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A Quantitative Case Study on School Climate, Student Behavior, Student Achievement, and Classroom Facility Factors in an Urban Midwest High School

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A Quantitative Case Study on School Climate, Student Behavior, Student Achievement, and Classroom Facility Factors in an Urban Midwest High School

by

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Abstract

This research was a quantitative case study on the possible relationship between school climate, student behavior, student achievement, and classroom facility factors in an urban Midwest high school. Specific variables included lighting, wall color, classroom temperature, school climate, student behavior, and student academic achievement. The researcher collected the following data: student behavior, number of out of school suspensions (OSS) students received in 2014 through 2017, End of Course data, 2014-2017, in the areas of Biology, American Government, English I, and English II. To measure school climate, the researcher used the district's annual climate survey. School climate survey data measured student and teacher perceptions of school climate. The researcher used an observation sheet to analyze wall color, temperature, and lighting. The researcher measured classroom temperature using an infrared thermometer gun; the observation sheet was marked 'yes' if the temperature measured between 73º F and 74º F.

Administrators looking to remodel a facility or looking to increase student achievement in a secondary setting could use the results of the study as one model to assess a possible relationship between classroom improvements and student outcomes. The data collected in the study could also possibly assist others seeking a grant to update older buildings within an urban setting. Finally, the information gained from the study could help educators plan and design future buildings. In Chapter Two, literature review, the previous studies suggested a different result from that of the researcher's data results. Analysis of the lighting variable, did not go according to the study. School climate, however did prove to have a relationship with achievement, but not student behavior.

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Chapter One: Introduction

The researcher selected to complete this study within the researched school, due to the high number of principal turnovers, the high teacher turnover rate, and the behavior problems found within the student population (Missouri Department of Elementary and Secondary Education [MODESE], 2018). In under three years, the researched district employed four different principals who set the climate as observed by the researcher. A strong leader made a difference in not only school climate but student achievement as well. "Research studies strongly support the fact that the leadership of the school principal impacts directly on the climate of the school and, in turn, on student achievement" ("Let's keep our quality," 2002, p. 200). Principals tended to leave because of the work over load, the salary, the lack parental /community, or were let go by the district ("Let's keep our quality," 2002).

Background of the Study/Problem

The researcher began working in the researched district in 2005, assigned to the researched school in 2006, and perceived the facility as a prison. The building was in a circular shape, with wings labeled ABC wing and EF wing, which included two floors, which were call ABC two and EF two. The facility included a courtyard and cafeteria at the center. As observed by the researcher, the students were not allowed to stand up in the cafeteria during the lunch periods and students were dismissed table by table to go to the food line; on top of students being expected to sit quietly during classes. On the second floor, students, teachers, and administrators looked down while the students ate breakfast and lunch. The researcher remembered people saying, 'If this school were not built like a prison, maybe these students would not behave like inmates.' Students were

expected to sit at desks, be quiet, and obey the rules just like correctional officers expected inmates to do ("10 Ideas for Making Schools," 2018).

The walls were white, the classroom mostly bricked, bulletproof windows with no way to open, and classroom temperatures were either too hot or cold, because the facility was controlled by the researched district. The walls throughout most of the school had turned beige and had peeling plaster or staples with built up residue on the walls. The lack of fresh air led to allergies and other health problems, related to lower student achievement. "The U.S. Government Accountability Office estimated more than 1 in every 5,000 schools nationwide reported suffering from poor indoor air quality. Schools with poor indoor air quality experience increased absenteeism, decreased student concentration and productivity, and lower student test scores" (Belew, 2011, p. 22).

The classroom door had a small window similar to a prison cell. The entire building had fluorescent lighting throughout the researched school, with little natural light. Lights can have a non-visual side effect as well. The school had several student riots in the span of three years and over 10 principals within a five-year time span (MODESE, 2018, p. 5). Teachers nor school leaders were taught how to properly deal with a student body riot. In one instance, the riot began from a social media post. A fight started in the cafeteria that involved 10 or more male students. By the time the security guards reached the cafeteria, more than 20 people were involved. Food and milk were thrown at the guards, administrators, and other students. The students began to attack the safety officers. The police were called and other safety officers throughout North Star district had to be called. By the end of the riot, there were over 20 guards and it took over an hour to restore order back to North City High School, with numerous casualties.

Not even a week later, as observed by the researcher, the principal of the high school resigned and was placed in an elementary school within the district. Every year, the school lost over 65% of the staff (MODESE, 2018, sheet 1). Substitute teachers taught some of the classes recruited from the national program, Teach for America (TFA) (MODESE, 2018). Having a substitute could be good or bad depending on the sub and the student body. "When a teacher is out, a strong substitute teacher can smoothly step in and keep classroom learning going — but that's not necessarily easy" ("Making Substitutes Feel Welcome," 2012, para. 1). Most subs were left without a lesson plan or pacing guide to teach the students. Some of the subs were not knowledgeable about the course and students completed busy work.

Purpose

The purpose of this quantitative case study was to analyze a possible relationship between school facility factors: lighting, wall color, classroom temperature, school climate, student behavior, and student academic achievement. For student behavior, the researcher used secondary data to analyze the number of out of school suspensions (OSSs) students received 2014 through 2017 and End of Course (EOC) data 2014 through 2017, in the areas of Biology, American Government, and English I and English II. School Climate survey data measured the perceptions of students, parents, and teachers on school climate; the researcher utilized an observation sheet to analyze wall color and lighting. The researcher also investigated a possible relationship between the classroom facility factors in which the students were instructed, specific to student attendance of the EOC related course and the room facility factors where the students took the EOC test. The researcher measured classroom temperature by using an infrared

thermometer gun, utilized a Pearson observation sheet and marked 'yes' if the temperature measured between 73º F and 74º F. Administrators and districts looking to remodel a facility and to increase student achievement in a secondary setting may use the results of the study to assess whether classroom improvements may be related to student outcomes. The data collected in the study could also possibly assist others seeking a grant to update older buildings within an urban setting. Finally, the information gained from the study could be used to help plan and design future buildings.

Rationale

The study derived from the researcher's observation of numerous fights at the North City High School's facility, modeled like a prison with low lighting and numerous un-supervised areas, known as "cuts." At the time of the study, the researcher also observed a negative school climate and low student achievement on the student's EOC exams. The student body in the researched school also exhibited a high number of OSSs (MODESE, 2018; Saint Louis Public Schools, 2018). The researcher aimed to add to the current literature, by investigating the possible relationship among the following variables: school facility factors specifically lighting, wall color, classroom temperature, school climate, student achievement, and behavior. Analysis of literature concerning the researched variables supported the hypothesis; a relationship exists between school facility factors, school climate, student behavior, and academic achievement. "The study revealed that there is [a] significant relationship between the educational facilities and the academic achievement of the students. Academic achievement correlate and depend on the school facilities" (Akinsanmi, 2008; Skinner, Furrer, Marchand, & Kindermann, 2008; Vandiver, 2011, p. 45).

The researcher aimed to provide data to the researched school on the study outcomes to initiate possible facility changes. The researcher found numerous studies on school climate (Adams, Ware, Miskell, & Forsyth, 2016; Fierberg, Phillips, & Rowley, 2016; Hopson, Schiller, & Lawson, 2014), student behaviors (Gibson & Haight, 2013; Noltemeyer, Marie, Mcloughlin & Vanderwood, 2015), and school facilities (Davis, 2015; Walczak & Van Wylen, 2015), in relationship to academic achievement (Berkowitz et al., 2015; Espelage, Hong, Rao, & Low, 2013; Lacey & Cornell, 2014). The researcher was unable to find any study on the possible relationship between school facility factors, school climate, student achievement, and behavior in an urban secondary setting.

Most research completed on school facilities suggested the interior of the school be a color other than white. Many modern researchers studied Grangaard's work on wall coloring, "Color impacts student behavior within the physical learning environment. Due to the move toward including students with disabilities in the general education classroom, functional color applications are critical" (as cited in Gaines & Curry, 2011, p. 47). Previous research on school facilities suggested walls within schools to be a color other than white and off white. "Industrial white, off-white and white must not be considered as satisfactory [for learning environments]" (Grangaard, 1993, p. 93). The researcher found warm and soft colors created a relaxed setting. Warm color palettes, such as shades of yellow and peach or cooler palettes of blue and green, accounted for most hues recommended. "Warm colors were also selected to energize students; while cooler colors provided a relaxing setting that calmed students" (Grube, 2013b, p. 78).

School climate varied, depending on the variable(s) studied. “Key dimensions of school climate include interpersonal relationships among adults and children within the school and behavioral norms that engender feelings of safety” (Hopson et al., 2014, p. 199). The researcher found several studies on school climate and most contained different definitions. “School climate refers to the shared beliefs, values, and attitudes that shape interactions between students, teachers, and administrators and set the parameters of acceptable behavior and norms for the school” (Bradshaw, Waasdorp, Debnam, & Johnson, 2014, p. 594). When students had positive relationships, with teachers and school staff, students felt more connected to the school, avoided unsafe and disruptive behavior, and performed better academically (Crosnoe, 2004; McNeely, Nonnemaker, & Blum, 2002). Previous studies found a link between the academic success of a school and students’ behaviors and school climate. “School climate is profoundly important to the social, emotional, and academic successes of its students and staff” (Bradshaw et al., 2014, p. 593). The longer students were suspended, the more academic performance dropped. Students who were “punished harshly with suspensions or expulsions, may be at an increased risk for having juvenile justice system contact. Researchers identified the connection as the school-to-prison pipeline” (Monahan, VanDerhei, Bechtold, & Cauffman, 2014, p. 1110). Additional research noted bad lighting had a negative relationship on students’ behaviors and academic achievement. “Studies show that basic physical variables in one’s environment, such as light, affect learning and may even influence a student’s achievements and behavior” (Casadonte, 2016, p. 24). In some cases, the researcher found, lighting and wall color directly related to student achievement. Classroom décor led to an increase in student achievement, as Bloom

(2013) reported “the colour of the walls, the amount of natural light and the degree to which classrooms are personalized can all affect pupils' progress and test results” (p. 14).

The researcher developed the following hypotheses based on the current literature and the researcher’s experience.

Alternate Hypotheses

Hypothesis 1: There is a relationship between classroom lighting (natural lighting) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting.

Hypothesis 2: There is a relationship between classroom lighting (natural lighting) and student behavior, in an urban setting.

Hypothesis 3: There a relationship between classroom lighting (natural lighting) and school climate, in an urban setting.

Hypothesis 4: There is a relationship in wall color (white or off-white versus not white or off-white) and student achievement EOC content scores: Biology, American Government, English I, and English II,, in an urban setting.

Hypothesis 5: There is a relationship in wall color (white or off-white versus not white or off-white) and student behavior, in an urban setting.

Hypothesis 6: There is a relationship in wall color (white or off-white versus not white or off-white) and student/teacher perception of school climate, in an urban setting.

Hypothesis 7: There is a relationship in classroom temperature (73º F - 74º F versus not 73º F - 74º F) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting.

Hypothesis 8: There is a relationship in classroom temperature (73º F - 74º F versus not 73º F - 74º F) and student behavior in an urban setting.

Hypothesis 9: There is a relationship in classroom temperature (73º F - 74º F versus not 73º F - 74º F) and student/teacher's perception of school climate in an urban setting.

Hypothesis 10: There is a relationship in school climate (measured by the School Climate Survey) and student achievement EOC content scores: Biology, American Government, English I and English II in an urban setting.

Hypothesis 11: There is a relationship in school climate (measured by the School Tool Climate Survey) and student behavior in an urban setting.

Limitations

Due to the high transit/homeless rate at the researched school, the researcher used a convenience sample. Fraenkel, Wallen, and Hyun (2015) described a convenience sample as "a group who are available for the study" (p. 100). The researcher also found a high teacher turnover rate at the researched site. At a back to school meeting in fall, 2016, the researcher learned, over the last three years the research site experienced a personnel turnover rate of 65%. The researcher also utilized a stratified random sample. According to Fraenkel et al. (2015), a stratified random sampling was "the process in which certain subgroups are selected for the sample in the same proportion as they exist in the population" (p. 96).

Definition of Terms

Alternative school: A school for at-risk students that aids to reduce the dropout rate.

***Class interchange**:* For the purpose of the study, the five minutes between each class period within the researched school (Mann & Whitworth, 2017).

***Comprehensive school**:* A secondary school categorized as a state school and one in which the student population is not based on academic achievement or aptitude, in contrast to the selective school system, where admission is restricted on the basis of selection criteria (Gamoran, 1996, p. 1).

***Cut**:* For the purpose of the study, a blind area or unmonitored area in the researched school found within hallways or staircases.

***End of Course exam**:* A standardized, statewide assessment students complete in the areas of science, math, literature and social studies. The test scores serve as a snapshot of how well the school performed (Mueller & Colley, 2015).

***Perception**: A participant's viewpoint* (Steelman, & Maguire, 1999).

***School facility factors**:* For the purpose of the study: lighting, wall color, and classroom temperature.

***Classroom temperature**:* For the purpose of the study, classroom temperature between 73º F and 74º F.

***Lighting**:* For the purpose of the study, lighting of natural light or LED lighting.

***School climate**:* The "quality and character of school life that reflects the norms, goals, values, interpersonal relationships, teaching and learning practices, and the organizational structure of a school" (Bao, Zhang & Wang, 2015, p. 81). The researched school's climate was measured through the survey method.

***Student achievement**:* For the purpose of the study, End Of Course exams scores specifically: Biology, American Government, English I, and English II 2014-17 over a three-year period.

***Student behavior**:* The number of out of school suspension (OSS) rates each year 2014-2017 in the researched setting.

***Wall color**:* For the purpose of the study, non-white wall color.

Summary

The researcher chose to do this study after witnessing a high number of principal turnovers, high teacher turnover rates, and behavior problems. Chapter One, introduced the rationale and introduced hypotheses statements. In Chapter Two, the researcher notes current studies on the possible relationship between the following components: lighting, wall color, temperature, school facilities, student achievement, student behavior, and student climate. The researcher includes in Chapter Three, details of the research design, and in Chapter Four, the researcher presents the results. Finally, in Chapter Five, the researcher includes a discussion of the results aligned with the current literature and notes recommendations for future research.

Chapter Two: The Literature Review

Wall Color

The research on wall color suggested a positive relationship between certain color of paints and student achievement. White walls seemed to have the opposite result on the student's psyche. Going all the way back to Cheskin (1947), "white walls, as we know, are an optical strain and a psychological hazard" (p. 158). Many researchers relied on Grube's (2013b) findings, the leading expert on wall color, in which Grube (2013a) found a relationship with students' education. "Proper color usage on classroom walls creates an enriched learning environment that increases student achievement, accuracy, instructor effectiveness and staff efficiency" (Grube, 2013a, p. 219). The color of the paint and the natural lighting of the classroom had a positive relationship on student achievement. Classroom décor led to an increase in student achievement, Bloom (2013) reported, "The colour of the walls, the amount of natural light and the degree to which classrooms are personalized can all affect pupils' progress and test results" (p. 14). The research suggested for a learning environment to be described as enriched, certain qualities had to exist: wall color and lighting. The researcher found several definitions for the term enriched learning environment. The one best suited for the research, described a print rich facility as one with rich color walls and an inviting décor. According to the leading author on wall color and lighting, Grube (2013a) suggested,

> An enriched learning environment is one of the keys to successful academic performance and provides a "feel good" atmosphere that can stimulate positive emotion. It can induce more productive learning, student creativity, and promote

> collaboration, interpersonal and organizational skills. It also boosts morale and can provide a feeling of security for students. (pp. 219-220)

During an evaluation, wall color and classroom décor was sometimes taken into consideration but was not a major factor during district/state evaluations. Research suggested most teachers were given one to two days to prepare classrooms for student learning, with very little financial stipends, if any to address the wall color or classroom décor (Chesley & Jordan, 2012). Additional research found color had a relationship with the brain and psyche functions and revealed certain colors made a person sad, hungry, and calm and could even influence an individual to want to buy certain things. Grube (2013a) also suggested, "Viewing color has a thought-provoking effect; the visual stimulation helps a person retain information. This same principle can help schools increase students' learning retention" (p. 220). Cooler colors had a positive relationship, while white colors, made the learning environment feel more institutionalized. "Colour choice also plays a significant role in the psychological balance of a classroom environment. White is too harsh. Instead, use near-white paints that are much gentler on the eye and complement lighting strategies" (Wells, 2014, p. 41). By simulating the brain, the researcher noted academic scores and memory increased. Grube (2013a) stated, "Adding color to interior walls helps stimulate students' brains and can create an improved learning environment that boosts students' academic performance, simply by being visible on the walls of the room during class time" (p. 220). Other researchers mentioned cool and warm colors in several research topics. "Warm colours may complement young pupils' extroverted nature. Cool colours enhance older pupils' ability to concentrate on learning" (Bloom, 2013, p. 15). Different shades of blues were

considered cool colors. Wells (2014) found, blue paint "increase[d] student engagement and achievement" (p. 41). "Strong blues helped to focus the mind, while soft blues aided concentration. The optimum colour scheme for learning might be a dominant blue with a secondary yellow" (Wells, 2014, p. 41).

