INTERIM ASSESSMENT DATA: A CASE STUDY ON MODIFYING INSTRUCTION BASED ON BENCHMARK FEEDBACK

by

Tracey M. Lange

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

April 2014

INTERIM ASSESSMENT DATA: A CASE STUDY ON MODIFYING INSTRUCTION BASED ON BENCHMARK FEEDBACK

By Tracey M. Lange

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, Virginia

April 2014

APPROVED BY:

Cristie McClendon, PhD, Committee Chair

Jared Bigham, EdD, Committee Member

Kristen Moran, PhD, Committee Member

Scott B. Watson, PhD, Associate Dean of Advanced Programs

INTERIM ASSESSMENT DATA: A CASE STUDY ON MODIFYING INSTRUCITON BASED ON BENCHMARK FEEDBACK

ABSTRACT

The role of data analysis in the jobs of instructional leaders has become as commonplace as teachers creating lesson plans and taking roll in the classroom. Teachers and building leaders routinely use interim assessment data to develop thoughtful and robust instructional plans that address identified areas of student need. The link between the interim assessment data collection and student learning includes the pedagogical changes that teachers implement based on the data from these interim assessments. However, teachers do not always know how to use the data for this purpose or do not always make necessary changes in their instruction. As a result, student achievement goes unchanged. The purpose of this evaluative qualitative case study was to explore how high school teachers used interim assessment data to evaluate their instruction, and if, or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study was to explore the pedagogical changes teachers had made, if any, in response to reviewing this data. The discovery process highlighted how the teachers used the interim assessment data, their own content knowledge, and pedagogical skills to change their instructional approaches to the content based on the interim assessment feedback.

Descriptors: *Virginia Standards of Learning, interim assessments, formative assessments, summative assessments, and data-driven-decision making*

ACKNOWLEDGEMENTS

I began the doctoral process when our first child was four weeks old. Our children have grown over the last five and half years hearing, “Mommy has to go do some homework.” Years of weekends have been spent with the breakfast table covered with books and a laptop. I dedicate this work to my husband, TJ, our son, Tristan, and our daughter Tinsley. How do I express my love and appreciation to the three of you for sticking by me during some of the most stressful times? Your precious hugs always came at the right moments. I extend my deepest appreciation to my mother-in-law, Lorraine, for our many, many conversations on perseverance. To persevere, one must have a solid work ethic. Thank you to my mother, Mary Lou, for teaching me pride for one’s work and that sleep can always come later. I watched you study late at night, Mom, and now your grandchildren are watching me. To my sister, Heather, for helping me brainstorm when I thought I had run out of ideas! Corie, my sister in the long nights and early mornings of studying and being a mom, I talked you into joining me in the doctoral process, and here we are! Ladies, your knowledge and passion for education and learning are inspiring. The dissertation process has truly been one of strangers helping strangers. Dr. McClendon, thank you for answering when I reached out to you over the past years. Your communications have been sources of support that have grounded me and kept me sane. Thank you for sharing your wisdom! As I read one of my final drafts, our three-year-old daughter cuddled on my lap, and said you have to start with, “Once upon a time.” Well, here we are my sweet supportive family. We are finally at “happily ever after.” I can clean off the breakfast table. Tristan and Tinsley, you can now touch the mouse on the laptop, and TJ, you finally have the undivided attention you deserve.

Table of Contents

LIST OF ABBREVIATIONS

Adequate Yearly Progress (AYP)

Assessment-Centered Teaching (ACT)

Criterion Referenced Competency Test (CRCT)

Date-Driven-Decision Making (DDDM)

End of Course (EOC)

Elementary and Secondary Education Act (ESEA)

No Child Left Behind (NCLB)

Roanoke County High School (RCHS)

Reading, Literature, and Research (RLR)

Standards of Learning (SOL)

Technology Enhanced Items (TEI)

United States Department of Education (USDOE)

Virginia Department of Education (VDOE)

Zone of Actual Development (ZAD)

Zone of Proximal Development (ZPD)

CHAPTER ONE: INTRODUCTION

The implementation of the No Child Left Behind Act (NCLB) in 2001 led to numerous education initiatives designed to increase student learning and performance on standards-based tests. NCLB (2001) requires states to set measureable objectives in reading and math, school attendance, and graduation rates. While President Obama released some states from the strict expectations of NCLB (2001) through the Elementary and Secondary Education Act (ESEA), flexibility waivers first announced in 2011, the state of Virginia continues to strive to have all students graduate from high school and perform on grade level in reading, math, science, and social studies by this year, 2014.

In response, the Virginia reading, writing, and math standards were reconstructed to address the more rigorous expectations implemented in the *Joint Agreement on Virginia's College and Career Ready Mathematics and English Performance Expectations* that was signed into action in February, 2011. At the high school level, students in English, math, science, and social studies are given Standards of Learning (SOL) summative assessments at the end of each course. Additionally, different types of questions, called technology-enhanced items, were included in the summative SOL tests in the areas of reading, writing, and math: "Technology-enhanced items allow students to apply what they have learned and use critical-thinking skills in ways not possible with traditional multiple-choice questions" (VA Department of Education [VDOE], 2012-b, para. 6).

These technology-enhanced and free-response field questions on the Algebra I, II, and Geometry SOL tests were subsequently included on the 2012 math assessments (VDOE, 2012

to highlight portions of the screen, plot points on a diagram, or fill in the blank on open-ended problems.

The Reading, Literature, and Research (RLR) SOL also includes technology-enhanced "drag and drop" and free response items including "hot spots" and fill-in-the blank. The drag – and- drop items allow students to create graphs from data sets, as well as sort, order, classify, or label as part of their responses to questions. The hot spot items require students to choose more than one correct answer from the distracters or highlight a specific area on a diagram or image. The fill-in-the-blank items require students to complete open-ended questions by typing in their own answers to the questions (VDOE, 2012-b, para. 6). In the past, the SOLs have consisted of only multiple-choice questions with four distracters from which students were to choose. Therefore, it is logical that the interim assessments used throughout the school year be used to help prepare students for the summative assessments and should mimic the new item formats.

To prepare for state standardized tests, many school systems are performing interim assessments at almost every grade level. Tienken and Wilson (2001) supported the premise that teachers and administrators can successfully incorporate standards, curriculum frameworks, sample questions, and interim assessments as procedures for improving student learning. Accordingly, the school district targeted for this study developed reading and math interim assessments and embedded them in the curricula for English 11, Algebra I, II, and geometry in 2008 as a way to improve SOL scores through data-driven decision making and to reach the target goal of having 100% of students, in all five high schools, passing the Virginia Reading, Literature, and Research (RLR) and the Algebra I, II, and Geometry Standards of Learning (SOL) assessments by 2014.

The goal of embedding interim assessments in the curricula was not only to meet the objectives of NCLB (2001), but also to also address the goals set forth by Virginia Governor Robert McDonnell in 2010 with the College and Career Readiness Initiative. Governor McDonnell established an objective of creating "100,000 additional degrees from the Commonwealth's two- and four-year institutions of higher education over the next 15 years" (VDOE, 2011, para. 1). To reach this goal, Virginia elementary and secondary schools had to establish higher expectations so that all stakeholders would understand what it takes to graduate from high school and be successful in higher learning and in chosen careers. In response, teachers disaggregate data from the interim assessments and prescribe instructional interventions in areas that need improvement.

Prior research performed by Smith (2008), Lim and Rodger (2010), and Brundage and Hancock (2010) documented the importance of using interim and formative assessments. Smith (2008) conducted research on formative assessments, using Georgia's Criterion- Referenced Competency Test (CRCT) as the measurement of increased academic performance at the end of the school year. Results indicated that for every 1 point increase on the quarterly formative assessments, a prediction in student academic growth could be made. Thus, the results of this study supported the use of interim assessments as indicators of summative assessment scores, as well as for instructional and remediation purposes. Smith (2008) advocated the use of formative assessments because there was a high degree of statistical data in support of using the assessments to predict performance on end-of-year tests.

A study done by Lim and Rodger (2010) detailed how interactive formative assessments can be used with first-year college students. The researchers discussed extensively how engaging students in this form of assessment can positively impact summative assessment scores and final

grades. Still, Lim and Rodger noted that while the teachers collected information and instructed students, there was no clear plan on how the teachers processed the assessment data and modified instruction. If educational leaders, building administrators, and teachers do not understand how to use data, then it can be assumed that they are not using the information effectively to guide instruction.

Brundage and Hancock (2010) reiterated that assessing student learning and progress can increase student achievement, noting, “Instruction must begin with measurable learning outcomes and be informed by assessment of student learning” (p. 586). However, the researchers did not summarize how the teachers should disaggregate the data and manipulate their teaching habits to fit the academic areas of weakness. Li, Marion, Perie, and Gong (2010) stated, “When the test is meant to serve a predictive purpose, the report should convey information about how the results on the interim assessments are related to predictions for state-wide-end of year assessments” (p. 171). Again, the importance of interim assessments as a predictor of summative assessment results was evident in this study, but there was no process based on empirical research that described how teachers were to study the results of the interim assessments and make changes that would garner productive results in student understanding and on high stakes summative tests.

Liang’s (2010) study focused on the role of assessments in relation to the mathematics achievement of students from the United States, Canada, and Finland. Data for the study were collected from the Program of International Student Assessment from 2003. The results of the research supported the trend of using assessment feedback to enhance the students’ understanding of learning and then helping teachers focus their instructional goals. Still, the study did not describe how to use the assessment data for the analysis process, so teachers

understand where their students need academic help. Teachers, building, and division leaders must be able to actively engage in the data interpretation process and make content decisions based on the data (McMillan, 2000).

