Teacher and Student Perceptions of Rigor and Relevance in Grades 6-8

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Abstract

The purpose of this quantitative, descriptive study was to examine the presence of rigor and relevance of instruction as perceived by teachers and students in one middle school in District X in Northeast Kansas. The sample included 565 middle school students and 40 teachers who responded to the WE Teach ™ and WE Learn™ surveys, designed by Daggett (2011), and administered during the 2017-2018 school year. Rigor and relevance were defined by the survey statements.

In terms of rigor, all but three of the 19 concepts were perceived by teachers as being used in their classrooms. For three concepts, the results were unclear. Students' perceptions of rigor in the classroom indicated that they observe all but three of the 18 rigor concept statements used in their classroom. Three survey items were reverse coded.

In terms of relevance, of the 13 statements teachers perceived all but one was present in their classroom. For 14 of 15 statements related to relevance, students agreed with or strongly agreed the presence of relevance in instruction in the classroom. There were no reverse coded items in the relevance survey section.

In addition, the extent to which there were differences in teacher and student perceptions about the presence of rigor and relevance was studied. The results of the comparison of the survey data were mixed regarding rigor and relevance. For some responses teacher and student responses regarding the presence of rigor and relevance were similar, while other responses differed. In terms of rigor, the differences between teacher and student responses about the five concepts were more extensive and the differences in the responses. These concepts included choice in how students show understanding of their learning, when they struggle in class students receive help, passing

the state test is the number one priority, teaching what students already know, and students are encouraged to think for themselves. Three concepts were less extensive. Teacher and student responses on two concepts were unclear. In terms of relevance, teacher and student responses were analyzed for the nine statements related to relevance that were determined to be matched conceptually. Theses relevance concepts included that students are encouraged to explore things they find interest and that students can apply what they learn in class or in school to their everyday lives. The differences in three concepts with more extensive differences and the difference in one concept were less extensive. Five concepts were not statistically significant.

Additional studies should be conducted to determine the relationship between perceptions of the presence of rigor and relevance in instruction, which were studied in this research and actual achievement. Future studies should also determine the impact of changes implemented, as a result of the survey data, such as professional development on the Rigor/Relevance Framework and teacher learning opportunities related to rigor and relevance instructional strategies. Additionally, future research should be conducted on the two areas from the WE Teach™ and WE Learn™ surveys not examined in this study, relationships and leadership, to determine teacher and student perceptions and the comparison of these perceptions.

Dedication

This dissertation is dedicated to the following:

To my partner, who from the beginning, helped me to know I am capable and that being my best self is enough. Thankfully he has not yet realized that I have outkicked my coverage. And, D., for the record, I still want to stand on dictionaries to see the world with you.

To my big kids. Thanks for letting Mama Shan and Dad run off to class and work so many nights of the week for so many years. To you, PQ, because you wanted to hold my hand and I was so nervous you would let go. To you, Braegen, because you are the most driven, independent woman I know and have unimaginable talent. You inspired me and I want to be you when I grow up. To you, Co, because you remind me I am a half-grown adult.

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To my other siblings because I don't want you to be jealous of your brother.

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Chapter 1

Introduction

Since the 1980s, and the publication of *A Nation at Risk* (National Commission on Excellence in Education, 1983), the American educational system has been under scrutiny. The National Commission on Excellence in Education noted that America is falling behind competitors and the responsibility is that of public education. As a result, high-stakes and test-based accountability have forced district administrators to seek systems to increase academic achievement.

Some researchers have suggested rigor is necessary for student achievement and is needed to positively impact student success. "Students are more likely to be intrinsically motivated when content is challenging and schools that provide rigorous curricula have higher student achievement" (Early, Rogge, & Deci, 2014, p. 235). Researchers also have suggested relevance impacts student success. Bernard (2010) stated "Students need a personal connection to the material, whether that's through engaging them emotionally or connecting the new information with previously acquired knowledge" (p. 5).

Daggett (2009) claimed an increase in rigor and relevance are needed in order to provide every student the opportunity to achieve and compete in the global job market. According to Daggett (2009), "Successful schools tend to envision a system focused on the future. The goal is to teach every student how to think – not simply what to know" (p. 3). Daggett further indicated there is a need for an analysis of instruction to understand every student's achievement. Daggett (2011) developed the Rigor/Relevance Framework to aid school districts in analyzing instruction and student perceptions of

instruction, and to aid in school improvement efforts. Daggett (20100) developed the WE Teach™, WE Learn™, and WE Lead™ surveys to measure teacher perceptions and student perceptions in four key areas of the Rigor/Relevance Framework: rigor, relevance, relationships, and leadership. The WE Teach ™ survey is used to measure teacher perceptions of the four key areas of the Rigor/Relevance Framework. The WE Learn™ survey is used to measure student perceptions of these four key areas of the Rigor/Relevance Framework. WE Lead™ survey is used by schools to identify teacher perceptions of leadership strengths and areas for further development. For purposes of this study, only data on the areas of rigor and relevance from the WE Teach ™ and WE Learn™ surveys was used.

According to Hanover Research (2013), students can provide reliable feedback. Daggett explained that the WE Teach ™ and WE Learn™ surveys have been used to accurately predict student achievement and other outcomes. "Studies have shown that student surveys can accurately predict student achievement gains" (Hanover Research, 2013, p. 3). Additionally, student self-reports on general engagement have predicted outcomes, such as: attendance, school dropouts, and standardized test scores (Early et al., 2014, p. 223).

Education has seen much reform. In the next section an overview of the changes in education in both Kansas and the U.S. are presented. This overview spans from the 1980's-2016.

Background

In this section, background information is provided related to the school accountability. Major activities will be highlighted for four time periods: 1980s, 1992-

2015, 2015, and 2016. Additional sections highlight information on the movement beyond low-level accountability measures, the Kansas College and Career Ready Standards, and information on the district were the research was conducted.

Beginning in the early 1980s, **s**chools in the United States have gone through a variety of accountability systems since the *Nation at Risk* which advocated for standardized achievement tests. 1983 marked the official *Nation at Risk* report advocated that standardized test be administered at major transition points in students' schooling, specifically, from high school to college or work. Then, in 1989, George H.W. Bush organized the nation's governors to discuss education reform, raising accountability measures for each state (McShane & DiPerna, 2018).

Accountability measures changed from the early 1990s to 2015. According to Klein (2019), the focus on accountability and standardized tests continued under No Child Left Behind (NCLB) which was passed by Congress in 2001 and remained in place until 2015 (Klein, 2019)**.** In Kansas, NCLB was translated into the Quality Performance Accreditation (QPA) model for accountability and training. QPA was enacted by The School District Finance and Quality Performance Act, requiring an additional six days of school, a new performance accreditation process, and a directive to the Kansas State Board of Education (KSBE) to develop curriculum standards and state assessments in a minimum of three grades in math, science, communications, and social studies. "After a pilot test of the idea, the Board and Legislature determined that it was better to base school accreditation on measures of improvement" (Martinez & Snider, 2001, p. 21).

Until 2010, KSBE had consistently looked to organizations outside of the state to determine what Kansas students should know upon graduation. In October 2010, KSBE

approved the Kansas College and Career Ready Standards. These standards were derived from the Common Core Standards, previously developed by state leaders across the country (KSDE, n.d.- a, p. 4). The Kansas College and Career Ready Standards have incorporated benchmarks and guidelines requiring educators to make a shift in instruction to focus on students learning real-world, applicable knowledge. The previous focus on lower levels of thinking was exacerbated by NCLB (No Child Left Behind, 2019). Under NCLB students were prepared "for well over a decade to think primarily at the recall and application levels due largely to end-of-year assessments emphasizing thinking at the cognitively simple end of the rigor continuum" (Paige, Smith, & Sizemore, 2015, p. 2). Kansas preschool to 12th grade (PK-12) educators are faced with altering their instruction to prepare students not for application level knowledge, but to prepare students to think strategically and critically.

In 2015, the U.S. Department of Education (2019b) instituted the Every Student Succeeds Act (ESSA) and returned accountability to states. ESSA provides a framework for states related to accountability but provides greater flexibility for states to set their own goals and requirements. In 2015, Kansas instituted a new assessment program called the Kansas Assessment Program (KAP). KAP includes assessments for English language arts (ELA), mathematics, and science which is required for the federal ESSA law and the required mandate from the Kansas Legislature.

In 2016 KSBE (2019) instituted a new accreditation system called Kansas Education Systems Accreditation (KESA). This new model broadened the focus on accountability for schools beyond performance measures, such as state assessments, to include a variety of other factors such as social-emotional development and individual

plans of study. KESA also focuses on four evidence-based practices: relationships, relevance, responsive culture; and rigor.

In addition to accountability measures over time, the nation and Kansas began focusing on more rigorous standards of learning and broadened its definition of success, going beyond low-level accountability measures. With the pressures of federal and state expectations, school districts like District X are examining at the level of rigor and relevance in schools. According to Williamson and Blackburn (2013), authors of *Rigorous Schools and Classrooms: Leading the Way*, there has been a call for schools to be culturally responsive to student needs and provide access to rigorous curriculum that prepares students for success after high school, be it in continuing education or the workplace. Daggett and Nussbaum (2013) stated that if the educational environment is "rote and passive, brain reserve will not be as developed and the overall health benefit for a brain is not as great" (p. 5). Educators must create enriched educational environments for students. "Studies suggest that the earlier in life a person is exposed to an enriched environment, the greater the benefit to brain health, even late into life" (Daggett & Nussbaum, 2013, p. 7). If educators are requiring more critical thinking and establishing more enriched learning environments, educators must also engage students if they are to improve student achievement. Students engage in learning and work diligently if they are connected, encouraged, and supported (Daggett & Nussbaum, 2013).

In January 2016, KSBE adopted the Kansas College and Career Ready Standards which provided the following definition of a successful high school graduate:

> A successful Kansas High School Graduate has the academic preparation, cognitive preparation, technical skills, employability skills, and civic engagement

> to be successful in postsecondary education, in the attainment of an industry recognized certification, or in the workforce without the need for remediation. (KSDE, n.d.-a, para. 1)

With this description of success, comes high expectations for Kansas school districts. No longer is regurgitation and recall enough for graduates. The continued federal and state accountability requires school districts, including school districts in Kansas, to seek out ways to better prepare every student for life after high school graduation.

District X is located in a suburban community in Northeast Kansas consisting of 91 square miles with 21 elementary schools, 9 middle schools, and 5 high schools. In 2017, per KSDE (n.d.-b), District X enrolled a total of 22,787 PK-12 students. Students self-identified as the following: 73.99% Caucasian/White, 12.62% Asian, 5.54% Hispanic, 3.18% African-American/Black, 0.33% American Indian/Alaskan Native American, and 0.08% Hawaiian/Pacific Islander. Additionally, during the 2016-2017 school year, the graduation rate in District X was 97% with a dropout rate of 0.3% with a daily attendance rate of 96.7% (KSDE, n.d-b).

In 2017, District X partnered with the ICLE to support improvement efforts. As reported by District X, in 2017 all middle and high schools administered the WE Teach™, WE Learn™, and WE Lead™ surveys to staff and students. The survey results provide feedback on teacher and students so district and building leaders may make informed decisions to improve instruction and learning. "The Daggett System leverages more than the teacher in the classroom. It emphasizes vertical alignment—with organizational systems and structures and with instructional leadership—and horizontal alignment—with teaching colleagues and classroom resources—as keys to

success"(Daggett, 2011, p. 4). In addition to quality teacher instruction, educators must also align curriculum vertically and horizontally. The Daggett System for Effective Instruction states that teachers are most influential factor in student learning, and because of that, the system must focus on making teachers more effective (Daggett, 2011). ICLE pairs Daggett's System for Effective instruction, which includes the results from the surveys, and the Rigor/Relevance Framework to improve school districts. District X utilizes the Rigor/Relevance Framework as well as WE Teach ™ and WE Learn™ survey data to analyze and enhance effective classroom instruction.

Statement of the Problem

Like school districts across the nation, District X leaders face the challenge of educating all students while continuing to improve student achievement each year. During the 2017-2018 school year, District X partnered with ICLE to collect perception data in order to evaluate rigor, relevance, relationships, and leadership. District X is committed to ensuring all students are afforded an exceptional learning experience. Despite the efforts of District X leaders, not all students are successful academically. The partnership between District X and ICLE occurred with the purpose of improving student achievement. While the district collects data on student achievement, no study has been conducted to determine student and teacher perceptions of the rigor and the relevance of the instruction in District X (T. Merrigan, personal communication, March 14, 2020).

Purpose of the Study

The purpose of this study was to examine rigor of the instruction, as perceived by both teachers and students, in one middle school in District X in Northeast Kansas. Additionally, the study examined relevance of the instruction as perceived by both

teachers and students in one middle school in District X in Northeast Kansas. The differences in teacher and student perceptions of the rigor and the relevance of the instruction were also studied.

Significance of the Study

Educational leaders throughout the world, and specifically in District X, continue to create and implement ways to improve student achievement. Results from this study are important to all stakeholders in District X: the Board of Education, district administration, building administrators, teachers, staff, parents, and students. The survey results provide an opportunity for school leaders to examine perceptions of the rigor and relevance of instruction in a 6-8 middle school in District X. The analysis results collected from the WE Teach ™ and WE Learn™ surveys can be used to guide the school learning plan, teacher professional development, and student instruction. In addition, District X can also use survey feedback to compare teacher and student perceptions on rigor and relevance to determine if groups perceive rigor and relevance in the same way. Additionally, this study will add to the research base on the surveys used in the study.

Delimitations

As stated by Lunenburg and Irby (2008), "Delimitations are self-imposed boundaries set by the researcher on the purpose and scope of the study" (p. 134). The following delimitations were imposed on this study:

1. This study included staff and students from one building in District X during the 2017-2018 school year.

2. The WE Teach ™ and WE Learn™ survey results were anonymous and the data was collected as a school, not by teacher, class, or grade level as confirmed by District X's director of assessment.
3. This study only involved the analysis of perceptions of rigor and relevance of instruction.

Assumptions

Assumptions, postulates, premises, and propositions accepted as operational for purposes of the research, "provide meaning to the conclusions and lend support to the recommendations" (Lunenburg & Irby, 2008, p. 135). The following assumptions were made during this study.

1. School personnel followed appropriate district protocol for surveying minor students.
2. All staff and students understood the questions and responded accordingly.
3. All participants who took the WE Teach ™ and WE Learn™ survey did so willingly and provided honest responses reflective of their perceptions.
4. Preliminary analysis and data in the form of percentage tables, provided by the Successful Skills Network, was assumed to be accurately reported.

Research Questions

Lunenburg and Irby (2008) pointed out that research questions are critical. The purpose of the research questions is to guide the study. For this study there are two areas of focus: relationships and rigor.

RQ1. To what extent do teachers perceive rigor is present, as measured by the WE Teach™ survey?

RQ2. To what extent do students perceive the presence of rigor, as measured by the WE Learn™ survey?

RQ3. To what extent are there differences in teacher and student perceptions of the presence of rigor, as measured by the WE Teach™ and WE Learn™ surveys?

RQ4. To what extent do teachers perceive the presence of relevance, as measured by the WE Teach™ survey?

RQ5. To what extent do students perceive the presence of relevance, as measured by the WE Learn™ survey?

RQ6. To what extent are there differences in teacher and student perceptions of the presence of relevance, as measured by the WE Teach™ and WE Learn™ surveys?

Definition of Terms

Definitions below are provided for terms that are used throughout this study. These definitions are used by the researcher to focus on variables that are tested in this study.

International Center for Leadership in Education (ICLE) (2020). Daggett (2011), who founded ICLE in 1991, stated the organization works with school districts to analyze and improve student achievement. ICLE's website (2020) indicates they are an education consulting company best known for identifying and disseminating successful practices to assist all students in achieving higher standards. The website further provides ICLE's mission which is to challenge, inspire, and equip leaders and teachers to prepare our students for lifelong success based on the philosophy that the entire system must be aligned around instructional excellence, rooted in rigor, relevance, and relationships to ensure every student is prepared for a successful future. The cornerstone

of ICLE's work is the Daggett System for Effective Instruction and Rigor/Relevance Framework ICLE works jointly with the Successful Practices Network in its efforts at school improvement.

Rigor/Relevance Framework. According to Daggett (2014), "The Rigor/Relevance Framework is a model measurement tool developed by staff of the International Center for Leadership in Education to examine curriculum, instruction, and assessment" (Daggett, 2014, p. 1). This framework can be used by school leaders to ensure high standards and student achievement occur.

WE Teach ™ and WE Learn™. These surveys are "relevant tools that ask students, and staff to share their perceptions anonymously about four aspects of the learning environment, quality of instruction, and leadership in a school" (Successful Practices Network, n.d.-b, p. 1).

Organization of the Study

This study is presented in five chapters. Chapter 1 included an introduction, the background of the study, statement of the problem, purpose of the study, significance of the study, delimitations, assumptions, research questions and definitions of key terms. Chapter 2 reviews the literature on historical trends of accountability requirements for PK-12 schools; the standards movement, including Common Core State Standards; college and career readiness standards; factors that impact achievement, models and frameworks of instruction, the Rigor/Relevance Framework, perceptions of rigor and relevance, and perceptions of teachers and students. In chapter 3 the research design, selection of participants, measurement, data collection procedures, data analysis procedures, hypothesis testing, and limitations are discussed. Chapter 4 presents the

descriptive statistics and results of the hypothesis testing that was conducted. Chapter 5 includes the study summary (overview of the problem, purpose statement, research questions, review of the methodology, and major findings); findings related to the literature; and implications for action, recommendations for future research, and concluding remarks.

Chapter 2

Review of the Literature

Chapter 2 is a review of literature related to the major topics of the dissertation. The chapter begins with a historical review of the increased accountability requirements for PK-12 education, beginning with Sputnik I and includes other major legislation focusing on educational accountability. A second topic focuses on the standards movement, including the Common Core State Standards movement, which, increased the expectation for rigor in PK-12 education. A third section covers college career and readiness standards, followed by a fourth section on factors that impact achievement, providing a review of the literature on factors that impact achievement, including ethnicity, socio-economic status, attendance. The fifth section covers models and frameworks of instruction, rigor, and relevance. A sixth section follows highlighting how PK-12 systems adapted models and frameworks of instruction to achieve the accountability measures and expectations for graduates, including the Framework for Rigor, Relevance, and Relationships put forth by Daggett (2011). Included in this section of chapter 2 are two factors of the Daggett model, rigor and relevance, and studies that have researched these two factors as they relate to PK-12 education. A seventh section outlines the validity of teacher and student perceptions of rigor and relevance and how these perceptions can be ascertained using survey instruments developed by Daggett (2009). The final section shares research on the compatibility of perceptions of teachers and students.

Historical Review of the Increased Accountability for PK-12 Schools

The launch of Sputnik I on October 4, 1957 changed the world and the world of education. The space age and the space race marked the beginning of the federal government's involvement in educational curriculum. "If Sputnik demonstrated the superiority of Soviet military technology, then, many people argued, that superiority must rest on a superior educational system-particularly in subjects on which technology rests, such as the sciences and mathematics" (Marsh & Willis, 2007 p. 52). From here, schools were called to train a new and better generation of scientists.

> Even though the federal government has no constitutional authority in the area of education, the impact of Sputnik placed education front and center in the minds of the public and created a mindset for the federal government's involvement in public education. (Ellis, 2007, p. 222)

In 1965 President Lyndon B. Johnson signed the Elementary and Secondary Education Act (ESEA). The law represented a commitment by the federal government to provide full educational opportunities (Paul, 2019). As noted by Paul, ultimately, the purpose of ESEA was to provide additional resources for vulnerable students. ESEA offered new grants to districts serving low-income students, federal grants for textbooks and library books, created special education centers, and created scholarships for low-income college students. Additionally, the law provided federal grants to state educational agencies to improve the quality of education. Since the establishment of ESEA, there has been an increase in the amount of resources dedicated to education (McDonnell & Fuhrman, 1986). In addition, after the publication of *A Nation at Risk*, academic requirements necessary for graduation were increased as was certification

testing for teachers by 1985 (McDonnell & Fuhrman, 1986). President Clinton then signed *Goals 2000* into law which required that when students leave grades 4, 8, and 12 they will have demonstrated competency over challenging subject matter in English, math, science, foreign languages, civic and government, economics, the arts, history, and geography (McShane & DiPerna, 2018).

In 2002 President George W. Bush signed the *NCLB Act of 2001* to provide more accountability and results for money spent on ESEA programs (Thomas & Brady, 2005, p**.** 55). NCLB required statewide testing in grades 3-8 and a year of reading and math testing in high school and testing in science every three years. All students were to score proficient. If schools did meet requirements, they would be required to fire staff, close, and be turned over to a private operating group. NCLB played a role in closing achievement gaps and requiring transparency with significant flaws while creating incentives for states to lower their standards; emphasized punishing failure over rewarding success; focused on absolute scores, rather than recognizing growth and progress; and prescribed a pass-fail, one-size-fits-all series of interventions (Klein, 2019).

"In 2011 the Obama Administration begins to offer conditional waivers to sanctions of No Child Left Behind to states that agree to adopt college and career ready standards, revamp their accountability systems, and work to hold teachers and principals accountable in addition to schools" (McShane & DiPerna, 2018, p. 4). The Every Student Succeeds Act (ESSA), was the Obama administration's new vision for ESEA in 2015. ESSA expanded mandates to include high-quality preschool, ensuring how parents and teachers have information about how their children are doing every year, equitable investment in high-poverty schools and districts. The goal of ESSA was to ensure action

was taken for students that need more support to achieve, including students in the lowest-performing and/or high-poverty schools (U.S. Department of Education, 2019b).

Standards Movement, Including the Common Core State Standards

One consequence of the NCLB legislation was the recognition that the rigor of states' standards varied widely and even declined in some states (Bandeira de Mello, Blankenship, & McLaughlin, 2009). To combat this concern, state leaders in 2009 launched an effort to develop consistent, rigorous standards for students to prepare them for college, career, and life. "The adoption of the Common Core State Standards by nearly all states, combined with tough literacy assessments that are now in the offing, will soon reveal that literacy skills of average students fall below international standards and that the gap in literacy skills between students from advantaged and disadvantaged families is huge" (Haskins, Murnane, Sawhill, & Snow, 2012, p. 1). The Common Core Standards are divided into two categories: College and Career Readiness Standards (CCRS) and K-12 content standards. Authors of CCRS, developed based on teachers and community feedback, were created first and then incorporated into the K-12 Standards with the function of addressing what students are expected to know and be able to do at graduation. K-12 content standards state the expectations for grades PK-12 (Common Core State Standards Initiative, 2019, p. 1). The Race to the Top initiative motivated states to adopt Common Core State Standards because the U.S. Department of Education provided incentives totaling $4.3 billion in grants as well as providing waivers from NCLB requirements. According to federally required assessments like the National Assessment of Education Progress (NAEP), student results indicate more rigorous standards. "No fewer than 36 states have raised their proficiency standards over the past

two years, while just 5 relaxed them. Forty-five states have boosted their standards since 2001" (Peterson, Barrows, & Gift, 2016, para. 22).