The color blue was found to increase learning within school facilities. According to the researcher's observation, there was a lack of research on other wall colors, besides the research on cool and warm colors, most researchers lacked detail on other colors besides blue, orange and yellow.

A review of the current literature showed the combination of wall color and light had a positive influence on student achievement. According to Bloom (2013), rooms that received light, "from more than one direction, and with high-quality electric lighting, benefited pupils. Pupils did well when the wall and floor colours had been carefully considered. For example, warm colours helped to encourage younger pupils' extroverted nature" (p. 14). According to Wells (2014), "lighting help[s] to maintain the energy and vitality of a classroom" (p. 40). When adding light, "position lights so that they do not cause glare or shadows, making the light source as inconspicuous as possible. Next, Remember that excessive light contrast across adjacent areas can lead to eye strain and headaches" (Wells, 2014, p. 40).

A room with natural light, and the correct wall color, could increase academic success. Previous researchers tested theory of print rich rooms with posters and decorations and the rooms had a positive relationship on learning. "The colour of the walls, the amount of natural light and the degree to which classrooms are personalized

can all affect pupils' progress and test results" (Bloom, 2013, p. 14). When natural light was not available, researchers suggested using LED lighting (Wells, 2014, p. 40).

White walls within schools made students feel punished or in jail. Grube (2013b) stated, "Color schemes with various values of white, including off whites and grays, when used on the walls within a learning environment can be perceived "institutional-like" from its origins of use in medically sanitary and hygienic oriented facilities" (p. 69). Research dated back to 1981 noted whites, beiges and even greys had a negative correlation on student learning. Kuller (1981) found "that being in white or gray classroom environments ha[d] a negative effect on its inhabitants, as shown by increased student irritability and difficulty maintaining concentration" (p. 81). When there was no electricity, white paint made teaching easier as it got darker, while the white paint increased functionality for those learning as well. "The brightness of the white-hued walls was better for educational performance as compared to the previous learning environment, whose functions were restricted by daylight, oil lamps, and candles in the already dark schoolhouse structure" (Grube, 2013b, p. 73).

Researchers suggested white paint was cheaper for schools to use. Krims as cited by Argon, stated, "In a lot of cases, color choices are left up to administrators, teachers or the maintenance departments" (2013, p. 24). An ideal well-designed building would be carefully planned out before designing. Districts do not have to break the bank. An architecture should take in to account the following; "environmental psychology literature details the extent to which physical settings, including the height of ceilings, the colour of walls, levels of natural light, views from windows and temperature can have a dramatic impact on everything from motivation to energy levels" (Arora, 2013, p. 24). If

the building was already built, then paint can be added on an individual basis or school wide project. If paint cannot be added, then posters and other rich displays will increase student learning (Trent, 1995).

Room Lighting

"Studies have shown that light exposure has an effect on human energy levels and alertness" (Bernhofer, Higgins, Daly, Burant, & Hornick, 2014, p. 1171). The research suggested a relationship between school facility lighting academics, as well as behavior (Casadonte, 2016). "Until the mid-1960s, most American school buildings were designed so that they admitted sufficient daylight for typical daytime learning tasks. Then came the need for air conditioning, flexible classrooms, and more compact designs to reduce school construction costs" (Nelson, 2016, p. 20). According to research, construction companies built most schools either with top light or with side light. "Top lighting included skylights and side lighting came from the classroom windows [where] teachers and students described the window glare as a major concern" (Wexler & Luethi-Garrecht, 2015, p. 18). Wexler and Luethi-Garrecht (2015) suggested most school buildings still used fluorescent lights which "have a light cycle of 60 times per second that is offending to people with visual hyper-acuity. The humming of these lights can also be intrusive" (p. 18).

All lights were not created equal; specifically lumens, which vary depending on the brand of lighting. LED lights, according to the current literature were more cohesive to student learning. "LED technology may translate into better learning environments and enhance sustainability. Lighting also may affect mood, productivity and even decision-making. Two-thirds of the brain is devoted to visual processing, so optimal classroom

lighting is imperative" (Casadonte, 2016, pp. 25-26). Studies suggested lighting within the education facilities had a negative relationship with student academics. The *Journal of the Illuminating Engineering Society* published an article titled "Daylighting Impacts on Human Performance in School" in which the authors reported a significant positive association between daylight and student performance (Nelson, 2016, p. 20).

Researchers showed lighting also had a relationship with student health. "Proper lighting, with an emphasis on daylighting, fosters a more focused and productive learning environment. Classrooms with well-planned daylighting also help improve the health of students, increase teacher satisfaction and offer energy and cost savings" (Lighting/ Controls Knowledge Center, 2013, p. 14). Natural lighting also led to a positive relationship with student learning and emotions. "Ideal rooms have windows for integration of natural daylight, which has a direct impact on the emotional and physical wellness of students. Transparency, natural illumination, and vistas are components of a healthy environment" (Wexler & Luethi-Garrecht, 2015, p. 18). Architects made modern schools with larger windows to allow more natural light into the schools and changed adolescents' hormone levels. "Natural light impacts circadian rhythms; the color, intensity, and timing of light are the driving forces that balance hormonal levels within the body" (Bolin & Baker, 2014, p. 20). The key to using natural light was to avoid having a glare. "Windows do more than admit daylight; they provide views to the outside. Too often, the landscape is considered an amenity that is included only if the budget allows" (Nelson, 2016, p. 23).

Due to the glare from the sun, most teachers covered the window or closed the blinds and did not allow the natural light to shine in, depending only on the electric light

even though "glare-free, natural daylighting helps promote healthier, productive learning environments and encourages students and teachers to excel" (Bolin & Baker, 2014, p. 21). Studies revealed if no natural lighting was available then LED, would be better than fluorescent lighting. "Two-thirds of the brain is devoted to visual processing, so optimal classroom lighting is imperative. Additionally, because LEDs last longer than previous technologies, students experience far fewer maintenance disruptions" (Casadonte, 2016, p. 25). The readings also indicated switching from regular lights, such as case fluorescent, to LED which would save districts additional funds. Educational facilities "that wait to switch to LEDs are losing out on energy savings that could reduce operating expenses and energy bills today, the upfront investment is lower, and payback can be achieved in as little as one year" (Casadonte, 2016, p. 26). "LEDs reduce energy consumption by as much as 50 to 70 percent and can reach up to 80 percent savings when coupled with smart controls, according to a June 2012 report by The Climate Group" (Casadonte, 2016, p. 26). Besides the district saving money, students and teachers reaped the benefits of switching light types.

"Brighter walkways usually equal safer walkways. LED lighting provides this enhanced security for students and faculty. Along with enhancing outdoor visibility, LEDs illuminate classrooms more effectively and generally [use] less energy than standard fluorescent bulbs" (Velarde, 2016, p. 20). LED lights also allowed students to see well. "LEDs are free of toxic chemicals as opposed to compact fluorescents and some other bulb technologies" (Velarde, 2016, p. 20). Some researchers implied the bulbs lasted longer, some for years; aside for increased student achievement, the district

would save on the yearly budget. “Lighting represents an estimated 30 percent of electricity consumption in a typical school” (“Lighting tips,” 2012, p. 14).

The use of such lights also reduced the use of air and heat. The researched district installed censors in the classrooms to detect movement by the students. “Occupancy sensors with door controls to reduce unnecessary heating, ventilation and air conditioning” were used throughout the school (“Getting the LED In,” 2013, p.12). Providing the teacher with an ability to control the lighting, hence by controlling the classroom temperature and keeping a neutral temperature throughout, allowed a better learning environment. LED lights were also better for those students who were visually impaired (“Lighting tips,” 2012, p. 14). “Many facilities do not have adequate lighting, color, and contrast in some areas to accommodate individuals who are visually impaired” (Tutuncu & Lieberman, 2016, p. 166). Better lighting was needed for those with vision problems; an inadequate classroom with low lighting could hinder a student’s maximum performance. “Plenty of evidence points to daylighting's role in improving occupant productivity in both schools and offices. Especially in learning environments, sky lighted classrooms provide a natural and stimulating space for teachers and students” (Warren Rose, 2013, p. 27).

In many schools, most problems occurred in the hallway where the lighting was described as poor quality or fair. “Lighting campuses with LED fixtures (indoors and outdoors) can be one of the first steps in minimizing safety and security concerns” (Argon, 2014, p. 6). In the researcher’s experience these type of lights were better for exit signs and in the hallways where cuts in the researched school were located. Lighting in schools needed to benefit all students and students needed to feel safe at school.

“Studies show that poor lighting adversely affects learning; effectively designed daylighting has been shown to increase student performance in math and reading scores, and improve attendance” (Warren Rose, 2013, p. 27). School was where students spent the majority of time beyond home and the research suggested a safe school with adequate lighting supported students academically. “For students, rooms that offer the right amount of light for the task at hand improve visibility and visual comfort. For teachers, daylight can enhance learning activities through improved student moods and concentration, and reduce off-task behavior” (Warren Rose, 2013, p. 27). The research suggested with natural lighting, glare control be installed, for a safe and a more productive building (Argon, 2014, p. 6).

Natural Lighting in School Facilities

"Sunshine affects human social interactions and emotion" (Guéguen & Lamy, 2013 p. 123); yet several schools built throughout the United States included little to no windows or windows students could not open. Several researchers reported different views as to why schools started building facilities with no windows. One researcher stated, "Without windows, students were less likely to daydream and would concentrate on their studies. Those were among the factors that led to the construction of many U.S. schools with a minimal number of windows" (Kennedy, 2017b, p. 12). The research in question was later proved wrong. According to Kennedy (2017b), "Studies examining the effect of daylighting in schools have convinced most educators and architects that classrooms and the students in them benefit from exposure to daylight scores and less energy consumption" (pp. 12-13). Most researchers believed lighting not only helped with learning, but certain windows helped with temperature as well as utility costs.

Hale's (2002) study suggested "that students will perform better with daylighting features in place. Some also believe replacing older, inefficient windows with daylighting systems can improve the performance of the school, as well" (2002, p. 32). Natural light without glare improved the student performance through the thought process, according to one article a student increased an ability to concentrate. Chambers (2004) wrote, "Studies indicate that natural light can enhance student performance, provided that it is not accompanied by glare. Studies also suggest that daylighting spaces can boost overall health and physical development, encourage increased student attention and promote better behavior" (p. 30).

Temperature and Learning

Researchers who believed temperature had a correlation on learning noted, "Overall, human behavior is associated with variations in weather. It is possible that sunshine activates positive emotions and a good mood, which, in turn, influence behavior. Sunshine is clearly associated with a positive mood" (Cunningham, 1979, p. 150). People understood what a comfortable temperature is and to most, the room was either to hot or too cold. According to Roman (2012), "There are a number of possible reasons for this, including drafts, the sun shining directly into the classroom, or very cold outside weather" (p. 22). According to some, "The weather is something very intimate to the lives of our students. The weather tells them how to dress for the day and may shape their attitude for their life interactions of the day" (Sabato, 2012, p. 104). Many studies suggested; temperature had a positive correlation on student achievement, as in the case of Shaughnessy. Researchers Shaughnessy and Shaughnessy, concluded that temperature

along with ventilation played a role in the achievement of students (Haverinen-Shaughnessy & Shaughnessy, 2015, p. 1).

Research completed on the relationship between students' test scores and classroom ventilation rate and temperature varied. One of the studies "utilizes multilevel analyses and a large database, including measured data on ventilation and thermal parameters, and student level data on standardized test scores. Based on the results, maintaining adequate ventilation and thermal comfort could raise an average test score" (Haverinen-Shaughnessy & Shaughnessy, 2015 p. 1). The same study went on to suggest, "Indoor temperatures in the winter [should] be between 20 and 24°C (68–75° F), whereas summer temperatures be maintained between 23 and 26°C (73–79° F)" (Haverinen-Shaughnessy & Shaughnessy, 2015, p. 1). Researchers suggested students were more likely to be productive. "These ranges were acceptable for sedentary or slightly active persons. Both measured ventilation rates and elevated temperatures have been associated with students' self-reported stuffiness" (Haverinen-Shaughnessy & Shaughnessy, 2015 p. 1).

Student Achievement

When the United States students began to compete academically with other nations, test scores revealed student achievement needed to improve. Some researchers suggested the physical classroom environment had a positive influence on student achievement. "Two findings [were] key: First, the building's structural facilities profoundly influence learning. Inadequate lighting, noise, low air quality, and deficient heating in the classroom are significantly related to worse student achievement" (Fiske, Cheryan, Ziegler, Plaut, & Meltzoff, 2014, p. 4). Student achievement could be assessed

in several different ways, such as question and answer, informal or formal quiz, through discussion. Researchers investigated what kept most students from reaching the competing achievement score and found different states assessed student achievement in several ways, depending state to state. In Missouri High schools, achievement was based on the End of Course exam areas, growth, attendance, class offerings (MODESE, 2018, para. 3). According to the study, student assessment data included information on students' demographic characteristics and scores. One researcher suggested that student achievement was successful with parental support. In the study, the administration believed "student achievement can be improved across racial, ethnic, and socioeconomic lines through more effective parental engagement" (Shriberg et al., 2012, p. 227).

> On the New York State Testing Program's standardized assessments in mathematics and English language arts (ELA); these scores served as the basis for our two primary student outcomes. We standardize students' scale scores within grade, year, and subject in order to place these scores on a ''pooled'' scale and control for secular, statewide trends in score variances and means (Kraft, Marinell & Shen-Wei Yee, 2016, p. 1418).

Though researched parents expressed a desire to be involved, obstacles stood in the way of supporting the children. Some of the obstacles included "heavy workloads, a limited understanding of family diversity, and gender issues also contributed to a lack of parental involvement" (Sukhbaatar, 2014, p. 189). Studies implied, when parents worked together with the schools, students had a better chance of succeeding academically. As cited in Sukhbaatar (2014, p. 193), "Studies have shown that when home and school work together effectively, students have greater success in their learning and

development with better academic results and social and emotional benefits" (Abdullah et al., 2011; Epstein & Sanders, 2006; Flynn, 2007).

Other studies revealed student achievement depended on teacher experience and commitment. "Teacher experience was the teacher characteristic most positively related to school achievement. Teacher salary is directly linked to the years of teaching experience" (Jimenez-Castellanos, 2010, p. 355). At the time of this study, some districts were moving to a salary increase or bonus based on standard test scores.

One way to measure student achievement in Missouri is the end of course exams, also known as the EOC. At the start of "2010-2011 school year, a new standardized test was introduced" (Mallory & Lee, 2012, p. 86) in the areas of Algebra 150, Geometry, English language Arts one and two and Government. Schools had the choice of testing other areas as well. The EOC raised the accountability bar higher for school districts throughout the United States and served as the state's high school exit exam. Before students were allowed to graduate, students has to take at least four EOC tests. The EOC was introduced ten years after No Child Left Behind (NCLB) was introduced to the United States. Because of NCLB, students that had IEP(s), received special accommodations on the EOC such as extra time, or with a 504 plan, the teacher may read the test aloud, but could not answer any questions.

Researchers and teachers have debated on whether the end of course test adequately measured student achievement. "Teachers have been described as 'gatekeepers' whose decisions about aims, subject matter and instructional methods, and student interest and effort impact students more significantly than policies created by outside authorities" (Mueller & Colley, 2015 p. 95). Some researchers argued

standardized test were bias and not culturally sensitive to students who live in certain areas. Shuster (2012) found students in exit exam states were more likely to drop out of school than peers not subject to exit exams (p. 1). Research suggested the test was no longer diverse, ensuring students in poorer urban areas did not do as well as that of the white counter parts.