Olah, Lawrence, and Riggan's (2010) study on a Philadelphia school system focused on data derived from five elementary schools that all made adequate yearly progress during 2004-05 and performed average in mathematics. The data were collected from three rounds of interviews with 25 teachers. The interviews focused on data analysis procedures and instructional planning based on the interim assessment results. The school district used a similar benchmark analysis procedure as RCHS called the Benchmark Data Analysis Protocol. However, the teachers were limited by how they actively modified instruction based on the students' responses. The instructors analyzed the data based on their own personal thresholds for student understanding. The thresholds varied from teacher to teacher. One teacher may have considered a score of 80% on interim assessments as mastery, while another teacher may have set a personal threshold of 60% for student understanding. While the researchers did not thoroughly describe the procedure used to study the information, they stated, "The teachers by and large did not use the interim assessments to make sense of students' conceptual understanding of the content, nor were they helpful for diagnosing errors in anything beyond a procedural way" (Olah et al., 2010, p. 244). This indicated that teachers often used formative assessments to validate their "impressions of student strengths and weaknesses based on other assessments, performance on previous interim assessments, informal observations, or nonacademic background information" (Olah, et al., 2010, p. 237).

Miller (2009) conducted a study using feedback from formative computer-based assessments, and results indicated that the system was beneficial. However, there is still a

question regarding how teachers use data from interim assessments in reading and math to enhance student learning. The NCLB Act had an established deadline in 2014 for gauging student performance. Educational leaders have implemented the use of interim and benchmark assessments. Thus, it is especially important for teachers to understand how to reflect on the student data, so they can make objective responses to performance. Shephard (2010) wrote that she observed highly motivated teachers and principals linking assessment results to content and instruction. However, there was little explanation regarding where the students' level of understanding was falling short. The focus of this case study was to describe how teachers in one school in Virginia analyzed student interim assessment data and how they changed their instructional practices to facilitate student learning.

Situation to Self

The researcher was an assistant principal in the same building where the case study data were collected. The researcher had a vested interest in the teachers' receipt of valuable information and opportunities for pedagogical reflection during the case study. While an administrator and school testing coordinator, the researcher realized the deficit of information provided to teachers on how to develop instructional practices that address the areas of need identified by the interim assessment feedback. Seven years ago, teachers were told to look at their interim assessment data and to respond appropriately; however, a review of how the teachers acted on this request, made it become evident that constructive guidance on how to use the interim assessment data was not being given to the teachers. As one of the instructional leaders and an administrator in the building, the researcher began investigating data-disaggregation processes, data-driven-decision making, and pedagogical responses to students' interim assessment feedback, with the hope of gaining insight on how high school teachers used

interim assessment data to evaluate their instruction in preparation for SOL assessments. The researcher also wanted an understanding of the instructional changes the teachers identified as having made as a result of reviewing interim assessment data.

Through this investigative process, the researcher remained responsible for classroom walk-throughs, classroom observations, and teacher evaluations in the school where the research was conducted. However, the building principal is the ultimate instructional leader in the school. The data collection process, teacher participation, and research feedback was in no way tied to the teacher evaluation process used by the school or the school district. The participants were invited to be part of the case study and were informed of the expectations and obligations to the case study. The researcher identified an ontological assumption for data collection, used quotes and themes for participants, and provided evidence through typological coding for different and like perspectives. The ontological assumption defined by Culbertson (1981) noted that the reality of situations is subjective as viewed by the participants involved in the situations. In this evaluative qualitative case study, the researcher asked the participants to reflect on their personal perspectives and educational philosophies. Vygotsky's (1978) constructivist theory and Mezirow's (1990) theory on transformative learning guided the study as the researcher looked for assimilation, accommodations, and socially engaging experiences in the teachers' instructional planning to assist with student learning.

Problem Statement

There was a vast amount of research on the use of interim and formative assessments in preparation for standardized tests (Creighton, 2007). However, it was not known how high school teachers used interim assessment data to evaluate their instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR) and Algebra I, II, and

Geometry Standards of Learning (SOL) assessments in one school located in Virginia. Further, it was not known, what, if any, pedagogical changes they had made in response to use of interim data. Formative assessment results can be overwhelming if there is no guidance for teachers in isolating the data and developing a plan for addressing the student needs. Black and Wiliam (2010) stated that interim and formative assessments that are embedded in the curriculum help students succeed academically and help to even the playing field for students who struggle with learning: "Improved formative assessments help low achievers more than other students and so reduces the range of achievement while raising achievement overall" (Black & Wiliam, 2010, p. 83).

Smith (2008) also noted the importance of formative assessments as tools for measuring understanding and predictors of summative assessments. At the same time, it is imperative for school leaders and teachers to have a firm understanding of how to use the interim and formative assessment data to guide instruction. Creighton (2007) wrote that decision making should be based on thorough data analysis. What does it mean for the teachers and building leaders to analyze the data? One can look at numbers and understand nothing from their position on a spreadsheet. The questions posed in this study were meant to examine if and how teachers used data from interim assessments to modify their instruction.

Purpose Statement

The purpose of this evaluative qualitative case study was to explore how high school teachers used interim assessment data to evaluate their instruction and if or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study

was to explore the pedagogical changes teachers had made, if any, in response to reviewing this data. The research questions focused on how these teachers used interim assessment data to reflect on their instruction, and, what, if any, instructional changes they identified as having made as a result of reviewing interim assessment data. The researcher used multiple sources of data to obtain detailed information regarding techniques teachers use to analyze and translate data into modified instructional practices. Yin (2009) noted the importance of using multiple sources of evidence as a process of triangulating data and corroborating information from the different tools. Thus, three data collection tools were used in this case study: a Benchmark analysis spreadsheet, a focus group, and individual interviews. The researcher looked for patterns or themes in the data collected during the research process (Hatch, 2002). The discovery process highlighted how the teachers use the interim assessment data, their own content knowledge and pedagogical skills, and their understanding of their class settings to evaluate their instructional approaches as they worked to improve student learning and achievement.

Significance of the Study

The Reading, Literature, and Research and the Algebra I, II, and Geometry SOL scores are the focus for RCHS because student performance in these areas determines whether a school makes Adequate Yearly Progress (AYP). The researcher hoped that this case study would provide constructive techniques for incorporating data into the instruction process for the teachers who are developing the reading and math curricula and remediation procedures in response to the interim assessment data. This case study was designed to shed some light on what instructors are to do with all the feedback collected from interim assessment data during the

school year and how it can be used to modify instruction in all disciplines and levels using interim/formative assessments measures.

The expectation was that the data would increase teacher awareness and use of data-driven pedagogy based on the use of interim assessments to facilitate changes in instructional activities and improvement in student learning and summative assessment responses (Smith, 2008; Miller, 2009; McMillan, 2000; Liang, 2010; and Li, et al., 2010). Dunn and Mulvenon (2009) criticized this idea, stating, "A review of literature revealed limited empirical evidence demonstrating that the use of formative [interim] assessments in the classroom directly resulted in marked changes in educational outcomes" (p. 1). There is a need for a prescribed method for teachers to analyze student data, reflect on instructional practices, and modify instructional practices to address the areas of need identified through data disaggregation. The gap in the data-driven instruction process needs to be filled by a detailed methodology of interpreting data and translating the information into productive instructional skills. In fact, the wave of data-driven decision making, calls for school leaders and teachers to understand how to implement interim and formative assessments during the school year, how to read the data that is collected once the assessments are given, and how to implement instructional strategies to address the areas of need.

Creighton (2007) stated, "Meaningful information can be gained only from a proper analysis of data" (p. 11). For positive educational outcomes to occur from implementing interim assessments, school leaders and teachers must be able to engage in healthy conversations about the data. They must also feel comfortable in establishing instructional methods to address the areas of weakness diagnosed from the interim assessment data. For teachers to feel comfortable with making instructional changes based on the data, they must know how to disaggregate the

data for themselves. However, they must also possess content knowledge and pedagogical creativity to implement lesson plans based on those data.

Research Questions

This study was guided by the following research questions:

1. How do high school teachers at one Virginia school use interim assessment data to evaluate their instruction as they prepare students for the Virginia Reading, Literature, and Research (RLR) and the Algebra I, II, and Geometry Standards of Learning (SOL) assessments?
2. What, if any, instructional changes do participants identify as having made as a result of reviewing interim assessment data?

Definition of Terms

Terminology important for the reader to understand included the Virginia Standards of Learning (SOLs), summative assessments, formative assessments, interim assessments, Interactive Achievement, and Pearson Access.

The *Virginia Standards of Learning (SOLs)* are the state standardized tests and summative assessments that are given once a year, usually at the end of the year, and analyze student performance against a set of described curriculum standards (Virginia Department of Education, 2014, para. 1).

Summative assessments are usually given statewide and are part of an accountability program (Perie, Marion, & Gong, 2009, p. 6). In describing the Virginia SOLs, the term *summative* is used because the assessments are given once a year as a summary test for the entire school year's curricula in science, math, English, and social studies.

Formative assessments are embedded in the daily instruction and are often called minute-by-minute assessments (Perie, et al, 2009). *Formative assessments* "cannot stand alone but must be a part of a whole system that uses the information from the assessment to adapt teaching to meet the learner's needs" (Black & Wiliam, 1998, p. 6).

Interim assessments fall between the summative and the formative and are typically given several times during the year. The data from the assessments is intended to guide instruction, "but a crucial distinction is that these results can be meaningfully aggregated and reported at a broader level" (Perie, et al., 2009, p. 6).

Interactive Achievement is the assessment company that houses Virginia SOL released test item banks from previously administered SOLs. The creators of *Interactive Achievement* also develop sets of questions based on changes in the Virginia Standards and the format of the questions on the SOLs. The intent is to use the question banks to create interim assessments as practice tools for students in the areas of science, math, English, and social studies (Interactive Achievement, 2013, p. 2).

Pearson Access is the online database used by school testing coordinators to register students for the appropriate standardized tests, execute summative test sessions, monitor student demographics, and collect and analyze final test scores (Pearson Access, 2012, para. 1).

Research Plan

An evaluative, qualitative case study was used to explore how high school teachers used interim assessment data to evaluate their instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study was to explore the pedagogical changes teachers had made, if any, in response to

reviewing this data. Hatch (2002) defined this type of qualitative study as a participant observation study, since the researcher is placed in a social situation with specific interests or questions. The types of questions used in a case study are open-ended *how* and *why* questions where the method of inquiry does not call for the researcher to control the behavioral events in the social setting (Yin, 2002). Yin (2009) noted that the need for case studies evolves out of a desire to comprehend multifaceted events in the environment.

