the ways students identified with their learning environment. Consequently, I would want to measure the effectiveness of the instrument based on the effects of students. Therefore, I would intentionally conduct student interviews with intermediate grade levels to assess feedback regarding the dimensions of the instrument:

Identity Affirmations

1. How do you feel about your classroom environment?
2. What items within the classroom validate your identity?
3. Pick an item within your classroom that you value the most. Describe why?

Connectivity

1. How does the classroom connect with social contexts outside of school?
2. Which classroom arrangements promote collaboration?

Intentional Spaces

1. Is there space for independent or group work?
2. Is the classroom arranged in a way that helps you learn best?
3. What items within the room encourage you to learn?

Personal Touch

1. Are you able to gain a sense of your teacher's values based on the design of the classroom?

Authenticity

1. Are you able to express yourself or represent your learning?
2. How is technology utilized within the classroom environment?

Furthermore, I would recommend a study that measures student achievement within a culturally inclusive classroom. The Bridging Cultures project determined that inclusive strategies established connectedness among students, but did not significantly improve student achievement (Trumbull, Rothstein-Fisch, Greenfield, & Quiroz, 2001). However, the project did not have an intentional focus on the physical environment as related to responsive pedagogy. It would be beneficial to collect data from classrooms where teachers employ responsiveness and maintain an inclusive physical space as opposed to rooms that do not reflect the image of the child. One could also view discipline data between the control (traditional) and experimental (inclusive) classrooms and determine the differences after several weeks of implementation.

Summary

The hallmark of humanity is contingent upon cultural connectivity. Educators have the power to equip and prepare students for the social injustice within society. The classroom is a space where learners can process the inequities that exist and devise plans of resolution. However, it is critical for educators to understand the depth of institutionalized racism and their role in dismantling injustice. Although there are many uncontrollable variables that perpetuate cultural conflicts in society, the classroom is a place where educators orchestrate practices of inclusivity. Now, more than ever in history, the future of our country rests upon the collaboration of diverse, cultural beings. Thus, it is critical to understand critical race theory and its implications in modern day education.

Considering the 2016 election season, recent cases of police brutality, and terrorism, Americans cannot deny that racism and social injustice does not exist. This environment tool should serve as a guide for educators who want to examine how space enhances and contributes to culturally responsive teaching. Educators can determine if the physical environment reflects

student-centered pedagogy, egocentrism, or a cultural congruence among all within the shared space. It is powerful when an educator can own and determine the inclusive messages that an environment transmits.

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APPENDIX A: CONSENT FOR RESEARCH STUDY LETTER TO PARTICIPANTS

November 2016

Dear Educator:

You are invited to participate in a research study concerning classroom environments. This study is being conducted by Erica Buchanan-Rivera as a part of a doctoral dissertation with Dr. Steve Gruenert serving as the faculty sponsor from the department of Educational Leadership at Indiana State University. All kindergarten through twelfth grade educators in the Midwest who are responsible for a classroom and cohort of students are invited to participate. As a participant in this study, I will gain an understanding of the values and perspectives that inspire educators while developing, organizing, and arranging their classroom environments.

We will not require your name or personal identification, and your answers will be kept in a secure, password protected file that is only accessible to the researcher and her faculty sponsor. Although we cannot guarantee anonymity, due to nature of an Internet survey, all responses received will be reported only as group data for this particular study.

Your participation in this research is voluntary. There is no penalty if you decline the opportunity to participate. In order to make an informed decision to participate, please know that the risk of your involvement is not greater than minimal risk. Additionally, the probability of harm or discomfort is not greater than that ordinarily encountered in daily life. If you decide to participate and complete the survey, please note that you cannot withdraw from the research once the data recorded. We will not know your name or identify the data you entered specifically.

If you have any questions about this study, please contact me at (309) 370-5316 or at ebuchanan2@sycamores.indstate.edu or Dissertation Chairperson, Dr. Steve Gruenert, by e-mail at Steve.Gruenert@indstate.edu. If you have any questions about your rights as a research subject, you may contact the Indiana State University Institutional Review Board (IRB) by mail at 114 Erickson Hall, Terre Haute, IN 47809, by phone at (812) 237-8217, or by e-mail at irb@indstate.edu. Thank you for your assistance in this study.

If you agree to participate in this voluntary study, please click the arrow button below to begin with demographic questions followed by the classroom survey.

Respectfully,
Erica Buchanan-Rivera
Doctoral Candidate
Bayh College of Education
Indiana State University

APPENDIX B: CLASSROOM ENVIRONMENT SURVEY

Demographic Questions

Select the current grade level you serve as an educator.

K 1 2 3 4 5 6 7 8 9 10 11 12

Select a range to denote your year(s) of experience.

0 to 2 years 3 to 5 years 6 to 10 years 11 to 15 years 16 to 20 years Over 21 years

Have you participated in any professional related to cultural competency?

Yes or No _____

Are you responsible for the organization and arrangement of a classroom environment?

Yes or No _____

Classroom Environment Survey

Please respond by circling the appropriate number.

To what degree does each statement describe the conditions of your classroom environment?