> In 1954, the Supreme Court ruled in favor of Brown v. Board of Education and overturned the Plessy v. Ferguson (1896) decision allowing segregated schools. The underlying assumption of Plessy was that segregated schools (and other segregated public facilities) were permissible as long as they were equal. In Brown, the Supreme Court ruled that segregated schools, by definition, violated Black students' constitutional rights. Most recently, the Supreme Court has moved away from Brown, constraining school boards' ability to pursue diversity, resulting in the increasing re-segregation of public schools (Sharma, Joyner, & Osment, 2014, p. 2)

Attendance

Some researchers suggested a correlation between attendance, student achievement and student perception of the facility. Other related studies included the variables of student and staff attendance and student achievement. The results revealed a push for low income districts worldwide to increase student attendance on day one of class. Mancini (2017) stated, "Class attendance and attendance policies may play a role in students' perceptions and actions when it comes to attending or not attending the first day of class" (p. 42). Crede, Roch, & Kieszczynka (2010) "concluded a slight positive relationship between a mandatory attendance policy and average grades. A number of

studies have explored the influence of attendance policies on student performance" (p. 273). Additional study topics included why students were not achieving as expected, including the following variables: "student attendance, economic status, parental involvement, teacher-student relationship, curriculum, school budgets and the testing climate" ("Teacher Attendance Effects," 2013, p. 201). A few of the factors were noted as being related to learning, but research found Teacher Attendance and student attendance played the biggest role. "Numerous studies suggest that attendance may be one of the factors which influence student performance in the classroom and on state tests" (Lyubartseva & Mallik, 2012, p. 31). Another researcher suggested that when students were not at school they could be considered at risk. "School attendance is critical for American students. When students are not in school, they are missing out on their education and potentially engaging in risky behaviors. On any given day, 10% of public school students are absent from school" (McConnell & Kubina, 2014, p. 249). Next, Lyubartseva and Malilik (2012), found attendance was just one factor in student achievement. The researchers stated "Obviously, showing up for all classes doesn't guarantee high grade in the course" (Lyubartseva & Mallik, 2012, p. 33). Attendance in the poorer urban areas was lower than that of the surrounding districts. Sharma, Joyner and Osmet (2014) found, "Attendance at racially isolated schools is associated with lower performance on both Algebra I and English I End-of-Course exams, and that while teacher quality can improve performance, high quality teachers are less likely to be found at segregated schools" (p. 16).

Student Behavior

Student behavior was an issue in urban communities for the years. In the researcher's experience when students were absent, students missed assignments and academically fell behind the rest of the student body. Some districts implanted the no suspension rule and started using the restorative justice practice where Sparks (2016) found, "suspensions are so closely linked to later school dropout and referrals to law enforcement" (p. 8).

The researcher found, within the literature, many urban schools designed programs, such as K12, for online learning for students who struggled in regular school and who displayed self -discipline. "One important requirement for online students is to be self-disciplined. This includes following the class schedule and studying the learning materials along the timeline of the course" (Xiangmin, 2016, p. 261). Alternative schools were once used for offences such as gang fights and drugs, and were now used for repeated offenders, students who received numerous write-ups. "Our analyses of suspension data revealed no significant differences in frequency of suspension between students enrolled in behavior-focused alternative schools or students enrolled in traditional schools" (Wilkerson, Afacan, Perzigian, Justin, & Lequia, 2016, p. 90).

Students placed in alternative schools had lower attendance and some even dropped out of school all together. "Our research indicated that placement in behavior-focused alternative schools was associated with significantly lower school attendance" (Wilkerson et al., 2016, p. 90). Students treated received respect from the teachers and performed better behaviorally while student and teacher perception on respect differed. According to Sparks (2016), "Stanford researchers found teachers often view respect in

terms of cooperation and compliance. For students, respect involves a basic recognition of your humanity" (p. 9).

Previous authors described several techniques teachers used to offset the negative behavior. Perle (2016) found, "Active ignoring occurs when a teacher systematically withholds attention from a student when that student engages in an undesired attention-seeking behavior that is ignorable" (p. 254). Once the teacher figured out how to support the behavior needs of students, appropriate behaviors increased. "Teachers can support those needs by providing structure, autonomy, support, and involvement in the interactions they have with their students" (Haakma, Janssen, & Minnaert, 2016, p. 315).

The teacher's job was to educate among a host of other things. "A teacher serves many important roles within a classroom, including an educator and a manager of child behavior" (Perle, 2016, p. 250). One method used to cut down on behavior issues was to keep students engaged. "Engagement includes behavioral and emotional participation in the classroom" (Haakma et al., 2016, p. 316). The techniques of positive attending were found to have a positive influence on students' behavior. "Teachers implementing techniques of positive attending in their classrooms should strive to be specific, immediate, consistent, frequent, and preventative" (Perle, 2016, p. 251). For those teachers who avoided change in teaching style or management, student behavior stayed the same and the teachers had the highest number of referrals. **"**The researchers' concluded that the disruptive behavior (talking out of turn) will persist to some degree as long as teachers continue to do most of the talking and are unwilling to change their teaching methods and classroom management methods**"** (Reglin, Akpo-Sanni, & Losike-Sedimo, 2012, p. 17).

According to the research, students with some type of disability were more prone to discipline problems or referrals. “Students with disabilities—particularly those labeled with emotional or behavioral disorders (EBD)—present a unique challenge” (Wilkerson et al., 2016, p. 81) and received a higher number of expulsions than other students. According to Noltemeyer, Marie, Mcloughlin, & Vanderwood (2015) “Expulsion refers to the permanent removal of a student from the school by the superintendent, the term suspension generally refers to the denial of school attendance for a specific amount of time that may be 10 days or less” (p. 224).

Students who had a better support team in place, tended to exhibit better behavior in school. “Students living with two parents tended to report higher grades than students who did not live with both parents. Being retained in school was associated with lower grades, and boys tended to report lower grades than girls” (Hopson et al., 2014, p. 203). Students, who did not have the needed support, often had more referrals and a higher dropout rate from falling behind. “Some of these students fall into one or more of the metrics associated with being at-risk for school failure, including those who are in poverty, in foster care, or homeless” (Fisher, Frey, & Smith, 2016, p. 54).

Schools perceived as having a safe school climate, tended to foster higher testing scores and lower behavior reports. “Students reporting a safer school climate were about 30% more likely to also report better behavior than those reporting less safe schools” (Hopson et al., 2014, p. 206). Schools that also used the project base teaching technique resulted in students who were better engaged and resulted in less behavioral referrals. **“**More hands-on activities could be employed to engage the students' bodies at the same time as they engage their tongues” (Reglin et al., 2012, p. 17). In education leaders had

the "knowledge and ability to ensure the success of all students by promoting a positive culture of learning, providing an effective instructional program that applies best practice to student learning, and ensuring comprehensive professional growth plans for staff," (MODESE, 2013, pp. 3-4).

Since 2012, when the suspension rates were at an all-time high, more schools explored the use of an in- school suspension (ISS) model. "ISS tended to keep the students better engaged; some studies found suspensions were positively associated with high school dropout rates" (Noltemeyer, Marie, Mcloughlin, & Vanderwood, 2015, p. 226). Some students were more likely to receive a write up or a referral. Ford (2016) reported, "Black, Hispanic, and American Indian students are more likely to experience exclusionary discipline than their white counterparts are. In other words, students of color get disproportionately punished and suspended" (p. 44). Additionally, Ford (2016) noted "When I asked what got them removed, I typically heard trivial reasons along the lines of, "I had my head down," "I wasn't participating," or even "I didn't have a pencil" (p. 43). Some researchers suggested implementing fines, community service, and parent attendance in class with the students, long term ISS, short term ISS and temporary removal of class as an alternative to suspension (Fisher et al., 2016, p. 54).

Studies in the current literature noted schools had one specific method to cut down on behavior issues; teachers who built relationships with students. Fisher, Frey, and Smith (2016) stated, "There are plenty ways to build positive relationships with students, including knowing all students' names, opening up about your interests, eliminating sarcasm, knowing at least one thing about a student, and showing respect for students' perspectives" (p. 56). Some researchers noted respect was the key on cutting down on

discipline issues. Sparks (2016) noted, **"**In schools working to reduce suspension rates, teachers could take a cue from Aretha Franklin: Considering how young people view respect can greatly improve [a] classroom man" (p. 8).

The Learning Environment and Climate

Some researchers suggested the learning environment and assessment environment should be similar. Meaning the testing room should be just as comfortable and engaging as the classroom, but the room should be void of too much decoration since the decoration distracted students from learning. "More than a decade of research shows that students learn better when they're not distracted by the negative social behaviors of other students in a classroom climate that liberates good teaching with fewer disruptions" (Nelson, 2015, p. 36). For a school to have a successful turnaround in school climate the factors (problems) should be identified through data and a plan created to combat the issue. According to Nelson (2015), "identifying and developing the natural social influencers to lead more effectively, schools can improve the learning environment while decreasing classroom disruptions, bullying, and other negative social behaviors" (p. 36). Nelson (2015) identified the problem student as "thermostats" (p. 36). "We refer to these students as 'Thermostats,' because they help set the temperature of classroom climate" (Nelson, 2015, p. 36). Some researchers considered more factors, when determining the climate of the learning environment. Bloom (2013) observed the following, the academic set-up of each classroom - recording factors such as layout, colour, artificial and natural light and wall displays on a detailed drawing. According to Bloom (2013), he measured "light, noise, temperature and carbon dioxide levels to determine the quality of the environment. In addition, room and window size was recorded" (p. 14). Staff and

students should feel safe and protected while in the school facilities. According to Kennedy (2017a), the history of deadly school shootings, such as “Sandy Hook, Virginia Tech, Columbine, and 50 years ago the sniper in the clock tower of the University of Texas. Leaves no doubt that students and staff at schools and universities are vulnerable to attack" (p. 140).

Another key component of the learning environment as well as the culture/climate of the school was getting students engaged in the lesson. Technology was a factor in the 21st century learning skills. Most school districts looked for the use of technology and a DOK (depth of knowledge) level of two or more while doing observations. The use of technology was used to bring in outside resources as well as keeping student interested in the subject. The use of video clips helped visual leaners understand a concept (Burke, Snyder, & Rager, 2009). “Social media applications such as Facebook, YouTube, blogs, and wikis can be used as supplemental materials in the teaching process” (Ljubojevic, Vaskovic, Stankovic, & Vaskovic, 2014, p. 277). Wikipedia and twitter were used as well. This can be useful for secondary students who planned on taking online higher education courses. In addition, some of Missouri state test have moved from paper to online while many students had problems comprehending reading (Ciullo, Falcomata, & Vaughn, 2015, p. 16). Online books can also be used, along with graphic organizers as reinforcement tools on an interactive board. Graphic organizers were utilized on a smart board to increase instant feedback or student engagement. “Graphic organizers are visual displays that arrange words using boxes, cells, arrows, or other visual cues to depict key concepts in a comprehensible format” (Stull & Mayer, 2007, pp. 813-814).

Next, was a student- centered classroom. Going beyond the regular pen to paper instruction teachers were able to reach a wide array of students in one lesson. The idea of a flipped classroom was ideal for students in the education field. According to Kates, Byrd, and Haider (2015), "flipped classrooms are transformational, shifting the educational focus from the traditional and passive lecture-based teaching to an active engagement of students with each other and with faculty" (p. 190). The teachers talked less and students' engagement went up. The flipped classroom ensured that students worked together by collaborating on ideals. Visual aids were used along with oral speaking and allowed teachers to provide feedback at the time an error was made. Reflection and evaluations was a huge part of teaching and learning (Owen, 2014). Going beyond the regular pen to paper was also described as effective instruction. Teachers were able to reach a wide array of students in one lesson. The idea of a flipped classroom was described as ideal for some in the education field. The model ensured that students worked together through collaboration. Visual aids were also used along with oral speaking.

Flexible Learning Environment

Most classrooms were arranged in rows or group tables. Studies suggested teachers think outside of the box to increase student achievement. One researcher utilized, "tables, desks, wiggle stools, yoga balls, and even standing desks—all in the name of increasing comfort, focus, and engagement" ("7 Innovations," 2018, p. 44). Some articles suggested the big technology companies used flexible seating as a way to increase creativity. Lewington (2012) stated, "In addition to the reality of collaboration, there is the reality today of what modern, successful companies are like. . . . If we look at

Apple and Google, their offices are not just a series of enclosed rooms with doors anymore" (p. 46). The same author suggested, getting rid of bells and allow flexible seating for collaboration. "Gone is the traditional layout of long corridors with classrooms on either side – the so called "cells and bells" model of the traditional school, replaced with flexible spaces for individual and group learning activities and plenty of natural light" (Lewington, 2012. p. 46). The day of assigned seating and the one size fit all is a thing of the past. Seating could meet the needs of individual students. Most schools brought seats in a one size fit all model. Flexible seating was defined by Kennedy (2017c) as "classrooms designed to support active learning, increase student engagement on multiple measures, as compared to traditional row-by-column classroom seating" (2017, p. 28). Flexible seating allowed students to have control over learning. "By giving students control over their own learning, guided inquiry allows for increased engagement, more autonomy, and deeper learning overall" (Carter, 2017, p. 14). In the majority of the classrooms around the world, more than half of the time in a classroom was spent sitting down. "On average, K-12 kids spend about 80 percent of their school day sitting" (Student Seating is on the Move, 2016, p. 18).

School Facilities

School facilities along with other variables played a critical role in student achievement; researchers Ulin and Tschannen agreed (2008). Results confirmed a positive relationship between the quality of school facilities and student achievement in the areas of ELA (English) and mathematics (Uline & Tschannen-Moran, 2008). "Quality facilities were significantly positively related to three school climate variables. Finally, results confirmed the hypothesis that school climate plays a mediating role in the

relationship between facility quality and student achievement" (Uline & Tschannen-Moran, 2008, p. 55). "The quality of school facilities in the United States is correlated with local community wealth. The U.S. Constitution makes no mention of education, so by virtue of the Tenth Amendment, the funding of schools has fallen on the states" (Davis, 2015, p. 4). Some studies suggested urban schools were breeding grounds for crime, while other studies revealed students engaged in crime resulted in a lack of supervision. Although studies existed on crime in schools, very few studies examined crime within the vicinity of schools (Murray & Swatt, 2013). "Schools, like other urban facilities, can generate crime by providing youth opportunities to congregate with little supervision, particularly before and after school hours" (Murray & Swatt, 2013, p. 164). Even when not on school grounds, but in the surrounding areas, students tended to be tempted in low areas of supervision. Murray and Swatt (2013) believed, "areas around schools are frequently used by students as routes to and from school and provide opportunities for interactions between students and between students and community members, particularly after school hours" (p. 165). Most people believed the guardianship of teachers and administrators extended only to the school campus and once, the students boarded the bus they were in the supervision of the district until the students reached their front doors or property line.

"Nearby areas outside of school property provide students with opportunities to engage in unsupervised activities, increasing the likelihood of these youth being either victims or perpetrators of crime" (Murray & Swatt, 2013, p. 165). Researchers suggested schools should improve crime and safety by improving the lighting. "Many education

institutions have sought to make their buildings and grounds safer by using design strategies that remove conditions that make crime more likely" (Fedewa, 2015, p. 651).

School safety was a huge concern at some urban schools, such as the one in the study. If students did not feel safe, attendance and concentration became a problem and affected school culture. Research suggested schools should be in an environment where students felt safe and did not worry about intruders; there should be enough school spirit to create a community similar to the individual family. Some schools located in safer environments, did not have to worry about what other neighborhood schools had to deal with on a day to day basis, while some neighborhoods were severely poverty stricken. Another major issue in schools\districts was the political systems in some schools not only did the students not feel safe, in some cases the staff also reported not feeing safe. Forty-one percent of schools had a system set in place in case of a national emergency (Neiman, 2011).

School Climate

School climate was defined differently throughout the current literature. The researcher found numerous definitions for school climate as well as school culture. Many researchers considered certain variables when talking and measuring school climate. "Although there is considerable variation in the definitions of school climate, the current findings provide evidence that safety, environment, and engagement are important dimensions to consider when measuring it" (Bradshaw et al., 2014, p. 602). "The development of suburban schools saw a subsequent decline in the number of students attending urban schools, and was encouraged by a phenomenon known as 'White Flight in the late 1800s'" (Sulak, 2016, p. 673). Students from the poorer urban neighborhoods

could attend schools in what was referred to as upper neighborhoods. Most students were bused out to schools in the urban area for a better chance of succeeding academically.