The targeted school within this district was referred to with the pseudonym "RCHS" throughout this document. At the time of this study, this high school used a formal data analysis strategy to study the interim assessment data for student weakness and to establish a plan to address areas of need through classroom instruction. RCHS used a Benchmark analysis spreadsheet (Appendix A) as the starting point for the math and English teachers to reflect on their instructional practices and to devise pedagogical changes to enhance student learning based on the interim assessment data. The researcher's intent was to establish a thorough description of the methods used by teachers to disaggregate interim assessment data, how they reflected on this data, and if they made subsequent modifications to their classroom instruction.

The social setting for this case study was a suburban high school in Southwest Virginia with approximately 990 students in grades 9 through 12. The context was described as those students enrolled in the English 11 courses where the Virginia RLR SOL is given, as well as those students enrolled in the Algebra I, II, and geometry classes and who were taking the SOLs in these courses. Seven math teachers, two English teachers, and three special education collaborative teachers were invited to participate in the data collection process. Three data collection tools were used in this case study: documentation on a Benchmark analysis spreadsheet (Appendix A), a focus group Appendix B), and individual interviews (Appendix C).

The researcher reviewed the interim assessment data for the students taking the English 11 RLR, Algebra I, II, and geometry for the purpose of engaging in informed conversations with the teachers regarding their specific class information.

The factors that were considered throughout the research included the classroom context, the methods used to analyze the interim assessment results, the modifications made to the pedagogical approaches to the reading and math curricula, and the assignment of students to the English and math classes. The students were assigned to the English 11, Algebra I, II, and geometry classes, and teachers that best fit the requirements of their schedule, as well as any services that were identified in a student's Individual Education Plan (IEP). The researcher isolated the case study to the areas of reading (English 11) and math (Algebra I, II, and geometry) because at the time of this qualitative study, these are the areas measured for Adequate Yearly Progress (AYP) under the No Child Left Behind Act (NCLB) of 2001.

Assumptions, Limitations, and Delimitations

Assumptions

Fraenkel and Wallen (2000) defined assumptions as anything that may be taken for granted by the researcher. The following assumptions were made regarding the study:

1. The English 11, Algebra I, II, and geometry teachers used the same curriculum pacing guide to develop lesson plans and guide instruction. The district English coordinator developed the interim assessments from banks of released SOL test items and questions developed by the school district's contracted testing company, Interactive Achievement.
2. The English 11, Algebra I, II, and geometry interim assessments were created using the same format as the English 11, Algebra I, II, and Geometry SOL tests.

3. “Virginia teachers, school administrators and content specialists participate in the development of SOL assessments by serving on committees that review test items and forms to ensure that they measure student knowledge accurately and fairly” (VDOE, 2011, para. 1).
4. The groups of students took the assessments at the same place in the English 11, Algebra I, II, and geometry curricula and put forth their best efforts to answer the questions correctly based on the instruction they received.
5. The expectation was that the students received similar preparation for the interim assessments based on the curricula pacing guides.
6. The teachers responded honestly and candidly to the interview questions posed regarding their data analysis process and their instructional response to the interim assessment feedback.
7. The teachers involved in this case study understood the basics of how to disaggregate data from interim assessment response summaries.
8. Teachers had the desire to make pedagogical changes based on interim assessment feedback and the academic needs of their students.

Limitations

Fraenkel and Wallen (2000) defined limitations as those variables that may impact the outcomes of the study over which the researcher has no control. There were several limitations to the case study. The researcher was an assistant principal in the same building where the data collection occurred. The participants were invited on a volunteer basis, and the results of the data collection tools in no way impacted teacher evaluations or observations of performance. The building level principal remained the final evaluator for all teachers in the school during the

time frame of the case study and always. The names were removed from the Benchmark analysis spreadsheets for anonymity. The focus group conversations were conducted by the researcher in the relaxed environment of the school coffee shop, and the individual interviews were conducted in the teachers' classrooms at times that were convenient for the participants. A bracketing process was implemented, so the researcher could document facial expressions and body language during the focus group conversations and the individual interviews. The researcher used the bracketing process notes documented in the field notes to fill in information in the focus group and individual interview transcripts (Hatch, 2002). The raw data collected during the bracketing process assisted the researcher in developing a complete understanding of the facts presented by the participants. The researcher had no control over the information noted on the Benchmark analysis spreadsheet, during the focus group conversations, or during the individual interviews. Therefore, the researcher was limited in the depth of the data collected, as the value of the feedback was based on how robust and thoughtful the participants' responses were during the study.

The researcher brainstormed four initial themes to use as a guide for organizing the data rich feedback but was prepared to discard some or all of the initial themes if they were not exhibited in the teacher responses. The initial themes or typologies were generated using common sense, research objectives, or preliminary data (Hatch, 2002). The themes were given specific colors and were highlighted as they appeared in the typological color coding process. The typological color coding of the predetermined themes and those that emerged as the researcher studied the feedback guided the researcher in realizing patterns in the data and developing a summary of the coded material. Hatch (2002) wrote, "The acceptability of using predetermined categories is what makes typological analysis distinct" (p. 156). Typological

analysis is different from inductive analysis in the sense that categories are not defined prior to data collection (Hatch, 2002).

Delimitations

The delimitations or the elements of this case study that could be controlled by the researcher included the courses chosen to study and the environments in which the focus group and individual interviews were conducted. The researcher chose to focus on the data collected from the Benchmark analysis spreadsheets for English 11, Algebra I, II, and geometry. The English 11 Reading, Literature, and Research and the Algebra I, II, and Geometry SOL scores were the focus for RCHS since student performance in these areas determine whether a school makes Adequate Yearly Progress (AYP).

The researcher chose to conduct the focus group conversations in the school's coffee shop meeting room. This environment was comfortable and inviting. The individual interviews happened in the teachers' classrooms at times chosen by the teachers. The researcher's hope was that the participants would feel relaxed and not defensive as they reflected on their disaggregation processes and their instructional methods.

While the nation is in an assessment frenzy, teachers are often left in the dark as how to use the assessment data to determine the students' level of understanding of state standards. It is important for the teachers to have an understanding of how best to assess their own students' learning, so they can engage is self-reflection on their instructional methods.

CHAPTER TWO: LITERATURE REVIEW

The purpose of this evaluative qualitative case study was to explore how high school teachers used interim assessment data to evaluate their instruction and if or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study was to explore the pedagogical changes teachers had made, if any, in response to reviewing this data. The setting for the study included one suburban high school located in Southwest Virginia. The intent of this chapter is to review research and literature that have added to the analysis of the interim, formative, and summative assessment development and process. The review of literature begins with an explanation of the theoretical framework by discussing Piaget (1969) and Vygotsky's (1978) constructivist theory and analyzing how students process and learn information. Mezirow's (1990) theory on transformative learning is also described as it pertains to the teachers' transformation, changing their thought processes about instruction and learning as they devised lessons based on new information from the interim assessment data.

Keeping this information in mind is important, considering this case study's focus was on how teachers modified instruction based on interim assessment feedback. Subsequent sections of the literature review explain the law that has led to the push for assessment in schools, the accountability measures to which they are linked, the impact of the building leaders on the interim assessment process, how interim assessments are linked to college readiness expectations in Virginia, and data-driven-decision making. Research was focused on an overall understanding

of types of assessments and the implementation of these assessments in schools. The concluding sections of the literature review describe the Virginia Standards of Learning (SOLs), teacher knowledge of the SOLs, and the studies performed on interim, formative, and summative assessments in kindergarten through college level classrooms. Most of the studies originated and were executed within the United States. However, there were some studies that were completed in Canada and Europe. Observational case studies, peer -reviewed journal articles, and texts on data-driven decision making were used to collect information for this case study. The keywords and phrases used to search for research references were *interim, formative, and summative assessments, classroom instruction, Virginia Standards of Learning, data-drive decision making*, and *the administrator's role in data disaggregation*.

Theoretical Framework

There are two theories that guided this evaluative qualitative case study: Vygotsky's (1978) theory of constructivism as it relates to the young learner and Mezirow's (1990) theory of transformative learning as it relates to the adult learner. Vygotsky defined constructivism as the psychological and social processes a learner experiences to understand concepts. Vygotsky's stated that knowledge and understanding is based on the social aspect of what children contribute to their learning in a social setting. The philosopher also believed that social and cultural tools like technology and the Internet help young students to understand and relate to educational concepts (Vygotsky, 1978).

In response to the students' constructivist type of processing and learning, adult instructors use Mezirow's (1990) theory of transformative learning to develop reactions to the

identified areas of need. Mezirow (1997) described transformative learning as the process of implementing change in the frames of reference that adults have created through life experiences. The theory of transformative learning is the process of effecting change in already established ideas and preconceptions that define an adult's thoughts, reactions, and responses. The teachers' instructional planning for and in response to the interim assessment sessions was based on Mezirow's theory of transformative learning, as they attempted to decipher how they should address concepts, so students could assimilate, accommodate, and engage in socially-stimulating learning experiences. According to Mezirow "learning may be defined as the process of making a new or revised interpretation of the meaning of an experience, which guides subsequent understanding, appreciation, and action" (p. 1). The application or transformation of information is an important process for the teachers to consider as they develop their lessons in preparation for interim assessment sessions.

Studying the students' methods of applying and assimilating information is also necessary for creating interventions based on the interim assessment feedback (Hoy & Miskel, 2008). At the same time students may be assimilating information, they may also be performing the sequence Piaget referred to as making accommodations. According to Piaget's theory on constructivist learning, individuals change their existing ways of thinking to accommodate and comprehend new information (Piaget, 1969). Keeping both Piaget (1969) and Vygotsky's (1978) philosophies of assimilation, application, and socialization in mind when developing lesson plans can assist with addressing the various learning modalities, as well as help students connect the concepts with which they are struggling. Mezirow (1990) referred to this as the "reflective action" of transformative learning (p. 6). The reflective action is the response predicated on the analysis of assumptions regarding learning.

Important Terms

The formative, interim, and summative assessments are given statewide and are part of an accountability program. In describing the Virginia SOLs, the term *summative* is used because the assessments are given once a year as a summary test for the entire school year's curricula in science, math, English, and social studies using the online database, *Pearson Access*. *Formative* assessments are embedded in the daily instruction and are often called "minute-by-minute" instruction. Black and William (1998) stated formative assessments should not be used alone, but should be part of a curriculum plan that molds instruction to meet the learners' instructional needs. *Interim* assessments fall between the summative and the formative and are given several times during the year through the assessment company, Interactive Achievement. The data from the assessments are intended to guide instruction and are crucial for reporting knowledge measurement at a higher level (Perie, et al., 2009).