Additional pressures of CCRS calls for academic rigor K-12. Rigorous academics and the CCRS incorporates instruction previously advocated by Bloom's (Bloom, 1956; Anderson, Kraftwahl, & Bloom, 2001) taxonomy. Bloom's Taxonomy advocates for instruction at six different levels increasing in complexity when mastering academic tasks: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation (Bloom, 1956; Anderson, Kraftwahl, & Bloom, 2001). Teachers, however, are unable to "align instruction, learning, and assessment, and, as a result, instruction and, in many cases, assessments tend to focus on recalling facts and understanding concepts" (Maye, 2013, p. 30), the lowest levels of Bloom's taxonomy. In one elementary school, administrators and teachers examined the academic rigor of their instruction using the Rigor/Relevance Framework, developed by Daggett (2009). In the study, researchers found that "learning activities that are well-structured, highly engaging, and cleverly designed are ultimately worthless if they fail to meet the intended learning objectives (Maye, 2013. p. 36). Additionally, Maye indicated that using effective questioning is a result of deliberate planning. Because teachers must plan deliberately and have high expectations for students, ongoing professional, job-embedded learning are necessities (Maye, 2013).

College and Career Readiness Standards

In 1990, the Secretary of Labor appointed a commission, the Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) to determine the skills young people need to succeed in the work world (Kane, Berryman, Goslin, & Meltzer,

1990). According to SCANS there are competencies needed in all jobs; for example, creative thinking, problem solving, self-management and responsibility (Kane, Berryman, Goslin, & Meltzer, 1990). Kane et al. (1990) stated, "We can become increasingly divided into rich and poor, a nation of second-rate products and services; or, we can continue to be a highly productive and thriving economic force. To remain the latter we must restructure our schools and workplaces and greatly increase the skills of much of our current and future workforce--especially those of our frontline, non-college educated workers" (p. 3).

With funding attached to achievement results, school districts continue to seek the most effective instructional strategies. Continued accountability measures and implementation of the CCRS, places pressure on school districts across the nation to reevaluate ways to ensure all students receive a high-quality education. (U.S. Department of Education, 2019b).

"To be career ready, a graduate must have mastery of three kinds of skills, not just one" (Stone & Lewis, 2015, p. 15). There are three areas of importance for college and career ready students: academic knowledge, employability skills, and technical skills. In addition to the career ready skills, a graduate must also have employability skills. "Employers place a higher premium on hiring individuals who show good work habits, confidence, and leadership skills-often described as soft skills" (Stone & Lewis, 2015, p. 16). In a study conducted by Olson (2019), 12 adult basic education (ABE) instructors were interviewed about their experiences implementing CCRS and their thoughts on its impact on the cognitive rigor of their instruction and student learning. "10 of the 12 participants reported that their CCRS implementation increased the rigor of their

instruction and their students' learning" (Olson, 2019, para. 11). In this study, "participants reported that their students demonstrated higher levels of rigor, met increased expectations, and experienced increased confidence and self-reliance" (Olson, 2019, para. 11). Olson stated that providing content rich in rigor with student engagement and skill-building are a pathway to college and careers.

CCRS are intended to benefit students, parents, educators, and states. Students benefit because they have clear expectations on what is expected of them in college and the workplace to compete globally. Parents benefit because they have a better understanding of what is expected of students in preparation for college and career success. Educators benefit because they can focus on professional development on the standards and assessments having their materials focus on standards. States benefit by encouraging best practices and provide economical test development and administration (U.S. Department of Education, 2010, p. 6).

Factors that Impact Achievement

The achievement gap refers to "unequal or inequitable distribution of education result and benefits" (Great Schools Partnership, 2013). When disparity occurs over a period of time from group to group or place to place, it is considered to an achievement gap. Factors impacting student achievement include ethnicity, socio-economic status, and attendance. According to Bertolini, Stremmel, & Throngren, (2012) "Effective practices for education are essential to ensure public investment in our schools provides the maximum yield for our students, communities, states, and nation" (p. 2). While these factors impact achievement, accommodations and changes in the classroom can positively impact individual student success (Hannah, 2013).

Ethnicity. NAEP is an assessment administered to 4th, 8th, and 12th grade students. It was developed in 1969 to measure student achievement nationally and represents what America's students knows (*The Nation's Report Card*, 2019, p. 1). According to the 2015 nation's NAEP report on 8th grade mathematics, 43% of white students were proficient, while 13% of black students and 19% of Hispanics were proficient. In the area of 8th grade reading, 46% of whites were proficient, while 16% of black students 21% of Hispanic students were proficient (*The Nation's Report Card,* 2019). Reardon, Valentino, Kalogrides, Shores, & Greenberg (2013) noted, "racial differences in average academic achievement are large and persistent (p. 3). He also pointed out that "Black and Hispanic students score, on average, roughly three-quarters of a standard deviation lower than white students in both math and reading–the equivalent of about four years of learning in middle or high school" (p. 3).

On average, students of color "tend to be disproportionately represented in lower-level classes with lower academic expectations" (Great Schools Partnership, 2014). According to Singh, Chang, and Dika (2010), "Even though African American students start school with test scores close to those of their Caucasian-American peers, the gap between these two groups widens over the course of the school years" (p. 2). It is necessary to enroll students of color in rigorous courses and programs so educators may attempt to close the achievement gap.

Socio-Economic Status. Another disparity in student achievement is a result of differences in socio-economic status (SES). Students from low-SES families, researchers suggest, have a lower rate of academic achievement due to the school systems in their communities. In a study by Aikens & Barbarin (2008), it was reported that school and

neighborhood conditions have more of an effect on achievement than do family characteristics to SES. As noted by Morgan, Farkas, Hillemeir, and Maczuga (2009), low socio-economic families need more time to develop academic than their higher SES counterparts. With more publicly funded early childhood education programs, evidence suggests that high-quality preschool can have long-lasting effects on student achievement (Garces, Thomas & Currie, 2002).

Attendance. Chronic absenteeism, defined as missing 10% or more of the school year, is an early indicator of disengagement (U.S. Department of Education, 2019b). Chronic absence early has an impact on academic performance for all children. According to the U.S. Department of Education, (2019a) over 7 million students missed over 15 days of school or about 1 in every 6 students. Compared to white peers, black students are 40% more likely and Hispanic students 17% more likely to miss school (Chang & Romer, 2008).

Later in school, as reported by Epstein & Sheldon (2012), chronic absenteeism negatively affects graduation rates. According to the U.S. Department of Education (2019a), a Utah public school study found that chronic absenteeism in a single year between 8th and 12th grade was associated with a seven-fold increase in the likelihood of dropping out. Additionally, dropping out of high school has been linked to poverty, diminished health, and involvement in the criminal justice system. Results from Epstein and Sheldon's study suggest that school efforts to connect with students' families and communities about attendance can help keep students in school.

Models and Frameworks of Instruction

"An Instructional Framework is an interrelated set of systems and expectations that govern how we teach students" (Grant, 2018). According to Grant, Instructional Frameworks include data-driven instruction, instructional expectations, professional development, and teacher collaboration in Professional Learning Communities (PLCs). One model, Instructional Design, is the practice of creating instructional experiences to help facilitate learning most effectively" (Kurt, 2015). This model provides opportunity to represent a student's framework of thinking. This model of instruction is student-centered, goal-oriented, with a focus on real-world outcomes that can be measured in a valid and reliable manner. Many types of instructional design exist, such as Backward Design, the Kemp Design, and Understanding by Design (UbD).

Backward design "reverses the typical approach, so that the primary focus of course design becomes the desired learning outcomes" (Kurt, 2015, para. 3). Educators in this system of instruction must know what they want students to learn before they consider the best method for teaching content or meeting learning goals. Three phases make up backward design: identify the desired outcomes; determine the acceptable criteria for evaluating students' progress; plan the instructional methodologies. Within the first stage, identifying the desired outcomes, educators identify what students should know, understand, and do. In the second phase, educators must consider the levels of thinking, understanding, and reasoning that will best support the learning goals. Educators in the third phase should answer the question, "How can I create a learning experience for students that encourages them to engage with the content so that they are truly learning, and not simply passing assessments through rote memorization" (Kurt,

2015, para 13). The Backward Design Framework places learning outcomes at the forefront and allows flexibility to the learning experience and evaluation (Kurt, 2015).

The Kemp Instructional Design Model (Kemp, 1985; Kemp 2016), later modified by Kemp, Morrison, and Ross (1994), is a non-linear structure that uses a variety of approaches from multiple disciplines. Within this model, the learner's goals and needs are considerations when making instructional decisions. Nine core elements make up the Kemp model: determine the goals; identify characteristics of the leaner; clarify course content and analyze the tasks in relation to the goals; define instruction objectives and outcomes; ensure content is sequentially and logically structured; design instructional strategies for individual learners; plan the instructional message and delivery mode; develop evaluation instruments for measuring progress; choose appropriate resources (Kurt, 2015).

"UbD offers a planning process and structure to guide curriculum assessment, and instruction" (McTighe & Wiggins, n.d., para.1). The UbD framework consists of two ideas: teaching and assessing for understanding and designing curriculum in reverse. The UbD framework is based on seven tenets: learners is enhances when teachers think purposefully; curriculum and teaching development are the focus so student understanding is deepened; curriculum is planned through a three-stage backward design process; teachers are coaches of understanding; curriculum is more engaging as teachers regularly review units and curriculum; there is continual improvement approach to student achievement and teacher instruction (McTighe & Wiggins, n.d.).

To achieve accountability measures and expectations for graduates, PK-12 systems have adopted models and frameworks of instruction such as those previously

discussed. One additional framework that has been adopted is the Rigor/Relevance Framework put forth by Daggett (2011). In the following section the both rigor and relevance are further explained as is the Rigor/Relevance Framework.

Rigor. A common term among school personnel, the term rigor is used to "describe instruction, schoolwork, learning experiences and educational expectations that are academically, intellectually, and personally challenging" (Great Schools Partnership, 2014). Another definition put forth by Hess (2013) mirrors this definition, describing rigor as "the complexity of content, the cognitive engagement with that content, and the scope of the planned learning activities" (p. 1). In order for an educational task to be considered rigorous, it would need to be relevant and require critical thinking skills. For example, a student could be enrolled in an advanced course, but if the assignment requires the student to complete a fill-in-the-blank worksheet, this assignment would not be considered rigorous. If, however, a student were asked to interpret and analyze historical data, make connections between historical periods and current events, using primary and secondary sources to support an argument, this would be considered rigorous (Great Schools Partnership, 2014).

"One common way in which educators do use rigor to mean unyielding or rigid is when they are referring to "rigorous" learning standards and high expectations" (Great Schools Partnership, 2014, p. 1). In this case, students are held to the same challenging standards and expectations and are not allowed to get by because of lower requirements or expectations. Rigor in academics is learning where students demonstrate a "mastery of challenging tasks to develop cognitive skills through reflective thought, analysis, problem solving, evaluation or creativity. "It's the quality of thinking, not the quantity that

defines academic rigor" (Daggett, 2009, p. 1). Strong, Silver, and Perini (2001) suggested that rigor can be thought of as a goal where the teacher strives to help students understand content. Results from Moose's (2015) quantitative and qualitative study indicated rigor and relevance are of extreme importance when engaging students in education while also helping to keep them coming back to school. In this particular study, Moose surveyed one class of tenth grade students in one high school who had just finished a previous year in the ninth grade academy. This class of students and their teachers were administered the WE Suite created by ICLE (Successful Practices Network, n.d.-b).

In a qualitative case study conducted by Reich, Sevim, and Turner (2015), the researchers determined that teachers who effectively implement rigor should do so in a way that does not exceed students' abilities; meaning, "All students are capable of meeting the rigorous requirements of their teachers if teachers are able to set the level of rigor in a way that meets students' needs" (p. 1). Reich et al. also found that organization of instruction around concepts throughout the year result in student success regardless of the student's ability.

"According to a survey conducted by Peter D. Hart and Research Associates, almost 90% of students said they would work harder if more was expected of them and less than 33% said their school set high academic expectations" (as cited in Matusevich, O'Connor, & Hargett, 2009, p. 45). Students would favor more rigorous work and learn more if provided rigorous learning opportunities. "Students learn skills and acquire knowledge more readily when they can transfer their learning to new or more complex situations" (Matusevich et al., 2009, p. 6). In other words, teachers should provide

changing tasks and demanding goals for students so they can reach high goals, and experience a deep learning of content.

In order to increase rigor in the classroom teachers must use appropriate strategies and provide opportunities for higher-level thinking involving using deductive and inductive reasoning; for example, asking open-ended question or synthesis questions (Blackburn, 2014). High expectations are an integral part of rigor; however, students should be supported so they may be able to learn at high levels. "It is essential that teachers design lessons that move students to more challenging work while simultaneously providing ongoing scaffolding to support students' learning as they move to those higher levels (Blackburn, 2014, p. 4). Blackburn (2014) provided examples such as asking guiding questions and chunking information. Beasley (2014) stated that rigor is "The quality of instruction that requires students to construct meaning for themselves" (p. 5). For example, students should ask and answer open-ended questions, develop sequences of events, investigate or apply learning to the real-world, as well as make connections across disciplines and combine information from multiple sources (Beasley, 2014). "Good teachers understand that matching the learner, the content, and the strategy is critical if learning is to be achieved" (State of Iowa Department of Education, 2005, p. 8). Many teachers rely on strategies like lecture, demonstration and worksheets to deliver content, when in fact, strategies like problem-based learning, work-based learning, exhibitions, simulation, and role-playing push students into more rigorous learning (State of Iowa Department of Education, 2005).

Relevance. As stated by Briggs (2014), relevance is defined as the "perception is that something interesting and worth knowing. When a teacher provides relevance for a

student, the teacher help the student perceive these two things" (p. 4). Relevance is learning opportunities created through problems, tasks, simulations, and teaching others. According to Daggett (2009), "relevance refers to skills used to solve real-world problems" (p. 1).

"When stress in the classroom is getting high, it is often because a lesson is overly abstract or seems irrelevant to students. Teachers can reduce this type of stress by making the lesson more personally interesting and motivating" (Willis, 2007, para. 12). Students must be able to understand why they are learning about something. Pawlak, Magarinos, Melchor, McEwen, and Strickland (2003) research suggests that superior learning takes place when classroom experiences are relevant to students' lives, interests, and experiences. Various authors (Blackburn, 2008; Kilpatrick, Swafford, & Findell, 2001; Williamson & Blackburn, 2010; Mitchell, K., Shkolnik, J., Song, M., Uekawa, K., Murphy, R., Garet, M., 2005) have also determined that by including tasks that have relevance to students' interests and real-world applications, student engagement can be increased. According to Ferlazzo, (2014) when students are engaged, they perform better academically, improve behavior, and of a higher level of self-esteem.

Providing a list of vocabulary words to students that have no personal relevance or no relevance to an interest are likely to be blocked by the students' affective filters. Students instead need a connection to the material either emotionally or through connections with other content or their own experiences. Otherwise, students will disengage and forget. Relevant, meaningful activities that provide engagement and connect, build neural connection and long-term memory storage (Briggs, 2014). Teachers communicate intentions by connecting to the student's cognitive need to make

sense of the world (Roberson, 2013). In the end, the students decide what they will learn, not the teachers, meaning, educators must have an understanding of what the students' goals are and why they want to engage in learning. Hattie (2009) stated, "Learning is very personal to the teacher and to each student" (p. 241).

In order to make learning relevant, educators should, according to Briggs, (2014), use suspense, make it student-directed, make connections to students' lives or previous knowledge, provide value, and explain how it relates to the student and his or her world. Two ways to make learning relevant for students is through unity value and relatedness. Unity value means that a teacher inform students of what they will use their learning for with an emphasis on the importance of content concerning the students' future short and long term goals. Relatedness is the need for students to feel close to the significant people in their life, specifically, the relationship between the student and the teacher. The closer students feel to their teacher, the more likely they are to listen and learn from them. According to Roberson (2013), one of the most important elements of instruction is providing relevance to students. "It gives them a context within which they can develop into engaged, motivated and self-regulated learners" (p. 1).

Rigor/Relevance Framework

"The Rigor/Relevance Framework is a powerful tool for explaining that learning is optimized when students are involved in activities that require both complex thinking as well as the application of knowledge to real-world situations" (Daggett & Nussbaum, 2008, p. 5). The Rigor/Relevance Framework (see Figure 1) can be used by educators to promote student achievement among all students. Two continuums make up the Rigor/Relevance Framework, the thinking continuum and the action continuum. The

thinking continuum is based on Bloom's Taxonomy and the action continuum was developed by Daggett (2014).

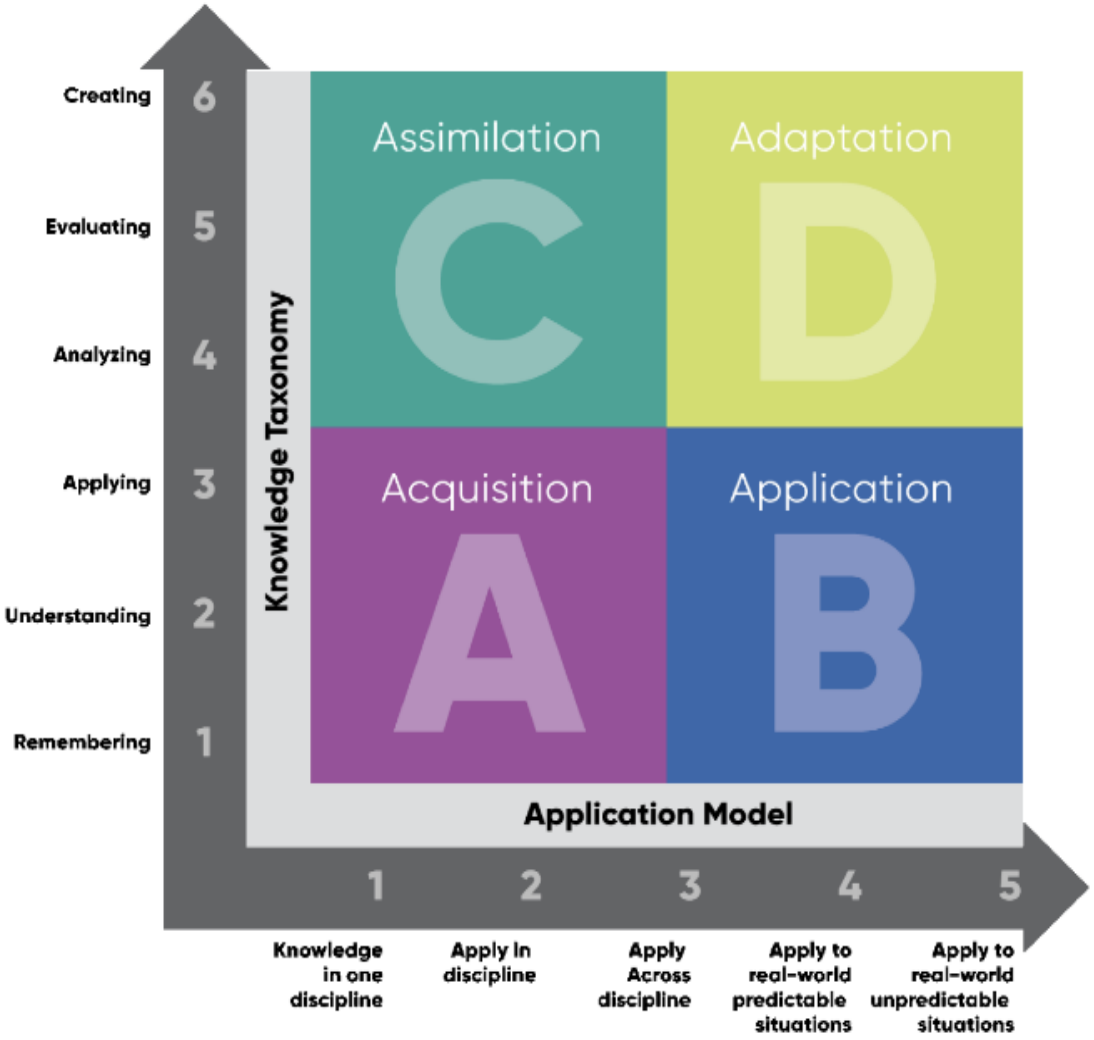


Figure 1. The Rigor/Relevance Framework® with the four quadrants. Adapted from *Rigor/Relevance Framework®: A Guide to Focusing Resources to Increase Student Performance*, by W. R. Daggett, 2014, p. 2.

The thinking continuum and knowledge taxonomy of the Rigor/Relevance Framework describes the ways we think. At the lowest level of rigor on the thinking continuum is the acquisition of knowledge and on the highest level of rigor is when students use knowledge to analyze, evaluate, and solve problems. The thinking continuum uses Bloom's Taxonomy: awareness, comprehension, application, analysis,

synthesis, and evaluation. "The second dimension is the application model or Action Continuum, which describes the five levels of relevant learning: knowledge in one discipline, apply across disciplines, apply to real-world predictable situations and apply to real-world unpredictable situations" (McNulty & Quaglia, 2007, p. 19). According to Daggett, (2014) good instruction is a balance of the 4 Quadrants and students especially need Quadrants B and D if they are to be lifelong learners.

Quadrant A (or acquisition) is where students learn and store knowledge and information. In Quadrant A the focus is on teacher work. "Teachers expend energy to transmit content through learning activities, worksheets, and other assignments" (McNulty & Quaglia, 2007, p. 21). When in Quadrant A the student is a passive learner. Teaching in Quadrant A is necessary to build a foundation; however, high levels of student learning do not occur when instruction is in Quadrant A.

Quadrant B (or application) is when teachers ask students to use their knowledge and solve problems. Here the emphasis is on real-world tasks and this work requires more time of the student. "Quadrant B work is best described as student work because students are doing extensive real-world tasks" (McNulty & Quaglia, 2007, p. 21). Daggett believes in this quadrant students are learning to create solutions to real-world problems; however, the do not learn to analyze or synthesize information and adapt it to the real-world (Daggett 2011).

Quadrant C (or assimilation) is when students extend their knowledge to use it routinely to analyze problems to create solutions. "Learning in Quadrant C is best described as student think" (McNulty & Quaglia, 2007, p. 21). In Quadrant C students are expected to think in complex ways and to analyze, compare, create, and evaluate.

Quadrant D (or adaptation) is when students have to apply their thinking and knowledge to solve difficult problems, meaning student-centered (Daggett, 2009, p. 9). Student activity in this quadrant "can be characterized by student think and work" (McNulty & Quaglia, 2007, p. 21). In this Quadrant students are required to apply their thinking and knowledge in order to solve problems. The teacher-centered instruction is not present in Quadrant D where the teacher is more of a facilitator of learning.