1= Never 2= Rarely 3= Sometimes 4= Often 5= Always

		Please circle the appropriate number.				
		Never	Rarely	Sometimes	Often	Always
1.	There are pathways for student mobility.	1	2	3	4	5
2.	Students complete work in areas with natural lighting.	1	2	3	4	5
3.	There are store-bought instructional posters mounted on the walls within my classroom.	1	2	3	4	5

4.	I play a variety of music throughout the instructional day.	1	2	3	4	5
5.	Students' names are evident on desks or tables.	1	2	3	4	5
6.	I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.	1	2	3	4	5
7.	My room includes many eclectic, miscellaneous items.	1	2	3	4	5
8.	There is space for group gatherings or meetings.	1	2	3	4	5
9.	I have a leveled library within my classroom.	1	2	3	4	5
10.	The books displayed within my classroom are written by racially- diverse authors.	1	2	3	4	5
11.	The books displayed within my classroom incorporate a wide variety of genres.	1	2	3	4	5
12.	I display the interests of students within my classroom.	1	2	3	4	5
13.	There are photographs of students in my classroom.					
14.	I display student artwork within my classroom.	1	2	3	4	5
15.	I document learning experiences via photography.	1	2	3	4	5
16.	There are spaces provided for peer collaboration.	1	2	3	4	5
17.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the room.	1	2	3	4	5
18.	I display behavior charts or positive reinforcement initiatives.	1	2	3	4	5
19.	There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.	1	2	3	4	5
20.	There is space provided for individualized work.	1	2	3	4	5
21.	The desks within my classroom are aligned in rows.	1	2	3	4	5
22.	There are tables in my classroom.	1	2	3	4	5
23.	There is a combination of desks and tables in my classroom.	1	2	3	4	5
24.	Students are encouraged to use their native language.	1	2	3	4	5
25.	I spend more time lecturing than facilitating student-led discussions.	1	2	3	4	5
26.	I cluster my desks into groups.	1	2	3	4	5

27.	There is evidence of project-based learning within my classroom.	1	2	3	4	5
28.	Languages outside of Standard English are displayed within my classroom.	1	2	3	4	5
29.	I create anchor charts that incorporate the ideas of students.	1	2	3	4	5
30.	I have distinct spaces within my room that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).	1	2	3	4	5
31.	There is space provided for small-group instruction.	1	2	3	4	5
32.	Technology is readily accessible in my classroom.	1	2	3	4	5
33.	There is a visible map or globe in my classroom.	1	2	3	4	5
34.	The classroom reflects my personal interests.	1	2	3	4	5
35.	I have student accessible mirrors in my classroom.	1	2	3	4	5
36.	I have pictures displayed of my family.	1	2	3	4	5
37.	There is a variety of comfortable seating such as beanbags, cushions, or chairs.	1	2	3	4	5
38.	The images featured on the cover of literary books and textbooks reflect multiracial individuals.	1	2	3	4	5
39.	There are bright colors displayed within my classroom.	1	2	3	4	5
40.	I decorate my room prior to receiving a class list.	1	2	3	4	5
41.	I value children as individuals with different cultural experiences.	1	2	3	4	5
42.	There are representations of current events relevant to the lives of students.	1	2	3	4	5
43.	Parents could learn about school initiatives via the way I design my classroom.	1	2	3	4	5
44.	I use neutral colors within my classroom.	1	2	3	4	5
45.	I teach in a classroom that has at least one window.	1	2	3	4	5
46.	I do not see color differences among students.	1	2	3	4	5
47.	Tables or desks are arranged at different heights to accommodate the learner.	1	2	3	4	5
48.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.	1	2	3	4	5

49.	Students' writing samples are evident in the classroom.	1	2	3	4	5
50.	I have discussion boards within my classroom to evoke student dialogues.	1	2	3	4	
51.	My classroom is organized to my liking.	1	2	3	4	5
52.	Students have adequate space to engage in instructional activities.	1	2	3	4	5
53.	I believe that all students are capable of intellectual work.	1	2	3	4	5
54.	Students represent their learning through media arts.	1	2	3	4	5
55.	I use worksheets to assess the learning of students.	1	2	3	4	5
56.	I display posters of inspirational leaders of racially-diverse backgrounds.	1	2	3	4	5
57.	I assess student learning through paper-pencil assessments.	1	2	3	4	5
58.	I try to incorporate instructional materials that appeal to the cultural backgrounds of students.	1	2	3	4	5
59.	Students have the opportunity to collaborate with peers.	1	2	3	4	5
60.	I have to think of my students as data points in order to be an intentional instructor.	1	2	3	4	5
61.	My classroom has a variety of textures and sensory materials.	1	2	3	4	5
62.	I have a space to conduct student conferences.	1	2	3	4	5
63.	I make an extra effort to connect with the families of my students.	1	2	3	4	5
64.	Furniture is intentionally arranged for peer socialization.	1	2	3	4	5
65.	I celebrate each student's strengths throughout the instructional day within my classroom.	1	2	3	4	5
66.	I display photographs and books that represent the native countries of students.	1	2	3	4	5
67.	There are storage areas for instructional materials.	1	2	3	4	5
68.	There are areas where at least two students can work quietly together.	1	2	3	4	5
69.	Displays of students' work focus on the process of learning rather than the product.	1	2	3	4	4
70.	It is important for me to create a sense of belonging among students within the classroom.	1	2	3	4	5
71.	I research cultural studies to understand the complexities of diverse learners.	1	2	3	4	5