Most people, when the word urban was used, individuals associated the concept with something negative. The word "urban" to some invoked images of poverty, low educational achievement, high crime, drug addiction, and violence (O'Connor, Mueller, & Neal, 2014). According, to research mainly students of color attended urban schools. "Students of color are more likely to attend schools that are 'low-performing' on state tests and graduation rates" (Blanchett, 2014, para. 5). Most researchers indicated school climate was based off other factors independent apart of students' everyday lives. Xia, Fosco, and Feinberg (2016) stated, "our findings revealed that family, school, and individual factors generally are mutually influential; however, the ways in which they are linked over time were nuanced" (p. 448). In schools throughout the United States, most schools saw an increase in safety officers, due to the surge of school shootings. "Many U.S. schools use visible security measures (security cameras, metal detectors, security personnel) in an effort to keep schools safe" (Tanner-Smith, 2016, p. 195).

Some researchers indicated school climate had a direct correlation with students' health. "School climate with positive health behaviors and emotional well-being suggests that school climate could also have an association with positive physical health outcomes" (Gilstad-Hayden et al., 2014, p. 503). When schools received the results from climate surveys, the data informed the administrator of the overall temperature of the building. In addition, "school climate was used to check the school's strengths and needs" (Cohen, 2012, p. 230). What the administrator chose to do with the information from the survey was up to the individual leader. "School climate variables could be used

to predict academic achievement when school climate [was] defined as school culture, school organizational structure, and the background characteristics of the students" (Sulak, 2016, p. 674). When measuring or defining school climate, the community should be reflected, specifically the area in which the school was embedded (Sulak, 2016). Most researchers suggested buildings used school climate variables to perceive the strengths of the school and understand if goals were reached for the year. "School climate evaluations allowed principals to let students, parents, and school personnel know that their perception of the school's strengths and needs and their goals for the school are valued" (Ice, Thapa, & Cohen, 2015, p. 10). Research also suggested the federal government, started to use school climate as a tool to evaluate schools. "With research linking school climate with positive outcomes for students, it has become a target for many federal and local school improvement initiatives, such as the Safe Schools/Healthy Students Program and the Safe and Supportive Schools Program" (Bradshaw et al., 2014, p. 593).

In one study, when the administrator revealed the climate survey results and behavior was the top problem, some teachers turned to a positive behavior reward system specifically situations where food/snacks were used as a reward for positive behavior. As reported by Fedewa, "Using food to reward children would be frowned upon by national organizations such as the Mayo Clinic, the American Academy of Child and Adolescent Psychiatry, and the American Academy of Pediatrics" (2015, p. 649). Giving foods as a prize, "may be short-term gains in behavior change, there is gathering evidence that using food as a reward could be associated with long-term health consequences for the child and society as a whole" (Fedewa, 2015, p. 649).

Students' began to lose interest in school right have middle school and there was an increase in student behavior issues. One researcher stated, "Adolescents interest in education decreased from middle school into high school" (Xia, Fosco, & Feinberg, 2016, p. 443). The administrator's task was to come up with a solution and find another way to enforce positive behavior. Robinette (2016) stated, "An administrator's job must be to first positively shape the culture and climate of a school so that the institution is a bastion where children are excited to learn" (p. 23).

School Climate

School Climate was defined in different ways, depending on the research and the variables listed; while some researchers shared similar predictors of school climate. "School climate is also a significant predictor of rates of dropout, absenteeism and truancy, suspension, drug use, and violent and aggressive behavior" (Bradshaw et al., 2014, p. 593). "Results suggested that adolescents who perceived their schools to have a positive school climate were less likely to engage in deviant behaviors and report depressive symptoms" (Gage, Larson, Sugai, & Chafouleas, 2016, p. 494). Students' perceptions of parents' behavioral expectations tended to have a strong relationship with student behavior in school and academic performance, along with the neighborhood of the school's location. "Better neighborhood safety was associated with better grades, as well. Students perceiving their neighborhoods as safer reported grades about .12 higher on a five-point scale than those with less perceived safety" (Hopson et al., 2014, p. 203).

Teacher and student relationships were also key when determining the climate. "School climate is a product of teacher and student social interactions and is influenced by educational and social value" (Bradshaw et al., 2014, p. 594). Without a positive

nurturing, and safe environment for learning, most students did not grow academically. "Without a positive school climate, students will not benefit from improvements in curriculum and instruction, and reform efforts fall short" (Robinette, 2016, p. 21). School climate was found to be equally important to both staff and students, for academic growth. "School climate is profoundly important to the social, emotional, and academic successes of its students and staff" (Bradshaw et al., 2014, p. 593).

Some researchers, even Marzano, suggested curriculum was the key to school climate, but Robinette (2016) differed based on the results for a study, "Curriculum can be viewed as the most important determinant of student success. However, a solid curriculum is at first dependent on a positive school climate that supports and respects each student in a safe and clean learning environment" (p. 23). The teacher's perception of structure was noted in the research. "School climate refers to faculty members' collective perceptions on formal and informal sides of organizational structure, characteristics of colleagues, principal leadership, and how things are done in the organization" (Kılınç, 2013, p. 624).

While investigating previous studies, the researcher found several researchers with different ideas on variables related to school climate. The main focus was that of the perception of students' and the teachers' perception of education and the school. Kılınç (2013) indicated, "The improvement of student learning and achievement along with building an effective learning environment at schools depend largely on teachers" (p. 621). Even going back in history to when school climate was first investigated researchers had different views. "School climate can be attributed as the personality of a school" (Halpin & Croft, 1963, para. 3). One key component to having a great school

climate and culture was establishing a mission and vision statement. Kreitner and Robbins, made an excellent point, when they said, “No matter how well the mission and vision statements are written, problems may arise” (as cited in Mapolisa & Mawere, 2012, p. 562). All stakeholders needed a chance to have a say in at least the vision of the school. Ozdem (2011) said “Vision is defined as a look towards the unknown to define the future, which combines current facts, hopes, dreams, threats and opportunities" (p. 1888).

Parental and Community Support

For many parents who arrived at work before school started early arrival was an issue, due to the day care fees. Schools that offered before and after care, were a help to the families in the community. The services ensured the students came to school and the parents were working. Some parents received assistance if the family was deemed low income (Spielberger, Zanoni, & Barisik, 2013). The decision was made by collaboratively looking at the family and the need of the family, the school and the agency involved. Some programs encouraged single mothers to find a job to help with child assistance. Some individuals assisted struggling families to find employment and offered services such as helping with the utilities bills. The flaw with the majority of the programs was programs such as Head start was limited. The purpose of pre-kindergarten included “collaboration with Head Start a primary strategy to meet the physical, mental, social, and emotional needs of young children” (Spielberger et al., 2013, p. 4). Data revealed the program’s success and led to the development of full day attendance. In addition to a full day, a different curriculum was required to get the students ready for the next level of education.

Some schools had low parental or community support. When a school wanted build a better relationship, a period of reflection was needed; which meant fix the problems you can fix, before trying to invite stakeholders into your building. Second, work on the relationship between staff/ administrators and students/ teachers. Next work on the relationship with the community, starting with the neighbors who were close by. Finally, work on a relationship with all other stakeholders, so once students arrived the parents knew what the school had to offer or needed areas of support.

Public schools were not the only schools who faced with low parental involvement. Some Catholic schools in urban areas, which became increasingly diverse experienced a similar outcome (Shriberg et al., 2012). The school administrators believed the problem crossed racial lines; the teachers were all White and the majority of the students were Black. "Student achievement can be improved across racial, ethnic, and socioeconomic lines through more effective parental engagement" (Shriberg et al., 2012, p. 227). The next step included increasing parental involvement to address the issue and equip the students for learning and in life. The school acquired data through the use of a community survey. Next focus groups addressed different problems and alumni and were brought in to help in areas, such as tutoring for the students who struggled academically. "Students of color and those living in poverty stricken communities continue to be marginalized within our public schools" (Griffin & Steen, 2011, p. 75). The goal was to catch problems and issues early. Lastly, administrators believed no one should "sell the students short" on education because of circumstance. Educational leaders needed to raise the bar and set attainable high goals. Researches showed parental involvement in education and teaching were related to many variables. There were a number of studies

showing the academic achievement of individuals and tone levels of motivation to learn were related to the involvement of the parents to the schools (Erol & Turhan, 2018: Şad, 2012).

Summary

While the researcher introduced the rationale for the study in Chapter One, Chapter Two included a summary of the research available on the topics listed above. In Chapter Two, the researcher noted current studies on the possible relationship between the following components: lighting, wall color, temperature, and school facilities and student achievement, student behavior and school climate. The research on wall color, suggested white walls were less expensive, but did not enhance student learning (Wells, 2014, p. 41). The researcher suggested warm colors be used, such as soft blues (Bloom, 2013, p.15). Second the research on lighting, suggested if natural lighting was not available LED lights should be used (Casadonte, 2016, p. 25). Next, the researcher found literature noting classroom temperature should be kept at a comfortable temperature, not too cold nor too hot (Haverinen-Shaughnessy & Shaughnessy, 2015 p. 1). One study suggested, "indoor temperatures in the winter be between 20 and 24°C (68–75° F), whereas summer temperatures be maintained between 23 and 26°C (73–79° F)" (Haverinen-Shaughnessy & Shaughnessy, 2015, p. 1). Previous studies showed even if the building was old, as long as the building was kept clean then a positive relationship existed between student achievement and behavior (Uline & Tschannen-Moran, 2008, p. 55). Finally, student behavior and school climate had the most possibility of a positive relationship on student achievement (Bradshaw et al., 2014, p. 593).

Chapter Three included a description of the methodology and steps the researcher took to complete the study and could serve as a future guide to other researchers interested in the topic. Chapter Four presented the data, while in Chapter Five the researcher explained the data and made recommendations for future research.

Chapter Three: Methodology

In Chapter Three, the researcher introduces all steps needed to begin the study and the data collection process; which included the help of the research school district's human resource department. The researched district only agreed to approve the study if all stakeholders completed the climate survey and the researcher agreed to share the data with the researched district. For the purpose of anonymity, the researched school is noted as North City High. The researcher utilized a quantitative methodology. After four months, the researcher agreed to use the district's climate survey and received district approval. The researcher utilized secondary data and data gathered by the researched district from the Climate Survey. The researcher gathered EOC and OSS data from the researched state's data website page. Finally, the researcher statistically analyzed the data and then coded the data. For the color of the walls, number of windows, and the temperature of the classrooms, the researcher used observation tools.

Participants

The participant list for the research school was obtained though human resources, which included a staff and student directory accompanied with emails and the specific school facility. The head of research for the district issued usernames and passwords to keep the student, staff, and parent emails and names anonymous. The participants came from a Midwest urban district and included teachers, students, parents, and staff, as well as support staff. The teachers' sex varied, and the ages ranged from 22 to 68 years, plus. The students who participated were in the third through 12th grade, while the parents' age ranges varied, as well. The participants did not receive a monetary award for taking the survey; while the researched district provided usernames and passwords to all

stakeholders who agreed to take the survey. The number of participants were 2048 to 3000, depending on the question answered. Because, it was a high participation rate, the sample was random.

Research Site

The research site was an urban Midwest high school located in one of the poorest and most violent parts of the city west of the Mississippi river, for African American students; well known for its basketball program, not academics. In the researcher's experience, North City High made the news headlines for negative publicity far more than for positive publicity. North City High was known for numerous fights and riots, as well as a student walk out, due to a high principal turnover rate (Hayes, 2014, para. 2). According to S. Owens (personal observation, 2014-2018), the negative community perception continued, due to the word of mouth, as well as videos of fights posted on social media. According to the Missouri Department of Elementary and Secondary Education (MODESE, 2018), the population included 99% African/Black American and 1% Other (para. 2). The staff of the researched school self-identified as 75% White and 5% Black/African American; the opposite of the student population (MODESE, 2018, para. 2). According to the school's data listed on the district website and MODESE (2014-2017), over 90% of the student body received free or reduced lunch (MODESE, 2018, para. 3). According to the Renaissance Star Reading test, a computer-based test for students in grades K-12, and the average of all students reading scores, the students' growth and the overall reading score was on a fifth through sixth grade level (MODESE, 2018, para. 2). The student body included children from the surrounding neighborhood within a new facility in the researched city, and the researcher

described the staff and other stakeholders as unkempt, with many broken items within the facility and writing on the walls throughout the school facility. Specifically, the researcher observed broken chairs, desks, lockers, doors, blinds, holes in the walls, and tables. The school building had two levels, and a circular design, with four separate halls and a courtyard. The walls of the facility protected the courtyard from outside intruders, and only the ceiling allowed the natural light to enter. Metal detectors existed at both entry points, and the researcher found within the researched building an average of six to eight guards on staff. Finally, as more student work, color, and décor was added around the entire building, the school appeared to become increasingly more visually appealing. The researcher was given the task of becoming the Cultural Lead for the sophomore teachers and students to increase the positive climate and culture of the school.

Null Hypotheses

Hypotheses 4 through 9 were originally stated as seeking relationships, as stated in Chapter One. Following data collection, it became clear to the researcher that the data gathered were not in an appropriate form for traditional relationship testing. Hypotheses were reworded to reflect a change from testing for relationships to testing for differences. The null hypotheses, including the changes in Null Hypotheses # 4 through # 9, were:

Null H1: There is no relationship between classroom lighting (natural lighting) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting.

Null H2: There is no relationship between classroom lighting (natural lighting) and student behavior, in an urban setting.

Null H3: There is no relationship between classroom lighting (natural lighting) and school climate, in an urban setting.

Null H4: There is no difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending schools with white walls versus non-white walls, in an urban setting.

Null H5: There is no difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with white walls versus non-white walls, in an urban setting.

Null H6: There is no difference in school climate between students attending schools with white walls versus non-white walls in, an urban setting.

Null H7: There is no difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting.

Null H8: There is no difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting.

Null H9: There is no difference in school climate between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting.

Null H10: There is no relationship in school climate, measured by the School Climate Survey, and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting.

Null H11: There is no relationship in school climate, measured by the School Tool Climate Survey, and student behavior, in an urban setting.

Data Collection Procedures

The researcher first gained study approval from the researched school district by agreeing to use the yearly survey and share findings with the district upon completion. The researcher also gained Lindenwood University IRB approval. The researcher agreed to use secondary data retrieved from the district's school climate survey and MODESE data from previous years, 2014 through 2016; the annual survey assessed the district and individual schools on school climate, attendance, and end of course data. The head of research and technology from the researched district sent an email to all staff members, requesting everyone to participate in a climate survey. In the researched district, each building sent an email to every staff member. The district notified the parents of the researcher's study through PTO meetings and a system called 'Bigmouth' was used to call all numbers listed in the automatic phone system, which parents and guardians signed up for when enrolling student(s). In addition, parents received information through email and flyers. Even though the district sent an email and was sending out the survey, the researcher spoke at a faculty meeting to explain the study and answer any questions of staff members.

The researcher explained to the district administration, as well as building leaders, the process for collecting the classroom temperature. The researcher took the

temperature of specific classrooms twice a day and noted the color of the wall, as well as any natural light in the classroom. The researcher spoke to parents at the PTO meeting to share information regarding the study and gain consent to participate. The researcher then met with students and parents who missed the first meeting, while the district sent flyers home with all students, including additional consent/assent forms. The students were to take the consent form home and have the appropriate guardian sign the consent form and return the paperwork to the main office in each school building.

When the individuals within the district sent the survey to all participants, the researcher assigned each participant a username, along with a password, to complete the survey. The school district emailed the school climate and culture survey to teachers and students, for an initial four-week response window. Some educators were assigned the task of taking classes to the lab for students to participate in the survey and staff crossed off students' names once students logged into the survey with an assigned username and password. The district sent a reminder to complete the climate/cultural survey to all participants for an additional two-week response window. At the end of the six-week survey window, the survey closed. The researcher analyzed each null hypothesis after all data were collected.

The researcher visited each classroom from the various high schools throughout the district, in which teachers taught specific EOC coursework, and each classroom in which the students participated in the EOC assessment to collect data on the School Facility Factors. The researcher used the observation form to collect data (see Appendix I), which measured the following variables: classroom number, lighting, window, LEDs, wall color, and temperature.