Literature Review

History of Assessment in the United States

In August of 1981, the National Commission on Excellence in Education was given the task of collecting and analyzing data and literature on the quality of education, at every level, in both public and private schools in the United States (U.S. Department of Education, 1983). The report, *A Nation at Risk*, focused on four areas of education: content, expectations, time, and teaching (U.S. Department of Education, 1983). In response to weak content and curriculum, the report recommended strengthening graduation requirements to require a minimum knowledge of English, math, science, social sciences, and computer sciences. The Commission's report also noted that the expectations of student knowledge of core areas were deficient and recommended that schools and school districts establish more rigorous standards and higher expectations. The

time students were spending on instruction, both in the classroom and at home, were found to be unproductive. Therefore, the report also recommended better use of instructional time during the school day, a longer school day, or an extended academic year. The report also pointed out that the education field was not attracting individuals with a strong content knowledge and a capacity to be successful in a learning environment. The Commission made recommendations to better prepare teachers for the classroom (U.S. Department of Education, 1983).

Virginia Standards of Learning

A Nation at Risk (1983) was the beginning of the development of state standards, high-stakes testing, and accountability reform in states, school districts, and schools. In June of 1995, the *Standards of Learning for Virginia Public Schools* were published, establishing high academic standards in English, math, science, and social studies. In 1996, the state then developed summative assessments aligned with these standards, and in 1998 students began taking these cumulative exams in the four content areas in grades 3, 5, and 8 (Sullivan, 2006). Following the heightened awareness of academic accountability, Virginia then presented the *Standard of Accrediting Public Schools* in 1997. The accreditation process links student performance to school accreditation. Thus began the process of assessing for learning throughout the school year, in preparation for the high stakes summative SOL tests given at the end of a course.

On January 8, 2002, President George W. Bush signed into law the No Child Left Behind Act of 2001 (NCLB). The law sets high standards for all children regardless of race, gender, or ability. The intent of NCLB is to create a level playing field for all students, close achievement gaps, improve teaching and learning, and implement accountability measures for schools, school systems, and states (U.S. Department of Education, 2007). The premise of the law is that

children will perform on grade level in reading, writing, and math by 2014. Schools must ensure that students are learning the essential skills outlined in the state standards. The need for academic accountability translates into the need for academic assessment in the classroom, so building leaders and teachers can make data-driven decisions based on interim and formative assessment feedback. This allows better preparation for the summative high stakes tests that are used to determine the Adequate Yearly Progress (AYP) under NCLB (Jorgeson & Hoffmann, 2003).

Virginia English and Math (SOL) Summative Assessments

The Virginia SOLs summative assessments are developed by SOL Assessment Committees. These committees are made up of Virginia teachers, school administrators, and Virginia content specialists who undergo an application process to be part of this development process. The committee members review the test items and forms to ensure that the documents measure student understanding and content knowledge accurately and fairly. The assessment questions must be aligned with the Virginia SOL test blueprints that teachers use as guides for appropriate grade level and content area test construction.

The Virginia End- of- Course (EOC) Reading, Literature, and Research (RLR) SOL assessment covers the reading strand of the state English standards. The EOC Reading Test Blueprint notes that 10 items on the assessment are devoted to using word analysis strategies and word reference materials. Eighteen test items cover the students' comprehension of fictional texts. Another 27 test items demonstrate student understanding of nonfictional items. There are 65 total items on the summative EOC RLR; 55 are operational items, while 10 are field test items that are not used to compute a student's score on the assessment. The field test items may be

used on subsequent summative assessments (VA Standards of Learning [VA SOL] Blueprint End of Course Reading, 2010).

The Virginia Algebra I SOL assessment consists of 60 total items. Fifty items are operational, and 10 are field test items. On the Algebra I SOL assessment, students are given 12 items measuring their knowledge of expressions and operations. Eighteen items cover equations and inequalities. Another 20 items assess the students' understanding of functions and statistics. All of the Algebra I standards are covered on the summative assessment (VA SOL Blueprint End of Course Algebra I, 2009).

The Virginia Algebra II SOL assessment covers the same reporting category as the Algebra I SOL. However, the strands of standards included in the categories differ based on the increased level of the content. Thirteen questions are devoted to expressions and operations, as well as equations and inequalities. Twenty-four items are devoted to functions and statistics. All of the Algebra II standards are included in the summative assessment (VA SOL Blueprint End of Course Algebra II, 2009).

The Virginia Geometry SOL assessment consists of 60 total items. Again, 10 items are field questions, and 50 are operational questions that are computed for a score on the assessment. There are 18 items that measure student understanding of reasoning, lines, and transformations. Fourteen questions are devoted to understanding triangles, and 18 questions cover polygons, circles, and three-dimensional figures. All of the geometry standards are assessed on the summative test (VA SOL Blueprint End of Course, 2009).

For the purpose of this evaluative qualitative case study, the Virginia Standards of Learning summative assessments were defined to establish a clear understanding of the tests for which the teachers prepare the students through the use of interim assessment feedback.

Summative assessment data was not collected for the purpose of this case study, as the focus was on how teachers used formative benchmark data to prepare students for the summative SOL tests.

Formative, Interim, and Summative Assessments

Popham (2008) defined formative assessment as a planned process used by teachers and students to evaluate learning and adjust what teachers are currently doing in class. The actual assessments, according to Popham, are part of the process and are considered formative if the instructor uses the responses to make instructional adjustments. By using assessment-based evidence, teachers are able to immediately identify areas of cognitive weakness. The formative assessment process is followed by the teachers and students identifying areas that need immediate intervention.

Interim assessments are given periodically during the school year, perhaps every two to three months. The interim assessments are used to measure student understanding or level of mastery of content material. Popham (2008) stated that interim assessments are given to provide a student's mastery-level, as well as, act as a predictor for student performance on summative assessments. As with formative assessments, the expectation is for teachers to develop instructional responses to the interim assessments, addressing areas of concern (Popham, 2008).

Summative assessments are considered to be those evaluation tools that are given at the end of an educational process as a way to determine the students' level of understanding and the effectiveness of the instructional processes and adjustments that are already completed. Relative to this case, the summative assessments were the Virginia Standards of Learning (SOL) tests given in the subject areas of English, math, social studies, and science. While Popham noted that summative assessments are the final assessments and instruction in the content area is complete,

there is a caveat to the summative Virginia SOL assessments. While a "pass proficient" score is a 400, if a student scores between a 375 and 399, he or she can be provided immediate remediation and retest in the same core area, with the hope that the direct intervention will help the student reach the 400 mark on the assessment. So, in fact, instruction can continue after a summative assessment is taken by a student.

The Purpose of Interim Assessments

The effectiveness of interim assessments is dependent upon teachers having a clear understanding of how to collect and analyze the data gathered from the student work. Duckor (2014) noted that while assessments are powerful tools for learning, teachers often do not always know which practices are most effective, when to implement them, and why a particular combination of strategies worked best in a certain classroom with a certain demographic. Perie, Mario, and Gong (2009) suggested five questions teachers can use when evaluating the purpose of the assessment:

> (a) What do I want to learn from this assessment? (b) Who will use the information gathered from this assessment? (c) What action steps will be taken as a result of this assessment? (d) What professional development or support structures should be in place to ensure the action steps are taken appropriately? (e) How will student learning improve as a result of using this interim assessment system and will it improve more than if the assessment system were not used? (p. 9)

The answers to these questions dictate the type of assessments needed and help focus the design of the assessment, including the types of items used, the structure of the assessment, and the frequency of the assessments. One test is not appropriate for measuring all content. Interim assessments are used to measure designated areas of the curricula during specific times of the

year.

According to Sawchuck and Cain (2009), interim assessments can be used to review student mastery of content material and, in some instances, determine possible student performance on summative state tests. Since Rudman (1989) published an article on the topic of assessment over 20 years ago, the philosophy of measuring student understanding being intertwined with instruction has remained status quo: "Testing and teaching are not separate entities. Teaching has always been a process of helping others to discover 'new' ideas and 'new' ways of organizing that which they learned" (Rudman, 1989, p. 1). Many teachers however, have access to data collected from interim and formative assessments, but have no idea what to do with the information once it is collected (Black and Wiliam, 2010). Teachers have an important impact on student achievement (Heritage, Kim, Vendlinski, & Herman, 2009). It is important for teachers to follow appropriate procedures if assessments are to be sufficiently dependable to inform student learning on summative measures (Harlen, 2005).

As McMillan (2000) pointed out, teachers must have an understanding of what to do with student assessment results. Essential measurement evidence includes variability, standard scores, and applying growth-scale scores to classroom instructional practices. A teacher must be able to practice the aforementioned skills to create lessons that address student needs (McMillan, 2000)

Using formative assessments effectively is one way teachers can maximize student learning. Duckor (2014) presented seven essential processes teachers can use during instruction to do a quick check for student understanding. The seven processes were also used by teachers as they prepared students for the scheduled assessments given by the target district throughout the

school year. One process Duckor described includes priming the students with thought-provoking questions like, “Can you say more about your thoughts?”

When prompting students through inquiry, teachers should pose questions related to the lesson content to help students relate concepts to larger ideas through deeper thinking (Duckor, 2014). Teachers can pause during questioning, so students can process the information and apply the question to the material. The questions need to be equitably spread throughout the lesson so that all students get a chance to respond.

The teacher’s response to student answers is important to the level of motivation and the students’ desire to learn. Duckor (2014) recommended that teachers create a graphic organizer of correct and incorrect student answers to provide a visual of how students are thinking about concepts. The last process Duckor described included a method by which teachers categorize student answers into bins labeled for correct, incorrect, misconceptions, and proficient answers. The process of creating these bins gives the teacher the opportunity to assess the level of student learning of the content presented during a lesson.