Educators can use the Quadrants to determine the type of instruction appropriate for students so they may develop to the fullest of their potential. "The phenomenon of a dynamic and changeable brain–whose health can, at least to some extent, be cultivated and nurtured–reinforces an intuitive understanding that schools can and do make a difference (Daggett & Nussbaum, 2013, p. 9). A 1950 study designed to investigate the effect of environment on structure and function of the animal brain showed "that mammalian brain plasticity is connected to environmental richness: the richer the environment, the more brain growth and the higher the synaptic density" (Daggett & Nussbaum, 2013, p. 5). In this study 2 groups of rodents were autopsied, and when compared, had significant differences in their brains. The results indicated environment has a significant effect on brain structure in animals. Those "factors that were identified as contributing to the environmental richness included, physical activity and mental stimulation" (Daggett & Nussbaum, 2013, p. 5). The Rigor/Relevance Framework provide tools for educators to make a positive impact on student achievement. In a study conducted by Willoughby (2013) the relationship between the Rigor/Relevance Framework and statewide assessments was investigated. The purpose of Willoughby's research was to identify characteristics of effective professional development programs

for K-12 teachers and explore the relationship between professional development and student achievement. Of the number of students, 368 students were used in the actual survey and the results of Willoughby's research indicated that "The framework is not a prescriptive model to improve test scores, but a model that encourages teachers to create and students to engage in assignments that are rigorous and relevant" (Willoughby, 2013, p. 75).

In another study on the impact of rigor, relevance, and relationships, Moose (2015) examined how integrating curriculum, utilizing effective teacher collaboration, and creating a freshman academy impact the rigor, relevance, and relationship for both students and teachers during the ninth-grade year. Sampling tenth-grade students at one high school, Moose's research results indicated positive impacts on rigor, relevance, and relationships for high school students. The researcher determined that "these three areas are of extreme importance in engaging students in meaningful education and keeping them enrolled in school" (Moose, 2015, p. 86).

White (2018) specifically studied the impact of the Rigor/Relevance Framework on students in one district. The results of this study indicated there is a statistically significant relationship between perceived levels of rigor, relevance, relationships, and school-wide academic achievement and attendance. The researcher also noted a difference between teacher perceptions and student perceptions.

Perceptions of Rigor and Relevance

According to Follman (1995), students as young as age 4, can provide valid and reliable feedback. Secondary school students have also been found to "properly, objectively, reliably, and perhaps validly report on descriptive matters such as events that

occur in their class and their teacher interactions" (Follman, 1992, p. 168). Peterson, Whalquist, and Bone, (2000) conducted a study that assessed student views on their teachers' performance.

The results of the item analysis conducted suggest that of the surveys of 9,765 student surveys administered, pupils responded with reliability and validity. Ben-Chaim and Zoller (2001) reported that "students assess quite adequately the actual Personal Style of their teachers" (p. 437). All in all, the results of these studies confirm that student perceptions are valid and reliable. In a learning environment, asking the student to provide feedback is paramount.

In a study investigating Aboriginal students' perceptions of the qualities and actions of effective teachers, 27 high school students from four schools and their parents participated in individual and group interviews. From these interviews Lewthwatie, Boon, Webber, and Laffin (2017) gathered that students emphasized the importance of relationships as the precursor to constructive student-teacher relationships and learning. Students said, "You want to be in a place where you feel welcome" (Lewthwatie et al., 2017, p. 86). According to Lewthwatie et al. (2017) "You must capture interest by being mindful of what is important to students" (p. 89). Teachers must commit to serve students academically, socially, and culturally; meaning, considering more than achievement is necessary. In this study, Lewthwatie et al. (2017) determined that teachers, although they had expressed a commitment to student interest, did not show "the same detailed and low-inference awareness and understanding of the source of students' requested emphasis on diverse practices" (p. 89).

Perceptions of Teachers and Students

Teachers and students may or may not perceive the teaching and learning process the same. One study examined the extent to which elementary students and teacher of the classroom and social environment are the same and different. Grade 5 and 6 students, along with their teachers in an ethnically diverse elementary and middle school participated in the study. Results indicated that school socio-economic status, classroom gender and ethnicity as well as teacher and student demographics and beliefs, influence teacher and student perceptions (Stewart, 2016). All in all, the findings from this study recommend schools utilize a variety of instructional practices to motive and engage diverse student populations in the learning process while also fostering positive peer relationships.

Another study was designed to determine if there is a relationship between perceived levels of rigor, relevance, and relationships as measured by the WE Teach ™ and WE Learn™ surveys, school-wide student achievement, and attendance. Participants in the study were staff and students during the 2012-2013 school year, totaling 9,279 students and 1, 154 staff members from 30 schools. White (2018) stated that positive impacts on student achievement can be made when teachers and students are in agreement that the curriculum is rigorous and relevant. In the end, the study indicated a difference between teacher perceptions and student perceptions.

Summary

Chapter 2 reviewed the historical trends of accountability requirements for PK-12, the standards movement, factors that impact achievement, models and framework of instruction, the Rigor/Relevance Framework, perceptions of rigor and relevance, and

perceptions of teachers and students. Chapter 3 presents the methodology used for this study, including measurement, research design, limitations, explanation of participant selection, data collection, and data analysis.

Chapter 3

Methods

The purpose of this study was to examine the teacher and student perceptions of rigor and relevance. This study also examined the differences in teacher and student perceptions of rigor and relevance. Chapter 3 focuses on the methodology of the study including: research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations.

Research Design

A quantitative descriptive survey design was used in this study, using archived teacher and student responses from the WE Teach ™ and WE Learn™ surveys. In this method of research quantifiable information is collected for statistical analysis of the data. The teacher survey contained 19 statements about rigor and 13 statements about relevance. The student survey contained 18 statements about rigor and 15 statements about relevance. The variables of interest in this study were the teacher and student perceptions of the presence of rigor and relevance, as measured by the WE Teach ™ and WE Learn™ survey items.

Selection of Participants

The two populations in this study were all students and staff in one middle school in District X. The sample included 565 middle school students and 40 teachers who responded to the survey during the 2017-2018 school year. The study specifically examined responses from staff and students who voluntarily and anonymously completed the 2018 administration of the WE Teach ™ and WE Learn™ surveys in one Grades 6-8 middle school in District X.

Measurement

Daggett (2009), founder of ICLE, developed the WE Teach ™ and WE Learn™ surveys to measure teacher and student perceptions of rigor, relevance, relationships, and leadership in grades 6 through 12. Both surveys measure perceptions of rigor, relevance, relationships, and leadership. The surveys were administered in each middle and high school in District X during the 2017-2018 school year. The statements for the rigor and relevance surveys are included in Appendix A. To address the purposes of this study, rigor and relevance were focus areas for analysis and discussion. Teachers and students responded to statements using a 1-5-point numeric Likert scale where: 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, and 5 = Strongly Agree.

Rigorous learning opportunities, according to the Daggett (2011), are those requiring the learner to, manage information, and solve problems sometimes independently and sometimes in groups. The WE Teach™ survey contains 60 questions, 9 that measured perceived rigor. The WE Learn™ survey contains 60 statements, 8 that measured rigor. Measurement of rigor for the current study involved the use of a table of percentages of respondents who strongly disagreed, disagreed, were undecided, agreed, and strongly agreed with the individual item provided by the Successful Practices Network (n.d.-b). No total score was provided for rigor by the Successful Practices Network.

Relevant instructional strategies may be interdisciplinary, require students to make real world connections, and include the use of technology (Successful Practices Network, n.d.-b). The WE Teach™ survey contains 60 statements, 13 that measure perceived relevance. The WE Learn™ survey contains items measuring student

perceptions of relevance and contains a total of 60 statements, 15 that measure relevance. Only individual item survey data is available for both teacher and student survey participants. Measurement of relevance for the current study involved the use of a table of percentages of respondents who strongly disagreed, disagreed, were undecided, agreed, and strongly agreed with the individual item provided by the Successful Practices Network (n.d.-b). No total score was provided for relevance by the Successful Practices Network.

Byrd (2011b) stated, "There is a high level of confidence in the reliability and validity of the WE Teach™ survey" (p.6). The reliability estimates for each of the scales, as measured by Cronbach's alpha are .81 for rigor, and .84 for relevance (Byrd, 2011b). The principal component analysis analyses and reliability indices indicated that WE Teach™ survey items measure a single dimensional construct which supports construct validity. According to Byrd (2011b), there is also support for discriminant validity.

Bryd (2011a) examined the reliability and validity of the WE Learn™ surveys. The reliability estimates for each of the scales, as measured by Cronbach's alpha are .84 for rigor, and .84 for relevance (Byrd, 2011a). The principal component analysis analyses and reliability indices indicated that WE Learn™ survey items measure a single dimensional construct which supports construct validity. As stated by Byrd (2011a), "There is a high level of confidence in the reliability and validity of the WE Learn™ survey" (p. 5).

To address RQ3 and RQ6 the researcher needed to determine if similar statements from the two surveys could be said to measure the same concepts. Wording of the teacher and student statements were similar but not exact. Two inter-rater reliability

processes (Phase 1 and Phase 2) were completed to determine whether the statements on the rigor and relevance portions of the teacher and student version of the surveys could be considered similar enough in content for hypotheses about differences between student and teacher responses to be evaluated for RQ3 and RQ6. Three experts were invited to participate in an inter-rater reliability test. All three experts, who were the same for Phase 1 and Phase 2 of the inter-rater reliability check, were selected from District X, where they were employed as administrators, and were familiar with the administration of the surveys.

- **Expert 1:** B.A. in Spanish Education and M.A. in School Leadership; 10 years teaching Spanish at the high school level, 11 years as an assistant principal at the high school level, and 5 years as a building principal at the middle school level.
- **Expert 2:** B.S. in Elementary Education, M.S. in Curriculum and Instruction, M.S. in School Administration; 6 years as an elementary teacher, 4 years as an elementary reading specialist, 3 years as a district coordinating teacher for literacy at the elementary level, 8 years as a principal at the elementary level, and 1 year as K-12 director of academic achievement and accountability.
- **Expert 3:** B.A. in English Education, M.S. Curriculum and Instruction, M.S. in School Leadership; 13 years teaching English at the high school level, 5 years as an assistant principal at the high school level, and 2 years as an assistant principal at the middle school level.

During Phase 1, each expert was provided a list of student statements and teacher statements from the surveys. During Phase 1, the three experts independently matched

survey statements from the teacher and student survey when they thought the items measured the same concept. The experts were asked to insert the number of an item from the teacher survey in the column next to a student survey item that was a match and experts were advised that some student and teacher items would not have a matching item. When this occurred, the experts were instructed to indicate 'no match'. If two of the three experts agreed that the statements measured the same concept, the statements were identified as a match.

During Phase I, the experts were provided 19 statements related to rigor from the WE Teach ™ survey and 18 statements related to rigor from the WE Learn™ survey. There are 10 statements from the WE Teach ™ survey were found to measure the same rigor concept, creating 10 pairs of statements to be compared. Experts were provided 13 relevance statements from the WE Teach™ survey and 13 relevance statements from the WE Learn™ survey. There are 10 statements from the WE Teach™ survey and 13 statements from the WE Learn™ survey that were found to measure the same relevance concept with some overlap in the matches, creating 9 pairs of statements to be compared. A table of the results of the inter-scorer reliability process from Phase I is included in Appendix B. Teacher and student statements that were identified as comparable by two out of three experts were then used for Phase 2.

In Phase 2, the same three experts were asked to conduct a final validation of the teacher and student statements identified as comparable in Phase 1. Specifically, the three experts were asked to verify whether a student statement measured the same concept as a teacher statement. The student and teacher statements that were matched during phase 1 were placed side-by-side in a Microsoft Excel document. If statements

did not measure the same concept, experts were to indicate "No Match." The experts indicated yes if they agreed that the statements were comparable or no if they did not agree the statements were comparable. Only statements that at least two of the three experts agreed measured the same concept were used in the analysis for RQ3 and RQ6. Phase 2 inter-rater reliability results are also included in Appendix B.

Data Collection Procedures

Prior to data collection, permission was granted by District X on September 26, 2018 to utilize the data from the WE Teach ™ and WE Learn™ surveys. The director of academic achievement and accountability, along with a committee, examined the request submitted on September 26, 2018 and approved the use of archived data from the WE Teach™ and WE Learn™ survey from one 6-8 middle school (see Appendix C). On January 14, 2019 the researcher submitted an application to the Institutional Review Board (IRB) at Baker University for approval of the topic, data analysis, and processes used to conduct the study. The IRB approval, obtained on October 14, 2019 is included in Appendix D. The summary data was provided by a representative assigned to District X from The Successful Practices Network. Percentages from the data were entered into Microsoft Excel and frequency tables were constructed from the percentages.

Data Analysis and Hypothesis Testing

Chi-square tests of goodness of fit and chi-square tests of independence were used for the hypothesis tests. Each of the tests involved the evaluation of a one-way frequency table for one categorical variable or tabulation table of frequencies for two categorical variables. The researcher used frequency tables that were constructed from the archived quantitative data. The research questions are listed below. Following each research

question is a description of the analyses used to test hypotheses that were posed to address each research question. A list of the hypotheses follows the analysis paragraph.

RQ1. To what extent do teachers perceive rigor is present, as measured by the WE Teach™ survey?

To address RQ1, H1-H19 were tested using 19 chi-square tests of goodness of fit. For each test the observed frequencies were compared to those expected by chance. The level of significance was set to .05. An effect size is presented when appropriate.

H1. Teachers perceive they use discussion and open-ended questions and problems in their classroom.

H2. Teachers perceive they are expected to provide opportunities for students to discuss and solve open-ended questions and problems.

H3. Teachers encourage students to create original solutions to complex problems.

H4. Teachers perceive they are expected to use common rubrics and scoring guides to measure student proficiency.

H5. Teachers design assessments that encourage students to think creatively.

H6. Teachers measure student reading levels regularly.

H7. Teachers expect students to work with different groups of classmates.

H8. Teachers perceive they provide the support necessary for struggling and disengaged learners to be successful.

H9. Teachers perceive the school gives up on difficult students.

H10. Teachers provide more challenging work for students and they do it.

H11. Teachers perceive they are expected to make passing the state assessments the number one priority.

H12. Teachers spend too much time-re-teaching what students should already know.

H13.Teachers have high expectations for all students.

H14. Teacher designed assessments are more challenging than current state tests.

H15. Teachers expect students to become independent learners.

H16. Teachers use assessments to plan and adjust instruction.

H17. Teachers expect students to exceed a basic understanding of what is being taught.

H18. Teachers prepare students for college and/or the workforce.

H19. Teachers encourage students to demonstrate their understanding in a variety of ways.

RQ2. To what extent do students perceive the presence of rigor, as measured by the WE Learn™ survey?

To address RQ2, H20-H37 were tested using 18 chi-square tests of goodness of fit. The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is presented when appropriate.

H20. Students perceive they discuss and solve problems that have more than one answer.

H21. Students perceive teachers expect them to apply what they learn in school to life.

H22. Students perceive teachers ask them to share their thinking with others.

H23. Students perceive teachers give them choices in how they show understanding of learning.

H24. Students perceive if they were given more challenging work in class, they would do it.

H25. Students perceive the school has high expectations for all students.

H26. Students perceive passing the state test is the most important thing they do in school.

H27. Students perceive when they struggle in class, they receive help.

H28. Students perceive they are given more difficult things to read as the school year progresses.

H29. Students perceive that on tests, they solve problems that have more than one answer.

H30. Students perceive they are required to demonstrate their understanding in a variety of ways.

H31. Students perceive their teacher expects them to work with different groups of classmates.

H32. Students perceive their assignments require that they organize and manage information.

H33. Students perceive they are encouraged to think for themselves.

H34. Students perceive that they themselves and other students care about doing well academically.

H35. Students perceive their teachers are teaching them things they already know.

H36. Students perceive their assignments have predictable solutions.

H37. Students want to do better academically at school.

RQ3. To what extent are there differences in teacher and student perceptions of the presence of rigor, as measured by the WE Teach™ and WE Learn™ surveys?

To address RQ3, H38-H47 were tested using10 chi-square tests of independence. For each test, participant status (teacher, student) by agreement level (strongly disagree, disagree, neutral, agree, strongly agree) were cross tabulated. Statements from the WE Teach™ and WE Learn™ surveys, which were identified as the same by the expert panel, were used for the analysis. The observed frequencies were compared to frequencies expected by chance. The level of significance was set at .05. An effect size is presented when appropriate.

H38. There are differences in teacher perceptions that in their class students discuss and solve open-ended questions and problems and student perceptions that they discuss and solve problems that have more than one answer, as measured by teacher and student survey statements identified as the same.

H39. There are differences in teacher perceptions that they encourage students to create original solutions to complex problems and student perceptions that teachers give them choices to show understanding of what they learned, as measured by teacher and student survey statements identified as the same.

H40. There are differences in teacher perceptions that they encourage students to work with different groups of classmates and student perceptions that they work with different groups of classmates, as measured by teacher and student survey statements identified as the same.

H41. There are differences in teacher perceptions struggling and disengaged learners receive the support necessary to be successful and student perceptions that when they struggle in class, they receive help, as measured by teacher and student survey statements identified as the same.

H42. There are differences in teacher perceptions that if students are given more challenging work, they do it and student perceptions that if they were given more challenging work in class they would do it, as measured by teacher and student survey statements identified as the same.

H43. There are differences in teacher perceptions that they are expected to make students passing the state assessment their number one priority and student perceptions that passing the state test is the most important thing they do in school, as measured by teacher and student survey statements identified as the same.

H44. There are differences in teacher perceptions that they spend too much time re-teaching what students should already know and student perceptions that teachers are teaching things they already know, as measured by student/learner survey statements identified as the same.

H45. There are differences in teacher perceptions that teachers have high expectations for all students and student perceptions that this school has high expectations for all students, as measured by teacher and student survey statements identified as the same.

H46. There are differences in teacher perceptions that they expect students to become independent learners and student perceptions that they are encouraged to think

for themselves, as measured by teacher and student survey statements identified as the same.

H47. There are differences in teacher perceptions that they encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing) and student perceptions that they are required to demonstrate their understanding in a variety of ways (i.e. speaking, writing), as measured by teacher and student survey statements identified as the same.

RQ4. To what extent do teachers perceive the presence of relevance, as measured by the WE Teach™ survey?

To address RQ4, H48-H60 were tested using13 chi-square tests of goodness of fit. The observed frequencies were compared to those expected by chance. The level of significance was set at .05. An effect size is presented when appropriate.

H48. Teachers perceive they are expected to use a variety of instructional strategies to help students learn.

H49. Teachers use performance-based assessments to reflect how well their students have learned.

H50. Teachers encourage students to explore things they find interesting.

H51. Teachers perceive they are expected to use the relevance strategy by doing interdisciplinary planning and projects.

H52. Teachers perceive students can apply what I am teaching to their everyday lives.

H53. Teachers use information and communication technology to promote learning.

H54. Teachers encourage students to explore career pathways.

H55. Teachers perceive they are expected to use information and communication technology to promote learning.

H56. Teachers connect the learning in their classroom to the community.

H57. Teachers encourage students to use multiple resources when solving problems.

H58. Teachers encourage students to work with others to solve problems.

H59. Teachers teach students to use information and communication technology responsibly.

H60. Teachers reach out to colleagues to identify successful practices.

RQ5. To what extent do students perceive the presence of relevance, as measured by the WE Learn™ survey?

To address RQ5, H61-H75 were tested using 15 chi-square tests of goodness of fit were conducted. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

H61. Students perceive they can apply what they learn in their classes to everyday life.

H62. Students perceive teachers use computers in the classroom.

H63. Students hope they are prepared for college when they graduate from school.

H64. Students perceive they are encouraged to use computers to work on assignments.

H65. Students perceive they are encouraged to explore things they find interesting.

H66. Students look in textbooks for most of the answers for assignments.

H67. Students perceive some of their classes combine different subjects.

H68. Students work with other students to solve problems.

H69. Students perceive teachers make learning fun.

H70. Students are taught by teachers to use computers and the internet in a responsible way.

H71. Students perceive teachers make them aware of different career choices.

H72. Students perceive their teachers expect them to use the internet on some class assignments.

H73. Students believe that what they are learning in school will help in the future.

H74. Students perceive teachers use the internet in the classroom.

H75. Students perceive they have opportunities to apply what they learn in school to life.

RQ6. To what extent are there differences in teacher and student perceptions of the presence of relevance, as measured by the WE Teach™ and WE Learn™ surveys?

To address RQ6, H76-H84 were tested using 9 chi-square tests of independence. For each test, participant status (teacher, student) by agreement level (strongly disagree, disagree, neutral, agree, strongly agree) were cross tabulated. The observed frequencies were compared to frequencies expected by chance. The level of significance was set at .05. An effect size is presented when appropriate.

H76. There are differences in teacher perceptions that they encourage students to explore things they find interesting and student perceptions they are encouraged to explore things they find interesting, as measured by teacher and student survey statements identified as the same.

H77. There are differences in teacher perceptions they are expected to do interdisciplinary planning and projects and student perceptions that some of their classes combine different subjects, as measured by teacher and student survey statements identified as the same.

H78. There are differences in teacher perceptions that students can apply what is being taught to their everyday lives and student perceptions that they have opportunities to apply what they learn in school to their lives, as measured by teacher and student survey statements identified as the same.

H79. There are differences in teacher perceptions that they are expected to use information and computer technology (e.g. computers, internet) to promote learning and student perceptions that teachers use computers in the classroom, as measured by teacher and student survey statements identified as the same.

H80. There are differences in teacher perceptions that they teach students to use information and communication technology responsibly and student perceptions that they are taught by teachers to use computers and the internet in a responsible way, as measured by teacher and student survey statements identified as the same.

H81. There are differences in teacher perceptions that students can apply what they are teaching to their everyday lives and student perceptions they can apply what they

learn in class to their everyday lives, as measured by teacher and student survey statements identified as the same.

H82. There are differences in teacher perceptions that staff are expected to use information and computer technology (e.g., computers, internet) to promote learning and student perceptions that teachers use the internet in the classroom, as measured by teacher and student survey statements identified as the same.

H83. There are differences in teacher perceptions that staff are expected to use information and communication technology (e.g., computers, internet) to promote learning and student perceptions that teachers use computers in the classroom, as measured by teacher and student survey statements identified as the same.

H84. There are differences in teacher perceptions that they use information and communication technology (e.g., computers, internet) to promote learning and student perceptions they teachers use the internet in the classroom, as measured by teacher and student survey statements identified as the same.

Limitations

Lunenburg and Irby (2008) defined limitations as "factors that may have an effect on the interpretation of the findings or on the generalizability of the results" (Lunenburg & Irby, 2008, p. 133). Two issues with the available data could be limitations on the interpretation of the analysis results. The limitations for this study included:

- The student sample used was limited to the students who chose to complete the WE Learn™ survey.
- The teacher sample used was limited to the teachers who chose to complete the WE Teach™ survey.

- The data was available only in tabled form and the percentages in the tables were rounded to whole numbers. Calculations of the frequencies and expected frequencies resulted in an unknown degree of rounding error.

Summary

Chapter 3 included a description of the methodology, research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations. Included in chapter 4 is an explanation of the descriptive statistics, the hypothesis testing results, and a summary.