Data Analysis

The researcher tested eleven hypothesis using statistical analysis, a Pearson Product Moment Correlation analysis to seek a possible relationship and a *t*-test to test for the significance of the correlation, if one existed. The researcher also analyzed data for differences by applying a *t*-test for difference in means. The researcher used secondary data to test each hypothesis and each hypothesis was either accepted or rejected. Next, the research district categorized and grouped the survey questions together from three different categories: teacher, parent, and student perspectives of school climate and culture. Finally, the researcher developed charts and figures to articulate the study results.

The researcher analyzed the data for hypotheses one through eleven using a Pearson Product Moment Correlation and a *t*-test, according to Bluman (2008) and Fraenkel et al. (2015). Out of the eleven null hypotheses, four included the observation checklist and student achievement data; the researcher measured the lights, counting the number of windows. The researcher described specific analysis below.

For null hypothesis two the researcher analyzed student behavior using secondary data. The amount of student OSSs from the MODESE website was used for each of the 15 schools. Next, the researcher used data from the climate survey to number the schools from one to 15, based on all stakeholders' perceptions. For null hypothesis four the researcher labeled each participating classroom with white walls with a one for yes and a two for no. The scores were calculated and tested against the three areas. In analyzing null hypothesis six, in addition to the *t*-test, the researcher utilized data from the climate survey, based on all stakeholders' perceptions of the climate of the district.

For null hypothesis seven, the researcher first used a data collection, such as a checklist to gather the data for over 10 months, then went on to use a *t*-test for difference in means to analyze the data. The researcher visited the classrooms twice a day for a period of 10.5 months. The temperature was taken with an infrared gun, once in the A.M. then again in the P.M. After the researcher gathered the range and average temperatures, the data were compared with all 15 schools' EOC scores on the three areas. To analyze null hypothesis nine, data were analyzed with a *t*-test for difference in means. The researcher visited the classrooms twice a day for a period of 10 months. The temperature was taken with an infrared gun, once in the A.M. then again in the P.M. After gathering the range and average temperature, the data was compared to school climate. Next, the data from the climate survey were used to number the schools from one to 15, based on all stakeholders' perceptions. To analyze null hypothesis 10, in addition to the Pearson Product Moment Correlation, a *t*-test was run to test the significance of the correlation. The data from the climate survey was used to number the schools from one to 15, based on all stakeholders' perceptions. The data were compared with all 15 schools EOC scores on the three areas. Finally, the researcher analyzed null hypothesis 11using a Pearson Product Moment Correlation in addition to the *t*-test, the data from the climate survey were used to number the schools from one to 15, based on all stakeholders' perceptions. The amount of OSSs from the state's website was used to analyze student behavior for each of the 15 schools.

Gaining entrance to some of the study sites was difficult; two facilities included high schools where, on opposite sides of the building, the climate appeared to be different. The researcher observed specific quotes and pictures were painted in most of

the hallways in the 15 high schools, some displayed student work. Trying to collect data during the morning was difficult. The help of others was utilized to collect the morning temperatures in various buildings, due to time restraint and buildings not being open until a certain time. Most of the afternoon temperatures, the researcher took directly after class ended. Using the observation tool to count windows, the researcher noticed that some windows opened to allow fresh air to enter the classroom, while the newer buildings did not have windows that opened, due to the buildings having central air and heat. The older buildings still had AC units in the windows. The majority of the classrooms were painted white, but were decorated with posters, paper, student work, and things made to hide the white wall and to establish a culture in the classroom. The researcher also found that the district controlled the temperatures in all buildings in the district for financial reasons, so no teachers had control over the temperature, unless they had AC units. Teachers did bring in fans, as well as personal space heaters. The researcher observed one side of the school and even one class as being hot, while the room next door was cool. There were rooms that were 78 degrees in the summer time, while the class next door was 68 degrees. In addition, throughout the building there was very little airflow in the hallways, no vent nor fan.

Summary

The researcher collected data over a period of 10 months. Once the researcher gained district approval, the researcher then applied and received IRB approval. Second, the secondary data were gathered from the MODESE website and the researched school district. Data gathered from the MODESE website were accessible to the public. To note the results the researcher developed tables, listed in Chapter Four. The researched district

survey yielded a high number of responses, all participant responses remained anonymous, due to pre-assigned random usernames and passwords. Chapter Five, included a discussion of the results and recommendations for future research.

Chapter Four: Results

Based on all eleven hypotheses, the researcher chose the following characteristics to check. The researcher observed classroom lighting using a data collection 'Pearson' observation sheet. The researcher was able to check for classroom windows and the type of lighting used. The data were collected in the month of August. Second, the color of classroom walls was observed, while using a checklist as well. The researcher checked to see if the classroom wall was white or painted different colors. Next, the temperatures of several tested classrooms were measured in 15 different high schools each month, at different times. Then a climate survey was sent out by the researched district to staff and students, as well as parents and guardians. Student behavior was measured using secondary data from the researched district, as well as the state, represented by OSSs. Finally, the EOC data were secondary data retrieved from the researched district, as well as the researched district state webpage. Table 1 shows the studied variables.

Table 1

Study Variables

Lighting	Facility Observation Sheet (Visited classrooms August 2017)
Wall Color	Observation check list (Visited classrooms August 2017)
Temperature	Infrared IR Thermometer Gun (IR Gun) - (Measure the temperature each month from 8:30 -9AM and 2:10-5:00 PM)
School Climate	School climate survey
Student Behavior	Number of Out of School Suspensions 2014-2017
Student Achievement	End of Course Exam Scores 2014-2017; Biology, American Government, English I, and English II

All results were based on the following hypotheses:

Null H1: There is no relationship between classroom lighting (natural lighting) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting. To test this hypothesis, the researcher compared the variables Lighting and Student Achievement. Since Lighting was an ordinal variable, the researcher calculated the Spearman's Rank-Order Correlation Coefficient (Spearman's Rho) and tested for significance using a *t*-test. The researcher further had to convert the average EOC scores in Biology, American Government, English I and English II to ordinal variables, so the comparisons could be made. All tests were conducted at an $\alpha = .05$ level of significance. In the area of Biology, Spearman's Rho ($r_s = .203$) was not significant; $t(11) = 0.688$, $p = .5059$. The researcher failed to reject the null hypothesis and concluded that the variable of Lighting was not related to the EOC scores in Biology. In the area of American Government, Spearman's Rho ($r_s = .418$) was not significant; $t(11) = 1.526$, $p = .1552$. The researcher failed to reject the null hypothesis and concluded that variable of Lighting was not related to the EOC scores in American Government. In the areas of English I and English II, Spearman's Rho ($r_s = .462$) was not significant; $t(11) = 1.728$, $p = .1120$. The researcher failed to reject the null hypothesis and concluded that variable of Lighting was not related to the EOC scores in English I and English II.

Null H2: There is no relationship between classroom lighting (natural lighting) and student behavior, in an urban setting. To test this hypothesis, the researcher compared the variables Lighting and Student Behavior. Since Lighting was an ordinal variable, the researcher calculated the Spearman's Rank-Order Correlation Coefficient (Spearman's Rho) and tested for significance using a *t*-test. The researcher further had to convert the variable of Student Behavior (the number of OSSs) to an ordinal variable, so the

comparisons could be made. This test was conducted at an $\alpha = .05$ level of significance. Spearman's Rho ($rs = .212$) was not significant; $t(12) = 0.751$, $p = .4669$. The researcher failed to reject the null hypothesis and concluded that the variable of Lighting was not related to Student Behavior.

Null H3: There is no relationship between classroom lighting (natural lighting) and school climate, in an urban setting. To test this hypothesis, the researcher compared the variables Lighting and School Climate. Since Lighting was an ordinal variable, the researcher calculated the Spearman's Rank-Order Correlation Coefficient (Spearman's Rho) and tested for significance using a *t*-test. The researcher further had to convert the variables of School Climate, according to teachers, students, and parents, to ordinal variables, so the comparisons could be made. All tests were conducted at an $\alpha = .05$ level of significance. For School Climate according to teachers, Spearman's Rho ($rs = .256$) was not significant; $t(13) = 0.955$, $p = .3571$. The researcher failed to reject the null hypothesis and concluded that the variable of Lighting was not related to School Climate according to teachers. For School Climate according to students, Spearman's Rho ($rs = .246$) was not significant; $t(13) = 0.915$, $p = .3768$. The researcher failed to reject the null hypothesis and concluded that variable of Lighting was not related to School Climate according to students. For School Climate according to parents, Spearman's Rho ($rs = .084$) was not significant; $t(13) = 0.304$, $p = .7660$. The researcher failed to reject the null hypothesis and concluded that variable of Lighting was not related to School Climate according to parents.

Null H4: There is no difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending

schools with white walls versus non-white walls, in an urban setting. To test this hypothesis, the researcher utilized the variables Wall Color and Student Achievement. Since Wall Color was a dichotomous (nominal) variable, the researcher conducted *t*-tests of independent means, comparing the Student Achievement scores of schools with white walls to those of schools with non-white walls. All tests were conducted at an $\alpha = .05$ level of significance. In the area of Biology, a preliminary test of variances revealed that the variances were equal. The mean Biology EOC score of schools with white walls (M = 40.85, SD = 31.30) was not significantly different from the mean Biology EOC score of schools with non-white walls (M = 58.48, SD = 12.47); $t(11) = -1.067$, $p = .3087$. The researcher failed to reject the null hypothesis and concluded that EOC Biology scores were not different between students attending schools with white and non-white walls. In the area of American Government, a preliminary test of variances revealed the variances were equal. The mean American Government EOC score of schools with white walls (M = 39.71, SD = 28.76) was not significantly different from the mean American Government EOC score of schools with non-white walls (M = 59.68, SD = 15.44); $t(11) = -1.287$, $p = .2246$. The researcher failed to reject the null hypothesis and concluded that EOC American Government scores were not different between students attending schools with white and non-white walls. In the area of English I and English II, a preliminary test of variances revealed that the variances were equal. The mean English I and English II EOC score of schools with white walls (M = 62.42, SD = 21.96) was not significantly different from the mean English I and English II EOC score of schools with non-white walls (M = 79.65, SD = 6.95); $t(11) = -1.503$, $p = .1609$. The researcher failed to reject

the null hypothesis and concluded that EOC English I and English II scores were not different between students attending schools with white and non-white walls.

Null H5: There is no difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with white walls versus non-white walls, in an urban setting. To test this hypothesis, the researcher utilized the variables Wall Color and Student Behavior (the number of OSSs). Since Wall Color was a dichotomous (nominal) variable, the researcher conducted *t*-tests of independent means, comparing the Student Behavior scores of schools with white walls to those of schools with non-white walls. This test was conducted at an $\alpha = .05$ level of significance.

A preliminary test of variances revealed that the variances were equal. The mean number of OSSs of schools with white walls ($M = 39.00$, $SD = 36.82$) was not significantly different from the number of OSSs of schools with non-white walls ($M = 16.50$, $SD = 18.98$); $t(11) = 1.137$, $p = .2797$. The researcher failed to reject the null hypothesis and concluded that number of OSSs were not different between schools with white and non-white walls

Null H6: There is no difference in school climate between students attending schools with white walls versus non-white walls in, an urban setting. To test this hypothesis, the researcher utilized the variables Wall Color and School Climate. Since Wall Color was a dichotomous (nominal) variable, the researcher conducted *t*-tests of independent means, comparing the School Climate scores according to teachers, students, and parents of schools with white walls to those of schools with non-white walls. All tests were conducted at an $\alpha = .05$ level of significance. For school climate according to teachers, a preliminary test of variances revealed that the variances were not equal. The

mean School Climate score of schools with white walls (M = 7.74, SD = 1.98) was not significantly different from the mean School Climate score of schools with non-white walls (M = 9.00, SD = 0.61); $t(4) = -1.846$, $p = .1386$. The researcher failed to reject the null hypothesis and concluded that school climate according to parents was not different between schools with white and non-white walls. For school climate according to students, a preliminary test of variances revealed that the variances were equal. The mean School Climate score of schools with white walls (M = 6.71, SD = 2.38) was not significantly different from the mean School Climate score of schools with non-white walls (M = 8.50, SD = 0.87); $t(13) = -1.602$, $p = .1331$. The researcher failed to reject the null hypothesis and concluded that school climate according to students was not different between schools with white and non-white walls. For school climate according to parents, a preliminary test of variances revealed that the variances were equal. The mean School Climate score of schools with white walls (M = 7.35, SD = 1.96) was not significantly different from the mean School Climate score of schools with non-white walls (M = 8.60, SD = 1.47); $t(13) = -1.252$, $p = .2328$. The researcher failed to reject the null hypothesis and concluded that school climate according to parents was not different between schools with white and non-white walls.

Null H7: There is no difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting. To test this hypothesis, the researcher utilized the variables Temperature and Student Achievement. Since Temperature was a dichotomous (nominal) variable, the researcher conducted *t*-tests of

independent means, comparing the Student Achievement scores of schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. All tests were conducted at an $\alpha = .05$ level of significance. In the area of Biology, a preliminary test of variances revealed that the variances were equal. The mean Biology EOC score of schools with a temperature of 73° F or 74° F (M = 39.48, SD = 19.94) was not significantly different from the mean Biology EOC score of schools with a temperature that was not 73° F or 74° F (M = 50.53, SD = 32.06); $t(11) = -0.686$, $p = .5072$. The researcher failed to reject the null hypothesis and concluded that EOC Biology scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F.

In the area of American Government, a preliminary test of variances revealed that the variances were equal. The mean American Government EOC score of schools with a temperature of 73° F or 74° F (M = 40.76, SD = 12.14) was not significantly different from the mean American Government EOC score of schools with a temperature that was not 73° F or 74° F (M = 49.04, SD = 33.03); $t(11) = -0.531$, $p = .6060$. The researcher failed to reject the null hypothesis and concluded that EOC American Government scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. In the area of English I and English II, a preliminary test of variances revealed the variances were equal. The mean English I and English II EOC score of schools with a temperature of 73° F or 74° F (M = 64.46, SD = 10.95) was not significantly different from the mean English I and English II EOC score of schools with a temperature that was not 73° F or 74° F (M = 69.76, SD = 24.66); $t(11) = -0.448$, $p = .6627$. The researcher failed to reject the null hypothesis and concluded that

EOC English I and English II scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F.

Null H8: There is no difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting. To test this hypothesis, the researcher utilized the variables Temperature and Student Behavior. Since Temperature was a dichotomous (nominal) variable, the researcher conducted *t*-tests of independent means, comparing the Student Behavior scores of schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. This test was conducted at an $\alpha = .05$ level of significance. A preliminary test of variances revealed that the variances were not equal. The mean number OSSs of schools with a temperature of 73° F or 74° F ($M = 30.8$, $SD = 13.22$) was not significantly different from the mean number of OSSs of schools with a temperature that was not 73° F or 74° F ($M = 32.88$, $SD = 42.45$); $t(4) = -0.129$, $p = .9039$. The researcher failed to reject the null hypothesis and concluded the number of OSSs was not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F.

Null H9: There is no difference in school climate between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting. To test this hypothesis, the researcher utilized the variables Temperature and School Climate. Since Temperature was a dichotomous (nominal) variable, the researcher conducted *t*-tests of independent means, comparing the School Climate scores according to teachers, students, and parents

of schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. All tests were conducted at an $\alpha = .05$ level of significance. For school climate according to teachers, a preliminary test of variances revealed that the variances were equal. The mean School Climate score of schools with a temperature of 73° F or 74° F (M = 8.67, SD = 1.47) was not significantly different from the mean School Climate score of schools with a temperature that was not 73° F or 74° F (M = 7.82, SD = 1.89); $t(13) = 0.920$, $p = .3742$. The researcher failed to reject the null hypothesis and concluded that school climate according to teachers was not different between schools with a temperature that of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F For school climate according to students, a preliminary test of variances revealed that the variances were equal. The mean School Climate score of schools with a temperature of 73° F or 74° F (M = 7.50, SD = 1.67) was not significantly different from the mean School Climate score of schools with a temperature that was not 73° F or 74° F (M = 7.18, SD = 2.51); $t(13) = 0.275$, $p = .7878$. The researcher failed to reject the null hypothesis and concluded that school climate according to students was not different between schools with a temperature that of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. For school climate according to parents, a preliminary test of variances revealed that the variances were equal. The mean School Climate score of schools with a temperature of 73° F or 74° F (M = 7.83, SD = 1.86) was not significantly different from the mean School Climate score of schools with a temperature that was not 73° F or 74° F (M = 7.72, SD = 1.97); $t(13) = 0.109$, $p = .9147$. The researcher failed to reject the null hypothesis and concluded that school climate

according to parents was not different between schools with a temperature that of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F.