Teachers who use assessment data appropriately understand the importance of providing students with feedback during daily instruction. Building leaders should also understand the importance of interim and formative assessments. The principal should have the ability to disaggregate the data and create staff development opportunities to teach the staff how to align instruction to assessment results. However, unless the purpose of the interim assessments plays a role in the planning of instruction, few teachers seem to understand what to do with the data. According to Popham (2008) “Formative assessment is all about decision making. Those decisions, made by both teachers and students, invariably revolve around the following two-part question: ‘Is an adjustment needed, and if so, what should that adjustment be?’”(p. 23).

Dunn and Mulvenon (2009) noted that assessments can serve a variety of roles in education including diagnosing weaknesses, evaluating understanding and teaching, and predicting student performance on summative assessments. Even before the No Child Left Behind Act was implemented, many schools began using interim and formative assessments. Mehrens (1989) discussed the concern for test scores guiding decisions and, therefore, establishing the possibility of teachers teaching to the test. Critics of interim assessments say that teaching to the test causes a complete focus on test content rather than preparing children with a well-rounded education (Dunn & Mulvenon, 2009). However, proponents say that the interim assessments provide feedback on learning and allow teachers to make appropriate adjustments in their instruction (Cauley & McMillian, 2009).

Mehrens (1989) created a continuum of seven descriptive points ranging from the ethical to the unethical use of assessment practices. The first three points on the continuum were described as ethical uses for assessments. The first point included teachers giving instruction related to district objectives without checking the objectives that standardized tests measure. The second focused on instructing students on test-taking skills, and the third entailed teachers using objectives from a variety of standardized tests as a planning tool for instruction. Moving to the right on the continuum, towards the less ethical uses of assessments, the teacher planned instruction, specifically based on the objectives measured by the high stakes test. Or, the teacher included instruction for the students that included items formatted the way they are on the standardized test, and even provided students with opportunities to practice taking tests that were formatted in the same way as the standardized tests or gave practice or instruction on the actual test.

Bambrick-Santoyo's (2008) research on data-driven-decision making showed that teachers in one school who were initially resistant to using interim assessments, data binders, and curricula based on the students' assessment results, found that the plan actually worked. Two years after the interim assessments were embedded in the curriculum, teachers debated ever changing the assessment model again. One teacher who was originally reluctant to implement the assessments was adamant that the assessment process needed to continue **(**Bambrick-Santoyo, 2008). Student scores increased through the use of formative and interim assessments, and resultant instruction based on those data. Today, students are held accountable for learning in all core areas, and consistent assessments establish high expectations for all students, leading to increased graduation rates.

Interpreting and Using Interim Assessment Data

Perie, et al. (2009) identified three purposes for interim assessments: to predict student performance on summative assessments, to evaluate instructional methodology, and to improve instructional techniques for one student, a group of students, or an entire class. For teachers to gain the most from using interim assessment data, they must have a strong grasp on the content material, as well as pedagogical responses to content needs (Goren, 2010).

To better understand how educators should respond to interim assessment data, one might entertain the idea of a cyclical process. The teacher instructs the students with techniques that engage all learning modalities. The interim assessments are then given to analyze the students' knowledge of the content material. The interim assessment feedback is then used to guide and mold the content instruction for remediation, as well as continued instruction on core concepts. Interim assessments are then implemented again to examine student understanding of another

round of content standards. Again, comprehension is checked, and instructional practices are established based on the areas of need noted in the interim assessment data (Appendix D).

Hess and Mehta (2013) described four problems with the use of data in schools. The first problem noted was how the data were used by the teachers. The intent of assessment data is to improve teaching and learning. However, Hess and Mehta stated that teachers are often not provided with the professional development needed to cultivate an understanding of how to use data.

The second issue was the influence of politics in the classroom. Educational data can be used to inform political debates, but cannot be used to settle them (Hess & Mehta, 2013). Politicians tout data-driven-decision making as the key to educational reform, but often educators do not know how to use the data to make informed decisions (Sharratt & Fullan, 2012).

The third problem with data, as reported by Hess and Mehta (2013), was the misunderstanding of what kind of data to use for what purpose. Data that were once thought to be used for instruction is now used for evaluative purposes for teachers, schools, and systems. Hess and Mehta echoed Black and Wiliam (2010) and McMillan's (2000) premises when documenting the fourth problem with data use. Teachers and building leaders need training so they can develop and perfect their understanding of analyzing and responding to data.

Schmoker (2009) reported that some schools have seen improvements in their authentic literacy learning based on the data. However, Schmoker also reported that sometimes schools fixate on data, but do not making instructional gains. In these instances of strong standardized scores, but lackluster instruction, teaching to the test has taken over the need for critical thinking skills and deeper learning (Schmoker, 2009; Davidson, 2008).

Further complicating data collection and disaggregation is the practice of teachers drawing incorrect inferences about why students score the way they do on interim assessments (Mehrens, 1989). Schools that are devoted to the goal of linking graduation with the mastery of material and deeper learning, engage students in learning through teaching, assessments, and classroom environments geared toward student-based and thoughtful data-driven instruction, not inferences regarding student performance (Davidson, 2008; Mehrens, 1989).

The Leadership behind Successful Interim Assessments

Waters, and McNulty (2005) outlined 21 responsibilities for school leaders. Three of the responsibilities include the importance of school leaders acknowledging and understanding new curriculum theories, being involved in the development of curriculum, instruction, and assessment, and also having knowledge related to research-based best practices. While it is easy for a school leader to simply instruct teachers to implement interim assessments into the curricula, it is not so easy for the staff members to understand the importance of the assessments. Valuable data can be gathered from providing students with snapshots of their knowledge throughout the school year, prior to a standardized test in the subject area. Determining if students are tested on convergent or divergent skills is important to the interim and summative assessment process during the school year. Pryor and Crossouard (2008) defined convergent assessments as those used to determine "*if* the learner knows, understands or can do a predetermined thing," while divergent assessments are embedded in the curriculum with the intent to discover "*what* the learner knows, understands or can do" (p. 5).

The type of leadership in a building directly impacts the level of devotion to teaching and learning. While everyone in a school is an educational leader in some capacity, the building leader sets the tone for efforts put forth by both the teachers and the students. Marzano, et al.

(2005) noted that being grounded in knowledge of content information and pedagogy is just as important for the administrator as it is for the teacher. Kouzes and Posner (2007) echoed this philosophy with their five practices of leadership: "(a) model the way; (b) inspire a shared vision; (c) challenge the process; (d) enable others to act; and (e) encourage the heart" (p. 26). Hackman and Johnson (2009) stated that leaders establish direction by creating a vision and defining the strategies for establishing the changes needed to reach that vision.

Sharratt and Fullan (2012) wrote that principals must develop "increasing intentionality and finite precision in their data analyses and follow-up action and use data to make emotional connections" in order to create cognitive theories on establishing successful practices in the classroom (p. 48). When synthesizing responses from educators regarding what they want they want from building leaders when it comes to support in data-driven-decision making, Sharratt and Fullan (2012) noted that teachers want leaders who know what to do with data, leaders who are able to positively influence teachers in the same direction, and leaders who lead for the long term.

In an interview Jay McTighe, author and former Director of the Maryland Assessment Consortium, stated that principals should ask two guiding questions of teachers, "What are the most important 'learnings' that you want your students to achieve?" and "What evidence will show that students have achieved the desired learning?" (Richardson, 2008, p. 30). Leaders must provide a perspective for teachers by using as many opportunities as possible to establish an instructional leadership philosophy in the building (Marshall, 2008). Reeves (2006) further discussed the "Pygmalion Effect" that occurs when separate groups of individuals are given different sets of expectations, they respond accordingly. For example, one set of individuals may be encouraged by high expectations and respond by performing to reach those expectations.

However, another set of individuals presented with low expectations, may work to achieve the bare minimum of what is asked of them. Therefore, with focused leadership that is based on a well-communicated vision and has high expectations for student achievement student achievement, teachers are clear about the levels of commitment they are held accountable for. Thus, the instructional expectations established principals have a direct impact on the performance of teachers and students.

Reeves (2006) explained that teachers and leaders are the significant variables in the instructional plans. The changes in teaching and leadership directly impact student learning and performance. While interim assessments are used as predictors for the summative assessments, the summative assessments are used to measure learning and teacher/school accountability. However, merely implementing benchmark assessments without a cause-and-effect approach for learning is insufficient. Assessments must be informative with immediate feedback that supports learning and provides direct intervention for students who are having difficulty with concepts. Leaders who have established a vision for student performance exert more influence and take more responsibility for student learning and the pedagogical direction of the group (Hackman and Johnson, 2009).

Kouzes and Posner (2007) wrote about the paradox of power in which a person becomes more powerful when he gives his power away. In the scenario of principals conveying expectations of high student achievement and teachers taking control of the learning and interventions in their own classrooms, the flow of power from the building leader to the teacher is evident.

The principal's direct involvement in developing curricula, troubleshooting assessment issues, and addressing instructional needs, exhibits the importance of these same areas to the

teachers. In turn, the importance of instructional techniques, assessing understanding and responding to student needs are understood by the teachers. Examples of interim assessments used to successfully address the needs of all students and link results to curricula and instruction occurred in schools where teachers appeared to be supported by strongly committed principals (Shepherd, 2010). Using a hierarchical model, the principal of the school must have a strong understanding of the state standards to establish evidence and data-based decision making. The instructional leaders must also believe in a proactive philosophy for preparing, implementing, and responding to the interim assessments (Hackman & Johnson, 2009).

Chenoweth (2010) wrote "No one has the right to waste a day in the life of a child" (p. 20). The author described five insights for success in schools, beginning with the philosophy that everyone is responsible for running the school. Chenoweth proposed that principals should delegate the minor crises to others in the building, allowing time for the building leader to attend to instruction and student achievement.

The second insight described by Chenoweth (2010) was inspecting what is expected. The author described establishing standards in the classrooms and then visiting the instructional environments to engage with the learners and assess their understanding of the daily objectives. Chenoweth noted that as the instructional leader in the building, the principal models the expectation that all educators in the school should continuously reflect on and monitor their performance. Ginsberg and Brown (2009) wrote that the collection of such data by principals increases the possibility for instructional change in the future.