Chapter 4

Results

The purpose of this study was to examine the presence of rigor and relevance to instruction, as perceived by teachers and students, in one middle school in District X in northeast Kansas. The researcher used data from the 2017-2018 administration of the WE Teach ™ and WE Learn™ surveys. An additional two phase inter-rater reliability test was completed to determine if similar statements from the two surveys could be said to measure the same concepts. Only those statements determined to be similar by 2 of the 3 experts were used for analysis in RQ3 and RQ6. Chi-square tests of goodness of fit were used for hypothesis tests for RQ1, RQ2, RQ4, and RQ5. Chi-square tests of independence were used for the hypothesis tests for RQ3 and RQ6. The research results in this chapter provide evidence of the presence of rigor and relevance on instruction as perceived by teachers and students.

Descriptive Statistics

Of the 40 teachers surveyed, 2 (5%) were male, 32 (80%) were female, and 6 (15%) did not respond. The survey group sampled included 4 (10%) instructional support staff and 36 (90%) teachers. Within the group, 10 (25%) held a Bachelor's degree, 12 (30%) held a Master's degree, and 18 (45%) held a Master's degree plus additional hours. Further information about descriptive statistics for the number and percentage of years working at this school and the number and percentage of years working in education is provided in Appendix E. Of the 565 students surveyed, 290 (51%) were male, 271 (48%) were female, and 4 (1%) did not respond to the question that measured gender. In 6^{th} grade there were 181 students (32%), in 7^{th} grade there were

169 students (30%), and in 8th grade there were 201 students (36%). The majority of the students (65%) described themselves as white with the second largest group describing themselves as Asian (19%). Further information about student ethnicity is provided in Appendix F.

Hypothesis Testing

In this section there are six research questions exploring teacher and student perceptions of rigor and relevance. Each research question is followed by the hypotheses and the results of the hypothesis tests. There are six research questions and a total of 84 hypotheses.

RQ1. To what extent do teachers perceive rigor is present, as measured by the WE Teach™ survey?

H1. Teachers perceive they use discussion and open-ended questions and problems in their classroom.

The results of the chi-square test of H1 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 48.06$, $p = .000$, Cramer's V = .548. See Table 1 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 16$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 21$) is higher than the expected frequency for teachers who agreed ($n = 8$). H1 was supported. Teachers tended to strongly agree or agree that they use discussion and open-ended questions and problems in their classroom. The index of the effect size, Cramer's V = .548, is evidence for a large effect.

Table 1

Observed and Expected Frequencies for H1

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	16	8
Agree	21	8
Undecided	1	8
Disagree	2	8
Strongly Disagree	0	8

H2. Teachers perceive they are expected to provide opportunities for students to discuss and solve open-ended questions and problems.

The results of the chi-square test of H2 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 69.00$, $p = .000$, Cramer's V = .657. See Table 2 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 14$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 26$) is higher than the expected frequency for teachers who agreed ($n = 8$). H2 was supported. Teachers tended to strongly agree or agree that they are expected to provide opportunities for students to discuss and solve open-ended questions and problems in their classroom. The index of the effect size, Cramer's V = .657, is evidence for a large effect.

Table 2

*Observed and Expected Frequencies for H**2***

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	14	8
Agree	26	8
Undecided	0	8
Disagree	0	8
Strongly Disagree	0	8

H3. Teachers encourage students to create original solutions to complex problems.

The results of the chi-square test of H3 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 51.92$, $p = .000$, Cramer's V = .570. See Table 3 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 17$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 21$) is higher than the expected frequency for teachers who agreed ($n = 8$). H3 was supported. Teachers tended to strongly agree or agree that they encourage students to create original solutions to complex problems. The index of the effect size, Cramer's V = .570, is evidence for a large effect.

Table 3

*Observed and Expected Frequencies for H**3***

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	17	8
Agree	21	8
Undecided	1	8
Disagree	1	8
Strongly Disagree	0	8

H4. Teachers perceive they are expected to use common rubrics and scoring guides to measure student proficiency.

The results of the chi-square test of H4 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 23.66$, $p = .000$, Cramer's V = .385. See Table 4 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 19$) is higher than the expected frequency for teachers who agreed ($n = 8$). H4 was supported. Teachers tended to agree that they are expected to use common rubrics and scoring guides to measure student proficiency. The index of the effect size, Cramer's V = .385, is evidence for a medium effect.

Table 4

Observed and Expected Frequencies for H4

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	4	8
Agree	19	8
Undecided	5	8
Disagree	10	8
Strongly Disagree	2	8

H5. Teachers design assessments that encourage students to think creatively.

The results of the chi-square test of H5 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 46.00$, $p = .000$, Cramer's V = .536. See Table 5 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 14$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 22$) is higher than the expected frequency for teachers who agreed ($n = 8$). H5 was supported. Teachers tended to strongly agree or agree that they are expected to design assessments that encourage students to think creatively. The index of the effect size, Cramer's V = .536, is evidence for a large effect.

Table 5

Observed and Expected Frequencies for H5

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	14	8
Agree	22	8
Undecided	2	8
Disagree	2	8
Strongly Disagree	0	8

H6. Teachers measure student reading levels regularly.

The results of the chi-square test of H6 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 19.34$, $p = .023$, Cramer's V = .347. See Table 6 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 5$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 14$) is higher than the expected frequency for teachers who agreed ($n = 8$). H6 was supported. The observed frequency of teachers who were undecided ($n = 15$) is higher than the expected frequency for teachers who were undecided ($n = 8$). H6 was supported. Teachers tended to agree or are undecided that they measure student reading levels regularly. The index of the effect size, Cramer's V = .347, is evidence for a medium effect.

Table 6

Observed and Expected Frequencies for H6

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	5	8
Agree	14	8
Undecided	15	8
Disagree	2	8
Strongly Disagree	3	8

H7. Teachers expect students to work with different groups of classmates.

The results of the chi-square test of H7 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 54.98$, $p = .000$, Cramer's V = .586. See Table 7 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 22$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 15$) is higher than the expected frequency for teachers who agreed ($n = 8$). H7 was supported. Teachers tended to strongly agree or agree that they expect students to work with different groups of classmates. The index of the effect size, Cramer's V = .586, is evidence for a large effect.

Table 7

Observed and Expected Frequencies for H7

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	22	8
Agree	15	8
Undecided	5	8
Disagree	0	8
Strongly Disagree	0	8

H8. Teachers perceive they provide the support necessary for struggling and disengaged learners to be successful.

The results of the chi-square test of H8 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 20.22$, $p = .000$, Cramer's V = .355. See Table 8 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 17$) is higher than the expected frequency for teachers who agreed ($n = 8$). The observed frequency of teachers who disagreed ($n = 11$) is higher than the expected frequency for teachers who disagreed ($n = 8$). H8 was not supported. Teachers tended to agree or disagree that perceive they provide the support necessary for struggling and disengaged learners to be successful. The index of the effect size, Cramer's V = .355, is evidence for a medium effect.

Table 8

Observed and Expected Frequencies for H8

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	3	8
Agree	17	8
Undecided	5	8
Disagree	11	8
Strongly Disagree	2	8

H9. Teachers perceive the school gives up on difficult students.

The results of the chi-square test of H9 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 18.96$, $p = .001$, Cramer's V = .344. See Table 9 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 10$) is higher than the expected frequency for teachers who agreed ($n = 8$). The observed frequency of teachers who disagreed ($n = 17$) is higher than the expected frequency for teachers who disagreed ($n = 8$). H9 was not supported. Teachers tended to agree or disagree that the school gives up on difficult students. The index of the effect size, Cramer's V = .344, is evidence for a medium effect. This finding supports the presence of rigor.

Table 9

Observed and Expected Frequencies for H9

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	2	8
Agree	10	8
Undecided	3	8
Disagree	17	8
Strongly Disagree	6	8

H10. Teachers provide more challenging work for students and they do it.

The results of the chi-square test of H10 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 24.76$, $p = .000$, Cramer's V = .393. See Table 10 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 18$) is higher than the expected frequency for teachers who agreed ($n = 8$). The observed frequency of teachers who disagreed ($n = 12$) is higher than the expected frequency for teachers who disagreed ($n = 8$). H10 was not supported. Teachers tended to agree or disagree that if students are given more challenging work, they do it. The index of the effect size, Cramer's V = .393, is evidence for a medium effect.

Table 10

Observed and Expected Frequencies for H10

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	3	8
Agree	18	8
Undecided	3	8
Disagree	12	8
Strongly Disagree	2	8

H11. Teachers perceive they are expected to make passing the state assessments the number one priority.

The results of the chi-square test of H11 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 42.14$, $p = .000$, Cramer's V = .513. See Table 11 for the observed and expected frequencies for this analysis. The observed frequency of teachers who disagreed ($n = 21$) is higher than the expected frequency for teachers who disagreed ($n = 8$). The observed frequency of teachers who strongly disagreed ($n = 13$) is higher than the expected frequency for teachers who strongly disagreed ($n = 8$). H11 was supported. Teachers tended to disagree or strongly disagree that they perceived they are expected to make passing the state assessments the number one priority. The index of the effect size, Cramer's V = .513, is evidence for a large effect. This is a reverse-coded item, thus supporting the presence of rigor.

Table 11

Observed and Expected Frequencies for H11

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	0	8
Agree	0	8
Undecided	5	8
Disagree	21	8
Strongly Disagree	13	8

H12. Teachers spend too much time-re-teaching what students should already know.

The results of the chi-square test of H12 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 29.34$, $p = .000$, Cramer's V = .428. See Table 12 for the observed and expected frequencies for this analysis. The observed frequency of teachers who disagreed ($n = 21$) is higher than the expected frequency for teachers who disagreed ($n = 8$). H12 was supported. Teachers tended to disagree that they spend too much time re-teaching what students should already know. The index of the effect size, Cramer's V = .428, is evidence for a large effect. This statement does not align with rigor.

Table 12

Observed and Expected Frequencies for H12

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	2	8
Agree	7	8
Undecided	5	8
Disagree	21	8
Strongly Disagree	4	8

H13. Teachers have high expectations for all students.

The results of the chi-square test of H13 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 16.06$, $p = .003$, Cramer's V = .317. See Table 13 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 10$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 17$) is higher than the expected frequency for teachers who agreed ($n = 8$). H13 was supported. Teachers tended to strongly agree or agree that the school has high expectations for all students. The index of the effect size, Cramer's V = .317, is evidence for a medium effect.

Table 13

Observed and Expected Frequencies for H13

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	10	8
Agree	17	8
Undecided	4	8
Disagree	5	8
Strongly Disagree	4	8

H14. Teacher designed assessments are more challenging than current state tests.

The results of the chi-square test of H14 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 37.54$, $p = .000$, Cramer's V = .484. See Table 14 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 11$) is higher than the expected frequency for teachers who agreed ($n = 8$). The observed frequency of teachers who were undecided ($n = 23$) is higher than the expected frequency for teachers who disagreed ($n = 8$). H14 was supported. Teachers tended to agree or were undecided that their assessments are more challenging than current state assessments. The index of the effect size, Cramer's V = .484, is evidence for a large effect.

Table 14

Observed and Expected Frequencies for H14

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	3	8
Agree	11	8
Undecided	23	8
Disagree	8	8
Strongly Disagree	2	8

H15. Teachers expect students to become independent learners.

The results of the chi-square test of H15 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 63.46$, $p = .001$, Cramer's V = .630. See Table 15 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 23$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 17$) is higher than the expected frequency for teachers who agreed ($n = 8$). H15 was supported. Teachers tended to strongly agree or agree they expect students to become independent learners. The index of the effect size, Cramer's V = .630, is evidence for a large effect.

Table 15

Observed and Expected Frequencies for H15

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	23	8
Agree	17	8
Undecided	0	8
Disagree	0	8
Strongly Disagree	0	8

H16. Teachers use assessments to plan and adjust instruction.

The results of the chi-square test of H16 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 45.66$, $p = .000$, Cramer's V = .534. See Table 16 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 35$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 22$) is higher than the expected frequency for teachers who agreed ($n = 8$). H16 was supported. Teachers tended to strongly agree or agree that they use assessments to plan and adjust their instruction. The index of the effect size, Cramer's V = .534, is evidence for a large effect.

Table 16

Observed and Expected Frequencies for H16

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	14	8
Agree	22	8
Undecided	3	8
Disagree	1	8
Strongly Disagree	0	8

H17. Teachers expect students to exceed a basic understanding of what is being taught.

The results of the chi-square test of H17 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 32.00$, $p = .000$, Cramer's V = .447. See Table 17 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 12$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 22$) is higher than the expected frequency for teachers who agreed ($n = 8$). H17 was supported. Teachers tended to strongly agree or agree that students are expected to exceed a basic understanding of what is being taught. The index of the effect size, Cramer's V = .447, is evidence for a large effect.

Table 17

Observed and Expected Frequencies for H17

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	12	8
Agree	20	8
Undecided	4	8
Disagree	4	8
Strongly Disagree	0	8

H18. Teachers prepare students for college and/or the workforce.

The results of the chi-square test of H18 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 20.52$, $p = .000$, Cramer's V = .358. See Table 18 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 18$) is higher than the expected frequency for teachers who agreed ($n = 8$). The observed frequency of teachers who are undecided ($n = 11$) is higher than the expected frequency for teachers who are undecided ($n = 8$). H18 was supported. Teachers tended to agree or are undecided that students who graduate from this school are college and/or workforce ready. The index of the effect size, Cramer's V = .358, is evidence for a medium effect.

Table 18

Observed and Expected Frequencies for H18

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	3	8
Agree	18	8
Undecided	11	8
Disagree	5	8
Strongly Disagree	3	8

H19. Teachers encourage students to demonstrate their understanding in a variety of ways.

The results of the chi-square test of H19 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 52.94$, $p = .000$, Cramer's V = .575. See Table 19 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 23$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 14$) is higher than the expected frequency for teachers who agreed ($n = 8$). H19 was supported. Teachers tended to strongly agree or agree that they encourage school to demonstrate their understanding in a variety of ways (i.e. speaking, writing). The index of the effect size, Cramer's V = .575, is evidence for a large effect.

Table 19

Observed and Expected Frequencies for H19

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	23	8
Agree	14	8
Undecided	1	8
Disagree	1	8
Strongly Disagree	0	8

RQ2. To what extent do students perceive the presence of rigor, as measured by the WE Learn™ survey?

H20. Students perceive they discuss and solve problems that have more than one answer.

The results of the chi-square test of H20 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 521.77$, $p = .000$, Cramer's V = .480. See Table 20 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 119$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 311$) is higher than the expected frequency for students who agreed ($n = 113$). H20 was supported. Students tended to strongly agree or agree that they discuss and solve problems that have more than one answer. The index of the effect size, Cramer's V = .480, is evidence for a large effect.

Table 20

Observed and Expected Frequencies for H20

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	119	113
Agree	311	113
Undecided	102	113
Disagree	23	113
Strongly Disagree	6	113

H21. Students perceive teachers expect them to apply what they learn in school to life.

The results of the chi-square test of H21 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 417.25$, $p = .000$, Cramer's V = .430. See Table 21 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 153$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 271$) is higher than the expected frequency for teachers who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 158$) is higher than the expected frequency for students who were undecided ($n = 113$). H21 was supported. Students tended to strongly agree, agree, or undecided that teachers expect them to apply what they learn in school to life. The index of the effect size, Cramer's V = .430, is evidence for a large effect.

Table 21

Observed and Expected Frequencies for H21

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	153	113
Agree	271	113
Undecided	158	113
Disagree	23	113
Strongly Disagree	11	113

H22. Students perceive teachers ask them to share their thinking with others.

The results of the chi-square test of H22 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 401.43$, $p = .000$, Cramer's V = .421. See Table 22 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 283$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 119$) is higher than the expected frequency for students who were undecided ($n = 113$). H22 was supported. Students tended to agree or were undecided that they were asked to share their thinking with others. The index of the effect size, Cramer's V = .421, is evidence for a large effect.

Table 22

Observed and Expected Frequencies for H22

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	113	113
Agree	283	113
Undecided	119	113
Disagree	34	113
Strongly Disagree	11	113

H23. Students perceive teachers give them choices in how they show understanding of learning.

The results of the chi-square test of H23 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 256.80$, $p = .000$, Cramer's V = .337. See Table 23 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 249$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 124$) is higher than the expected frequency for students who were undecided ($n = 113$). H23 was supported. Students tended to agree or were undecided that their teacher gives them choices in how they show understanding of what they have learned. The index of the effect size, Cramer's V = .337, is evidence for a medium effect.

Table 23

Observed and Expected Frequencies for H23

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	96	113
Agree	249	113
Undecided	124	113
Disagree	68	113
Strongly Disagree	23	113

H24. Students perceive if they were given more challenging work in class, they would do it.

The results of the chi-square test of H24 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 110.18$, $p = .000$, Cramer's V = .221. See Table 24 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed (n = 124) is higher than the expected frequency for students who strongly agreed (n = 113). The observed frequency of students who agreed (n= 186) is higher than the expected frequency for students who agreed (n = 113). The observed frequency of students who were undecided (n = 130) is higher than the expected frequency for students who were undecided (n = 8). H24 was supported. Students tended to strongly agree, agree, or were undecided that if they were given more challenging work in class they would do it. The index of the effect size, Cramer's V = .221, is evidence for a medium effect.

Table 24

Observed and Expected Frequencies for H24

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	124	113
Agree	186	113
Undecided	130	113
Disagree	68	113
Strongly Disagree	45	113

H25. Students perceive the school has high expectations for all students.

The results of the chi-square test of H25 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 261.03$, $p = .000$, Cramer's V = .340. See Table 25 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 153$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 232$) is higher than the expected frequency for students who agreed ($n = 113$). H25 was supported. Students tended to strongly agree or agree that this school has high expectations for all students. The index of the effect size, Cramer's V = .340, is evidence for a medium effect.

Table 25

Observed and Expected Frequencies for H25

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	153	113
Agree	232	113
Undecided	107	113
Disagree	45	113
Strongly Disagree	17	113

H26. Students perceive passing the state test is the most important thing they do in school.

The results of the chi-square test of H26 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 41.25$, $p = .000$, Cramer's V = .135. See Table 26 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 136$) is higher than the expected frequency for students who agreed ($n = 8$). The observed frequency of students who were undecided ($n = 147$) is higher than the expected frequency for students who were undecided ($n = 113$). The observed frequency of students who were undecided ($n = 130$) is higher than the expected frequency for students who were undecided ($n = 113$). While H26 was supported, this statement is a reverse coded item, not indicative of the presence of rigor. Students tended to agree or were undecided that passing the state test is the most important thing they do in school. The index of the effect size, Cramer's V = .135, is evidence for a medium effect.

Table 26

Observed and Expected Frequencies for H26

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	73	113
Agree	136	113
Undecided	147	113
Disagree	130	113
Strongly Disagree	79	113

H27. Students perceive when they struggle in class, they receive help.

The results of the chi-square test of H27 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 325.72$, $p = .000$, Cramer's V = .380. See Table 27 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 130$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 260$) is higher than the expected frequency for students who were undecided ($n = 113$). H27 was supported. Students tended to strongly agree or agree that when they struggle in class, they receive help. The index of the effect size, Cramer's V = .380, is evidence for a medium effect.

Table 27

Observed and Expected Frequencies for H27

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	130	113
Agree	260	113
Undecided	113	113
Disagree	45	113
Strongly Disagree	11	113

H28. Students perceive they are given more difficult things to read as the school year progresses.

The results of the chi-square test of H28 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 41.25$, $p = .000$, Cramer's V = .309. See Table 28 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 232$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 119$) is higher than the expected frequency for students who were undecided ($n = 113$). H28 was supported. Students tended to agree or were undecided they are given more difficult things to read as the school year progresses. The index of the effect size, Cramer's V = .309 is evidence for a medium effect.

Table 28

Observed and Expected Frequencies for H28

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	107	113
Agree	232	113
Undecided	119	113
Disagree	68	113
Strongly Disagree	23	113

H29. Students perceive that on tests, they solve problems that have more than one answer.

The results of the chi-square test of H29 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 246.91$, $p = .000$, Cramer's V = .331. See Table 29 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 237$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 136$) is higher than the expected frequency for students who were undecided ($n = 113$). H29 was supported. Students tended to agree or were undecided that they perceive on tests, they solve problems that have more than on answer. The index of the effect size, Cramer's V = .331 is evidence for a medium effect.

Table 29

Observed and Expected Frequencies for H29

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	102	113
Agree	237	113
Undecided	136	113
Disagree	62	113
Strongly Disagree	17	113

H30. Students perceive they are required to demonstrate their understanding in a variety of ways.

The results of the chi-square test of H30 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 417.53$, $p = .000$, Cramer's V = .430. See Table 30 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 158$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 271$) is higher than the expected frequency for students who agreed ($n = 113$). H30 was supported. Students tended to strongly agree, agree that they are required to demonstrate their understanding in a variety of ways (i.e., speaking, writing). The index of the effect size, Cramer's V = .430, is evidence for a medium effect.

Table 30

Observed and Expected Frequencies for H30

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	158	113
Agree	271	113
Undecided	90	113
Disagree	17	113
Strongly Disagree	11	113

H31. Students perceive their teacher expects them to work with different groups of classmates.

The results of the chi-square test of H31 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 376.57$, $p = .000$, Cramer's V = .408. See Table 31 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 124$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 271$) is higher than the expected frequency for students who agreed ($n = 113$). H31 was supported. Students tended to strongly agree or agree that their teacher expects them to work with different groups of classmates. The index of the effect size, Cramer's V = .408, is evidence for a large effect.

Table 31

Observed and Expected Frequencies for H31

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	124	8
Agree	271	8
Undecided	113	8
Disagree	23	8
Strongly Disagree	6	8

H32. Students perceive their assignments require that they organize and manage information.

The results of the chi-square test of H32 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 449.46$, $p = .000$, Cramer's V = .446. See Table 32 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 153$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 283$) is higher than the expected frequency for students who agreed ($n = 113$). H32 was supported. Students tended to strongly agree or agree that their assignments require they organize and manage information. The index of the effect size, Cramer's V = .446, is evidence for a large effect.

Table 32

Observed and Expected Frequencies for H32

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	153	113
Agree	283	113
Undecided	85	113
Disagree	23	113
Strongly Disagree	6	113

H33. Students perceive they are encouraged to think for themselves.

The results of the chi-square test of H33 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 383.64$, $p = .000$, Cramer's V = .412. See Table 33 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed (n = 136) is higher than the expected frequency for students who strongly agreed (n = 113). The observed frequency of students who agreed (n = 271) is higher than the expected frequency for students who agreed (n = 113). H33 was supported. Students tended to strongly agree or agree they are encouraged to think for themselves. The index of the effect size, Cramer's V = .412, is evidence for a large effect.

Table 33

Observed and Expected Frequencies for H33

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	136	113
Agree	271	113
Undecided	96	113
Disagree	28	113
Strongly Disagree	11	113

H34. Students perceive that they themselves and other students care about doing well academically.

The results of the chi-square test of H34 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 182.21$, $p = .000$, Cramer's V = .284. See Table 34 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 198$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 175$) is higher than the expected frequency for students who were undecided ($n = 113$). H34 was supported. Students tended to agree or were undecided that at this school, students care about doing well academically. The index of the effect size, Cramer's V = .284, is evidence for a medium effect.