72.	Students create individual goals.	1	2	3	4	5
73.	My instructional materials spark student inquiry and curiosity.	1	2	3	4	5
74.	Students construct collective class goals for display.	1	2	3	4	5
75.	My classroom arrangement remains the same throughout the year.	1	2	3	4	5
76.	The policies of the building mandate how I should arrange and organize my classroom space.	1	2	3	4	5
77.	I prefer a quiet classroom in which students are engaged in silent work.	1	2	3	4	5
78.	The noise level in my classroom is loud, yet productive work is taking place.	1	2	3	4	5
79.	My classroom décor reflects a particular theme.	1	2	3	4	5
80.	I think about the ethnicity and race of my student population while organizing the classroom.	1	2	3	4	5
81.	I arrange my room in different ways throughout the year.	1	2	3	4	5
82.	I typically mount learning standards on my classroom walls.	1	2	3	4	5
83.	I think about the gender identities of students while delivering instruction.	1	2	3	4	5
84.	I secure classroom materials in areas that are not accessible to students.	1	2	3	4	5
85.	I am conscientious of the sexual orientation of students or families while planning instructional activities.	1	2	3	4	5
86.	My classroom reflects items that I value.	1	2	3	4	5
87.	When designing my classroom seating arrangements, I take the performance styles of students into consideration.	1	2	3	4	5
88.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	1	2	3	4	5
89.	When I think of the term culture, I reflect on the construct of race.	1	2	3	4	5
90.	When I rearrange my classroom, I take the input of students into consideration.	1	2	3	4	5
91.	I have a variety of manipulatives in my classroom for problem-solving purposes.	1	2	3	4	5

92.	Classroom materials are accessible for student use.	1	2	3	4	5
93.	Classroom materials connect to the social contexts of students beyond the school environment.	1	2	3	4	5
94.	I reflect on the behavioral responses of students in relation to my classroom environment.	1	2	3	4	5
95.	My classroom mirrors the vision of the school corporation.	1	2	3	4	5
96.	I view my classroom environment as another teacher.	1	2	3	4	5
97.	I am aware of the religious backgrounds of my students.	1	2	3	4	5
98.	The design and layout of my classroom is conducive for learning.	1	2	3	4	5
99.	I invite families to participate in the learning experiences of students.	1	2	3	4	5
100.	Classroom displays demonstrate uniformity in student work.	1	2	3	4	5

APPENDIX C: COMPLETE ROTATED COMPONENT MATRIX

Descriptive Statistics

	Mean	Std. Deviation[a]	Analysis N[b]	Missing N
There are pathways for student mobility.	4.40	.810	88	0
Students complete work in areas with natural lighting.	3.22	1.334	88	0
There are store-bought instructional posters mounted on the walls within my classroom.	3.69	1.272	88	0
I play a variety of music throughout the instructional day.	2.97	1.208	88	0
Students' names are evident on desks or tables.	2.48	1.748	88	0
I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.	3.47	1.154	88	0
My room includes many eclectic, miscellaneous items.	3.48	1.164	88	0
There is space for group gatherings or meetings.	4.09	1.256	88	0
I have a leveled library within my classroom.	3.48	1.654	88	0
The books displayed within my classroom are written by racially-diverse authors.	3.83	1.341	88	0
The books displayed incorporate a wide variety of genres.	4.12	1.290	88	2

I display the interests of students within my classroom.	3.80	.969	88	2
There are photographs of students in my classroom.	2.80	1.355	88	2
I display student artwork within my classroom.	3.58	1.281	88	3
I document learning experiences via photography.	2.98	1.304	88	2
There are spaces provided for peer collaboration.	4.15	1.078	88	2
There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the classroom.	2.51	1.172	88	2
I display behavior charts or positive reinforcement initiatives.	2.95	1.611	88	2
There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.	2.29	1.312	88	2
There is space for individualized work.	4.56	.737	88	2
The desks within my room are aligned in rows.	2.49	1.537	88	2
There are tables in my classroom.	3.80	1.596	88	2
There is a combination of desks and table in my classroom.	3.48	1.638	88	2
Students are encouraged to use their native language.	3.78	1.118	88	3
I spend more time lecturing than facilitating student-led discussions.	2.40	.938	88	2
I cluster my desks into groups.	3.49	1.320	88	2