Null H10: There is no relationship between school climate (measured by the School Climate Survey) and student achievement EOC content scores: Biology, American Government, English I, and English II in an urban setting. To test this hypothesis, the researcher compared the variables Student Achievement and School Climate. Since both variables were interval/ratio, the researcher calculated the Pearson Product-Moment Correlation Coefficient (PPMC) and tested for significance using a *t*-test. A total of nine tests were run, comparing each category of Student Achievement (Biology, American Government, English I, and English II) with each category of School Climate (according to teachers, students, and parents). All tests were conducted at an $\alpha = .05$ level of significance. In the comparison between Biology achievement and climate according to teachers, the PPMC ($r = .842$) was significant; $t(11) = 5.176$, $p = .0003$. The researcher rejected the null hypothesis and concluded that there was a relationship between Biology achievement and school climate according to teachers. In the comparison between Biology achievement and climate according to students, the PPMC ($r = .928$) was significant; $t(11) = 8.261$, $p < .00031$. The researcher rejected the null hypothesis and concluded that there was a relationship between Biology achievement and school climate according to students. In the comparison between Biology achievement and climate according to parents, the PPMC ($r = .916$) was significant; $t(11) = 7.573$, $p < .0001$. The researcher rejected the null hypothesis and concluded there was a relationship between Biology achievement and school climate according to parents.

In the comparison between American Government achievement and climate according to teachers, the PPMC (r = .846) was significant; $t(11) = 5.262$, p = .0003. The researcher rejected the null hypothesis and concluded that there was a relationship between American Government achievement and school climate according to teachers. In the comparison between American Government achievement and climate according to students, the PPMC (r = .890) was significant; $t(11) = 6.474$, $p < .0001$. The researcher rejected the null hypothesis and concluded there was a relationship between American Government achievement and school climate according to students.

In the comparison between American Government achievement and climate according to parents, the PPMC (r = .856) was significant; $t(11) = 5.492$, p = .0002. The researcher rejected the null hypothesis and concluded there was a relationship between American Government achievement and school climate according to parents.
In the comparison between English I and English II achievement and climate according to teachers, the PPMC (r = .655) was significant; $t(11) = 2.875$, p = .0151. The researcher rejected the null hypothesis and concluded there was a relationship between English I and English II achievement and school climate according to teachers.

In the comparison between English I and English II achievement and climate according to students, the PPMC (r = .755) was significant; $t(11) = 3.819$, p = .0028. The researcher rejected the null hypothesis and concluded there was a relationship between English I and English II achievement and school climate according to students. In the comparison between English I and English II achievement and climate according to parents, the PPMC (r = .637) was significant; $t(11) = 2.741$, p = .0192. The researcher

rejected the null hypothesis and concluded that there was a relationship between English I and English II achievement and school climate according to parents.

Null H11: There is no relationship between school climate, measured by the School Tool Climate Survey, and student behavior, as measured by the number of OSSs, in an urban setting. To test this hypothesis, the researcher compared the variables school climate and student behavior. Since both variables were interval/ratio, the researcher calculated the PPMC and tested for significance using a *t*-test. A total of three tests were run, comparing each category of School Climate (according to teachers, students, and parents) with the number of OSSs. All tests were conducted at an $\alpha = .05$ level of significance.

In the comparison between climate according to teachers and OSSs, the PPMC ($r = -.840$) was significant; $t(11) = -5.135$, $p = .0192$. The researcher rejected the null hypothesis and concluded there was a relationship between climate according to teachers and the number of OSSs. Additionally, the negative PPMC indicated a negative relationship, and so the more OSSs a school reported, the lower the school climate perception proved to be. In the comparison between climate according to students and OSSs, the PPMC ($r = -.882$) was significant; $t(11) = -6.207$, $p = .0001$. The researcher rejected the null hypothesis and concluded there was a relationship between climate according to students and the number of OSSs. Additionally, the negative PPMC indicated a negative relationship, and so the more OSSs a school reported, the lower the school climate perception proved to be.

In the comparison between climate according to parents and OSSs, the PPMC ($r = -.902$) was significant; $t(11) = -6.929$, $p < .0001$. The researcher rejected the null

hypothesis and concluded that there was a relationship between climate according to parents and the number of OSSs. Additionally, the negative PPMC indicated a negative relationship, and so the more OSSs a school reported, the lower the school climate perception proved to be.

According to MODESE, the research school earned 32 out of 56 points, or 57% of the total possible points on the school's report card, based on school improvement goals constructed from the state's standards. The data were included in the Annual Performance Report. While points earned in the academic area appeared low, other areas were higher, such as attendance and graduation rate. The researched school district scored 74.6% out of 100%. Notice in Table 1, in the category of academic achievement, that the school district received 17.92 percentage points out of 100 points possible, but received a 100% in the area of attendance.

Table 2

School District Data, APR 2015-2016

Category	Points Earned	Points possible
Academic Achievement	32	56
Subgroup Achievement	8.5	14
College and Career Readiness	24	30
Attendance	10	10
Graduation Rate	30	30
Total Points	104.5	140
Percentage of Points Earned	74.6	100

In Table 3, note the researched district's student performance on the EOCexams, 2015-2016. The researched school implemented the EOC exams in the areas of freshman literature, world literature, Algebra 150, biology, and American Government. In the year 2015-2016, the school scored Basic or Below in all of the tested content areas. Out of the four tested areas, Social Studies scores were Basic and the other groups were Below

Basic. For every student that scored Basic, one point was given, for Proficient two points per student was given, and three for those student who score Advanced.

Table 3

Missouri End of Course (EOC) 2015-2016

Content Area	Scores
ELA	36.9%
Math	26.2%
Science	25.7%
Social Studies	40.9%

In Table 4, the researcher listed North City High School End of Course scores in the areas of English Language Arts I and II, Geometry, Algebra 150, Biology, and American Government for the years of 2015 through 2017. According to MODESE, LND meant levels not determined. In the area of ELA for the years 2015 and 2016, 50% of the students scored Proficient, but in 2017 all students scored Basic. In the area of math students did not score in the area of Advanced from 2015 through 2017. Finally, science increased in 2015 but dropped in 2016. In 2105 all students who took the EOC exam in science scored Proficient and Above.

The ACT scores for North City High, earned a composite score lower than 15, for the years 2014, 2015, 2016, and 2017. In 2015 the scores increased, but went down in 2016. From 2014-2015, less than 60% of graduates took the ACT. North City District required students to take at least two tests before walking in graduation. The North City District also required a minimum of 24 units of high school credit, which needed to be earned in grades nine and above.

Table 4

Missouri End of Course (EOC)

Content Area	Grade	Year	Below Basic	Basic	Proficient	Advanced
ELA		2017	0.0	100.0	0.0	0.0
ELA	11	2015	25.0	0.0	50.0	25.0
ELA	11	2016	25.0	25.0	50.0	0.0
ELA	11	2017	0.0	100.0	0.0	0.0
ELA	E2	2015	19.8	49.5	29.7	1.1
ELA	E2	2016	18.9	40.5	39.6	0.9
Mathematics		2017	33.3	33.3	33.3	0.0
Mathematics	11	2015	75.0	25.0	0.0	0.0
Mathematics	11	2016	100.0	0.0	0.0	0.0
Mathematics	11	2017	33.3	33.3	33.3	0.0
Mathematics	A1	2015	51.7	36.4	11.9	0.0
Mathematics	A1	2016	55.6	27.2	17.3	0.0
Science		2017	66.7	25.9	7.4	0.0
Science	11	2015	0.0	0.0	66.7	33.3
Science	11	2016	75.0	0.0	25.0	0.0
Science	11	2017	33.3	33.3	33.3	0.0
Science	B1	2015	22.6	50.9	24.5	1.9
Science	B1	2016	38.6	51.7	9.0	0.7
Science	B1	2017	54.3	31.4	11.4	2.9
Social Studies		2017	50.8	39.7	7.9	1.6
Social Studies	GV	2015	30.0	55.7	13.6	0.7
Social Studies	GV	2016	46.9	29.2	24.0	0.0
Social Studies	GV	2017	51.4	38.6	8.6	1.4

The program requirements and elective courses were to be planned cooperatively by the student, parents, and school counselor. All students were scheduled for a minimum of eight periods per day, except for seniors who enrolled in an area college

part of the day or were involved in an approved work-study program. Seven of the eight assignments needed to be classes offered for credit.

The NCH District required all seniors to complete two of three assessments to participate in the commencement ceremony: Armed Service Vocation Aptitude Battery (ASVAB), American College Test (ACT), and College Placement Test (COMPASS). Table 5 indicates the percent of students who participated in each type of exam.

Table 5

ACT Results

North City High ACT	2014	2015	2016	2017
Percent of Graduates Taking the ACT	56.22	57.71	84.85	82.22
Composite ACT Score	13.90	14.50	13.90	14.10

Table 6 contains the attendance data for North City High school for the fiscal school year of 2015-2016. The district had a rule of 90/90; 90% of the students should be at school 90% of the time. The ninth graders were the only grade level that came close, but still did not meet that goal of 90/90. According to personal observations, the ninth graders had a different principal then the sophomores, juniors, and seniors. On average, the ninth graders attended school 21% more than the upper classmen.

Table 6

2015-16 Attendance Rates

Grades	Attendance Rate
9th Graders	87.9%
10th – 12th Graders	66.8%

Table 7 includes data for the researched school for the year 2017, broken down by points. The areas included Below Basic, Basic, Proficient, and Advanced. The district had a significant amount of students that scored Below Basic in each of the tested areas. In some cases, more than half of the students were tested. In Algebra, 60% of students scored Below Basic, which meant they did not understand the math.

Table 7

Research School Data 2017

Content Area	Grade	Below Basic	Basic	Proficient	Advanced
Mathematics	A1	63.5	15.4	19.2	1.9
Science	B1	54.3	31.4	11.4	2.9
ELA	E2	34.1	40.9	*	*
Social Studies	GV	51.4	38.6	8.6	1.4

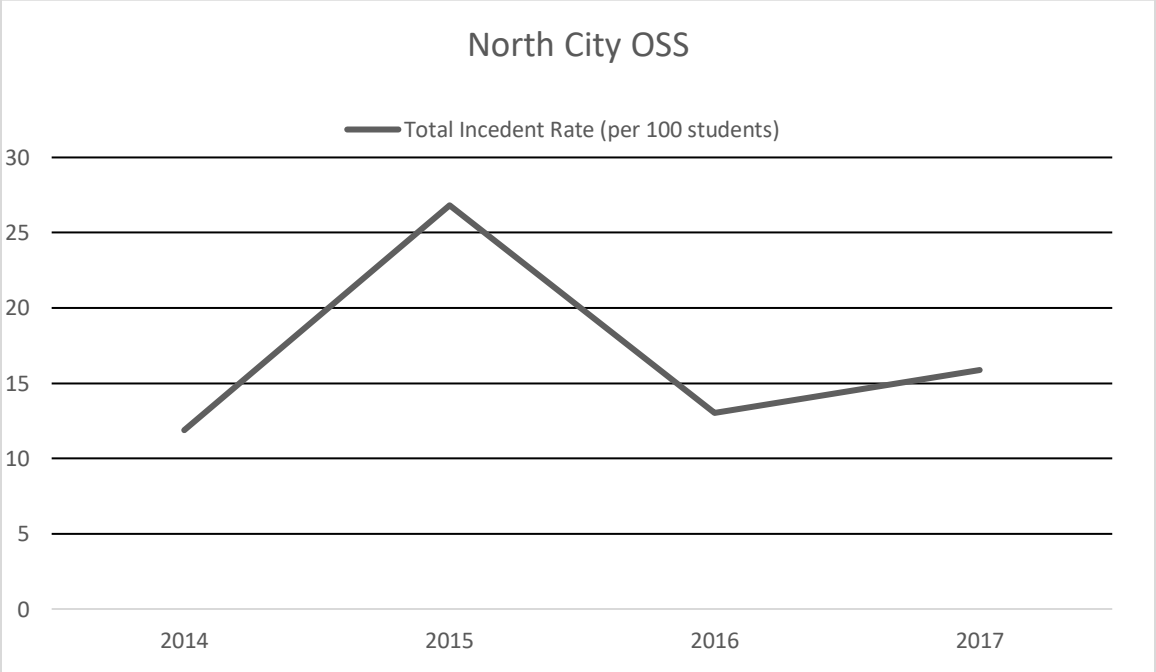

Figure 1. Research Schools' OSS

The number of OSSs spiked in 2015, but went back down the following year, due to a change in administrators (Observed by the researcher, 2014-2017). When the number of students suspended soared, the scores fell in tested areas. The data changed considerably each year, per the observer, when the school was led by a different principal.

District Climate Survey

The 6,225 parents who responded from North City District reported a mean score of 3.64 on the, "The school has helped my child establish educational and career plans," survey question, which placed the researched school at the 97th percentile, scoring higher than 96% of districts in the state. The 1,744 faculty members who responded from North City District reported a mean score of 3.61 on the, "My school adequately prepares all students for post-secondary education, and/or successful entry into the workforce," survey question, which placed the researched school at the 13th percentile, scoring lower than 87% of districts in the state.

The guaranteed and viable curriculum scale from the faculty Advance Questionnaire identified the degree to which essential curriculum was identified and the degree to which students had adequate opportunity to learn the content and demonstrate competency. The Faculty Scale for Guaranteed & Viable Curriculum consisted of six questions. The original questions and a summary of district responses follow on Table 8 through Table 22.

Table 8

Faculty Response Question set 1

Question	Percentile	Mean	Standard Deviation	n
The essential content is organized and sequenced in a way that students have ample opportunity to learn it.	5	3.50	1.09	1865
My school uses assessment data to evaluate and align the curriculum.	19	4.08	0.86	1905
My school systematically ensures that teachers address essential content.	33	4.12	0.82	1915
The content considered essential for all students to learn versus that considered supplemental has been identified and communicated to teachers.	31	3.95	0.91	1900
My school's administration protects instructional time available to teachers from interruptions.	20	3.64	1.19	1959
The amount of essential content that has been identified can be addressed in the instructional time available to teachers.	17	3.47	1.13	1870

The data use scale from the Faculty Advance Questionnaire identified the degree to which student performance data were collected, analyzed, and used to inform instruction. The Faculty Scale for Data Use consisted of four questions. The original questions and a summary of district responses follow on Table 9 and Table 10.

Table 9

Faculty Response Question Set 2

Question	Percentile	Mean	Standard Deviation	n
I routinely analyze disaggregated student data and use it to plan my instruction.	76	3.93	0.83	1794
I assess the level of prior knowledge of all students before initiating instruction.	78	4.30	0.77	1820
An assessment system is used that provides timely feedback on specific knowledge and skills for individual students.	37	4.07	0.79	1875
My school administers assessments throughout the school year that are used to guide instruction.	65	4.18	0.80	1919

The differentiated instruction scale from the Faculty Advance Questionnaire identified the degree to which teachers varied and revised instruction to meet the needs of students. The Faculty Scale for Differentiated Instruction consisted of five questions. The original questions and a summary of district responses follow on Table 10.

The efficacy and expectations scale from the Parent Advance Questionnaire identified the degree to which students believed they were capable of influencing student achievement. The Parent Scale for Efficacy & Expectations consisted of five questions. The original questions and a summary of district responses follow on Table 11.

Table 10

Faculty Response-Climate Survey

Question	Percentile	Mean	Standard Deviation	n
I alter instructional strategies when students are having difficulty learning the material.	34	4.54	0.64	1812
I routinely analyze disaggregated student data and use it to plan my instruction.	76	3.93	0.83	1794
I assess the level of prior knowledge of all students before initiating instruction.	78	4.30	0.77	1820
I organize students into flexible groups based on their understanding of the content and skill level.	65	4.03	0.95	1795
I have received professional development on differentiating instruction for learners.	46	4.13	0.91	1912

Table 11

Parent Response Question Set 1

Question	Percentile	Mean	Standard Deviation	n
Teachers and administrators value my child's opinions.	67	3.65	0.96	6304
My child's teachers are good teachers.	59	4.15	0.85	6267
My child's teachers expect very good work from my child.	91	4.42	0.75	6206
The school recognizes the accomplishments of my child.	58	3.94	0.90	6390
I know what my child's teachers expect in school.	77	4.13	0.88	6270

The efficacy and expectations scale from the Faculty Advance Questionnaire identified the degree to which students believed they were capable of influencing student achievement. The Faculty Scale for Efficacy & Expectations consisted of five questions. The original questions and a summary of district responses follow on Table 12.