Table 34

Observed and Expected Frequencies for H34

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	62	113
Agree	198	113
Undecided	175	113
Disagree	73	113
Strongly Disagree	40	113

H35. Students perceive their teachers are teaching them things they already know.

The results of the chi-square test of H35 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 170.63$, $p = .000$, Cramer's V = .275. See Table 35 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed (n =170) is higher than the expected frequency for students who agreed (n = 113). The observed frequency of students who were undecided (n = 192) is higher than the expected frequency for students who were undecided (n = 113). H35 was supported. Students tended to agree or were undecided that their teachers are teaching them things they already know. The index of the effect size, Cramer's V = .275, is evidence for a medium effect.

Table 35

Observed and Expected Frequencies for H35

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	90	113
Agree	170	113
Undecided	192	113
Disagree	79	113
Strongly Disagree	23	113

H36. Students perceive their assignments have predictable solutions.

The results of the chi-square test of H36 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 303.68$, $p = .000$, Cramer's V = .367. See Table 36 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed (n = 192) is higher than the expected frequency for students who agreed (n = 113). The observed frequency of students who were undecided (n = 220) is higher than the expected frequency for students who were undecided (n = 113). H36 was supported. Students tended to agree or were undecided that their assignments have predictable solutions. The index of the effect size, Cramer's V = .367, is evidence for a medium effect.

Table 36

Observed and Expected Frequencies for H36

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	85	113
Agree	192	113
Undecided	220	113
Disagree	40	113
Strongly Disagree	11	113

H37. Students want to do better academically at school.

The results of the chi-square test of H37 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 496.92$, $p = .000$, Cramer's V = .469. See Table 37 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 271$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 198$) is higher than the expected frequency for students who agreed ($n = 113$). H37 was supported. Students tended to strongly agree or agree they want to do better at school academically. The index of the effect size, Cramer's V = .469, is evidence for a large effect.

Table 37

Observed and Expected Frequencies for H37

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	271	113
Agree	198	113
Undecided	57	113
Disagree	17	113
Strongly Disagree	6	113

RQ3. To what extent are there differences in teacher and student perceptions of the presence of rigor, as measured by the WE Teach™ and WE Learn™ surveys?

H38. There are differences in teacher perceptions that in their class students discuss and solve open-ended questions and problems and student perceptions that they discuss and solve problems that have more than one answer, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H38 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 11.31$ $p = .023$, Cramer's V = .068. See Table 38 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 16$) was higher than the expected frequency for teachers who strongly agreed ($n = 9.07$). The observed frequency of students who agreed ($n = 311$) was higher than the expected frequency for students who agreed ($n = 309.59$). The observed frequency of students who were undecided ($n = 102$) was higher than the expected frequency for students who were undecided ($n = 95.97$). H38 was supported. Teachers strongly agreed that in their class students discuss and solve open-ended questions and problems while students

agreed or were undecided that they discuss and solve problems that have more than one answer. The effect size, as indexed by Cramer's V = .068, indicated a small effect.

Table 38

Observed and Expected Frequencies for H38

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	16	9.07
	Agree	21	22.36
	Undecided	1	6.93
	Disagree	2	1.66
	Strongly Disagree	0	0.38
Student			
	Strongly Agree	119	125.58
	Agree	311	309.59
	Undecided	102	95.97
	Disagree	23	22.94
	Strongly Disagree	6	5.27

H39. There are differences in teacher perceptions that they encourage students to create original solutions to complex problems and student perceptions that teachers give them choices to show understanding of what they learned, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H39 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 24.42$, $p = .000$, Cramer's $V = .100$. See Table 39 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 17$) was higher than the expected frequency for teachers who strongly disagreed ($n = 7.64$). The observed frequency of teachers who agreed ($n = 21$) was higher than the expected frequency for teachers who agreed ($n = 18$). The observed frequency of students who were undecided ($n = 124$) was higher than the expected frequency for students who were undecided ($n = 116.97$). The observed frequency of students who disagreed ($n = 68$) was higher than the expected frequency for students who disagreed ($n = 64.31$). The observed frequency of students who strongly disagreed ($n = 23$) was higher than the expected frequency for students who strongly disagreed ($n = 21.06$). H39 was supported. Teachers strongly agreed or agreed that they encourage students to create original solutions to complex problems while students were undecided, disagreed, or strongly disagreed that teachers give them choices in how they show understanding of what they learned. The effect size, as indexed by Cramer's V = .128, indicated a small effect.

Table 39

Observed and Expected Frequencies for H39

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	17	7.64
	Agree	21	18.21
	Undecided	1	8.47
	Disagree	1	4.16
	Strongly Disagree	0	1.53
Student			
	Strongly Agree	96	105.55
	Agree	249	251.46
	Undecided	124	116.77
	Disagree	68	64.31
	Strongly Disagree	23	21.06

H40. There are differences in teacher perceptions that they encourage students to work with different groups of classmates and student perceptions that they work with different groups of classmates, as measured by teacher and student survey statements identified as the same.

The results of the chi-square test of independence used to test H40 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 30.36$, $p = .000$, Cramer's $V = .112$. See Table 40 for the observed and expected

frequencies. The observed frequency of teachers who strongly agreed (*n* = 22) was higher than the expected frequency for teachers who strongly agreed (*n* = 9.00). The observed frequency of students who agreed (*n* = 271) was higher than the expected frequency for students who agreed (*n* = 268.20). The observed frequency of students who were undecided (*n* = 113) was higher than the expected frequency for students who were undecided (*n* = 105.82). The observed frequency of students who disagreed (*n* = 23) was higher than the expected frequency for students who disagreed (*n* = 21.16). The observed frequency of students who strongly disagreed (*n* = 17) was higher than the expected frequency for students who strongly disagreed (*n* = 15.87). H40 was supported. Teachers strongly agreed that they expect students to work with different groups of classmates while students strongly agreed, were undecided, disagreed, or strongly disagreed that the teacher expects them to work with different groups of classmates. The effect size, as indexed by Cramer's V = .112, indicated a small effect.

Table 40

Observed and Expected Frequencies for H40

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	22	9.00
	Agree	15	17.63
	Undecided	0	6.95
	Disagree	0	1.39
	Strongly Disagree	0	1.04
Student			
	Strongly Agree	124	137
	Agree	271	268.20
	Undecided	113	105.82
	Disagree	23	21.16
	Strongly Disagree	17	15.87

H41. There are differences in teacher perceptions struggling and disengaged learners receive the support necessary to be successful and student perceptions that when they struggle in class, they receive help, as measured by teacher and student survey statements identified as the same.

The results of the chi-square test of independence used to test H41 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 23.01$, $p = .000$, Cramer's $V = .098$. See Table 41 for the observed and expected

frequencies. The observed frequency of teachers who disagreed (n = 11) was higher than the expected frequency for teachers who disagreed (n = 3.62). The observed frequency of students who strongly agreed (n = 130) was higher than the expected frequency for students who were undecided (n = 124.51). The observed frequency of students who were undecided (n = 113) was higher than the expected frequency for students who were undecided (n = 110.53). H41 was supported. Teachers disagreed that struggling and disengaged learners receive support necessary to be successful while students strongly agreed or were undecided that when they struggle in class, they receive help. The effect size, as indexed by Cramer's V = .098, indicated a small effect.

Table 41

Observed and Expected Frequencies for H41

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	3	8.54
	Agree	17	17.78
	Undecided	5	7.59
	Disagree	11	3.62
	Strongly Disagree	2	.85
Student			
	Strongly Agree	130	124.51
	Agree	260	259.13
	Undecided	113	110.53
	Disagree	45	52.74
	Strongly Disagree	11	12.44

H42. There are differences in teacher perceptions that if students are given more challenging work, they do it and student perceptions that if they were given more challenging work in class they would do it, as measured by teacher and student survey statements identified as the same.

The results of the chi-square test of independence used to test H42 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 19.20$, $p = .001$, Cramer's $V = .089$. See Table 42 for the observed and expected

frequencies. The observed frequency of teachers who agreed (*n* = 18) was higher than the expected frequency for teachers who agreed (*n* = 12.99). The observed frequency of teachers who disagreed (*n* = 12) was higher than the expected frequency for teachers who disagreed (*n* = 5.07). The observed frequency of students who strongly agreed (*n* = 124) was higher than the expected frequency for students who strongly agreed (*n* = 119.3). The observed frequency of students who were undecided (*n* = 130) was higher than the expected frequency for students who were undecided (*n* = 124.51). H42 was supported. Teachers agreed or disagreed that if students are given more challenging work they do it while students strongly agreed or were undecided that if they were given more challenging work in class they would do it. The effect size, as indexed by Cramer's V = .089, indicated a small effect.

Table 42

Observed and Expected Frequencies for H42

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	3	8.10
	Agree	18	12.99
	Undecided	3	8.46
	Disagree	12	5.07
	Strongly Disagree	2	3.00
Student			
	Strongly Agree	124	119.23
	Agree	186	191.19
	Undecided	130	124.51
	Disagree	68	74.62
	Strongly Disagree	45	44.14

H43. There are differences in teacher perceptions that they are expected to make students passing the state assessment their number one priority and student perceptions that passing the state test is the most important thing they do in school, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H43 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 39.95$, $p = .000$, Cramer's $V = .128$. See Table 43 for the observed and expected

frequencies. The observed frequency of teachers who disagreed (*n* = 21) was higher than the expected frequency for teachers who disagreed (*n* = 9.90). The observed frequency of teachers who strongly disagreed (*n* = 13) was higher than the expected frequency for teachers who strongly disagreed (*n* = 6.05). The observed frequency of students who strongly agreed (*n* = 73) was higher than the expected frequency for students who strongly agreed (*n* = 68.64). The observed frequency of students who agreed (*n* = 136) was higher than the expected frequency for students who agreed (*n* =126.72). The observed frequency of students who were undecided (*n* = 147) was higher than the expected frequency for students who were undecided (*n* =142.14). H43 was supported. Teachers disagreed or strongly disagreed that they are expected to make students passing the state test their number one priority while students strongly agreed, agreed, or were undecided that passing the state test is the most important thing they do in school. The effect size, as indexed by Cramer's V = .128, indicated a small effect.

Table 43

Observed and Expected Frequencies for H43

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	3	8.54
	Agree	17	17.78
	Undecided	5	7.59
	Disagree	11	3.62
	Strongly Disagree	13	6.05
Student			
	Strongly Agree	130	124.51
	Agree	260	259.13
	Undecided	113	110.53
	Disagree	45	52.74
	Strongly Disagree	11	12.44

H44. There are differences in teacher perceptions that they spend too much time re-teaching what students should already know and student perceptions that teachers are teaching things they already know, as measured by teacher and student/learner survey questions identified as the same.

The results of the chi-square test of independence used to test H44 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 47.61$, $p = .000$, Cramer's $V = .140$. See Table 44 for the observed and expected

frequencies. The observed frequency of teachers who disagreed (n = 21) was higher than the expected frequency for teachers who disagreed (n = 6.57). The observed frequency of teachers who strongly disagreed (n = 4) was higher than the expected frequency for teachers who strongly disagreed (n = 1.74). The observed frequency of students who strongly agreed (n = 90) was higher than the expected frequency for students who strongly agreed (n = 86.23). The observed frequency of students who agreed (n = 170) was higher than the expected frequency for students who agreed (n =164.91). The observed frequency of students who were undecided (n = 192) was higher than the expected frequency for students who were undecided (n =184.13). H44 was supported. Teachers disagreed or strongly disagreed that they spend too much time re-teaching what students should already know while students strongly agreed, agreed, or were undecided that teachers are teaching them things they already know. The effect size, as indexed by Cramer's V = .140, indicated a small effect.

Table 44

Observed and Expected Frequencies for H44

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	2	6.05
	Agree	7	11.57
	Undecided	5	12.92
	Disagree	21	6.57
	Strongly Disagree	4	1.74
Student			
	Strongly Agree	90	86.23
	Agree	170	164.91
	Undecided	192	184.13
	Disagree	79	93.61
	Strongly Disagree	23	24.82

H45. There are differences in teacher perceptions that teachers have high expectations for all students and student perceptions that this school has high expectations for all students, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H45 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 12.51$, $p = .000$, Cramer's $V = .072$. See Table 45 for the observed and expected

frequencies. The observed frequency of teachers who disagreed (n = 5) was higher than the expected frequency for teachers who disagreed (n = .98). The observed frequency of teachers who strongly disagreed (n = 4) was higher than the expected frequency for teachers who strongly disagreed (n = 1.02). The observed frequency of students who were undecided (n = 113) was higher than the expected frequency for students who were undecided (n = 109.12). H45 was supported. Teachers disagreed that this school has high expectations for all students while students strongly agreed, agreed, or were undecided this school has high expectations for all students. The effect size, as indexed by Cramer's V = .072, indicated a small effect.

Table 45

Observed and Expected Frequencies for H45

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	10	8.54
	Agree	17	17.78
	Undecided	4	7.59
	Disagree	5	.98
	Strongly Disagree	4	1.02
Student			
	Strongly Agree	130	130.52
	Agree	260	258.43
	Undecided	113	109.12
	Disagree	45	47
	Strongly Disagree	11	14.27

H46. There are differences in teacher perceptions that they expect students to become independent learners and student perceptions that they are encouraged to think for themselves, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H46 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 57.35$, $p = .000$, Cramer's $V = .154$. See Table 46 for the observed and expected

frequencies. The observed frequency of teachers who strongly agreed (*n* = 23) was higher than the expected frequency for teachers who strongly agreed (*n* = 7.59). The observed frequency of teachers who agreed (*n* = 17) was higher than the expected frequency for teachers who agreed (*n* = 12.48). The observed frequency of students who were undecided (*n* = 192) was higher than the expected frequency for students who strongly agreed (*n* = 179.04). The observed frequency of students who disagreed (*n* = 79) was higher than the expected frequency for students who disagreed (*n* = 73.72). The observed frequency of students who strongly disagreed (*n* = 23) was higher than the expected frequency for students who strongly disagreed (*n* = 21.06). H46 was supported. Teachers strongly agreed or agreed that they expect students to become independent learners while students were undecided, disagreed, or strongly disagreed that they are encouraged to think for themselves. The effect size, as indexed by Cramer's V = .154, indicated a small effect.

Table 46

Observed and Expected Frequencies for H46

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	23	7.59
	Agree	17	12.48
	Undecided	0	12.84
	Disagree	0	5.29
	Strongly Disagree	0	1.51
Student			
	Strongly Agree	90	105.87
	Agree	170	174
	Undecided	192	179.04
	Disagree	79	73.72
	Strongly Disagree	23	21.06

H47. There are differences in teacher perceptions that they encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing) and student perceptions that they are required to demonstrate their understanding in a variety of ways (i.e. speaking, writing), as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H47 indicated a statistically significant difference between the observed and expected values,

$\chi^2(4) = 17.69$, $p = .001$, Cramer's $V = .086$. See Table 47 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 23$) was higher than the expected frequency for teachers who strongly agreed ($n = 11.88$). The observed frequency of students who agreed ($n = 271$) was higher than the expected frequency for students who agreed ($n = 265.98$). The observed frequency of students who were undecided ($n = 90$) was higher than the expected frequency for students who were undecided ($n = 85.43$). H47 was supported. Teachers strongly agreed they encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing) while students were agreed or were undecided that they are required to demonstrate their understanding in a variety of ways (i.e. speaking, writing). The effect size, as indexed by Cramer's V = .086, indicated a small effect.

Table 47

Observed and Expected Frequencies for H47

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	23	11.88
	Agree	14	18.68
	Undecided	1	6.00
	Disagree	1	1.19
	Strongly Disagree	0	.74
Student			
	Strongly Agree	158	169.18
	Agree	271	265.98
	Undecided	90	85.43
	Disagree	17	16.93
	Strongly Disagree	11	10.54

RQ4. To what extent do teachers perceive the presence of relevance, as measured by the WE Teach™ survey?

H48. Teachers perceive they are expected to use a variety of instructional strategies to help students learn.

The results of the chi-square test of H48 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 56.86$, $p = .000$,

Cramer's V = .596. See Table 48 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed (n = 22) is higher than the expected frequency for teachers who strongly agreed (n = 8). The observed frequency of teachers who agreed (n = 17) is higher than the expected frequency for teachers who agreed (n = 8). H48 was supported. Teachers tended to strongly agree or agree they are expected to use a variety of instructional strategies to help students learn. The index of the effect size, Cramer's V = .596, is evidence for a large effect.

Table 48

Observed and Expected Frequencies for H48

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	22	8
Agree	17	8
Undecided	0	8
Disagree	1	8
Strongly Disagree	0	8

H49. Teachers use performance-based assessments to reflect how well their students have learned.

The results of the chi-square test of H49 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 50.06$, $p = .000$, Cramer's V = .559. See Table 49 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed (n = 18) is higher than the expected frequency for teachers who strongly agreed (n = 8). The observed

frequency of teachers who agreed (n = 20) is higher than the expected frequency for teachers who agreed (n = 8). H49 was supported. Teachers tended to strongly agree or agree they use performance-based assessments to reflect how well their students have learned. The index of the effect size, Cramer's V = .559, is evidence for a large effect.

Table 49

Observed and Expected Frequencies for H49

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	18	8
Agree	20	8
Undecided	1	8
Disagree	1	8
Strongly Disagree	0	8

H50. Teachers encourage students to explore things they find interesting.

The results of the chi-square test of H50 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 55.46$, $p = .000$, Cramer's V = .589. See Table 50 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed (n = 20) is higher than the expected frequency for teachers who strongly agreed (n = 8). The observed frequency of teachers who agreed (n = 19) is higher than the expected frequency for teachers who agreed (n = 8). H50 was supported. Teachers tended to strongly agree or agree they encourage students to explore things they find interesting. The index of the effect size, Cramer's V = .589, is evidence for a large effect.

Table 50

Observed and Expected Frequencies for H50

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	20	8
Agree	19	8
Undecided	1	8
Disagree	0	8
Strongly Disagree	0	8

H51. Teachers perceive they are expected to use the relevance strategy by doing interdisciplinary planning and projects.

The results of the chi-square test of H51 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 35.92$, $p = .023$, Cramer's V = .474. See Table 51 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 15$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 19$) is higher than the expected frequency for teachers who agreed ($n = 8$). H51 was supported. Teachers tended to strongly agree or agree they are expected to interdisciplinary planning and projects. The index of the effect size, Cramer's V = .474, is evidence for a large effect.

Table 51

Observed and Expected Frequencies for H51

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	15	8
Agree	19	8
Undecided	3	8
Disagree	3	8
Strongly Disagree	0	8

H52. Teachers perceive students can apply what they are teaching to their everyday lives.

The results of the chi-square test of H52 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 54.92$, $p = .000$, Cramer's V = .586. See Table 52 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 23$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 15$) is higher than the expected frequency for teachers who agreed ($n = 8$). H52 was supported. Teachers tended to strongly agree or agree that students can apply what is taught to their everyday lives. The index of the effect size, Cramer's V = .586, is evidence for a large effect.

Table 52

Observed and Expected Frequencies for H52

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	23	8
Agree	15	8
Undecided	1	8
Disagree	1	8
Strongly Disagree	0	8

H53. Teachers use information and communication technology to promote learning.

The results of the chi-square test of H53 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 50.36$, $p = .000$, Cramer's V = .561. See Table 53 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 20$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 17$) is higher than the expected frequency for teachers who agreed ($n = 8$). H53 was supported. Teachers tended to strongly agree or agree that they use information and communication technology (e.g., computers, internet) to promote learning. The index of the effect size, Cramer's V = .561, is evidence for a large effect.

Table 53

Observed and Expected Frequencies for H53

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	20	8
Agree	17	8
Undecided	0	8
Disagree	1	8
Strongly Disagree	0	8

H54. Teachers encourage students to explore career pathways.

The results of the chi-square test of H54 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 15.48$, $p = .004$, Cramer's V = .311. See Table 54 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 8$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 15$) is higher than the expected frequency for teachers who agreed ($n = 8$). H54 was supported. Teachers tended to strongly agree or agree they encourage students to explore career pathways. The index of the effect size, Cramer's V = .311, is evidence for a medium effect.

Table 54

Observed and Expected Frequencies for H54

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	8	8
Agree	15	8
Undecided	10	8
Disagree	6	8
Strongly Disagree	0	8

H55. Teachers perceive they are expected to use information and communication technology to promote learning.

The results of the chi-square test of H55 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 58.28$, $p = .000$, Cramer's V = .604. See Table 55 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 21$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 18$) is higher than the expected frequency for teachers who agreed ($n = 8$). H55 was supported. Teachers tended to strongly agree or agree they are expected to use information and communication technology to promote learning. The index of the effect size, Cramer's V = .604, is evidence for a large effect.

Table 55

Observed and Expected Frequencies for H55

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	21	8
Agree	18	8
Undecided	0	8
Disagree	0	8
Strongly Disagree	0	8

H56. Teachers connect the learning in their classroom to the community.

The results of the chi-square test of H56 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 87.86$, $p = .000$, Cramer's V = .741. See Table 56 for the observed and expected frequencies for this analysis. The observed frequency of teachers who agreed ($n = 31$) is higher than the expected frequency for teachers who agreed ($n = 8$). H56 was supported. Teachers tended to agree they are expected to connect the learning in their classroom to the community. The index of the effect size, Cramer's V = .741, is evidence for a large effect.

Table 56

Observed and Expected Frequencies for H56

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	7	8
Agree	31	8
Undecided	2	8
Disagree	0	8
Strongly Disagree	0	8

H57. Teachers encourage students to use multiple resources when solving problems.

The results of the chi-square test of H57 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 64.00$, $p = .000$, Cramer's V = .632. See Table 57 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 24$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 16$) is higher than the expected frequency for teachers who agreed ($n = 8$). H57 was supported. Teachers tended to strongly agree or agree they encourage students to use multiple resources when solving problems. The index of the effect size, Cramer's V = .632, is evidence for a large effect.

Table 57

Observed and Expected Frequencies for H57

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	24	8
Agree	16	8
Undecided	0	8
Disagree	0	8
Strongly Disagree	0	8

H58. Teachers encourage students to work with others to solve problems.

The results of the chi-square test of H58 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 55.46$, $p = .000$, Cramer's V = .589. See Table 58 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 20$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 19$) is higher than the expected frequency for teachers who agreed ($n = 8$). H58 was supported. Teachers tended to strongly agree or agree they are expected to encourage students to work with others to solve problems in the community. The index of the effect size, Cramer's V = .589, is evidence for a large effect.

Table 58

Observed and Expected Frequencies for H58

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	20	8
Agree	19	8
Undecided	1	8
Disagree	0	8
Strongly Disagree	0	8

H59. Teachers teach students to use information and communication technology responsibly.

The results of the chi-square test of H59 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 56.32$, $p = .000$, Cramer's V = .593. See Table 59 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 12$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 25$) is higher than the expected frequency for teachers who agreed ($n = 8$). H59 was supported. Teachers tended to strongly agree or agree they are expected to teach students to use information and communication technology responsible. The index of the effect size, Cramer's V = .593, is evidence for a large effect.