There is evidence of project-based learning within my classroom.	3.60	1.054	88	2
Languages outside of Standard English are displayed in my classroom.	2.43	1.326	88	2
I create anchor charts that incorporate the ideas of students.	2.90	1.478	88	2
I have distinct spaces within my classroom that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).	3.10	1.509	88	2
There is space provided for small-group instruction in my classroom.	4.00	1.269	88	4
Technology is readily accessible in my classroom.	4.17	1.163	88	4
There is a visible map or globe in my classroom.	3.50	1.671	88	4
The classroom reflects my personal interests.	3.69	1.039	88	4
I have student accessible mirrors in my classroom.	2.36	1.558	88	4
I have pictures displayed of my family.	3.21	1.641	88	4
There is a variety of comfortable seating such as beanbags, cushions, or chairs.	2.52	1.579	88	4
The images featured on the cover of literacy books and textbooks reflect multiracial individuals.	3.51	1.309	88	4
There are bright colors displayed within my classroom.	4.23	1.021	88	4

I decorate my room prior to receiving a class list.	3.81	1.352	88	5
I value children as individuals with different cultural experiences.	4.82	.449	88	9
There are representations of current events relevant to the lives of students.	3.51	1.049	88	9
Parents could learn about school initiatives via the way I design my classroom.	3.24	1.116	88	10
I use neutral colors within my classroom.	2.94	.849	88	9
I teach in a classroom that has at least one window.	4.39	1.290	88	9
I do not see color differences among students.	3.58	1.369	88	10
Tables or desks are arranged at different heights to accommodate the learner.	2.71	1.471	88	10
There are items intentionally placed in specific areas to evoke student inquiry and provocations.	3.35	1.204	88	9
Students' writing samples are evident in the classroom.	3.09	1.261	88	9
I have discussion boards within my classroom to evoke student dialogues.	2.20	1.128	88	9
My classroom is organized to my liking.	3.78	.752	88	11
Students have adequate space to engage in instructional activities.	4.38	.845	88	11
I believe that all students are capable of intellectual work.	4.70	.644	88	11
Students represent their learning through media arts.	3.64	.993	88	11

I use worksheets to assess the learning of students.	3.16	.817	88	11
I display posters of inspirational leaders of racially-diverse backgrounds.	2.73	1.100	88	11
I assess student learning through paper-pencil assessments.	3.26	.701	88	11
I try to incorporate instructional materials that appeal to the cultural backgrounds of students.	3.64	.801	88	11
Students have the opportunity to collaborate with peers.	4.36	.741	88	11
I have to think of my students as data points in order to be an intentional instructor.	2.57	1.149	88	11
My classroom has a variety of textures and sensory materials.	3.51	1.096	88	14
I have a space to conduct student conferences.	3.74	1.251	88	14
I make an extra effort to connect with the families of my students.	3.90	.937	88	15
Furniture is intentionally arranged for peer socialization.	3.53	1.271	88	14
I celebrate each student's strengths throughout the instructional day within my classroom.	4.03	.802	88	14
I display photographs and books that represent the native countries of students.	2.70	1.142	88	14
There are storage areas for instructional materials.	4.21	.982	88	16

There are areas where at least two students can work quietly together.	4.08	1.211	88	14
Displays of student work focus on the process of learning rather than the product.	3.64	1.046	88	14
It is important for me to create a sense of belonging among students within the classroom.	4.76	.424	88	14
I research cultural studies to understand the complexities of diverse learners.	3.06	.908	88	21
Students create individual goals.	3.48	.902	88	21
My instructional materials spark student inquiry and curiosity.	3.82	.566	88	21
Students construct collective class goals.	2.96	.877	88	21
My classroom arrangement remains the same throughout the year.	2.72	1.122	88	21
The policies of the building mandate how I should arrange and organize my classroom.	1.94	.945	88	21
I prefer a quiet classroom in which students are engaged in silent work.	2.55	.716	88	21
The noise level in my classroom is loud, yet productive work is taking place.	3.51	.701	88	21
My classroom decor reflects a particular theme.	2.95	1.033	88	22

I think about the ethnicity and race of my student population while organizing the classroom.	2.72	1.059	88	21
I have a variety of manipulatives in my classroom for problem-solving purposes.	3.70	1.164	88	22
Classroom materials are accessible for student use.	4.48	.606	88	24
Classroom materials connect to the social contexts of students beyond the school environment.	3.35	.890	88	22
I reflect on the behavioral responses of students in relation to my classroom environment.	4.00	.727	88	22
My classroom mirrors the vision of the school corporation.	3.78	.719	88	23
I view my classroom environment as another teacher.	2.97	.994	88	22
I am aware of the religious backgrounds of my students.	3.59	.922	88	22
The design and layout of my classroom is conducive for learning.	4.42	.623	88	23
I invite families to participate in the learning experiences of students.	3.52	1.064	88	22
Classroom displays demonstrate uniformity in student work.	2.91	.880	88	23
I arrange my room in different ways throughout the year.	3.33	1.104	88	24

I typically mount learning standards on my classroom walls.	3.63	1.199	88	24
I think about the gender identities of students while delivering instruction.	3.30	.979	88	24
I secure classroom materials in areas that are not accessible to students.	2.75	.871	88	24
I am conscientious of the sexual orientation of students or families while planning instructional activities.	3.03	1.017	88	24
My classroom reflects items that I value.	3.77	.799	88	24
When designing my classroom seating arrangements, I take the performance style of students into consideration.	3.91	.880	88	24
I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	2.83	1.110	88	24
When I think of the term culture, I reflect on the construct of race.	2.79	.886	88	25
When I rearrange my classroom, I take the input of students into consideration.	3.41	.931	88	24

a. No items were deleted due to low standard deviations (.40>).

b. For each variable, missing values are replaced with the variable mean.