Chenoweth's (2010) third insight encouraged leaders to be "relentlessly respectful and respectfully relentless" (p. 20). Administrators of successful schools spend time in the classrooms, helping students and struggling teachers. The importance of adults setting the tone

in the school was also identified by Chenoweth as an integral philosophy to building relationships between teachers, students, and the community. In turn, those same relationships improved student achievement.

The fourth insight described by Chenoweth (2010) was using student achievement data to evaluate decisions in the building. The data were described as the deciding factor for validating or reconsidering financial and personnel decisions in the schools. Chenoweth detailed using professional learning communities to support teachers who were struggling with content, instructional techniques, or classroom management. The professional expectation is that every student will succeed, and when students fail, it is the responsibility of the teacher to find ways to improve (Chenoweth, 2010).

The final insight defined by Chenoweth (2010) was the philosophy that principals do whatever it takes to make sure students learn. Ginsberg and Brown (2009) described a process for evaluating classes called "Data in a Day." Teams of educators visited everyone classroom in a school for "snapshots" of instructional practices. The teams then shared their observations with the principals. Ginsberg and Brown noted that while data collection in every classroom in one day seems too much, too quickly, the brief descriptions of the instruction, student engagement, and class environments, were paramount to implementing pedagogical change for student achievement.

Data-Driven Decision Making

Data-driven-decision making (DDDM) and instructional leadership must be implemented together for an educational environment to be successful (Creighton, 2007). Data-driven-decision making is the analysis of curricula, teaching, and test scores spurred by feedback on informal and formal assessments. Mandinach, Honey, and Light (2006) wrote that teachers often

like to use multiple resources to assess learning and are leery of relying on methods like data from interim or summative assessments to make decisions about students' strengths and weaknesses. While this process gives a more robust view of students' performance, Mandinach, et al. suggested that teachers are more inclined to link factors causing individual behavior on a case-by-case basis rather than look for patterns in feedback. Therefore, the teachers' decision-making strategies lack systematic data collection from student to student, class to class, and year to year. Often, this type of data-driven-decision making results in teachers basing their instructional plans on personal biases rather than definitive statistical measures like distribution, variation, and reliability (Mandinach, et al., 2006).

Meaningful data collection results in effective instructional development and improved pedagogical practices in a school (Creighton, 2007). The data represented in the interim assessment feedback enables teachers to immediately address student needs. The disaggregated data guides the teachers in developing intervention plans and guiding students appropriately. Teachers are then able to assess the students following the remediation or modified instruction to decide if they are ready to move forward with the continued instruction (Smith, Johnson, & Thompson, 2012).

Marsh, Pane, and Hamilton (2006) discussed the organization of information in the data collection process, referring to data-driven-decision making as a cyclical process. The researchers noted that information becomes actionable knowledge when the data are prioritized and analyzed for problem areas and possible solutions. The actionable knowledge can help instructional leaders synthesize two types of decisions: using data to inform, identify, or clarify, and using data to act or make changes (Marsh, et al., 2006). Assessments should be viewed as the foundation for planning and instructional decisions (DiRanna, Osmundson, Topps, &

Gearhart, 2008). Once the choice is made to respond based on the data, the new data can be collected and studied for effectiveness and for establishing new goals. This process leads to a cycle of data collection and decision making (Marsh, et al., 2006).

The types of data used depend on what the building leaders are trying to discover. Many educational leaders prefer to use local or interim assessments, viewing the data from these resources as more useful than data from summative state tests. The summative tests are typically given in May, and results are not received in time for continued growth in the particular subject area. When the leaders decide types of data used to make decisions, the lessened pressure on teachers for student performance on the interim assessments may actually help the process of using the tests as valuable diagnostic tools rather than the high stakes summative assessments (Marsh, et al., 2006).

Getting Past Information Overload

Sharratt and Fullan (2012) wrote that educators are often overwhelmed by excessive amounts of information from assessment data. This overload of information is similar to the experience children have with the influx of the Internet, Facebook, tweets, emails, and electronic games, cell phones, and televisions. There is a feeling of sensory exhaustion and a difficulty in isolating the information that needs to take priority (Sharratt & Fullan, 2012). However, when teachers are able to get past the information overload and isolate useful assessment data, they are able to make meaningful decisions for planning for instruction and teaching techniques.

Sharratt and Fullan (2012) used the phrase “knowledgeable others” to describe school leaders. Successful knowledgeable others engage in instructional practices that promote learning for all. They are attuned to how data are used to improve instruction in every classroom for each student. The leaders monitor and review lesson plans for instructional consistency and

educational goals and assist in developing plans for students who continue to struggle. DiRanna et al. (2008) discovered that teachers who were provided with a "systematic, reflective, collaborative, and supported process for planning for instruction and assessment, changed their instructional practices" (p. 23).

The knowledgeable others build supports for teachers who are struggling and reward those who are performing well (Sharratt & Fullan, 2012). These instructional leaders also spend time creating environments where collaboration is encouraged between students and staff members. Another support offered by the knowledgeable others was staff development on using data effectively to change instruction and impact learning (Sharratt & Fullan, 2012). Keeping instructional materials at the center of the instructional planning and implementation is important to embedding interim assessments in the educational process making the data more meaningful (DiRanna et al., 2008).

DiRanna et al. (2008) wrote "If teachers learn to plan assessments as they plan their instructional units, they will learn to view assessment and instruction as cycle in which evidence from assessments guides instruction to ensure that students make progress toward the learning goals" (p. 23). Hess (2009) noted that data-driven management should help develop schools and school systems that are more supportive of effective teaching and learning. Data-driven environments should not have the main focus of identifying effective teachers and struggling students (Hess, 2009).

DiRanna et al. (2008) developed a three-step process for embedding interim assessments in the classroom instruction and responding effectively to the assessment feedback. This cycle of events makes the assessment process the hub of the instructional planning. The act of taking an interim assessment during a unit of instruction is then a natural event in the learning process.

DiRanna et al. described the instructional cycle as Assessment-Centered Teaching (ACT).

The framework of the philosophy was established on fundamental elements of assessment knowledge, use of quality objectives, tools and evidence. Teachers should develop a flow of content material to be taught for a unit of instruction, and at the same time, develop interim assessment plans and predict student responses to the assessment items. An assessment record that documents the data should be implemented so patterns and trends in student performance can drive instruction and future assessments (DiRanna et al., 2008).

Greenstein (2012) wrote that assessments in the 21st century must be "transparent, flexible and responsive to learners' needs, informative, and integrated with teaching and learning" (p. 38). Educators must engage in balanced assessments and respond to assessment data through aligned and focused curricula (Greenstein, 2012). Instructional leaders must constantly pose the reflective questions about instruction. What are we doing in our lessons? What do we want to students to learn? How are they learning the objectives? Where are we supporting their learning? How can we improve? (Greenstein, 2012).

The Cost of Interim Assessments

While states are reducing the number and frequency of standardized tests, there does not seem to be a decline in the use of interim or formative assessments. The question is whether interim assessments are cost effective (Sawchuck & Cain, 2009). Large portions of testing costs include test creation, data reporting, and disaggregation of student performance.

There are indications that test bank companies may benefit from the monies allocated in the federal economic-stimulus bill. According to Sawchuck and Cain (2009), federal stimulus money will keep, if not, add to the momentum of interim assessments. While the national economic status is tumultuous, a 2009 *Education Week* review of articles discovered no findings

of districts reducing money spent on the development of interim assessments. The reports found no evidence of reductions in district practice.

Meanwhile, there were conflicting opinions from researchers regarding the use of outside testing companies creating interim and formative assessment measures for school systems. Schafer and Moody (2004) reported that many teachers do not feel that interim assessments created by outside companies cover the material that has been presented in class, even though the teachers have followed the districts' curricula pacing guides. The authors continued to say that instruction benefits when teachers are the developers of the formative assessments, rather than hired companies with average banks of questions (Schafer and Moody, 2004). In regard to cost, however, those teachers contracted to develop the interim assessments for schools or school districts often reap financial rewards for the time spent developing banks of questions or entire assessments.

Hess (2009) wrote that school systems should consider four factors when discussing interim assessment options. Instructional leaders should not allow data or research to outweigh good judgment regarding the presumed benefits and costs of each assessment company. Hess further noted that schools and systems need to look for assessments that render the kind of data being sought. Feedback on student achievement is what is needed for NCLB (2001). However, this is not necessarily to kind of data needed to improve instruction and help teachers forge ahead with innovative responses to data. Hess (2009) called attention to not expecting research to dictate educational outcomes and, thus, drive policy. Instead, research should "ensure that decisions are informed by the facts and insights that science can provide" (Hess, 2009, p. 16). Finally, school systems should give positive feedback to those schools and building leaders that

effect change and impact instruction through the use of the interim assessments and data-driven-decision making (Hess, 2009).

Student Motivation and Interim Assessments

While student assessment data are imperative to review as primary sources, understanding the motivation and learning styles of the students is also important. While discussing the role of the teacher acknowledging students' needs, Mantero (2002) mentioned Vygotsky's Zone of Actual Development (ZAD) and the Zone of Proximal Development (ZPD). Simply stated, the Zone of Proximal Development is based on the premise that a student is able to better perform tasks and reach goals with guidance or collaboration than if the student were working on his own (Vygotsky, 1978). Mantero highlighted the importance of instruction that includes scaffolding involving modeling, feedback, rewards and punishments, direct instruction, explaining, questioning, and structuring student-centered activities based on the students' ZAD and ZPD, making assessments part of the learning pathway.

Beghetto (2004) distinguished between the three different types of goal-oriented behavior students exhibit throughout the academic process. He noted mastery-approach goals include the ability to establish self-improvement and set self-standards. Performance-avoidance goals are concentrated on avoidance and making one's self look less capable than others. Students who engage in performance-approach goals strive for achievement as a way to receive recognition. While student motivation is important for student achievement, the students' perspective of the assessment environment also factors into their performance (Alkharusi, 2008). The classroom characteristics can harbor a positive learning and testing environment that produces successful scores. On the other hand, the environment can contribute to lack of motivation and inconsistent performance on assessments.

The district superintendents model the importance of the use of assessments embedded in the curricula to the principals. In turn, the building administrators encourage teachers to use the interim assessments as instructional and remediation tools. Similarly, the students gain an understanding of the importance of performing their best on the interim assessments, so teachers can measure content learning and address areas of need.