Table 59

Observed and Expected Frequencies for H59

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	12	8
Agree	25	8
Undecided	1	8
Disagree	1	8
Strongly Disagree	0	8

H60. Teachers reach out to colleagues to identify successful practices.

The results of the chi-square test of H60 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 48.92$, $p = .000$, Cramer's V = .553. See Table 60 for the observed and expected frequencies for this analysis. The observed frequency of teachers who strongly agreed ($n = 13$) is higher than the expected frequency for teachers who strongly agreed ($n = 8$). The observed frequency of teachers who agreed ($n = 23$) is higher than the expected frequency for teachers who agreed ($n = 8$). H60 was supported. Teachers tended to strongly agree or agree they reach out to colleagues to identify successful practices. The index of the effect size, Cramer's V = .553, is evidence for a large effect.

Table 60

Observed and Expected Frequencies for H60

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	13	8
Agree	23	8
Undecided	3	8
Disagree	1	8
Strongly Disagree	0	8

RQ5. To what extent do students perceive the presence of relevance, as measured by the WE Learn™ survey?

H61. Students perceive they can apply what they learn in their classes to everyday life.

The results of the chi-square test of H61 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 152.83$, $p = .000$, Cramer's V = .260. See Table 61 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 209$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 141$) is higher than the expected frequency for students who were undecided ($n = 113$). H61 was supported. Students tended to agree or were undecided they can apply what they learn in their classes to their everyday life. The index of the effect size, Cramer's V = .260, is evidence for a large effect.

Table 61

Observed and Expected Frequencies for H61

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	73	113
Agree	209	113
Undecided	141	113
Disagree	96	113
Strongly Disagree	40	113

H62. Students perceive teachers use computers in the classroom.

The results of the chi-square test of H62 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 789.31$ $p = .000$, Cramer's V = .590. See Table 62 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 333$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 203$) is higher than the expected frequency for students agreed ($n = 113$). H62 was supported. Students tended to strongly agree or agree that teachers use computers in the classroom. The index of the effect size, Cramer's V = .590, is evidence for a large effect.

Table 62

Observed and Expected Frequencies for H62

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	333	113
Agree	203	113
Undecided	23	113
Disagree	6	113
Strongly Disagree	0	113

H63. Students hope they are prepared for college when they graduate from school.

The results of the chi-square test of H63 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 952.87$ $p = .000$, Cramer's V = .649. See Table 63 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 390$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 141$) is higher than the expected frequency for students agreed ($n = 113$). H63 was supported. Students tended to strongly agree or agree that when they graduate from school, they hope they will be prepared for college. The index of the effect size, Cramer's V = .649, is evidence for a large effect.

Table 63

Observed and Expected Frequencies for H63

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	390	113
Agree	141	113
Undecided	28	113
Disagree	6	113
Strongly Disagree	6	113

H64. Students perceive they are encouraged to use computers to work on assignments.

The results of the chi-square test of H64 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 388.72$, $p = .000$, Cramer's V = .414. See Table 64 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 170$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 254$) is higher than the expected frequency for students agreed ($n = 113$). H64 was supported. Students tended to strongly agree or agree that they are encouraged to use computers to work on assignments. The index of the effect size, Cramer's V =.414, is evidence for a large effect.

Table 64

Observed and Expected Frequencies for H64

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	170	113
Agree	254	113
Undecided	107	113
Disagree	17	113
Strongly Disagree	6	113

H65. Students perceive they are encouraged to explore things they find interesting.

The results of the chi-square test of H65 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 235.89$, $p = .000$, Cramer's V = .323. See Table 65 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 170$) is higher than the expected frequency for students who strongly agreed ($n = 113$. The observed frequency of students who agreed ($n = 215$) is higher than the expected frequency for students agreed ($n = 113$). H65 was supported. Students tended to strongly agree or agree they are encouraged to explore things they find interesting. The index of the effect size, Cramer's V = .323, is evidence for a medium effect.

Table 65

Observed and Expected Frequencies for H65

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	170	113
Agree	215	113
Undecided	107	113
Disagree	51	113
Strongly Disagree	17	113

H66. Students look in textbooks for most of the answers for assignments.

The results of the chi-square test of H66 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 125.71$, $p = .000$, Cramer's V = .235. See Table 66 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 158$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 170$) is higher than the expected frequency for students who were undecided ($n = 113$). The observed frequency of students who disagreed ($n = 136$) is higher than the expected frequency for students who were undecided ($n = 8$). H66 was not supported. Students tended to agree, were undecided, or disagreed that they look in textbooks for most of the answers for assignments. The index of the effect size, Cramer's V = .235, is evidence for a medium effect.

Table 66

Observed and Expected Frequencies for H66

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	51	113
Agree	158	113
Undecided	170	113
Disagree	136	113
Strongly Disagree	45	113

H67. Students perceive some of their classes combine different subjects.

The results of the chi-square test of H67 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 236.74$, $p = .000$, Cramer's V = .324. See Table 67 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 243$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 124$) is higher than the expected frequency for students were undecided ($n = 113$). H67 was supported. Students tended to agree or are undecided that some of their classes combine different subjects. The index of the effect size, Cramer's V = .324, is evidence for a medium effect.

Table 67

Observed and Expected Frequencies for H67

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	90	113
Agree	243	113
Undecided	124	113
Disagree	68	113
Strongly Disagree	28	113

H68. Students work with other students to solve problems.

The results of the chi-square test of H68 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 510.48$, $p = .000$, Cramer's V = .475. See Table 68 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 311$) is higher than the expected frequency for students who agreed ($n = 113$). H68 was supported. Students tended to agree they work with other students in their classes to solve problems. The index of the effect size, Cramer's V = .4751, is evidence for a medium effect.

Table 68

Observed and Expected Frequencies for H68

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	113	113
Agree	311	113
Undecided	85	113
Disagree	34	113
Strongly Disagree	6	113

H69. Students perceive teachers make learning fun.

The results of the chi-square test of H69 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 72.89$, $p = .000$, Cramer's V = .180. See Table 69 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 170$) is higher than the expected frequency for students who agreed ($n= 113$). The observed frequency of students who were undecided ($n = 147$) is higher than the expected frequency for students who were undecided ($n = 113$). H69 was supported. Students tended to agree or were undecided their teachers make learning fun. The index of the effect size, Cramer's V = .180, is evidence for a medium effect.

Table 69

Observed and Expected Frequencies for H69

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	90	113
Agree	170	113
Undecided	147	113
Disagree	85	113
Strongly Disagree	62	113

H70. Students are taught by teachers to use computers and the internet in a responsible way.

The results of the chi-square test of H70 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 323.75$, $p = .000$, Cramer's V = .378. See Table 70 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 186$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 232$) is higher than the expected frequency for students agreed ($n = 113$). H70was supported. Students tended to strongly agree or agree they are taught by their teachers to use computers and the internet in a responsible way. The index of the effect size, Cramer's V = .378, is evidence for a medium effect.

Table 70

Observed and Expected Frequencies for H70

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	186	113
Agree	232	113
Undecided	90	113
Disagree	34	113
Strongly Disagree	11	113

H71. Students perceive teachers make them aware of different career choices.

The results of the chi-square test of H71 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 157.07$, $p = .000$, Cramer's V = .264. See Table 71 for the observed and expected frequencies for this analysis. The observed frequency of students who agreed ($n = 158$) is higher than the expected frequency for students who agreed ($n = 113$). The observed frequency of students who were undecided ($n = 220$) is higher than the expected frequency for students who were undecided ($n = 113$). H71 was supported. Students tended to agree or were undecided that their teachers make them aware of different career choices. The index of the effect size, Cramer's V = .264, is evidence for a medium effect.

Table 71

Observed and Expected Frequencies for H71

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	85	113
Agree	158	113
Undecided	220	113
Disagree	85	113
Strongly Disagree	62	113

H72. Students perceive their teachers expect them to use the internet on some class assignments.

The results of the chi-square test of H72 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 489.01$, $p = .000$, Cramer's V = .465. See Table 72 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 209$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 260$) is higher than the expected frequency for students agreed ($n = 113$). H72 was supported. Students tended to strongly agree or agree that their teachers expect them to use the internet on some of their class assignments. The index of the effect size, Cramer's V = .465, is evidence for a large effect.

Table 72

Observed and Expected Frequencies for H72

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	209	113
Agree	260	113
Undecided	62	113
Disagree	11	113
Strongly Disagree	6	113

H73. Students believe that what they are learning in school will help in the future.

The results of the chi-square test of H73 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 171.20$, $p = .000$, Cramer's V = .275. See Table 73 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed (n = 147) is higher than the expected frequency for students who strongly agreed (n = 113). The observed frequency of students who agreed (n = 203) is higher than the expected frequency for students agreed (n = 113). The observed frequency of students who were undecided (n = 119) is higher than the expected frequency for students who were undecided (n = 113). H73 was supported. Students tended to strongly agree, agree, or were undecided believe that what they are learning in school will help them in their future. The index of the effect size, Cramer's V = .275, is evidence for a medium effect.

Table 73

Observed and Expected Frequencies for H73

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	147	113
Agree	203	113
Undecided	119	113
Disagree	45	113
Strongly Disagree	40	113

H74. Students perceive teachers use the internet in the classroom.

The results of the chi-square test of H74 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 533.64$, $p = .000$, Cramer's V = .486. See Table 74 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 249$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 237$) is higher than the expected frequency for students agreed ($n = 113$). H74 was supported. Students tended to strongly agree or agree that their teachers use the internet in the classroom. The index of the effect size, Cramer's V = .486, is evidence for a large effect.

Table 74

Observed and Expected Frequencies for H74

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	249	113
Agree	237	113
Undecided	45	113
Disagree	11	113
Strongly Disagree	6	113

H75. Students perceive they have opportunities to apply what they learn in school to life.

The results of the chi-square test of H75 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 155.38$, $p = .000$, Cramer's V = .262. See Table 75 for the observed and expected frequencies for this analysis. The observed frequency of students who strongly agreed ($n = 119$) is higher than the expected frequency for students who strongly agreed ($n = 113$). The observed frequency of students who agreed ($n = 203$) is higher than the expected frequency for students agreed ($n = 113$). The observed frequency of students who were undecided ($n = 124$) is higher than the expected frequency for students who were undecided ($n = 113$). H75 was supported. Students tended to strongly agree, agree, or were undecided that they have opportunities to apply what they learn in school to life. The index of the effect size, Cramer's V = .262, is evidence for a medium effect.

Table 75

Observed and Expected Frequencies for H75

Response Category	$f_{observed}$	$f_{expected}$
Strongly Agree	119	113
Agree	203	113
Undecided	124	113
Disagree	68	113
Strongly Disagree	28	113

RQ6. To what extent are there differences in teacher and student perceptions of the presence of relevance, as measured by the WE Teach™ and WE Learn™ surveys?

H76. There are differences in teacher perceptions that they encourage students to explore things they find interesting and student perceptions they are encouraged to explore things they find interesting, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H76 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 15.21$, $p = .004$, Cramer's $V = .079$. See Table 76 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 20$) was higher than the expected frequency for teachers who strongly agreed ($n = 13.13$). The observed frequency of teachers who agreed ($n = 19$) was higher than the expected frequency of teachers who agreed ($n = 16.20$). The observed frequency of students who were undecided ($n = 107$) was higher than the expected frequency for students who were

undecided (n = 101.24). The observed frequency of students who disagreed (n = 51) was higher than the expected frequency for students who disagreed (n = 47.42). H76 was supported. Teachers strongly agreed or agreed that in their class they encourage students to explore things they find interesting while students were undecided or disagreed that they were encouraged to explore things they find interesting. The effect size, as indexed by Cramer's V = .079, indicated a small effect.

Table 76

Observed and Expected Frequencies for H76

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	20	13.13
	Agree	19	16.20
	Undecided	1	7.52
	Disagree	0	3.52
	Strongly Disagree	0	1.17
Student			
	Strongly Agree	170	176.74
	Agree	215	218.14
	Undecided	107	101.24
	Disagree	51	47.42
	Strongly Disagree	17	15.81

H77. There are differences in teacher perceptions they are expected to do interdisciplinary planning and projects and student perceptions that some of their classes combine different subjects, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H77 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 15.67$, $p = .003$, Cramer's $V = .080$. See Table 77 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 15$) was higher than the expected frequency for teachers who strongly agreed ($n = 7.39$). The observed frequency of students who were undecided ($n = 124$) was higher than the expected frequency for students who were undecided ($n = 118.75$). H77 was supported. Teachers agreed that staff are expected to do interdisciplinary planning and projects while students were undecided that their classes combine different subjects. The effect size, as indexed by Cramer's V = .080, indicated a small effect.

Table 77

Observed and Expected Frequencies for H77

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	15	7.39
	Agree	19	18.34
	Undecided	3	8.92
	Disagree	3	4.97
	Strongly Disagree	0	1.98
Student			
	Strongly Agree	90	176.74
	Agree	243	218.14
	Undecided	124	118.75
	Disagree	68	66.13
	Strongly Disagree	28	26.31

H78. There are differences in teacher perceptions that students can apply what is being taught to their everyday lives and student perceptions that they have opportunities to apply what they learn in school to their lives, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H78 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 31.19$, $p = .000$, Cramer's $V = .114$. See Table 78 for the observed and expected

frequencies. The observed frequency of teachers who strongly agreed (*n* = 23) was higher than the expected frequency for teachers who strongly agreed (*n* = 9.92). The observed frequency of students who were undecided (*n* = 124) was higher than the expected frequency for students who were undecided (*n* = 116.72). The observed frequency of students who disagreed (*n* = 68) was higher than the expected frequency for students who disagreed (*n* = 64.17). The observed frequency of students who strongly disagreed (*n* = 28) was higher than the expected frequency for students who strongly disagreed (*n* = 26.27). H78 was supported. Teachers strongly agreed that in their class students can apply what is being taught to their everyday lives while students were undecided, disagreed or strongly disagreed that they apply what they learn in classes to their everyday lives. The effect size, as indexed by Cramer's V = .158, indicated a small effect.

Table 78

Observed and Expected Frequencies for H78

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	23	9.92
	Agree	15	15.29
	Undecided	1	18.78
	Disagree	1	4.83
	Strongly Disagree	0	1.98
Student			
	Strongly Agree	119	131.93
	Agree	203	203.31
	Undecided	124	116.72
	Disagree	68	64.17
	Strongly Disagree	28	26.27

H79. There are differences in teacher perceptions staff are expected to use information and computer technology (e.g., computers, internet) to promote learning and student perceptions that teachers use computers in the classroom, as measured by teacher and student/learner survey questions identified as the same.

The results of the chi-square test of independence used to test H79 indicated no statistically significant differences between the observed and expected values,

$\chi^2(3) = 3.04$, $p = .383$. See Table 79 for the observed and expected frequencies. None of the observed and expected frequencies were different. H79 was not supported.

Table 79

Observed and Expected Frequencies for H79

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	21	9.07
	Agree	18	22.36
	Undecided	0	6.93
	Disagree	21	1.66
	Strongly Disagree	0	0
Student			
	Strongly Agree	333	331.55
	Agree	221	207.04
	Undecided	23	21.13
	Disagree	6	5.28
	Strongly Disagree	0	0

H80. There are differences in teacher perceptions that they teach students to use information and communication technology responsibly and student perceptions that they are taught by teachers to use computers and the internet in a responsible way, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H80 indicated no statistically significant differences between the observed and expected values, $\chi^2(4) = 8.77$, $p = .067$. See Table 80 for the observed and expected frequencies. None of the observed and expected frequencies were different. H80 was not supported.

Table 80

Observed and Expected Frequencies for H80

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	20	17.69
	Agree	17	16.76
	Undecided	0	2.98
	Disagree	1	.82
	Strongly Disagree	0	0
Student			
	Strongly Agree	249	331.55
	Agree	237	207.04
	Undecided	45	21.13
	Disagree	11	11.68
	Strongly Disagree	6	5.28

H81. There are differences in teacher perceptions that students can apply what they are teaching to their everyday lives and student perceptions they can apply what they

learn in class to their everyday lives, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H81 indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 60.77$, $p = .000$, Cramer's $V = .158$. See Table 81 for the observed and expected frequencies. The observed frequency of teachers who strongly agreed ($n = 23$) was higher than the expected frequency for teachers who strongly agreed ($n = 6.57$). The observed frequency of students who were undecided ($n = 124$) was higher than the expected frequency for students who were undecided ($n = 116.72$). The observed frequency of students who disagreed ($n = 96$) was higher than the expected frequency for students who disagreed ($n = 90.64$). The observed frequency of students who strongly disagreed ($n = 40$) was higher than the expected frequency for students who strongly disagreed ($n = 36.86$). H81 was supported. Teachers strongly agreed that in their class students can apply what is being taught to their everyday lives while students were undecided, disagreed or strongly disagreed that they can apply what they learn in classes to their everyday lives. The effect size, as indexed by Cramer's V = .158, indicated a small effect.

Table 81

Observed and Expected Frequencies for H81

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	23	6.57
	Agree	15	15.25
	Undecided	1	9.68
	Disagree	1	6.61
	Strongly Disagree	0	2.69
Student			
	Strongly Agree	73	90.08
	Agree	209	203.31
	Undecided	141	116.72
	Disagree	96	64.17
	Strongly Disagree	40	36.86

H82. There are differences in teacher perceptions that staff are expected to use information and computer technology (e.g., computers, internet) to promote learning and student perceptions that teachers use the internet in the classroom, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H82 indicated no statistically significant differences between the observed and expected values,

$\chi^2(3) = 5.08$, $p = .279$. See Table 82 for the observed and expected frequencies. None of the observed and expected frequencies were different. H82 was not supported.

Table 82

Observed and Expected Frequencies for H82

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	21	18.13
	Agree	18	17.16
	Undecided	0	3.04
	Disagree	0	.76
	Strongly Disagree	0	.38
Student			
	Strongly Agree	249	90.08
	Agree	237	203.31
	Undecided	45	116.72
	Disagree	11	64.17
	Strongly Disagree	6	36.86

H83. There are differences in teacher perceptions that staff are expected to use information and communication technology (e.g., computers, internet) to promote learning and student perceptions that teachers use computers in the classroom, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H83 indicated no statistically significant differences between the observed and expected values, $\chi^2(3) = 3.94$, $p = .268$. See Table 83 for the observed and expected frequencies. None of the observed and expected frequencies were different. H83 was not supported.

Table 83

Observed and Expected Frequencies for H83

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	20	23.27
	Agree	17	14.53
	Undecided	0	1.49
	Disagree	1	.45
Student			
	Strongly Agree	333	330.86
	Agree	203	206.56
	Undecided	23	21.16
	Disagree	6	6.41

H84. There are differences in teacher perceptions that they use information and communication technology (e.g., computers, internet) to promote learning and student perceptions they teachers use the internet in the classroom, as measured by teacher and student survey questions identified as the same.

The results of the chi-square test of independence used to test H84 indicated no statistically significant differences between the observed and expected values, $\chi^2(4) = 4.11$, $p = .392$. See Table 84 for the observed and expected frequencies. None of the observed and expected frequencies were different. H84 was not supported.

Table 84

Observed and Expected Frequencies for H84

Participant	Agreement Level	$f_{observed}$	$f_{expected}$
Teacher			
	Strongly Agree	20	17.69
	Agree	17	16.76
	Undecided	0	2.98
	Disagree	1	.82
	Strongly Disagree	0	.37
Student			
	Strongly Agree	249	330.86
	Agree	237	206.56
	Undecided	45	21.16
	Disagree	11	6.41
	Strongly Disagree	6	0

Summary

Teacher responses to rigor and relevance survey questions provided feedback for District X that can be used to make positive changes in the school. Student responses to rigor and

relevance survey questions provided feedback to District X to make positive changes in the school. The comparison results of the survey data were mixed regarding rigor and relevance. In some places teachers and students tended to respond similarly. Some places, however, teachers and students tended to respond differently. Chapter 5 contains a summary of the study, while providing an overview of the problem, purpose statement and research questions, review of the methodology, and major findings. Also, included in chapter 5 are the findings related to the literature, as well as, conclusions which outlines implications for action, recommendations for future research, and concluding remarks.

Chapter 5

Interpretation and Recommendations

The research in this study focused on the perceptions of middle school teachers and students related to the presence of rigor and relevance in the classroom, as measured by the WE Teach™ and WE Learn™ surveys. Additionally, a comparison of teacher and student perceptions related to the presence of rigor and relevance was studied. Chapter 5 presents a summary of the study which includes an overview of the problem, the purpose statement and research questions, a review of the methodology, and major findings. Following the summary are the findings related to the literature and the conclusions.

Study Summary

This section provides a summary of the research conducted for this study. The summary contains an overview of the problem related to student and teacher perceptions of rigor and relevance in one middle school in District X. The purpose statement and research questions follow. The summary section concludes with a review of the methodology and summary of the major findings.

Overview of the problem. School districts across the nation are challenged with educating all students regardless of resources. In an age where critical thinking and problem-solving skills are of paramount importance to school districts, like District X, must find strategic ways to continue to enrich the learning environment and support students. The Rigor/Relevance Framework (Daggett, 2014), a tool that can be used by districts to look at the effectiveness of curriculum, instruction, standards, and achievement, is one method District X has employed to provide a high level of education to all students. Using the WE Teach™ and WE Learn™ surveys, District X gathered

data regarding teacher and student perceptions of the Rigor/Relevance Framework. It is important to analyze the data obtained from the surveys to determine teacher and student perceptions related to the presence of rigor and relevance in instruction.

Purpose statement and research questions. The purpose of this study was to examine teacher and student perception of the presence of rigor and relevance in instruction in one middle school in District X. Six research questions were posed. The first purpose was to determine the extent to which teachers perceive the presence of rigor. The second purpose was to determine to what extent students perceive the presence of rigor. The third purpose was to determine to what extent there are differences in teacher and student perceptions of the presence of rigor. A fourth purpose was to determine to what extent teachers perceive the presence of the relevance strategy. The fifth purpose was to determine to what extent students perceive the presence of the relevance strategy. The sixth purpose was to determine to what extent there are differences in teacher and student perceptions of the presence of relevance. To address the purposes of this study, six research questions were posed with 84 related hypotheses.

Review of the methodology. This quantitative descriptive design study used archived teacher and student responses from the WE Teach™ and WE Learn™ surveys. The sample for the current study included 40 teachers and 565 students from one middle school in District X who had voluntarily agreed to participate in the WE Teach ™ and WE Learn™ survey. Survey administration occurred during the 2017-2018 school year. The survey data was summarized in percentage tables by ICLE and provided to the researcher by representatives from District X. The researcher conducted an inter-rater reliability process consisting of two phases. The purpose of this process was to

determine what statements on the WE Teach™ and WE Learn™ surveys were considered similar in concept by an expert panel for analyzing differences between teacher and student responses. Only statements in which 2 of the 3 experts agreed the statements measured the same concept were used in analysis for differences between teacher and student responses. Chi-square tests of goodness of fit were conducted to test the RQ1, RQ2, RQ4, and RQ5 hypotheses. Chi-square tests of independence were used to test the RQ3 and RQ6 hypotheses.