APPENDIX D: ROTATED COMPONENT MATRIX

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
There are pathways for student mobility.	**.404**	.188	-.079	.101	-.139
Students complete work in areas with natural lighting.	**.378**	.264	-.043	.226	-.208
There are store-bought instructional posters mounted on the walls within my classroom.	-.039	-.362	-.121	.184	**.395**
I play a variety of music throughout the instructional day.	-.002	**.449**	.088	.002	.173
Students' names are evident on desks or tables.	**.526**	.320	-.022	.264	-.213
I utilize social media (i.e., Pinterest) to gather ideas for classroom organization.	.249	**.302**	.147	.133	.192
My room includes many eclectic, miscellaneous items.	-.043	-.129	.184	.153	**.572**
There is space for group gatherings or meetings.	**.648**	.322	.062	.063	.072
I have a leveled library within my classroom.	**.369**	.317	.091	.305	.152
The books displayed within my classroom are written by racially-diverse authors.	.238	.263	.027	**.605**	.139
The books displayed incorporate a wide variety of genres.	.340	.207	.137	**.533**	.100

I display the interests of students within my classroom.	.208	**.472**	.168	.214	.022
There are photographs of students in my classroom.	.109	**.428**	.237	.176	.232
I display student artwork within my classroom.	.047	.402	.119	**.483**	.226
I document learning experiences via photography.	.143	**.624**	.149	.161	.210
There are spaces provided for peer collaboration.	**.479**	.301	-.077	.178	.034
There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the classroom.	.173	.076	.257	**.461**	.328
I display behavior charts or positive reinforcement initiatives.	.306	.303	.123	**.308**	-.180
There are many natural materials (i.e., plants, acorns, tree stumps, etc.) in my classroom.	.051	.159	.220	**.482**	.167
There is space for individualized work.	**.563**	.121	-.028	.082	.091
The desks within my room are aligned in rows.	-.331	**-.619**	-.022	-.023	.142
There are tables in my classroom.	**.455**	.215	.236	-.035	.188
There is a combination of desks and table in my classroom.	**.474**	.140	.230	.051	.258
Students are encouraged to use their native language.	**.410**	.189	.074	-.047	.277
I spend more time lecturing than facilitating student-led discussions.	-.118	**-.455**	-.184	.227	.032
I cluster my desks into groups.	.278	**.480**	-.028	.223	-.191

There is evidence of project-based learning within my classroom.	-.099	**.595**	.176	.016	.104
Languages outside of Standard English are displayed in my classroom.	.036	.074	.180	**.495**	.154
I create anchor charts that incorporate the ideas of students.	.233	**.590**	.157	.296	-.146
I have distinct spaces within my classroom that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).	.356	**.525**	.128	.021	-.057
There is space provided for small-group instruction in my classroom.	**.747**	.258	.101	-.057	-.007
Technology is readily accessible in my classroom.	.353	**.558**	-.216	.104	.132
There is a visible map or globe in my classroom.	.188	.041	-.143	**.545**	-.065
The classroom reflects my personal interests.	.032	-.027	.201	.198	**.588**
I have student accessible mirrors in my classroom.	**.236**	.168	-.033	-.166	-.026
I have pictures displayed of my family.	.129	**.315**	.196	.158	.100
There is a variety of comfortable seating such as beanbags, cushions, or chairs.	.408	**.499**	.160	.239	.049
The images featured on the cover of literacy books and textbooks reflect multiracial individuals.	.224	.271	.274	**.559**	.068
There are bright colors displayed within my classroom.	.324	.006	.040	.387	**.394**

I decorate my room prior to receiving a class list.	.087	-.266	.066	**.326**	.262
I value children as individuals with different cultural experiences.	.252	**.382**	.179	.157	-.006
There are representations of current events relevant to the lives of students.	-.059	.414	**.442**	.374	.056
Parents could learn about school initiatives via the way I design my classroom.	-.117	.398	.369	**.433**	-.285
I use neutral colors within my classroom.	**-.362**	.093	.196	.029	-.191
I teach in a classroom that has at least one window.	.226	.254	-.061	**.347**	-.314
I do not see color differences among students.	-.052	.043	-.129	.035	**.199**
Tables or desks are arranged at different heights to accommodate the learner.	.397	**.417**	.146	.113	-.307
There are items intentionally placed in specific areas to evoke student inquiry and provocations.	.073	.240	.283	**.547**	.169
Students' writing samples are evident in the classroom.	.084	**.519**	.145	.420	-.025
I have discussion boards within my classroom to evoke student dialogues.	-.062	.217	.154	**.350**	-.142
My classroom is organized to my liking.	.271	-.003	-.172	.321	**.409**
Students have adequate space to engage in instructional activities.	**.688**	-.002	.104	.023	.134
I believe that all students are capable of intellectual work.	.134	**.371**	.065	.289	-.038
Students represent their learning through media arts.	.090	**.482**	.285	.290	.055