Table 12

Faculty Perception on Climate

Question	Percentile	Mean	Standard Deviation	n
This school makes students feel they belong.	23	4.07	0.88	1919
Our school promotes an environment of mutual respect among students.	12	3.94	1.00	1948
Student opinions are valued by teachers and administrators.	21	3.97	0.83	1937
If students in this school have a problem, teachers will listen and help.	15	4.27	0.70	1922

The school climate scale from the parent Advance Questionnaire identifies the degree to which all students feel respected and valued. The Parent scale for School Climate consists of four questions. The original questions and a summary of district responses follow on Table 13.

The classroom management scale from the Faculty Advance Questionnaire identified the degree to which educational personnel established and enforced classroom management processes that enhance student learning. The Faculty Scale for Classroom Management consisted of five questions. The original questions and a summary of district responses follow on Table 14.

Table 13

Parents Perception on Climate

Question	Percentile	Mean	Standard Deviation	n
My child's opinions are valued by teachers and administrators.	67	3.65	0.96	6304
Discipline in my child's school is handled fairly.	64	3.71	1.02	6231
My child likes attending this school.	54	4.12	0.99	6309
My child's school promotes an environment of mutual respect among students.	78	3.96	0.93	6181

Table 14

Faculty Perception

Question	Percentile	Mean	Standard Deviation	n
Teachers in our school use effective practices to keep all students actively engaged in learning.	11	3.97	0.84	1936
Our principal uses classroom management as part of our evaluation.	18	4.22	0.76	1921
Clear rules regarding behavior have been established in my classroom.	15	4.52	0.66	1856
Educators in our school respond to inappropriate behaviors quickly and effectively.	3	3.81	1.01	1951
Educators in our school use effective practices to promote positive behavior.	11	4.00	0.88	1954

The classroom management scale from the Student (grade 6 and older) Advance Questionnaire identified the degree to which educational personnel established and enforced classroom management processes that enhance student learning. The Student Scale for Classroom Management consisted of five questions. The original questions and a summary of district responses follow on Table 15.

Table 15

Student perception on Climate

Question	Percentile	Mean	Standard Deviation	n
Clear rules regarding behavior have been established in most of my classes.	39	3.78	1.09	8926
Teachers enforce the rules fairly.	29	3.61	1.29	8908
Most of my teachers respond to disruptive students quickly and effectively.	57	3.53	1.17	8920
Teachers treat me with respect.	39	3.96	1.10	13252
During our classes we stay focused on learning and don't waste time.	74	3.24	1.12	8877

The equity scale from the faculty Advance Questionnaire measures perceptions around issues of fairness in addressing student needs. The Faculty scale for Equity consisted of two questions. The original questions and a summary of district responses follow on Table 16.

The equity scale from the Student (grade 3 and older) Advance Questionnaire measured perceptions around issues of fairness in addressing student needs. The Student Scale for Equity consisted of four questions. The original questions and a summary of district responses follow on Table 17.

Table 46

Faculty Perception on Climate, Set 3

Question	Percentile	Mean	Standard Deviation	n
The mission of this school is clearly defined.	30	4.20	0.86	1939
My school's principal systematically engages faculty and staff in discussions about current research on teaching and learning.	59	4.13	0.95	1934
My school's principal fosters shared beliefs and a sense of community and cooperation.	19	4.08	1.02	1953
Our principal identifies issues in the school that could potentially become problems.	25	4.09	1.01	1941
In our school teachers are encouraged to be instructional leaders	14	4.23	0.84	1940
My school's principal monitors the effectiveness of school practices and their impact on student learning.	34	4.14	0.97	1946
There are open channels of communication among students, staff and administrators.	13	3.85	1.04	1941
Our principal promotes innovation.	23	4.03	0.93	1915
My school's administration protects instructional time available to teachers from interruptions.	20	3.64	1.19	1959

The equity scale from the Faculty Advance Questionnaire measured perceptions around issues of fairness in addressing student needs. The Faculty Scale for Equity consisted of two questions. The original questions and a summary of district responses follow on Table 18).

Table 57

Students' Perception on Climate

Question	Percentile	Mean	Standard Deviation	n
In my school, all students are given a chance to succeed.	58	3.95	1.07	8842
Discipline is handled fairly in my school.	45	3.58	1.26	13209
Teachers treat me with respect.	39	3.96	1.10	13252
I am treated fairly at school.	23	3.62	1.20	13234

Table 18

Parents' Perception on Climate

Question	Percentile	Mean	Standard Deviation	n
Discipline is handled fairly in this school.	4	3.54	1.16	1939
Students are treated fairly in this school.	18	4.03	0.93	1934

Table 19

Faculty on Safe and Orderly Environment

Question	Percentile	Mean	Standard Deviation	n
Clear rules that promote good behavior are enforced in our school.	6	3.76	1.19	1960
Overall, my school building is in good condition.	27	3.71	1.12	1945
Our school teaches and reinforces student self-discipline and responsibility.	12	3.88	1.06	1946
I feel safe at this school.	2	4.06	0.97	1945
Students who are prone to violence are systematically identified.	16	3.63	1.14	1876
I have received violence prevention training.	4	2.74	1.36	1855

The safe and orderly environment scale from the Faculty Advance Questionnaire identified the degree to which the school environment was safe and orderly. The Faculty Scale for Safe & Orderly Environment consisted of six questions. The original questions and a summary of district responses are displayed on Table 19.

The safe and orderly environment scale from the Parent Advance Questionnaire identified the degree to which the school environment was safe and orderly. The Parent Scale for Safe & Orderly Environment consisted of six questions. The original questions and a summary of district responses follow on Table 20.

Table 20

Parents Perception on Safe and Orderly Environment

Question	Percentile	Mean	Standard Deviation	n
If I could, I would send my child to a different school.	5	3.21	1.38	6217
My school has clear procedures for handling school emergencies.	53	4.00	0.87	6294
I feel my child is safe at school.	38	4.01	0.94	6293
My child's school building is in good condition.	43	3.85	1.02	6288
There are students from my child's school that belong to street gangs.	4	3.37	1.25	6118
Our school has a program that teaches and reinforces student self-discipline and responsibility.	80	3.88	0.96	6171

Several questions from the Advance Questionnaire, related to counseling. The researcher decided to present data here to facilitate a consideration of how different participants viewed counseling. The collection of related items consisted of nine questions. The original questions and a summary of district responses follow on Table 21.

Table 21

Students' Perception on Counseling:

Question	Source	Percentile	Mean	Standard Deviation	n
My school adequately prepares all students for post-secondary education, and/or successful entry into the workforce.	*Fac*	*13*	*3.61*	*1.06*	*1744*
Individual counseling services are available to students.	*fac*	*17*	*4.05*	*0.93*	*1909*
The school has helped my child establish educational and career plans.	*Prt*	*97*	*3.64*	*1.00*	*6225*
The guidance counselor is available to help my child if he/she has a personal problem.	*Prt*	*44*	*3.78*	*0.97*	*6232*
A guidance counselor has assisted me in creating a plan to reach my educational and/or career goals.	*Sec*	*67*	*3.39*	*1.23*	*5281*
If I have a personal problem, I can talk to the counselor.	*Std*	*36*	*3.48*	*1.29*	*8946*
I have been encouraged to establish career or educational goals at school.	*Sec*	*73*	*3.83*	*1.05*	*5274*
I have been encouraged to think about career or educational goals at school.	*Mid*	*90*	*4.20*	*1.02*	*3660*
My counselor makes visits to my classroom.	*Std*	*37*	*3.74*	*1.35*	*7974*

The career preparation scale from the Student (grade 9 and older) Advance Questionnaire identifies how well students in the district are prepared for post-secondary endeavors. The Secondary Student scale for Career Education consisted of four questions. The original questions and a summary of district responses follow on Table 22.

Table 62

Students' Perception of Career Preparation

Question	Percentile	Mean	Standard Deviation	n
I have been encouraged to establish career or educational goals at school.	73	3.83	1.05	5274
A guidance counselor has assisted me in creating a plan to reach my educational and/or career goals.	67	3.39	1.23	5281
Teachers connect what students are learning with the real world.	82	3.45	1.08	5225
Career-Technical education is an essential part of the district's program of studies.	48	3.29	1.06	5278

Table 23 shows the amount of surveys that the North Star District revived back from faculty, parents, and students. The parents' return rate was less than that of 50%. Both faculty and students tied in the response rate (see Table 23).

Table 23

Response Rates for North Star District

Respondent Type	Number Received	Population Estimate	Response Rate	Reference Group Response Rate
Faculty	1974	2952	67%	80%
Parents	6623	27421	24%	50%
Students	13372	20083	67%	83%

Compared to the state's graduation rate North Star district on average fell behind the state's graduation rate by 10% or more. The years 2016 and 2017 suggested only 70% of the entire district's student population graduated; 2018 showed a slight increase rate.

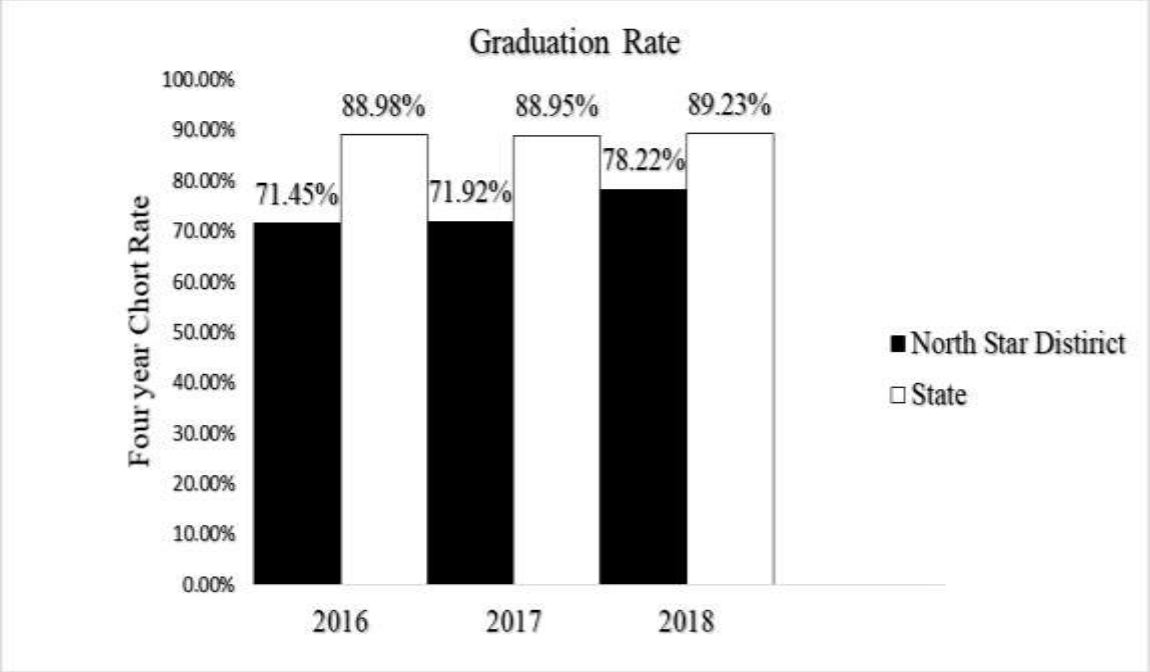

Figure 2. Research Schools' OSS

The average number of years for educators in North Star District were nine years. For the years 2015 and 2016, half of the staff in the district had a master degree or higher, while in 2014 it was less than half. North Star District offered tuition reimbursement for full time certified educators.

Table 24

District Faculty Information

Year	Average Teacher Salary (Regular Term)	Average Teacher Salary (Total*)	Average Administrator Salary	Average Years of Experience	Teachers with a Master Degree or Higher (%)
2016	$46,249	$46,394	$89,983	9.3	50.4
2015	$46,502	$46,655	$84,471	9.3	51.5
2014	$47,285	$47,443	$84,178	9.7	49.8

In 2014, 70% of the staff within North Star District was full time. In 2015, the numbers dropped by 20%; even in 2017 half of the staff remained part time.

Table 25

Building Certification

Year	Teacher Full Time	Regular Certification	No Certification	Highly Certified
2014	70.89	97.3	2.7	80.5
2015	51.39	94.5	5.5	78.7
2016	41.2	95.1	4.9	72.3
2017	44.65	93.6	6.4	0

The majority of suspensions within the researched school district came from something other than drugs and violence; with over 600 plus students being suspended for 10 or more days. In 2016, the amount of students caught with drugs decreased dramatically. In 2015, the number of violence offenses increased.

Table 26

District Discipline

Year	Enrollment Grades K-12	Incidents	Drug	Other	Violence	Weapon	Removal ISS	Removal OSS	More Than 10 days
2014	24,869	656	97	389	121	49	35	621	2
2015	24,154	772	111	389	223	45	41	731	10
2016	22,506	682	57	423	145	57	60	622	6

Summary

The researcher analyzed eleven hypotheses, aligned to the purpose of the study. Classroom lighting was observed utilizing a data collection observation sheet. The researcher was able to check for classroom windows and the type of lighting used. Third, the color of classroom walls was observed using a checklist, as well. The researcher checked to see if the classroom wall was white or painted different colors. Next, the temperatures of several tested classrooms were measured in 15 different high schools each month, at different times. Then a climate survey was sent out by the researched district to staff and students, as well as parents and guardians. Student behavior was measured using secondary data from the researched district, as well as from the state. Finally, the EOC exam data were secondary data retrieved from the researched district, as well as from the researched district's state webpage. Analysis revealed that the majority of the hypotheses aligned with the previous studies within the literature review.

In Chapter Five, the researcher discusses the results and provides recommendations for future research.

Chapter Five: Discussion and Recommendations for Future Research

The researcher analyzed all data and found nine hypotheses aligned with previous studies found within the current literature. The researcher found a relationship between the color of a classroom wall, the temperature of the room and lighting within the classroom. Finally, the researcher found a relationship between school culture, climate and student achievement**.**

Discussion of the Results

Hypothesis 1*:* There is a relationship between classroom lighting (natural lighting) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting. In the area of Biology, the researcher failed to support the hypothesis and concluded that variable of Lighting was not related to the EOC scores in Biology. In the area of American Government, the researcher failed to support the hypothesis and concluded that variable of Lighting was not related to the EOC scores in American Government. Next, in the areas of English I and English II, the researcher failed to support the hypothesis and concluded that variable of Lighting was not related to the EOC scores in English I and English II. After analyzing the data, the researcher found the results did not aligned with the current literature. “Proper lighting, with an emphasis on daylighting, fosters a more focused and productive learning environment. Classrooms with well-planned daylighting also help improve the health of students, increase teacher satisfaction and offer energy and cost savings” (Lighting/ Controls Knowledge Center, 2013, p. 14).

Hypothesis 2*:* There is a relationship between classroom lighting (natural lighting) and student behavior, in an urban setting. The researcher failed to support the

hypothesis and concluded the variable of lighting was not related to student behavior. The current literature lacked data from various researchers. More research was recommended, from a variety of buildings in different regions.

Hypothesis 3*:* There is a relationship between classroom lighting (natural lighting) and school climate, in an urban setting. For school climate, the researcher failed to support the hypothesis and concluded the variable of lighting was not related to school climate according to teachers. For school climate according to students, the researcher failed to support the hypothesis and concluded the variable of lighting was not related to school climate. The researcher failed to support the hypothesis and concluded the variable of lighting was not related to school climate according to parents. The researcher also found the current literature did not align with the hypothesis. "Natural light impacts circadian rhythms; the color, intensity, and timing of light are the driving forces that balance hormonal levels within the body" (Bolin & Baker, 2014, p. 20). The researchers went on to discuss unsupervised and dark areas prone to a student cutting/ skipping class (Henry, 2007).