Major findings. Major findings for all research questions are highlighted in the next sections. The first section relates to the major findings for rigor, including the teacher perceptions, the student perceptions, and the comparison between teacher and student perceptions. The second section relates to the major findings for relevance, including the teacher perceptions, the student perceptions, and the comparison between teacher and student perceptions.

Findings related to rigor. All but three of the concepts related to rigor were perceived by teachers as being used in their classrooms. Teachers agree they use discussion and open-ended questions and problems, measure student reading levels regularly, use assessments to plan and adjust their instruction, and those assessments are more challenging than current state assessments. Teachers also agree they are expected to provide opportunities for students to discuss and solve open-ended questions and problems, to use common rubrics and scoring guides to measure student proficiency, and to design assessments that encourage students to think creatively. In addition, teachers agree that they encourage students to create original solutions to complex problems and to demonstrate their understanding in a variety of ways, and they expect students

to work with different groups of classmates, become independent learners, and exceed a basic understanding of what is being taught. Finally, teachers agree that the high school has high expectations for all students and that students who graduate from this school are college and/or workforce ready. Teachers disagree they are expected to make passing the state assessments the number one priority or to spend too much time re-teaching what students should already know. For three of the concepts: the results were unclear as to whether or not teachers provide necessary support for struggling and disengaged learners, whether or not the school gives up on students, or if teachers provide more challenging work for students and they do it.

For the findings related to students' perceptions of rigor in the classroom, students indicate that they observe all but three of the eighteen statements used in their classroom, identifying various aspects of instruction as being rigorous. Students agree that on tests they solve problems that have more than one answer, teachers give them choices in how they show understanding of learning, if they are given more challenging work they do it, if they struggle in class, they receive help, they are given more difficult things to read as the school year progresses, they discuss and solve problems with more than one answer, and they care about doing well academically. In terms of expectations, students also agree they are expected to apply what they learn in school to life, share their thinking with others, demonstrate their understanding in a variety of ways, work with different groups of classmates, organize and manage information, and are encouraged to think for themselves. Finally, students agree they want to do better academically. Three survey items were reverse coded. In the findings for two of the reverse coded concepts, student responses indicated two strategies being used which do not promote rigor: teachers are

teaching them things they already know, and assignments have predictable solutions. In the findings for the third concept that was reverse coded, it was unclear whether or not students perceived passing the state test is the most important thing they do in school.

To some extent there were differences in teacher and student responses on the ten teacher and student statements related to rigor that were determined to be matched conceptually. The differences between teacher and student responses about the five concepts were more extensive and the differences in the responses about three concepts were less extensive. Teacher and student responses on two concepts were unclear. For the five concepts with more extensive differences teachers and students were at the opposite ends of the scale:

- Teachers agree that they encourage students to create original solutions to complex problems and students are undecided or disagree that teachers give them choices to show understanding of what they earned.
- Teachers disagree that struggling and disengaged learners receive the support necessary to be successful and students agree or were undecided that when they struggle in class, they receive help.
- Teachers disagree that they are expected to make students passing the state assessment their number one priority and students agree or were undecided that passing the state test if the most important thing they do in school.
- Teachers disagree that they spend too much time re-teaching what students should already know and students agree or were undecided that teachers are teaching things they already know.

- Teachers agree they expect students to become independent learners and students disagree or were undecided they are encouraged to think for themselves.

For the three concepts with less extensive differences, teachers and student responses were closer on the scale:

- Teachers agree that in their class students discuss and solve open-ended questions and problems and students agree or undecided that they discuss and solve problems that have more than one answer.
- Teachers disagree that teachers have high expectations for all students and students disagree or were undecided that this school has high expectations for all students.
- Teachers agree that they encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing) and students agree or were undecided that they are required to demonstrate their understanding in a variety of ways (i.e. speaking, writing).

There were two concepts where the differences between teacher and student perceptions were unclear:

- Teachers agree that they encourage students to create original solutions to complex problems and students agree, disagree, or were undecided that they work with different groups of classmates.
- Teachers agree and disagree that if students are given more challenging work, they do it and students agree or were undecided that if they were given more challenging work, they would do it.

Findings related to relevance. All but one of the findings related to relevance were perceived teachers as being used in their classroom. For example, teachers use performance-based assessments to reflect how well their students have learned, use information and communication technology to promote learning, teach students to use information and communication technology responsibly, and reach out to colleagues to identify successful practices. Also, teachers indicate they perceive they use a variety of instructional strategies to help students learn, do interdisciplinary planning and projects, and use information and communication technology to promote learning. Teachers also perceive that they encourage students explore things they find interesting, encourage students to explore career pathways, encourage students to use multiple resources when solving problems, and encourage students to work with others to solve problems. Finally, teachers perceive that students can apply what they are teaching to their everyday lives and that they connect the learning in their classrooms to student's everyday lives.

For the findings related to students' perception of relevance in the classroom, students identified the presence of 14 of the 15 concepts related to the relevance of instruction in the classroom. For example, students work with other students to solve problems and believe what they are learning in school will help in the future. Students also perceive teachers use computers in their classroom and perceive teachers use the internet in the classroom. Students are encouraged to use computers to work on assignments, explore things they find interesting, are taught by teachers to use computers and internet in a responsible way, perceive teachers expect them to use in the internet on some class assignments, and perceive some of their classes combine different subjects. For one concept, student perceptions were unclear as to whether or not students look in

textbooks for most of the answers for assignments. Finally, students agree that they can apply what they learn in classes to everyday life, hope they are prepared for college when they graduate from school, perceive teachers make them aware of different career choices, and have opportunities to apply what they learn in school to life.

Findings related to relevance. All but one of the findings related to relevance were perceived teachers as being used in their classroom. For example, teachers use performance-based assessments to reflect how well their students have learned, use information and communication technology to promote learning, teach students to use information and communication technology responsibly, and reach out to colleagues to identify successful practices. Also, teachers indicate they perceive they use a variety of instructional strategies to help students learn, do interdisciplinary planning and projects, and use information and communication technology to promote learning. Teachers also perceive that they encourage students explore things they find interesting, encourage students to explore career pathways, encourage students to use multiple resources when solving problems, and encourage students to work with others to solve problems. Finally, teachers perceive that students can apply what they are teaching to their everyday lives and that they connect the learning in their classrooms to student's everyday lives.

For the findings related to students' perception of relevance in the classroom, students identified the presence of 14 of the 15 concepts related to the relevance of instruction in the classroom. For example, students work with other students to solve problems and believe what they are learning in school will help in the future. Students also perceive teachers use computers in their classroom and perceive teachers use the internet in the classroom. Students are encouraged to use computers to work on

assignments, explore things they find interesting, are taught by teachers to use computers and internet in a responsible way, perceive teachers expect them to use in the internet on some class assignments, and perceive some of their classes combine different subjects. For one concept, student perceptions were unclear as to whether or not students look in textbooks for most of the answers for assignments. Finally, students agree that they can apply what they learn in classes to everyday life, hope they are prepared for college when they graduate from school, perceive teachers make them aware of different career choices, and have opportunities to apply what they learn in school to life.

To some extent there were differences in teacher and student responses on the nine teacher and student statements related to relevance that were determined to be matched conceptually. The differences in three concepts were more extensive and the difference in one concept was less extensive. For the more extensive differences, the responses of teachers and students were farther apart on the scale. Bullet two and three are similar because two student items about applying learning to everyday lives were matched to one teacher item.

- Teachers agree they encourage students to explore things they find interesting and students disagree or were undecided that they are encouraged to explore things they find interesting.
- Teachers agree that students can apply what is being taught to their everyday lives and students disagree or were undecided that they have opportunities to apply what they learn in school to their lives.

- Teachers agree that students can apply what they are teaching to their everyday lives and students disagree or were undecided that they can apply what they learn in class to their everyday lives.

For the findings that indicated a less extensive difference, teacher and student responses were closer on the scale. Teachers agree they are expected to do interdisciplinary planning and projects and students were undecided that some of their classes combine different subjects. No differences were found for the remaining five concepts. The hypotheses stated there would be differences, and in this case, teachers and students are viewing these relevant strategies similarly. Bullets one and two are similar because two student were matched to one teacher item about the expected use information and communication technology.

- Teachers are expected to use information and computer technology (e.g. computers, internet) to promote learning and students perceive that teachers use computers in the classroom.
- Teachers are expected to use information and communication technology (e.g. computers, internet) to promote learning and students perceive teachers use the internet in the classroom.
- Teachers teach students to use information and communication technology responsibly and students are taught by teachers to use computers and the internet in a responsible way.
- Teachers use information and communication technology (e.g. computers, internet) to promote learning and students perceive that teachers use the internet in the classroom.

- Teachers are expected to use information and communication technology (e.g. computers, internet) to promote learning and students perceive teachers use the internet in the classroom.

Findings Related to the Literature

The current study explored teacher and student perceptions of rigor and relevance in one 6-8 middle school in District X. Research on the impact of rigor and relevance on student achievement is presented. Research, in addition to this study, provides more information to help guide educators in making decisions using the data collected from a survey administered during the 2017-2018 school year to students and staff.

Some of the findings with regard to teachers' perception of rigor in the classroom were in agreement with current research and studies. For example, research-based instructional designs like the Backward Design (Kurt, 2015), which puts learning outcomes at the forefront and allows for flexibility to the learning experience, and The Kemp Instructional Design Model (Kemp 1985), where the learner's goals and needs are considered when making instructional decisions, are two lesson designs that provide rigorous learning opportunities for students. In the current study, teachers agree they are expected to provide opportunities for students to discuss and solve open-ended questions and problems as well as use discussion and open-ended questions and problems in their classrooms. Hattie (2009) also found in his meta-analysis, highlighted in his book *Visible Learning* that many instructional strategies identified as rigorous created a positive effect on learning. These strategies included discussion, high teacher expectations, student expectations, and working together. In the study of rigor in the classroom, Moose (2015) found rigor of great importance in order to engage students and keep them coming back to school. Reich, Sevim, and Turner (2015) determined that teachers who effectively implement rigor do so

in a way that meets students where they are and continues their learning. In the current study, teachers agree that they expect students to become independent learners and have a basic understanding of what is being taught. Teachers also agree that they encourage students to demonstrate their understanding in a variety of ways and that they use assessments to plan and adjust instruction.

Some of the findings with regard to students' perception of the presence of rigor in the classroom were in agreement with current research and studies. Matusevich, et al. (2009) found students favor more rigorous work and learn more if provided rigorous learning opportunities. In this study students reported they strongly agree or were undecided in that if they were given more challenging work they would do it. As Beasley (20140) stated in his narrative on research-based instructional tools, quality instruction requires students to construct meaning for themselves. Completing tasks like answering open-ended questions is one way to provide rigorous instruction to students. In this study students agree that they discuss and solve problems that have more than one answer.

White (2018) found a significant difference in teacher perceptions and student perceptions of rigor and relevance. In the current study, teacher and student perceptions did not always align. For example, teachers agree they expect students to become independent learners while students disagree they are encouraged to think for themselves. Teachers disagree that they are expected to make passing the state assessment their number one priority while students perceive passing the state test is the most important thing they do in school. Also, teachers perceive they encourage students to create original solutions to complex problems while students disagree teachers give them choices to show their understanding. White (2018) also stated teacher and student perceptions need to align in order to maximize student achievement. In this

study, some teacher and student perceptions were more closely aligned. For example, teachers strongly agreed they perceive they encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing) and students agree or were undecided they are required to demonstrate their understanding in a variety of ways (i.e., speaking, writing). Also, teachers strongly agree that in their class students discuss and solve open-ended questions and problems while students agree or were undecided that they discuss and solve problems that have more than one answer.

Some of the findings with regard to teachers' perceptions of relevance in the classroom were in agreement with current research and studies. According to Briggs' (2014) narrative, in *How to Make Learning Relevant to your Students (And Why It's Crucial to Their Success)*, lessons should be student-directed, use suspense, and build on students' previous knowledge. Roberson (2013), in *Helping Students Find Relevance,* stated one of the most important elements of instruction is providing relevance to students. In this study teacher perceptions reflected this research. For example, teachers strongly agreed students can apply what is being taught to their everyday lives and that they also encourage students to explore things they find interesting. As Hattie (2009) stated, learning is personal. In addition, Daggett and Nussbaum (2008) stated, "Learning is optimized when students are involved in activities that require both complex thinking as well as the application of knowledge to real-world situations" (p.5). In this study, teachers perceive they are expected to use a variety of instructional strategies to help students learn. Teachers also perceive students can apply knowledge to their everyday lives and that they encourage students to explore career pathways. Finally, teachers perceive they connect the learning in their classroom to the community.

Some of the findings with regard to students' perceptions of relevance in the classroom were in agreement with current research. In Roberson's (2013) text, *Helping Students Find Relevance,* he stated teacher's communicate intentions by connecting to a student's cognitive need, and in the end, students decide what they will learn, not the teachers. According to Pawlak, Magarinos, Melchor, McEwen, & Strickland (2003), in an article from *Nature Neruoscience,* superior learning takes place when classroom experiences are relevant to students' lives, interest and experiences. According to Ferlazzo, (2014) in *The Best Ways to Engage Students in Learning,* when students are engaged, they perform better academically, improve behavior, and of a higher level of self-esteem. These summations of research were in alignment with the current study. Students agreed that they can apply what they are learning to their everyday lives and that they have opportunities to apply what they learn in school to life. They perceive they are encouraged to explore things they find interesting, that their classes combine different subjects, and that they work with other students to solve problems. Also, they believe what they are learning in school will help them in the future. Hattie (2009) stated, "Learning is very personal to the teacher and to each student" (p. 241). In the current study, students perceive they are encouraged to explore things they find interesting.

Teacher perceptions and student perceptions of relevance were not the same. White's (2018) study discussed similar results, teacher and student perceptions in White's study were not in agreement just as in this study. According to White, there was a vast difference between teacher perceptions and student perceptions. In this study the findings were similar to this study. Teachers perceive their instruction as relevant and applicable to student's everyday lives, whereas students did not agree. Teachers also perceive that they encourage students to explore things they find interesting and students were undecided or disagree. In this study, one similarity

in teacher and student perceptions was that teachers and students were more closely aligned in their perceptions of technology use and technology instruction.

Conclusions

This section summarizes the conclusions drawn from the data outlining teacher and student perceptions of rigor and relevance. Implications for action are included as well as recommendations for future research. This section closes with concluding remarks.

Implications for action. The results of this study have implications for continuous curricular and instructional improvements in District X. District level administrators, building administrators, building leadership teams, and teachers can use the results to evaluate their perceptions and students' perceptions of rigor and relevance. Some hypotheses in particular lend themselves to an opportunity for professional learning for teachers. Teacher responses showed they strongly agreed students can apply what teachers are teaching to their everyday lives, whereas students disagree or strongly disagree that they can apply what they learn in classes to everyday life. This demonstrates a need for teachers to better understand their students and their students' needs. Teachers strongly agree or agree they encourage students to explore things they find interesting, whereas students disagree or are undecided they are encouraged to explore things they find interesting. This demonstrates an inconsistency between teacher perceptions and student perceptions. From this, leaders in District X should design conversations and professional learning around ways to truly learn about students' opinions, focusing on ways to build relationships and understand student needs.

From this study, other districts could pursue their own study of teacher and student perceptions regarding instruction. Other districts could consider the use of the commercially available WE Teach™ and WE Learn™ surveys to gather perception data. Based on the survey

results, district could determine specific actions focusing on rigor and relevance. Further aspects, relationships and leadership, measured by the WE Teach™ and WE Learn™ surveys could also be analyzed.

Recommendations for future research. The purpose of this study was to identify teacher and perceptions of rigor and relevance. District and building leaders, then, may use the data to better understand teacher and student needs so as to design professional learning specific to teachers in this building in District X. In the future, District X could continue to collect data and determine trends in teacher and student perceptions of rigor and relevance, including data collected and analyzed by grade level and other demographics, such as achievement level, which would require modification in the collection of survey data. Additional studies should be conducted to determine the relationship of perceptions to actual achievement and the impact of the changes implemented as a result of the survey data. Districts could also begin to institute professional learning on specific rigor and relevant strategies to see if student perceptions change.

Another area important to consider for District X, as well as other districts, is determining if relationships built between teacher and student are perceived the same by teachers and students. This study did not explore teacher and student perceptions of relationships. Research previously discussed suggests relationships are paramount to student achievement. First, districts should understand teacher perceptions and student perceptions of relationships. If perceptions differ, then educational leaders should provide more professional learning for teachers on how to build relationships with their students.

Concluding remarks. Continuing to provide a rich learning environment where all students can be successful will continue to prove difficult. As past research indicates, providing

an educational environment with rigor and relevance yields increased student achievement (Daggett 2013). Knowing this, district and building leaders can utilize teacher and perception data on rigor and relevance to determine effectiveness and areas of need. Additionally, with this data, educational leaders can make informed decisions on what to teach and how to teach for the betterment of all students.

References

Aikens, N. L., & Barbarin, O. (2008). Socioeconomic differences in reading trajectories: The contribution of family, neighborhood, and school contexts. *Journal of Educational Psychology, 100*(2), 235-251. http://dx.doi.org/10.1037/0022-0663.100.2.235

Anderson, L. W., Krathwohl, D. R., & Bloom, B. S. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives* (Complete ed.). New York, NY: Longman.

Bandeira de Mello, V., Blankenship, C., & McLaughlin, D.H. (2009). *Mapping state proficiency standards onto NAEP scales: 2005-2007* (NCES 2010-456). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S.
Department of Education

Beasley, J. (2014). *Recreating rigor: A tool to consider*. Retrieved from https://www.nagc.org/sites/default/files/THP_Summer_2014.pdf#page=5

Ben-Chaim, D., & Zoller, U. (2001). Self-perception versus students' perception of teachers' personal style in college science and mathematics courses. *Research in Science Education. 31*(3), 437-454. Retrieved from https://www.researchgate.net/publication/226923968_Self-Perception_versus_Students'_Perception_of_Teachers'_Personal_Style_in_College_Science_and_Mathematics_Courses

Bernard, S. (2010). *Science shows making lessons relevant really matters.* Retrieved from https://www.edutopia.org/neuroscience-brain-based-learning-relevance-improves-engagement

Bertolini, K., Stremmel, J., & Throngren T. (2012). *Student achievement factors.* Retrieved from https://files.eric.ed.gov/fulltext/ED568687.pdf

Blackburn, B. R. (2008). *Rigor is not a four letter word*. Larchmont, NY: Eye on Education.

Blackburn, B.R. (2014) *Rigor made easy: Getting started*. Retrieved from https://books.google.com/books?id=wbNFAAAAQBAJ&printsec=frontcover&dq=rigor+made+easy&hl=en&newbks=1&newbks_redir=0&sa=X&ved=2ahUKEwj1oP6oZXoAhWVoJ4KHcYMB0UQ6AEwAHoECAEQAg#v=onepage&q=rigor%20made%20easy&f=false

Bloom, B. S. (1956). *Taxonomy of educational objectives, Handbook I: The cognitive domain*. New York, NY: David-McKay.

Briggs, S. (2014). *How to make learning relevant to your students (and why it's crucial to their success).* Retrieved from https://www.opencolleges.edu.au/informed/features/how-to-make-learning-relevant/

Byrd, J. (2011a). *Analysis of the Successful Practices Network We Learn (Grades 6-12) Student Survey.* Retrieved From http://www.wesurveys.org/spn/userMedia/11/11/files/we_learn_survey_report%20PUB.pdf

Byrd, J. (2011b). *Analysis of the Successful Practices Network We Teach: Instructional Staff Survey.* Retrieved from http://wesurveys.spnetwork.org/spn/userMedia/31/31/files/We_teach_PUB.pdf

Chang, H. & Romer, M. (2008*) Present, engaged, and accounted for: The critical importance of addressing chronic absence in the early grades*. Retrieved from http://www.nccp.org/publications/pdf/text_837.pdf

Common Core State Standards Initiative. (2019). *Development process*. Retrieved From http://www.corestandards.org/about-the-standards/development-process/

Davis, H. A. (2006). Exploring the contexts of relationship quality between middle school students and teachers. *Elementary School Journal, 106*(3), 193-223. http://www.jstor.org/stable/10.1086/501483

Daggett, W. R. (2009). *Rigor and relevance: Preparing students for a 21st century world*. Retrieved from https://www.seenmagazine.us/Articles/Article-Detail/articleid/207/rigor-and-relevance

Daggett, W. R. (2011). *The Daggett system for effective instruction: Where research and best practices meet*. Retrieved from https://leadered.com/wp-content/uploads/Daggett_System_for_Effective_Instruction_2014.pdf

Daggett, W. R. (2014). *Rigor/Relevance Framework®: A guide to focusing resources to increase student performance*. Retrieved from https://leadered.com/wp-content/uploads/Rigor-Relevance-Framework-White-Paper-2016-1.pdf

Daggett, W. R., & Nussbaum, P. D. (2008). How brain research relates to rigor, relevance and relationships. *International Center for Leadership in Education,* 1-8. Retrieved from http://www.lbschools.net/Asset/Files/Linked_Learning/Reading/BrainResearchRigorRel.pdf

Daggett, W. R., & Nussbaum, P. D. (2013). *Latest brain research reveals multiple pathways to achievement*. (1-9) Retrieved from citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.492.6953&rep1&type=pdf

Early, D. M., Rogge, R. D., & Deci, E. L. (2014). Engagement, alignment, and rigor as vital signs of high-quality instruction: A classroom visit protocol for instructional improvement and research, *High School Journal*, *97*(4), 219-239. Retrieved from ERIC database. (EJ1026264)

Ellis, C. (2007). No Child Left Behind-A critical analysis: A nation at greater risk. *Curriculum and Teaching Dialogue. 9*(1&2), 221-233.

Epstein, J., & Sheldon, S. (2012). *Necessary but not sufficient: The role of policy for advancing programs of school, family, and community partnerships*. Retrieved from https://www.rsfjournal.org/content/2/5/202.abstract

Ferlazzo, L. (2014). *The best ways to engage students in learning*. Retrieved from http://blogs.edweek.org/teachers/classroom_qa_with_larry_ferlazzo/2014/12/response_the_best_ways_to_engage_students_in_learning.html

Follman, J. (1992). Secondary school students' ratings of teacher effectiveness. *The High School Journal, 75*(3), 168–178. Retrieved from https://psycnet.apa.org/record/1992-36955-001

Follman, J. (1995). Elementary public school pupil rating of teacher effectiveness. *Child Study Journal, 25*(1), 57–78. Retrieved from https://psycnet.apa.org/record/1995-42076-001

Garces, D., Thomas, J., & Currie, J. (2002). Longer term effects of Head Start. *The American Economic Review, 92*(4), 999-1012. Retrieved from https://www.aeaweb.org/articles?id=10.1257/00028280260344560

Grant, A. (2018). *Designing an instructional framework.* Retrieved from https://schoolturnaroundcoach.blog/2018/01/02/instructional-frameworks-for-school-turnaround/

Great Schools Partnership. (2013, December 19). *The glossary of educational reform.* Retrieved from https://www.edglossary.org/achievement-gap/

Great Schools Partnership. (2014, December 29). *The glossary of educational reform.* Retrieved from edglossary.org/rigor/

Hannah, R. (2013). The effect of classroom environment on student learning. Retrieved from https://scholarworks.wmich.edu/cgi/viewcontent.cgi?article=3380&context=honors_theses

Hanover Research. (2013). *Student perception surveys and teacher assessments*. Retrieved from https://dese.mo.gov/sites/default/files/Hanover-Research-Student-Surveys.pdf

Haskins, R., Murnane, R., Sawhill, I., & Snow, C., (2012). *Can academic standards boost literacy and close the achievement gap?* Retrieved from

https://www.brookings.edu/research/can-academic-standards-boost-literacy-and-close-the-achievement-gap/

Hattie, J. (2009). *Visible learning for teachers: Maximizing impact on learning a synthesis of over 800 meta-analyses relating to achievement*. London, England: Routledge.