I use worksheets to assess the learning of students.	-.116	-.069	.145	**.450**	.105
I display posters of inspirational leaders of racially-diverse backgrounds.	-.278	.114	.205	**.515**	.167
I assess student learning through paper-pencil assessments.	-.126	-.326	.037	**.617**	-.119
I try to incorporate instructional materials that appeal to the cultural backgrounds of students.	.209	.077	**.464**	.410	-.059
Students have the opportunity to collaborate with peers.	.065	**.593**	.096	.292	.063
I have to think of my students as data points in order to be an intentional instructor.	-.059	**.290**	-.120	.227	-.045
My classroom has a variety of textures and sensory materials.	.369	**.411**	.303	.102	.086
I have a space to conduct student conferences.	**.589**	.206	.203	.091	-.208
I make an extra effort to connect with the families of my students.	**.466**	.406	.337	-.011	-.162
Furniture is intentionally arranged for peer socialization.	**.427**	.392	.368	.338	-.135
I celebrate each student's strengths throughout the instructional day within my classroom.	.173	.281	**.438**	.078	-.018
I display photographs and books that represent the native countries of students.	.077	.249	**.566**	.266	-.065
There are storage areas for instructional materials.	**.503**	.075	.036	.106	.121

There are areas where at least two students can work quietly together.	**.698**	.127	.222	.012	.106
Displays of student work focus on the process of learning rather than the product.	.226	.388	**.439**	-.037	.079
It is important for me to create a sense of belonging among students within the classroom.	**.384**	-.019	.245	-.030	-.049
I research cultural studies to understand the complexities of diverse learners.	.023	.285	**.539**	.382	.006
Students create individual goals.	.293	.258	**.498**	-.004	-.360
My instructional materials spark student inquiry and curiosity.	.284	.177	**.396**	.088	.054
Students construct collective class goals.	-.056	.444	**.475**	.163	-.141
My classroom arrangement remains the same throughout the year.	**-.424**	-.218	-.156	-.169	.055
The policies of the building mandate how I should arrange and organize my classroom.	**-.521**	.176	.099	.175	.127
I prefer a quiet classroom in which students are engaged in silent work.	-.088	**-.368**	.131	.226	-.033
The noise level in my classroom is loud, yet productive work is taking place.	-.035	.293	.106	-.308	**.533**
My classroom decor reflects a particular theme.	-.006	.065	.057	.052	**.580**

I think about the ethnicity and race of my student population while organizing the classroom.	.200	.035	**.502**	.049	.337
I have a variety of manipulatives in my classroom for problem-solving purposes.	.389	**.476**	.249	.011	.160
Classroom materials are accessible for student use.	**.474**	.140	.066	.133	-.021
Classroom materials connect to the social contexts of students beyond the school environment.	.130	.174	**.372**	.131	.336
I reflect on the behavioral responses of students in relation to my classroom environment.	.286	-.029	**.551**	.079	-.096
My classroom mirrors the vision of the school corporation.	**.361**	-.067	.033	-.189	-.162
I view my classroom environment as another teacher.	.136	.137	**.439**	.222	-.169
I am aware of the religious backgrounds of my students.	.234	**.269**	.224	.239	.048
The design and layout of my classroom is conducive for learning.	**.602**	-.018	.183	.059	-.046
I invite families to participate in the learning experiences of students.	.370	**.494**	.251	.080	-.083
Classroom displays demonstrate uniformity in student work.	**.109**	.059	-.012	.108	.036
I arrange my room in different ways throughout the year.	**.547**	.321	.217	.122	-.082

I typically mount learning standards on my classroom walls.	.186	**.479**	-.064	-.047	-.025
I think about the gender identities of students while delivering instruction.	-.102	.038	**.611**	-.041	.116
I secure classroom materials in areas that are not accessible to students.	-.128	.167	-.205	-.062	**.549**
I am conscientious of the sexual orientation of students or families while planning instructional activities.	-.005	.046	**.822**	.110	.079
My classroom reflects items that I value.	.105	.041	-.033	.092	**.622**
When designing my classroom seating arrangements, I take the performance style of students into consideration.	.441	.059	**.459**	.108	-.091
I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	.054	.018	**.751**	.160	.081
When I think of the term culture, I reflect on the construct of race.	-.049	-.081	**.337**	.068	.183
When I rearrange my classroom, I take the input of students into consideration.	.121	.188	**.344**	.034	-.106

Note. Highlighted items identify strongest loading.

a. Rotation converged in 13 iterations.