Teacher Performance Linked to Student Performance

Effective in July 2012, the Virginia Board of Education approved the *Virginia Standards of Professional Practice of Teachers***.** Just as the Virginia Standards of Learning establish goals for students, standards for teachers provide a vision for which teachers strive in their profession. By developing an effective conceptual framework for instruction, the standards for teachers create a focus for continuing education, professional development, and personal academic growth. Under the revised *Virginia Standards of Professional Practice of Teachers,* teachers are observed and evaluated on seven standards. Six of the standards represent the key elements of teaching: professional knowledge, instructional planning, instructional delivery, assessment of student learning, the learning environment, and professionalism. The seventh standard of the teacher evaluation process is based on student growth performance.

College and Career Readiness Initiative

In addition to the Virginia SOLs, the state has further implemented achievement goals of student preparation for two or four-year colleges. In 2010, Governor Robert McDonnell announced the expectation of graduating 100, 000 additional degrees from Virginia's two and four year colleges over the next 15 years. In response to this challenge, and in collaboration with the state's two and four year colleges, Virginia's elementary and secondary schools have set the bar even higher, adding more rigor to the English and math content areas.

The goals of the Virginia College and Career Readiness Initiative are as follows: a) "To ensure that college and career ready learning standards in mathematics and English are taught and learned in every Virginia high school classroom," and b) "To strengthen students' preparation for college and the workforce before leaving high school" (VADOE, 2011, para. 3). The performance expectations established to reach these goals call for a level of achievement that must be reached to ensure that students are ready for entry-level-credit bearing college classes when they graduate from high school.

Virginia's College and Career Ready Mathematics and English Performance Expectations build upon the foundation of the Virginia SOLs and are "fully aligned with the international college and career readiness standards including the Common Core State Standards" (VADOE, 2011, para. 4). Furthermore, the interim assessment process can then be described as a predictor for the achievement of the academic goals set forth by this initiative. Therefore, the changes in the instructional methods and philosophies made based on the interim assessment feedback to address student understanding are just as important to the College and Career Readiness Initiative as they are for the preparation for the summative Virginia SOL assessments.

The Influence of Data on Deeper Learning

While politicians report the need for students to be career ready when they graduate from high school, educational leaders are also responding to the growing need for students to experience deeper learning, collaboration, inquiry-based instruction, problem solving, and critical thinking. Schmoker (2009) pointed out that many schools set expectations that surpassed those set by state standards, but did not use assessment data to change instructional practices to meet the needs of 21st century learners.

Popham (2009) wrote that instructional leaders are expected to "get more instructional mileage out of the assessment data at hand" (p. 85). However, Popham reported two obstacles that often stand in the way of translating data into opportunities for deeper learning: missing *realization* and missing *skill*. Popham noted that successful educators realize that not all data are useful. For a teacher to actually accumulate rich information from the data, he must have an understanding of what to do with the students' item-by-item analysis and try to infer what skills and knowledge the student possesses and how the teacher can hone those strengths.

Once instructional leaders understand that not all data is important to learning, Popham (2009) wrote they must have the skill to decide which data is important to instructional decisions and which are not. Popham explained that teachers must use more than one source of evidence in order to be able to accurately just a student's mastery of content that the test measures.

Summary

As instructional leaders battle the wave of changing demographics of school systems and economic challenges of the nation, teachers must realize the power of education. With that said, they have to remain steadfast in using the tools provided by districts to assemble as much information as possible about the student make-up of the classroom and the instructional needs of the students. Interim and formative assessments have a direct link to understanding the content students have mastered before they take the summative assessments (Alkharusi, 2008).

However, teachers must also be given the skills to understand the data that are garnered from the assessments. Therefore, teachers can adjust their instructional practices to address the weaknesses and highlight the strengths of student understanding. Instructional leaders must model the expectations of schools, so teachers, students, and stakeholders have a clear understanding of how students are expected to achieve in the educational environment.

Teachers and principals are responsible for preparing students for 21st- century learning through problem solving, and analytical thinking. Data-driven-decision making is the foundation of measuring the skills necessary for learners in this era. Alvin Toffler (1971) wrote, "Tomorrow's illiterate will not be the man who can't read; he will be the man who has not learned how to learn" (p. 271).

CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this evaluative qualitative case study was to explore how high school teachers used interim assessment data to evaluate their instruction, and if or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study was to explore the pedagogical changes teachers had made, if any, in response to reviewing this data. The techniques used to disaggregate the data and later used to modify instructional practices were researched through focus group interviews with inquiries based on an examination of the Benchmark analysis spreadsheet completed by the teachers and individual teacher interviews. The goal of the researcher was to develop a better understanding of how the teachers viewed, understood, and applied data to inform instruction. This chapter includes a detailed description of the research design, the data collection process, and the data analysis procedures established for this evaluative qualitative case study.

Research Design

In qualitative studies, data are collected through field work conducted by the researcher to discover how all of the pieces of research fit together to describe an entire setting or experience (Merriam, 1998). Merriam also stated "Qualitative researchers are interested in understanding the meaning people have constructed, that is, how they make sense of their world and the experiences that they have in their world" (p. 6).

Additionally, Merriam detailed that the qualitative case study that concludes with the researcher making judgments and summaries based on the information collected through the interviews and observations is considered an evaluative qualitative case study. Thus, a qualitative methodology was appropriate for this study because the intent of the researcher was to enter the field to gain a detailed understanding of how teachers reviewed interim assessment data. The researcher also analyzed how the teachers reflected on that data and their instruction and if, or how, they modified their instructional practices to address areas of content weakness.

The case study process allowed the researcher to retain the complete characteristics of "real-life" experiences including the interactions of small groups, changes in environments, school/teacher performance, community relationships (Yin, 2009). The researcher did not modify the educational environment in any way. The data collected were based on the teachers' individual and group reflections of their instructional methods. The real-life experiences, to which Yin referred, were not changed for the purposes of this case study. In fact, the real-life experiences were what the researcher was analyzing to determine how the high school teachers used interim assessment data to evaluate their instruction and if or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia.

Research Questions

Data collection for this study was guided by the following research questions:

1. How do high school teachers at one Virginia school use interim assessment data to evaluate their instruction as they prepare students for the Virginia Reading, Literature, and Research (RLR) and the Algebra I, II, and Geometry Standards of

Learning (SOL) assessments?

2. What, if any, instructional changes do participants identify as having made as a result of reviewing interim assessment data?

Participants

The target population for this study included all teachers in this school who taught math or English. A purposive sampling technique was used as the researcher wanted to discover, comprehend, and gather the most information possible from the sample of expert participants (Merriam, 1998). All educators at this high school who taught Algebra I, II, geometry, and English 11 and were required to assess student progress via interim data collected from benchmark exams were invited to participate in the study. These curricula areas are those analyzed for AYP areas of English and math. The sample for the study included 12 high school English, math, and special education teachers who also used interim assessment data to evaluate their instruction. The researcher was prepared for some invited participants to decline to be part of the case study because of the time constraints of the processes. Nine teachers responded to the invitation to participate in the case study. Two English teachers, one special education teacher collaborating in an English 11 classroom, and six math teachers participated in this case study.

Setting

The targeted high school was a suburban public high school in Southwest Virginia. The school had approximately 990 ninth through 12th grade students, 63 teachers, eight instructional assistants, three school counselors, one drug/alcohol/anger management/peer relations coordinator, one part-time nurse, one athletic director, and one school testing coordinator. The administrative team included one principal and two assistant principals.

The school was located in the middle of an upper middle class neighborhood; however, the socioeconomic status of the school had changed in the 13 years prior to the case study. Family incomes in the attendance zone ranged from the very affluent to those going through some very difficult times, as parents had lost their jobs and homes and had moved into small apartments. Some families had live-in maids, while others did not have running water. The population had also become culturally diverse in the 13 years prior to the case study, including students who were Black, Hispanic, Asian, Indian, Iraqi, Russian, Bosnian, Sudanese, Swedish, and Norwegian.

The courses offered included the core subject areas of English, science, social studies, and math. Advanced placement and dual- level classes were offered in these areas, as well. Students could fulfill their world languages requirements in Latin, Spanish, and French and fulfill other elective requirements with courses in art, music, business, marketing, health/physical education/driver's education, family and consumer science, and technology education. Students who received special education or English Language Learner services were provided their appropriate accommodations on a daily basis and on both the interim assessments and the SOLs. The students completed both assessments on computers unless their accommodations required a paper test. All materials that could give students information to answer questions on the summative assessments were removed from the testing environments during the testing sessions. However, posters or bulletin boards may not necessarily have been removed from the testing locations for the interim assessment sessions.

Procedures

Prior to beginning this research process, the researcher received approval from the Institutional Review Board at Liberty University (Appendix E). Additionally, permission was

obtained from the superintendent of the school district and the principal of RCHS to collect and use the data as needed, while allowing for confidentiality and anonymity of all parties. The researcher met with the English 11, Algebra I, II, geometry, and special education teachers to discuss the organization of the case study, answer any questions, and request informed consent (Appendix F) prior to collecting the necessary data for the evaluative qualitative case study. Once the required approvals were received, the researcher began collecting the aforementioned data.

The Researcher's Role

I graduated from the Virginia Polytechnic Institute and State University in Blacksburg, Virginia, with a Bachelor of Arts in Communication Studies and English and a minor in secondary education. I then received my Master of Science degree in Educational Leadership from Radford University in Radford, Virginia. At the time of the case study, I had been with the school district for almost 13 years. I also taught seventh grade English in Minnesota for 2 years. I taught English in grades 6 through 12 at the target school's feeder middle school and the target school, RCHS, before becoming a high school assistant principal at a different school in the same district. At the time of the case study, I had been an assistant principal for 8 years in the same district. For 2 years, my leadership responsibilities included those of the school testing coordinator. In this capacity, I began studying the processes teachers used to embed interim and formative assessments in their curricula and to respond to learning gaps identified in the interim assessment feedback.