Hypothesis 4*:* There is a difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending schools with white walls versus non-white walls, in an urban setting. To test the hypothesis, the researcher utilized the variables wall color and student achievement. In the area of Biology, a preliminary test of variances revealed the variances were equal. The mean Biology EOC score of schools with white walls was not significantly different from the mean Biology EOC score of schools with non-white walls, the researcher failed to support the hypothesis and concluded that EOC Biology scores were not different

between schools with white and non-white walls. In the area of American Government, the researcher failed to support the hypothesis and concluded EOC American Government scores were not different between schools with white and non-white walls. In English I and English II, the researcher failed to support the hypothesis and concluded the EOC English I and English II scores were not different between schools with white and non-white walls. The results and research did not align, which was the opposite of what the research suggested.

Hypothesis 5*:* There is a difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with white walls versus non-white walls, in an urban setting. Most students tended to do better in classrooms painted in colors other than white. The researcher failed to support the hypothesis and concluded the number of OSSs were not different between schools with white and non-white walls.

The researcher found studies, which suggested wall color was related to student behavior. As cited by Grube (2013a), "Johann Goethe, author of Theory of Colours, the sensory perception of color by how the brain reacts to color once it is viewed" (p. 219). In the same article, Grube (2013a) went on to say, "Color has the power to keep students in classrooms through the psychological benefits it provides to all inhabiting that space. It can unconsciously stimulate a brain to achieve more academically and improve teaching performance" (p. 220). In another study completed on offices, the researcher concluded, "Over-all, the white office was favored in terms of several environmental characteristics and also preferred over many other colors as an appropriate office color" (Kwallek, 1996, p. 50). In addition to the other studies, the researcher stated, "Planners consider countless

factors as they choose the features that will create effective education environments—the size and shape of classrooms and other spaces, the placement and size of windows, the types of flooring, the colors of walls and ceilings" (Kennedy, 2018, p. 16).

Hypothesis 6*:* There is a difference in school climate between students attending schools with white walls versus non-white walls in, an urban setting.

The researcher failed to support the hypothesis and concluded the school climate according to parents was not different between schools with white and non-white walls. For school climate according to students, a preliminary test of variances revealed the variances were equal. The researcher failed to support the hypothesis and concluded the school climate according to students was not different between schools with white and non-white walls. For school climate according to parents, the researcher failed to support the hypothesis and concluded that school climate was not different between schools with white and non-white walls. The current research did not align with Hypothesis 6. Stakeholders preferred other colors versus white or a print rich environment (Cheskin, 1947; Grube, 2013). Bloom (2013b) reported, "The colour of the walls, the amount of natural light and the degree to which classrooms are personalized can all affect pupils' progress and test results" (p. 14). Arora (2013), also supported the finding and stated, "the height of ceilings, the color of walls, levels of natural light, windows and temperature had a dramatic impact on everything from motivation to energy levels" (p. 24).

Hypothesis 7*:* There is a difference in student achievement EOC content scores: Biology, American Government, English I, and English II, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a

temperature that was not 73° F or 74° F, in an urban setting. The researcher failed to support the hypothesis and concluded that EOC Biology scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. In the area of American Government, the researcher failed to support the hypothesis and concluded that EOC American Government scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. In the area of English I and English II, the researcher failed to support the hypothesis and concluded that EOC English I and English II scores were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. The research aligned with the seventh hypothesis and the data agreed.

Hypothesis 8*:* There is a difference in student behavior, as measured by the number of Out of School suspensions, between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting. The researcher failed to support the hypothesis and concluded the number of OSSs were not different between schools with a temperature of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. The research did not align with the theory. There were not enough studies found in the current literature to gauge the data.

Hypothesis 9: There is a difference in school climate between students attending schools with a temperature of 73° F or 74° F and students attending schools with a temperature that was not 73° F or 74° F, in an urban setting. For school climate according to students, a preliminary test of variances revealed the variances were equal.

The researcher failed to support the hypothesis and concluded the school climate according to students was not different between schools with a temperature that of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. For school climate according to parents, a preliminary test of variances revealed the variances were equal. The mean School Climate score of schools with a temperature of 73° F or 74° F (M = 7.83, SD = 1.86) was not significantly different from the mean School Climate score of schools with a temperature that was not 73° F or 74° F (M = 7.72, SD = 1.97); $t(13) = 0.109$, $p = .9147$. The researcher failed to support the hypothesis and concluded the school climate according to parents was not different between schools with a temperature that of 73° F or 74° F and schools with a temperature that was not 73° F or 74° F. The data nor the literature supported the hypothesis. The researcher was unable to find previous research to support the claim.

Hypothesis 10*:* There is a relationship in school climate (measured by the School Climate Survey) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting. The researcher supported the hypothesis and concluded that there was a relationship between Biology achievement and school climate according to teachers. In the comparison between Biology achievement and climate according to students, the PPMC ($r = .928$) was significant; $t(11) = 8.261$, $p < .00031$. The researcher supported the hypothesis and concluded there was a relationship between Biology achievement and school climate according to students. In the comparison between Biology achievement and climate according to parents, the PPMC ($r = .916$) was significant; $t(11) = 7.573$, $p < .0001$. The researcher supported the hypothesis

and concluded there was a relationship between Biology achievement and school climate according to parents.

In the comparison between American Government achievement and climate according to teachers, the PPMC (r = .846) was significant; $t(11) = 5.262$, p = .0003. The researcher supported the hypothesis and concluded there was a relationship between American Government achievement and school climate according to teachers.

In the comparison between American Government achievement and climate according to students, the PPMC (r = .890) was significant; $t(11) = 6.474$, $p < .0001$. The researcher supported the hypothesis and concluded there was a relationship between American Government achievement and school climate according to students.

In the comparison between American Government achievement and climate according to parents, the PPMC (r = .856) was significant; $t(11) = 5.492$, p = .0002. The researcher supported the hypothesis and concluded there was a relationship between American Government achievement and school climate according to parents.

In the comparison between English I and English II achievement and climate according to teachers, the PPMC (r = .655) was significant; $t(11) = 2.875$, p = .0151. The researcher supported the hypothesis and concluded there was a relationship between English I and English II achievement and school climate according to teachers.

In the comparison between English I and English II achievement and climate according to students, the PPMC (r = .755) was significant; $t(11) = 3.819$, p = .0028. The researcher supported the hypothesis and concluded there was a relationship between English I and English II achievement and school climate according to students. In the comparison between English I and English II achievement and climate according to

parents, the PPMC (r = .637) was significant; $t(11) = 2.741$, p = .0192. The researcher supported the hypothesis and concluded there was a relationship between English I and English II achievement and school climate according to parents.

Hypothesis 11*:* There is a relationship in school climate (measured by the School Tool Climate Survey) and student behavior, in an urban setting. The researcher supported the hypothesis and concluded there was a relationship between climate according to students and the number of OSSs. Additionally, the negative PPMC indicated a negative relationship, and the more OSSs a school reported, the lower the school climate perception proved to be. In the comparison between climate according to parents and OSSs, the researcher supported the hypothesis and concluded that there was a relationship between climate according to parents and the number of OSSs. Additionally, the negative PPMC indicated a negative relationship, and so the more OSSs a school reported, the lower the school climate perception proved to be.

Hypotheses 10 and 11 were supported by literature review and data. There were several studies done on the topic of climate and student achievement, along with behavior. One researcher stated,

> Behavioral, emotional, and cognitive engagement are each positively associated with academic achievement outcomes for middle and high school students. For instance, students who listen to school rules and do not disrupt the learning environment get better grades and aspire for higher education. (Wang, Selman, Dishion, & Stormshak, 2010, p. 675)

Next, Davis and Warner (2018), found "school's climate significantly correlated with student academic progress; under some conditions" (2018, p. 959). In another

study, Wang and Degol (2016) said, “children’s experiences within the school environment is crucial to their academic and psychosocial development” (p. 326).

Student achievement, climate, and culture, temperature, and parent perspective were all interrelated throughout the research and literature. The culture and climate of a school played a huge role in student achievement. One study suggested that well-rested students that took learning and testing seriously, tended to perform better than those who just clicked away. Those tests included district and state assessments, such as the EOC and STAR reading test (Davis & Warner, 2018).

Student attendance also played a role in data analysis. Some data collected in the study depended on the parents, such as graduation rates depended on if parents allowed the child to stay enrolled in school or if the student transferred to another school within the district or to a charter school, or moved into the suburbs. The researcher found most students in the researched school were transient. Throughout the current literature, researchers described rooms that were too cool or hot, which provided a difficult space for students to learn (Haverinen-Shaughnessy & Shaughnessy, 2015, p. 1). The temperature of the room also dictated how well students performed on tests, as well as the perspective on the school. For example, Haverinen-Shaughnessy & Shaughnessy, concluded that temperature played a role in student achievement (2015, p. 1)

Most study results were opposite of what the researcher originally hypothesized and previous research results found in the literature review. Also, the literature contradicted Hypothesis 10 that dealt with climate. There was a relationship in school climate (measured by the School Climate Survey) and student achievement EOC content scores: Biology, American Government, English I, and English II, in an urban setting. In

the researcher's experience, the researched school district needed to address climate and cultural issues and increase the EOC student scores within the district. The results from the climate survey revealed the majority of staff, students, and parents were not pleased with the North City High School district, as a whole. The safe and orderly environment scale from the parent, staff, and student Advance Questionnaire identified the degree to which the school environment was safe and orderly. Out of six questions, all three groups (students, staff, and parents) failed to perceive the district was safe and orderly, especially in the Comprehensive school within the district. The researcher believed the state needed to provide additional funding for positive programs related to school climate.

There was not a relationship between temperature and student achievement, as well as wall coloring; the researcher failed to support the hypotheses. In Chapter Two the literature review, Grube's (2013a) research implied the results would be different from that of the researcher's analyzed data. "Proper color usage on classroom walls creates an enriched learning environment that increases student achievement, accuracy, instructor effectiveness and staff efficiency" (Grube, 2013b, p. 219). One researcher in particular believed that color had a relationship with student achievement and even memory. Grube (2013b) suggested (color had an effect on the visual stimulation and it helped students retain more information). He went on to say, "The same principle helped schools increase students' learning retention" (p. 220). This was related to Hypothesis 5: There is a relationship in wall color (white or off-white versus not white or off-white) and student behavior, in an urban setting.

Second, the lighting in the classroom did not go according to the study. Casadonte, 2016, suggested a relationship between lighting and academics, as well as

behavior. School climate, however, did prove to have a relationship with student achievement, but not student behavior. If the researcher served as a building administrator; additional positive incentives programs would exist throughout the entire district. Another recommendation would include for classroom teachers to be allowed to set and control the individual classroom temperature settings.

Recommendations for Future Research

A recommendation for future researchers would be to include more than one district in the study. The researcher recommended collecting data on the surrounding districts. Second, further research should be completed on similar districts within the region. The researcher also recommended ensuring a trusted person collects temperatures twice a day. The researcher developed the recommendation after finding the collection of data in the researched district was difficult, because the type of schools varied from type - alternative to magnet school and one school deemed the top school within the state. A further recommendation was to complete a qualitative or mixed method study and sending a researcher-designed survey. Relying on the researched school district to develop questions minimized the researcher's opportunity to ask specific questions. Also using climate data from the last three years would have given the researcher additional information on the school/district's climate. Also, future studies should include gaining district permission ahead of time or utilize only secondary data from the state's education department. The researcher recommended researching the utilization of school furniture along with analyzing whether a correlation existed between student nutrition and student achievement. Next, additional study variables would include community or parental support and student achievement. Lastly, the researcher should create and make his/her

own survey, and if possible administrate and code it, which would allow the researcher to stay in control of the results.

Recommendations for the Researched School

The researcher also recommended teachers be allowed to paint individual class rooms and rooms be re-painted on a three year cycle. Some walls had holes and paint pilling or a buildup of staples or sticky tacky. If the school did not allow for teacher creativity with walls of color, the researcher suggested some color be included throughout the school with the inclusion of plants and décor added to the school. Next, the researcher recommended additional LED lights, windows, and skylights to all new facilities, other than the researched school, who wanted to remodel. The brighter the classroom or testing area, the better student achievement will be. The current research noted lighting increased mood. LED lighting should also be added to the hallways to lighten up the building. During school improvement options, additional windows should include the ability to open to circulate air within the classroom, as well as the facility.

The fluorescent lights in the researched school made the classroom appear dark and gloomy; with some lights that blinked on and off or simply went out. To avoid the sun's glare, the researcher recommended the school go to a roll down blind. The majority of the blinds were horizontal metal blinds that had been broken and no longer functioned properly. Since the temperature varied from room to room, teachers should be allowed to bring in space heaters. Fans were allowed, but heaters were not allowed, due to safety concerns.

The school should add more Advanced Placement classes (AP); during the study only one AP Literature class was offered. Along with additional AP courses, additional

art classes should also be offered. Art, PE, Computer class, and music were the only electives to offer beside JROTC. Next, the textbooks needed to be updated, as well as resources to aid students in learning. The researcher found some of the textbooks were more than 10 years old. The labs used for testing should be comfortable and have windows that allow students to look outside. The chairs varied and some were broken; out of the four labs only one had any windows. Next, implement programs to increase parent involvement, including a parent lounge to make parents feel welcomed when in the building.

The school should look at programs and incentives that have been used to increase student attendance. The researcher believes students should have a reason to come to school, and a welcoming culture would add to a positive reason to attend and no longer cause students to feel like it was a detention center. The students arrived and must go through metal detectors and be searched; guards barely spoke. The researcher also recommended the staff be available to students in the cafeteria interacting with students and others while on duty.

There needs to be more focus throughout the school placed on students who do the right thing. Some programs, such as student of the month could be added, as well as an academic award ceremony. Positive Fridays were okay, but everyone got to enjoy the festivities, such as movies, board games and basketball. Also, in-school suspensions (ISS) should be utilized over OSS. There should be a reading or an ACT focus while a student is in in-school suspension. There should also be two different rooms with one for short-term minor offenses. The other room should be used for students that had to stay three or more days. The temperature should be placed at a comfortable temperature

shown throughout the literature to be cohesive for learning. With these types of changes, any future climate surveys should reveal a good student-teacher relationship, as well as a good student/student relationship.

To increase the school climate, team-building activities could take place on Fridays or during advisory. Next, classroom furniture should include a quiet spot of standing tables and alternative seating. The facility should be cleaned more, made brighter, and have administrators monitoring the dark cut areas and the problematic areas, such as the gym. Last, the school should house a community education office and be utilized to help students and parents find much needed resources to keep students in school. Parents would benefit from resources related to finding ways to pay gas or electric bills.

Conclusion

In conclusion, the classroom setting should be warm and welcoming, with walls that are class-content oriented, print rich, and creative. The furniture should suit all sized students. Second, the researcher would recommend a temperature of 70 to 72 degrees F in classrooms, so students are neither hot nor cold, but comfortable; and, a universal temperature setting would also save school districts money. Also, the researcher recommended a climate and a cultural survey be completed twice a year. One at the beginning of the year and the second towards the end of the school year. Again, the researcher recommended painting a focus wall in the hallway or classroom or place colored construction paper on the walls to remove the white wall and make the classroom more inviting.

A quantitative case study on school climate, student behavior, student achievement, and classroom facility factors in an urban Midwest high school, sparked the researcher's interest; due to the current facility and culture in which the researcher was employed. The researcher found some schools managed to do well, despite the wall color, temperatures, and lighting within the building.

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Vitae

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EXCELLENCE IN TEACHING, RESEARCH AND SERVICE

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St. Louis, Missouri 2009-2108		**[Career Continuous**
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[Ed.D Administration]
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Lindenwood University, St. Charles Mo.
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AWARDS
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Teacher of the year

TEACHING EXPERIENCE

2006-present *Vashon High School, St. Louis Mo.*

2005-2006 Turner Middle

New Teacher Coordinator [Vashon High School]
2012-2014

Mentor Teacher 2014- 2018

Instructional mentoring and culture building

Literacy

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MEMBERSHIPS

ASCD (Association for Supervision and Curriculum Development).

Educational Leadership

National History

Proficiencies

Curriculum Development

- ✓ Develops innovative curriculum to instruct individual students, small groups, and classes of 25+ students.
- ✓ Organizes time, space, and resources to balance heavy workloads and stringent deadlines.
- ✓ Created an after school program to increase EOC scores in my classroom.