APPENDIX E: RESPONSIVENESS ASSESSMENT FOR CLASSROOM ENVIRONMENTS

Item	Intentional Spaces	Never	Rarely	Sometimes	Often	Always
1.	Students' names are evident on desks or tables.	1	2	3	4	5
2.	There is space for group gatherings or meetings.	1	2	3	4	5
3.	There are spaces provided for peer collaboration.	1	2	3	4	5
4.	There is space for individualized work.	1	2	3	4	5
5.	There is a combination of desks and tables in my classroom.	1	2	3	4	5
6.	There is space provided for small-group instruction in my classroom.	1	2	3	4	5
7.	Students have adequate space to engage in instructional activities.	1	2	3	4	5
8.	I have space to conduct student conferences.	1	2	3	4	5
9.	There are storage areas for instructional materials.	1	2	3	4	5
10.	There are areas where at least two students can work quietly together.	1	2	3	4	5
11.	The policies of the building mandate how I should arrange and organize my space.	1	2	3	4	5
12.	I arrange my room in different ways throughout the year.	1	2	3	4	5
13.	Classroom materials are accessible for student use.	1	2	3	4	5
14.	The design and layout of my classroom is conducive for learning.	1	2	3	4	5

Authenticity		Never	Rarely	Sometimes	Often	Always
15.	I display the interests of students within my classroom.	1	2	3	4	5
16.	I document learning experiences via photography.	1	2	3	4	5
17.	The desks within my room are aligned in rows.	1	2	3	4	5
18.	I cluster my desks into groups.	1	2	3	4	5
19.	There is evidence of project-based learning within my classroom.	1	2	3	4	5
20.	I create anchor charts that incorporate the ideas of students.	1	2	3	4	5
21.	I have distinct spaces within my classroom that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).	1	2	3	4	5
22.	Technology is readily accessible in my classroom.	1	2	3	4	5
23.	Students represent their learning through media arts.	1	2	3	4	5
24.	I typically mount learning standards on my classroom walls.	1	2	3	4	5
Identity Affirmations		Never	Rarely	Sometimes	Often	Always
25.	I display photography and books that represent the native countries of students.	1	2	3	4	5
26.	I research cultural studies to understand the complexities of diverse learners.	1	2	3	4	5
27.	Students create individual goals.	1	2	3	4	5
28.	I think about the ethnicity and race of my student population while organizing the classroom.	1	2	3	4	5
29.	I think about the gender identities of students while delivering instruction.	1	2	3	4	5
30.	I am conscientious of the sexual orientation of students	1	2	3	4	5

	or families while planning instructional activities.					
31.	I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.	1	2	3	4	5
32.	I reflect on the behavioral responses of students in relation to my classroom environment.	1	2	3	4	5
Connectivity		Never	Rarely	Sometimes	Often	Always
33.	There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the classroom.	1	2	3	4	5
34.	The books displayed within my classroom are written by racially diverse authors.	1	2	3	4	5
35.	The books displayed incorporate a wide variety of genres.	1	2	3	4	5
36.	There are many natural materials (i.e., plants acorns, tree stumps, etc.) in my classroom.	1	2	3	4	5
37.	Languages outside Standard English are displayed in my classroom.	1	2	3	4	5
38.	There is a visible map or globe in my classroom.	1	2	3	4	5
39.	The images featured on the cover of literacy books and textbooks reflect multiracial individuals.	1	2	3	4	5
40.	There are items intentionally placed in specific areas to evoke student inquiry and provocations.	1	2	3	4	5
41.	I display posters of inspirational leaders of racially diverse backgrounds.	1	2	3	4	5
42.	I assess student learning through paper pencil	1	2	3	4	5

	assessments.					
Personal Touch		Never	Rarely	Sometimes	Often	Always
43.	My room includes many eclectic, miscellaneous items.	1	2	3	4	5
44.	The classroom reflects my personal interests.	1	2	3	4	5
45.	The noise level in my classroom is loud, yet productive work is taking place.	1	2	3	4	5
46.	My classroom décor reflects a particular theme.	1	2	3	4	5
47.	I secure classroom materials in areas that are not accessible to students.	1	2	3	4	5
48.	My classroom reflects items that I value.	1	2	3	4	5

APPENDIX F: R.A.C.E. WITH REFLECTIVE QUESTIONS

			Never	Rarely	Sometimes	Often	Always	**Reflective Questions**
INTENTIONAL SPACES	1.	*Students' names are evident on desks or tables.*	1	2	3	4	5	➢ *Are you aware of the performance style of each learner?* ➢ *How do you know current arrangement of classroom environment meets the need of learners?* ➢ *Which arrangements foster collaboration or independent work?* ➢ *How does each item within the classroom serve a distinct purpose? If the item does not have a purpose, is it necessary to keep within the classroom environment?*
	2.	*There is space for group gatherings or meetings.*	1	2	3	4	5	
	3.	*There are spaces provided for peer collaboration.*	1	2	3	4	5	
	4.	*There is space for individualized work.*	1	2	3	4	5	
	5.	*There is a combination of desks and tables in my classroom.*	1	2	3	4	5	
	6.	*There is space provide for small-group instruction in my classroom.*	1	2	3	4	5	
	7.	*Students have adequate space to engage in instructional activities.*	1	2	3	4	5	
	8.	*I have space to conduct student conferences.*	1	2	3	4	5	
	9.	*There are storage areas for instructional materials.*	1	2	3	4	5	