Hess, K. (2013). *Cognitive rigor in today's classroom. Measured progress*. Retrieved from http://asdn.org/wp\content/uploads/CCAP3010_Cognitive_Rigor_in_Todays_Classroom

International Center for Leadership in Education (ICLE). (2020). Boston, MA. Houghton Mifflin Harcourt. Retrieved from https://leadered.com/about-us/

Kane, M., Berryman, S., Goslin, D., & Meltzer, A. (1990). *The Secretary's commission on achieving necessary skills: Identifying and describing the skill required by work.* Retrieved from http://www.academicinnovations.com/report.html

Kansas State Board of Education. (2019). *Kansas education systems accreditation (KESA).* Retrieved from https://www.ksde.org/Agency/Division-of-Learning-Services/Teacher-Licensure-and-Accreditation/K-12-Accreditation-Home/KESA

Kansas State Department of Education. (n.d.-a). *Career standards and assessment.* Retrieved from https://www.ksde.org/Agency/Division-of-Learning-Services/Career-Standards-and-Assessment-Services/CSAS-Home/Standards-and-Fact-Sheets/ItemId/2221

Kansas State Department of Education. (n.d.-b). *KSDE data central*. Retrieved from https://ksreportcard.ksde.org/demographics.aspx?org_no=State&rptType=3

Kansas State Department of Education. (n.d.-c). *Quality performance accreditation*. Retrieved from https://www.ksde.org/Agency/Division-of-Learning-Services/Teacher-Licensure-and-Accreditation/K-12-Accreditation-Home/Quality-Performance-Accreditation-QPA

Kemp, J. E. (1985). *The instructional design process.* New York, NY: Harper and Row.

Kemp, J. E., Morrison, G. R., & Ross, S. V. (1994). *Design effective instruction,* New York, NY: Macmillan.

Kemp, S. (2016). *Kemp design model*. Retrieved from https://educationaltechnology.net/instructional-design-models-and-theories/

Kilpatrick, J., Swafford, J., & Findell, B. (2001). *Adding it up: Helping children learn Mathematics.* Washington, DC: National Academy Press. Retrieved from https://www.nap.edu/read/9822/chapter/1#xvii

Klein, A. (2019). No Child Left Behind: An overview. *Education Week*. Retrieved from https://www.edweek.org/ew/section/multimedia/no-child-left-behind-overview-definition-summary.html

Kurt, S. (2015). Instructional design models and theories, in *Education Technology*, December 9, 2015. Retrieved from https://educationaltechnology.net/instructional-design-models-and-theories/

Lewthwatie, B., Boon, H., Webber, T., & Laffin, G. (2017). Quality teaching practices as reported by aboriginal parents, students and their teachers: Comparisons and contrasts. *Australian Journal of Teacher Education, 42*(5), 80-97. Retrieved from https://ro.ecu.edu.au/cgi/viewcontent.cgi?article=3511&context=ajte

Lunenburg F. C., & Irby, B. J. (2009). *Writing a successful thesis or dissertation: Tips and strategies for students in the social and behavioral sciences*. Thousand Oaks, CA: Corwin Press.

Marsh, C., & C. Willis. (2007). *Curriculum: Alternative approaches, ongoing issues.* London, UK: Pearson. Retrieved from 1397/Summer%202013_Education%20Paradigm%20Shifts.pdf#page=30

Martinez, S., & Snider, L. (2001). *History of Kansas education.* Retrieved from https://www.ksde.org/Portals/0/Research%20and%20Evaluation/History%20of%20Kansas%20Education.pdf?ver=2017-08-18-125119-667

Matusevich, M., O'Connor, K., & Hargett, M. (2009). The nonnegotiables of academic rigor. *Gifted Child Today, (32)4*, 44-52. https://doi.org/10.1177/107621750903200412

Maye, D. (2013). *Hitting the mark: Strategic planning for academic rigor*. Retrieved from http://66.237.145.149/dsweb/Get/Document-

McDonnell, L., & Fuhrman, S. (1986). The political context of reform. In V. D. Mueller & M. P. McKeown (Eds.), *The fiscal, legal, and political aspects of state reform of elementary and secondary education* (pp. 43-64). Cambridge, MA: Ballinger.

McNulty, R. & Quaglia, R. (2007). Rigor, relevance, and relationships. *The School Administrator,* 18-24. Retrieved from https://eric.ed.gov/?id=EJ775460

McShane, M., & DiPerna, P. (2018). *Do-over or double down: working toward a new K-12 education accountability ecosystem.* Retrieved from https://www.edchoice.org/wp-content/uploads/2018/10/2018-10-Do-Over-or-Double-Down-by-Michael-Q.-McShane-and-Paul-DiPerna.pdf

McTighe, J., & Wiggins, G. (n.d.) *Understanding by design framework*. Retrieved from https://www.ascd.org/ASCD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf

Mitchell, K., Shkolnik, J., Song, M., Uekawa, K., Murphy, R., & Garet, M. (2005). *Rigor, relevance, and results: The quality of teacher assignments and student work in new and conventional high schools*. Washington, DC: American Institutes for Research and SRI International.

Moose, A. (2015). *A case study on the impacts of rigor, relevance, and relationships in a freshman academy for secondary classroom students*. Retrieved from https://digitalcommons.gardner-webb.edu/cgi/viewcontent.cgi?article=1138&context=education_etd

Morgan, P. L., Farkas, G., Hillemeier, M. M., & Maczuga, S. (2009). Risk factors for learning-related behavior problems at 24 months of age: Population-based estimates. *Journal of Abnormal Child Psychology, 37*(3), 401–413. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3085132/

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Retrieved from https://www.edreform.com/wpcontent/uploads/2013/02/A_Nation_At_Risk_1983.pdf.

Olson, L. (2019). *The road to college and career readiness: Why it just may be paved with rigor*. Retrieved from http://longmanhomeusa.com/blog/the-road-to-college-and-career-readiness-why-it-just-may-be-paved-with-rigor/

Paige, D., Smith, G., & Sizemore, J. (2015). Conceptualizing rigor and its implications for education in the era of the common core. *Cogent Education, 2*(1), 1-20. https://doi.org/10.1080/2331186X.2015.1048084

Pawlak, R., Magarinos, A. M., Melchor, J., McEwen, B., & Strickland, S. (2003). Tissue plasminogen activator in the amygdala is critical for stress-induced anxiety like behavior. *Nature Neuroscience, 6*(2), 168–174.

Paul, C. (2019). *Elementary and Secondary Education Act of 1965*. Retrieved from https://socialwelfare.library.vcu.edu/programs/education/elementary-and-secondary-education-act-of-1965/

Peterson, P., Barrows, S., & Gift, T. 2016. After common core, states set rigorous standards. *Education Next, 16*(3). Retrieved https://www.educationnext.org/after-common-core-states-set-rigorous-standards/

Peterson, K., Whalquist, C., & Bone, K. (2000). Student surveys for school teacher evaluation. *Journal of Personnel Evaluation in Education.* 14, 135-153. doi # 10.1023/A:1008102519702

Reardon, S. F., Valentino, R. A., Kalogrides, D., Shores, K.A., & Greenberg, E.H. (2013). *Patterns and trends in racial academic achievement gaps among states, 1999-2011*. Retrieved from https://cepa.stanford.edu/content/patterns-and-trends-racial-academic-achievement-gaps-among-states-1999-2011

Reich, G., Sevim, V., & Turner, A. (2015). *Academic rigor for all: A research report*. Retrieved from http://wp.vcu.edu/merc/wp-content/uploads/sites/3387/2015/07/Report-Final-5-15-15.pdf

Roberson, R. (2013). *Helping students find relevance*. Retrieved from

https://www.apa.org/ed/precollege/ptn/2013/09/students-relevance

Secretary's Commission on Achieving Necessary Skills. (1991). Washington, DC: Department of Labor.

Singh, K., Chang, M., & Dika, S. (2010). Ethnicity, self-concept, and school belonging effects of school engagement. *Educational Research for Policy & Practice*, *9*(3), 159-175. doi:10.1007/s10671-010-9087-0

State of Iowa Department of Education. (2005). Improving rigor and relevance in the high school curriculum. Retrieved from https://files.eric.ed.gov/fulltext/ED492963.pdf

Stewart, K. (2016). *Examining student and teacher perceptions of the classroom social environment across school context: Effects of individual factors*. Retrieved from https://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=7596&context=etd

Stone, J., & Lewis, M. (2015). *College and career ready in the 21st century: Making high school matter*. Retrieved from https://books.google.com/books?hl=en&lr=&id=7R9hAgAAQBAJ&oi=fnd&pg=PR5&dq=college+and+career+ready+standards+rigor+relevance&ots=KQSte1mM0k&sig=KWgrjJYMcc97HzHLkrtDZhxAw-o#v=onepage&q=college%20and%20career%20ready%20standards%20rigor%20relevance&f=false

Strong, R., Silver, H., & Perini, M. (2001). *Teaching what matters most*. Retrieved from http://www.ascd.org/publications/books/100057/chapters/An-ASCD-Study-Guide-for-Teaching-What-Matters-Most@-Standards-and-Strategies-for-Raising-Student-Achievement.aspx

Successful Practices Network. (n.d.-a). *History*. Retrieved from https://www.spnetwork.org/history.html

Successful Practices Network. (n.d.-b). *We survey suite*. Retrieved from http://wesurveys.org/

The nation's report card. (2019). Data Tools: District Profiles. Retrieved from https://www.nationsreportcard.gov/profiles/districtprofile?chort=1&sub=MAT&sj=XQ&sfj=NL&st=MN&year=2019R3

Thomas, J., & Brady, K. (2005). *The Elementary and Secondary Education Act at 40: Equity, accountability, and the evolving federal role in public education*. Retrieved from https://eric.ed.gov/?id=EJ746364

U.S. Department of Education. (2010). *College and career ready students.* Retrieved from https://www2.ed.gov/policy/elsec/leg/blueprint/college-career-ready.pdf

U.S. Department of Education. (2019a). *Chronic absenteeism in the nation's schools.* Retrieved from https://www2.ed.gov/datastory/chronicabsenteeism.html#four

U.S. Department of Education. (2019b). *Every Student Succeeds Act*. Retrieved from https://www.ed.gov/essa?src=rn

White, A. (2018). The impact of the Rigor/Relevance Framework ® on school-wide academic achievement and attendance. Retrieved from https://search.proquest.com/openview/6e48a15fc4ba2bc8b0ae66b0823c4e37/1?pq-origsite=gscholar&cbl=18750&diss=y

Williamson, R., & Blackburn, B. R. (2010). *Rigorous schools and classrooms*. Larchmont, NY: Eye on Education.

Williamson, R., & Blackburn, B. (2013). *Rigorous schools and classrooms: Leading the way*. New York, NY: Routledge.

Willis, J. (2007) The neuroscience of a joyful education. *Education Leadership, 64* (Summer), n.p.

Retrieved from https://www.psychologytoday.com/files/attachments/4141/the-neuroscience-joyful-education-judy-willis-md.pdf?scrlybrkr=5bf644ee

Willoughby, C. C. (2013). *The Rigor/Relevance Framework: Its relationship to K-12 student achievement on statewide tests*. (Doctoral dissertation). Retrieved from digitalcommons.wayne.edu/oa_dissertations/717/

Appendices

Appendix A: WE Teach ™ and WE Learn ™ Survey Statements: Rigor and Relevance

Survey Statements: Rigor

WE Teach ™	WE Learn ™
In my class students discuss and solve open-ended questions and problems.	In class we discuss and solve problems that have more than one answer.
Staff are expected to provide opportunities for students to discuss and solve open-ended questions and problems.	My teachers expect me to apply what I learn in school to my life.
I encourage students to create original solutions to complex problems.	I am asked to share my thinking with others.
The school expects me to use common rubrics and scoring guides to measure student proficiency.	My teacher gives me choices in how I show my understanding of what I learned.
I design assessments that encourage students to think creatively.	If I were given more challenging work in class, I would do it.
Student reading levels are measured regularly.	If I were given more challenging work in class, I would do it.
I expect students to work with different groups of classmates.	Passing the state test is the most important thing I do in school.
Struggling and disengaged learners receive the support necessary to be successful.	When I struggle in class, I receive help.
This school gives up on difficult students.	I am given more difficult things to read as the school year progresses.
If students are given more challenging work, they do it.	On tests, I solve problems that have more than one answer.
I am expected to make students passing the state test my number one priority.	I am required to demonstrate my understanding in a variety of ways (i.e. speaking, writing).
I spend too much time re-teaching what students should already know.	My teacher expects me to work with different groups of classmates.
This school has high expectations for all students.	My assignments require that I organize and manage information.
My assessments are more challenging than current state tests.	I am encouraged to think for myself.
I expect students to become independent learners.	At this school, students care about doing well academically.
I use assessments to plan and adjust my instruction.	My teachers are teaching me things I already know.
Students are expected to exceed a basic understanding of what is being taught.	My assignments have predictable solutions.
Students who graduate from this school are college and/or workforce ready.	I want to do better at school academically.
I encourage students to demonstrate their understanding in a variety of ways (i.e. speaking, writing).	

Survey Statements: Relevance

WE Teach ™	WE Learn ™
Staff are expected to use a variety of instructional strategies to help students learn.	I can apply what I learn in my classes to my everyday life.
I use performance based assessments to reflect how well my students have learned.	Teachers use computers in the classroom.
I encourage students to explore things they find interesting.	When I graduate from school, I hope I will be prepared for college.
Staff are expected to do interdisciplinary planning and projects.	Students are encouraged to use computers to work on assignments.
Students can apply what I am teaching to their everyday lives.	I'm encouraged to explore things I find interesting.
I use information and communication technology (e.g., computers, internet) to promote learning.	I look in textbooks for most of the answers for assignments.
I encourage students to explore career pathways.	Some of my classes combine different subjects.
Staff are expected to use information and communication technology (e.g., computers, internet) to promote learning.	I work with other students in my classes to solve problems.
I connect the learning in my classroom to the community.	My teachers make learning fun.
I encourage students to use multiple resources when solving problems.	I am taught by my teachers to use computers and the internet in a responsible way.
I encourage students to work with others to solve problems.	My teachers make me aware of different career choices.
I teach students to use information and communication technology responsibly.	My teachers expect me to use the internet on some of my class assignments.
I reach out to colleagues to identify successful practices.	I believe that what I am learning in school will help me in my future.
	Teachers use the internet in the classroom.
	I have opportunities to apply what I learn in school to my life.

Appendix B: Phase 1 and Phase 2 Inter-rater Reliability Processes

Phase 1: The process for Phase 1 inter-rater reliability involved the following processes

1. Each of the three experts were provided a list of student statements and teacher statements from the rigor and relevance portion of the WE Teach™ and WE Learn™ surveys. The original number of statements provided were:
2. The educational experts independently matched survey statements from the teacher and student survey when they thought the items measured the same concept. Items were provided in the order they appeared in the survey.
3. Experts were asked to insert the number of an item from the teacher survey in the column next to a student survey item that was a match.
4. Experts were advised that some teacher questions would not have a matching item and they were to enter a "No Match" in the column.
5. Items where two out of the three experts agreed there was a match in terms of concept are identified below.

Number of Original Items	WE Teach™ Survey	WE Learn™ Survey	Number of Items Where 2 out of 3 experts rated the statements as measuring the same concept
Rigor	19	18	10
Relevance	13	13	7

RIGOR STATEMENTS MEETING CRITERIA OF TWO OUT OF THREE EXPERTS AGREEING THEY MEASURED THE SAME CONCEPT	
WE Teach™ Statements	**WE Learn™ Statements**
In my class students discuss and solve open-ended questions and problems.	In class we discuss and solve problems that have more than one answer.
I encourage students to create original solutions to complex problems.	My teacher gives me choices in how I show my understanding of what I learned.
I expect students to work with different groups of classmates.	My teacher expects me to work with different groups of classmates.
Struggling and disengaged learners receive the support necessary to be successful.	When I struggle in class, I receive help.
If students are given more challenging work, they do it.	If I were given more challenging work in class, I would do it.
*I am expected to make students passing the state test my number one priority.	* Passing the state test is the most important thing I do in school.
I spend too much time re-teaching what student should already know.	My teachers are teaching me things I already know.
I expect students to become independent learners.	I am encouraged to think for myself.
I encourage students to create original solutions to complex problems.	I am required to demonstrate my understanding in a variety of ways (i.e. speaking, writing).

**Reverse-coded item*

RELEVANCE STATEMENTS MEETING CRITERIA OF TWO OUT OF THREE EXPERTS AGREEING THEY MEASURED THE SAME CONCEPT	
WE Teach™ Statements	**WE Learn™ Statements**
Students can apply what I am teaching to their everyday lives.	I can apply what I learn in my classes to my everyday life.
Staff are expected to use information and computer technology (e.g., computers, internet) to promote learning.	Teachers use computers in the classroom.
Students can apply what I am teaching to their everyday lives	I have opportunities to apply what I learn in school to my life.
I encourage students to use information and communication technology in a responsible way.	I am taught by my teachers to use computers and the internet in a responsible way.
I use information and communication technology (e.g., computers, internet) to promote learning.	Teachers use the internet in the classroom.
Staff are expected to do interdisciplinary planning and projects.	Some of my classes combine different subjects.
I encourage students to explore things they find interesting.	I'm encouraged to explore things I find interesting.

Phase 2 Inter-Rater Reliability Process: The same three experts were asked to conduct a final validation of the teacher and student statements identified as comparable in Phase 1 using the following process.

1. The three experts were asked to verify the student question that measured the same concept as a teacher question.
2. These statements were placed side-by-side in a Microsoft Excel document.
3. If statements did not correlate, experts were to place the words "No Match" in the blue column.
4. The experts indicated yes if they agreed that the statements were comparable or no if they did not agree the statements were comparable.
5. Only statements that at least 2 of 3 experts agreed measured the same concept were used in the analysis for RQ3 and RQ6.

RIGOR STATEMENTS MEETING CRITERIA OF TWO OUT OF THREE EXPERTS AGREEING THEY MEASURED THE SAME CONCEPT		
WE Teach™ Statements	**WE Learn™ Statements**	**Level of Inter-Scorer Agreement**
In my class students discuss and solve open-ended questions and problems.	In class we discuss and solve problems that have more than one answer.	3/3
I encourage students to create original solutions to complex problems.	My teacher gives me choices in how I show my understanding of what I learned.	3/3
I expect students to work with different groups of classmates.	My teacher expects me to work with different groups of classmates.	2/3

Struggling and disengaged learners receive the support necessary to be successful.	When I struggle in class, I receive help.	2/3
If students are given more challenging work, they do it.	If I were given more challenging work in class, I would do it.	2/3
*I am expected to make students passing the state test my number one priority.	* Passing the state test is the most important thing I do in school.	3/3
I spend too much time re-teaching what student should already know.	My teachers are teaching me things I already know.	2/3
I expect students to become independent learners.	I am encouraged to think for myself.	3/3
I encourage students to create original solutions to complex problems.	I am required to demonstrate my understanding in a variety of ways (i.e. speaking, writing).	3/3

**Reverse-coded item*

RELEVANCE STATEMENTS MEETING CRITERIA OF TWO OUT OF THREE EXPERTS AGREEING THEY MEASURED THE SAME CONCEPT		
WE Teach™ Statements	**WE Learn™ Statements**	**Level of Inter-Scorer Agreement**
Students can apply what I am teaching to their everyday lives.	I can apply what I learn in my classes to my everyday life.	2/3
Staff are expected to use information and computer technology (e.g., computers, internet) to promote learning.	Teachers use computers in the classroom.	2/3
Students can apply what I am teaching to their everyday lives	I have opportunities to apply what I learn in school to my life.	2/3
I encourage students to use information and communication technology in a responsible way.	I am taught by my teachers to use computers and the internet in a responsible way.	2/3
I use information and communication technology (e.g., computers, internet) to promote learning.	Teachers use the internet in the classroom.	2/3
Staff are expected to do interdisciplinary planning and projects.	Some of my classes combine different subjects.	
I encourage students to explore things they find interesting.	I'm encouraged to explore things I find interesting.	

Appendix C: Site Approval Letter

Baker University
Graduate School of Education
7301 College Blvd., Suite 120
Overland Park, KS 66210

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by Shannon Adams to conduct a research project entitled Rigor and Relationships and I approve of this research to be conducted at our district.

When the researcher receives approval for his/her research project from Baker University's Institutional Review Board, I agree to provide access for the approved research project. If we have any concerns or need additional information, we will contact Dr. Banikowski at 913-344-1225 or at ABanikowski@bakeru.edu

Sincerely,

[redacted]
Executive Director of School Administration-District X

Appendix D: Baker University Institutional Review Board (IRB) Approval

Baker University Institutional Review Board

October 14th, 2019

Dear Shannon Adams, Peg Waterman, and Dr. Alison Banikowski,

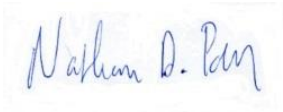
The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.
6. If this project is not completed within a year, you must renew IRB approval.

If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,



Nathan Poell, MLS
Chair, Baker University IRB

Baker University IRB Committee
Scott Crenshaw
Sara Crump, PhD
Jamin Perry, PhD
Susan Rogers, PhD

Appendix E: Teacher Respondents: Years Working in this School and in Education by Number and Percentage

Teacher Respondents: Years Working in this School and in Education by Number and Percentage

	Working at This School		Working in Education	
Years	*N*	*%*	*N*	%
1	8	20	1	3
2-5	12	30	7	18
6-10	11	28	10	25
11-20	7	18	13	33
Over 20	1	3	6	15
No Response	1	3	3	8

Appendix F: Student Respondents: Ethnicity

Student Respondents: Ethnicity

Ethnicity	*N*	%
White	367	65
Hispanic, Latino	30	5
Native Hawaiian	0	0
Other Pacific Islander	3	1
Native Hawaiian	0	0
Other Pacific Islander	3	1
Black or African American	22	4
Asian	108	19
American Indian or Alaska Native	4	1
Other	26	5
No Response	5	1