INTENTIONAL SPACES	10.	*There are areas where at least two students can work quietly together.*	1	2	3	4	5	➢ *If students know their own names and have a voice to express their identity, what purpose do name tags serve on desks or tables?* ➢ *How do you incorporate the input of students when changing the layout of space throughout the school year?*
	11.	*The policies of the building mandate how I should arrange and organize my space.*	1	2	3	4	5	
	12.	*I arrange my room in different ways throughout the year.*	1	2	3	4	5	
	13.	*Classroom materials are accessible for student use.*	1	2	3	4	5	
	14.	*The design and layout of my classroom is conducive for learning.*	1	2	3	4	5	
			Never	Rarely	Sometimes	Often	Always	**Reflective Questions**
AUTHENTICITY	15.	*I display the interests of students within my classroom.*	1	2	3	4	5	➢ *How do you know the interests and aspirations of your learners?* ➢ *How do students convey their understanding of learning objectives? If objectives are visible within the classroom, do students know how they can demonstrate or express their understandings of skills?*
	16.	*I document learning experiences via photography.*	1	2	3	4	5	
	17.	*The desks within my room are aligned in rows.*	1	2	3	4	5	
	18.	*I cluster my desks into groups.*	1	2	3	4	5	
	19.	*There is evidence of project based learning within my classroom.*	1	2	3	4	5	
	20.	*I create anchor charts that incorporate the ideas of students.*	1	2	3	4	5	

AUTHENTICITY	21.	*I have distinct spaces within my classroom that indicate specific instructional activities (i.e., area for reading, space for collaboration, etc.).*	1	2	3	4	5	➢ *Which items within your classroom convey evidence of student voice?* ➢ *Do you provide time for learners to practice and struggle productively?* ➢ *How do you challenge students to express their thinking in authentic ways?*
	22.	*Technology is readily accessible in my classroom.*	1	2	3	4	5	
	23.	*Students represent their learning through media arts.*	1	2	3	4	5	
	24.	*I typically mount learning standards on my classroom walls.*	1	2	3	4	5	
			Never	Rarely	Sometimes	Often	Always	**Reflective Questions**
IDENTITY AFFIRMATIONS	25.	*I display photography and books that represent the native countries of students.*	1	2	3	4	5	➢ *Do you reflect on the racial and cultural differences within your classroom?* ➢ *How do you identify with families who share different views and cultural beliefs?* ➢ *When reflecting on the behavioral responses of students, how often do you change the layout of your classroom to alter behaviors?*
	26.	*I research cultural studies to understand the complexities of diverse learners.*	1	2	3	4	5	
	27.	*Students create individual goals.*	1	2	3	4	5	
	28.	*I think about the ethnicity and race of my student population while organizing the classroom.*	1	2	3	4	5	

IDENTITY AFFIRMATIONS	29.	*I think about the gender identities of students while delivering instruction.*	1	2	3	4	5	➢ *Each student has an identity. Some students embrace their identity while others are still trying to discover a sense of self. Thus, how do you strengthen identity development through the instructional materials within the classroom?*
	30.	*I am conscientious of the sexual orientation of students or families while planning instructional activities.*	1	2	3	4	5	
	31.	*I am conscientious of the sexual orientation of students or families while determining the displays and features within my classroom environment.*	1	2	3	4	5	
	32.	*I reflect on the behavioral responses of students in relation to my classroom environment.*	1	2	3	4	5	
			Never	Rarely	Sometimes	Often	Always	**Reflective Questions**
CONNECTIVITY	33.	*There are cultural artifacts (i.e., masks, fabrics, symbols, etc.) exhibited throughout the classroom.*	1	2	3	4	5	➢ *Do you recognize the living experiences of students outside of the classroom walls (i.e., fears, familial structures, values, influences, etc.)?*
	34.	*The books displayed within my classroom are written by racially-diverse authors.*	1	2	3	4	5	

CONNECTIVITY	35.	*The books displayed incorporate a wide variety of genres.*	1	2	3	4	5	➢ *How do you intentionally make text-to-world connections visible within the classroom?* ➢ *Which materials within the classroom encourage students to connect to their cultural identity? Which materials foster cross-cultural connections?*
	36.	*There are many natural materials (i.e., plants acorns, tree stumps, etc.) in my classroom.*	1	2	3	4	5	
	37.	*Languages outside Standard English are displayed in my classroom.*	1	2	3	4	5	
	38.	*There is a visible map or globe in my classroom.*	1	2	3	4	5	
	39.	*The images featured on the cover of literacy books and textbooks reflect multiracial individuals.*	1	2	3	4	5	
	40.	*There are items intentionally placed specific areas to evoke student inquiry and provocations.*	1	2	3	4	5	
	41.	*I display posters of inspirational leaders of racially diverse backgrounds.*	1	2	3	4	5	
	42.	*I assess student learning through paper pencil assessments.*	1	2	3	4	5	
			Never	Rarely	Sometimes	Often	Always	**Reflective Questions**
	43.	*My room includes many eclectic, miscellaneous items.*	1	2	3	4	5	➢ *How often do you examine your bias?*