At the time the data collection and summary took place, I had been an assistant principal in the school where the evaluative qualitative case study was performed for approximately three and a half years. My administrative responsibilities included, but were not limited to, collecting

student registration information and building the master schedule for the building, meeting with the school's feeder middle school to develop transition plans and appropriate schedules for the students receiving special education services, attending and giving input during special education meetings, engaging teachers and students in conversations on instructional needs and seeking support when needed, conducting classroom observations and completing yearly teacher evaluations, overseeing the safety and well-being of all students and staff, supporting the custodial staff, maintaining positive and appropriate relationships with all community stakeholders, attending to any necessary disciplinary issues, and documenting building needs. I evaluated teachers as part of the leadership role. However, the building principal was the ultimate instructional leader and had the final opinion on teacher evaluations. I visited teachers' classrooms on a regular basis and engaged in conversations about instructional needs.

Data Collection

Upon receiving permission to collect data from the University and school district, I met with the principal and teachers at the targeted high school to describe the purpose of the study and gain informed consent of the teachers who desired to participate. Teachers were notified that their participation was voluntary and that they could withdraw from the study at any time with no penalty. Additionally, the procedures for keeping their identity and information confidential were described.

During the focus group sessions and throughout the individual interviews, the teachers' feedback on the Benchmark analysis spreadsheet was collected and documented as pure data and not responded to by the researcher from an administrator's perspective. I had an investigative relationship with the teachers and the data throughout the data collection process. The teachers' names were removed from the Benchmark analysis spreadsheets by the school testing

coordinator.

I conducted the focus group discussions in an informal coffee shop in RCHS, to create a more candid environment for transparent conversations about the teachers' methods for collecting and using interim assessment data for instructional purposes. Using a bracketing practice, I collected the responses from the individual interviews. Hatch (2002) noted the importance for researchers participating in the interview process to isolate emotion from the actual direct observations and quotes that are documented verbatim. The raw field notes documented from the teacher responses were documented next to the questions posed. I also noted body language and facial expressions in the field notes. However, my assumptions and feelings regarding the interview were noted or bracketed on the right side of the page.

Benchmark Analysis Spreadsheet

The first data collection point included a review of interim assessment data that the teachers had recorded on the Benchmark analysis spreadsheet. The interim assessments the district used were created by the English and math coordinators for RCHS school district based on released test items from past English RLR assessments, Algebra I, II, and Geometry SOL tests and banks of questions aligned with the Virginia Standards and provided by Interactive Achievement's onTRAC, the school district's online testing company. The interim assessments are also aligned to the revised standards in English and math, including technology-enhanced questions (VA SOL Blueprint End of Course Algebra I, 2009; VA SOL Blueprint End of Course Algebra II, 2009; VA SOL Blueprint End of Course Geometry, 2009; VA SOL Blueprint End of Course Reading, 2010). The interim assessment company, Interactive Achievement, employed content specialists "based on their knowledge of the Virginia Standards of Learning, their experience in the educational field, and the demonstrated ability to write questions that mirror

the state guidelines and follow the curriculum framework" (Interactive Achievement, 2013, para. 3). Once the questions were developed, Interactive Achievement then selected educators who had excelled in their specific field(s) to review each question and the distracters assigned to the questions.

The RCHS district's testing coordinator assigned the interim assessments cut scores that acted as indicators for whether a student receives a passing score on that particular assessment. The cut scores were determined by the district testing coordinator by first looking at the historical failure rate for the SOL course. The cut score was used to pinpoint students who were struggling with the content skills and to predict who may not pass the summative Virginia SOL assessments if remediation was not implemented (B. Williams, personal communication, February 11, 2012).

For teachers to closely scrutinize and isolate the standards that students had not mastered, the former school testing coordinator (STC) for RCHS devised an inquiry template called the Benchmark analysis spreadsheet. The English and math teachers were required to complete the spreadsheet (Appendix A) after each interim assessment session. The intent was for teachers to develop a meaningful guide for studying the data, so they could evaluate their lesson plans and their instructional techniques, to find the best way to help students understand the Standards of Learning for which they were responsible. The teachers performed their own analyses of the deficit areas when completing the Benchmark analysis spreadsheet. This was a starting point for the teachers' instructional self-reflection. I used these documents as archival data to explore how the teachers read and responded to the interim assessment data when they completed the Benchmark analysis spreadsheet and when they developed lessons to remediate students in deficit areas. The Benchmark analysis spreadsheet was provided to the teachers by the school

testing coordinator either electronically or as a hard copy. Once completed, the spreadsheet was copied, and the duplicate was given to me.

Focus Group Conversations

A focus group with the English 11 and Algebra I, II, and geometry teachers was conducted by the researcher. The administrators at RCHS met with the teachers of SOL courses on a regular basis to discuss concerns, patterns of growth, areas of student need, necessary support materials, and to exchange pedagogical philosophies in addressing the curriculum, and the interim and summative assessments. Therefore, the focus group felt like a natural continuation of previous conversations. The interview questions were open-ended and included the following:

1. How do you describe the instructional practices you feel you have had success with in addressing the Standards of Learning?
2. How do you isolate the Standards of Learning for which students will be tested during the summative assessments?
3. Based on the tested Standards of Learning for which you are responsible, how do you prepare your students for interim assessments?
4. After giving an interim assessment, how do you analyze the data for students' strengths and weaknesses?
5. How do you reflect on and evaluate your instructional practices to address the areas of analysis determined from the interim assessment results?
6. How, if at all, have you changed your instructional practices as a result of reviewing interim assessment data?

7. How do you review the students' areas of strength prior to the actual summative assessments?
8. How do you assess student understanding in between interim assessment sessions?
9. How do you reteach and reassess concepts while still moving forward with the curricula?

The focus group process also investigated common threads of student performance and teacher responses. The conversations happened in the school's coffee shop after school hours. The coffee shop also acted as a meeting room for small groups. The environment was comfortable, yet conducive and private for group conversations. The informed consent forms for the interviewees were given to the volunteering participants prior to the focus group conversations and were given back to the researcher before the group conversation began.

The focus group was digitally recorded for accuracy and then transcribed by an outside party. This procedure added another layer of anonymity to the focus group responses. The transcription was written in a question-and-answer format without identifiers for teacher responses. This data collection method added more reliability and validity to the case study process and the feedback. The focus groups' transcripts were read and reread many times and were analyzed using Hatch's (2002) content analysis steps. First, text was read and read again, so the researcher could get a sense of the responses. Then key words and phrases were identified and highlighted. Initial thematic codes were developed and tracked, followed by the development of more thematic categories. Information that did not pertain to these categories were disregarded of identifying key words and phrases. Every occurrence of a concept or category was appropriately color-coded and recorded. Finally, the researcher examined the categories and

drew conclusions. Following the coding, the researcher double checked the typological color codes for accuracy.

Individual Interviews

The individual interviews were conducted with a subset of the Algebra I, II, and geometry, and English 11 teachers, after the researcher had collected the data from the Benchmark analysis spreadsheets and the focus group conversations had occurred. I conducted these interviews with those teachers who did not clearly respond to similar questions during the focus group conversations. The individual interviews were conducted in person and were also digitally recorded. The interviewees were invited to participate. Upon participation approval, I confirmed that an informed consent form had been previously signed. The interviews were expected to last between 30 and 45 minutes. The researcher used a bracketed system to take raw notes in a field notebook next to the questions. I also documented the nonverbal cues given by the participants during the interview conversations. My hope was that the bracketing process would help remove emotions, preconceived notions, and biases from the documentation of the individual interviews. However, the notation of the nonverbal cues presented also gave insight into the teachers' thoughts and responses. Initially, the guiding questions for the individual interviews were thought to be the following inquiries:

1. Describe how you disaggregate the data from interim assessments?
2. Describe how you reflect on this data and evaluate your instructional practices?
3. Describe some ways you have made modifications to your classroom instruction as a result of data. If you have not made changes to your instruction as a result of data analysis, can you explain why?
4. How do you use data to make decisions about instruction?

5. How do you find the assessment feedback valuable?
6. How are you able to use the interim assessment responses as predictors for curriculum strengths and weaknesses?
7. What successes/barriers do you find with using data to make decisions about instruction?

However, as I worked through the multi-read process of the focus group conversations, the realization was that there were really only two questions that needed further discussion. The responses that were received through the Benchmark analysis spreadsheet and during the focus group conversations not only answered the guiding questions for the group discussions but also they answered the guiding questions for the individual interviews also. Therefore, I looked deeper into the transcripts and discovered the following two questions needed more in-depth discussion by members who did appear to have an opportunity to respond during the focus groups:

1. For teachers new to the interim assessment and data collection process, what would you tell them to use as a starting point for collecting their data?
2. Once you realize what piece of material you need to be attacking, whether it is the students or the instruction, how do you go back and change it? Do you repeat what you have done, or do you go back and actually change the way you have instructed?

Data Analysis

Benchmark Analysis Spreadsheet

The teachers' responses collected from the open-ended questions posed on the Benchmark analysis spreadsheet were coded for patterns of themes that emerged. In preparation for the responses, I began the coding process with the responses from the following categories

taken from the spreadsheet: identified deficit areas, how these deficit areas will be addressed within the classroom setting, instructional remediation plan, and a plan to monitor student progress. The following initial themes of planning and delivery, instructional changes based on learning styles, instructional changes based on student motivation, and instructional changes based on relating content material to real-life experiences were used to organize the key areas on the spreadsheet. Emerging themes were developed as the data was analyzed. I summarized these categories and then thematically color-coded the responses. The process of pattern coding was implemented to study the frequency of similar teacher responses (Hatch, 2002). Frequency counts were conducted on the responses for how teachers evaluated their instruction and why students chose particular distractors on the interim assessments. I also used frequency counts to note the patterns of responses for how the teachers changed their instruction as they prepared students for the Virginia RLR, Algebra I and II, and Geometry SOLs. As the patterns emerged in the data collection process, I discovered outliers or responses that did not naturally fit with the other teacher responses. I decided if there were enough outliers to create another category or if the responses needed to be discarded. The coding themes used to evaluate the Benchmark analysis spreadsheet paralleled the information sought by the researcher in the guiding questions for the focus group conversations.

Focus Group Conversations

The teachers' responses collected from the open-ended questions presented during the focus group conversations and subsequent topics covered in the session were coded and analyzed for emerging themes. My expectation was that the responses would create a broad picture of how the teachers understood the interim assessment process. I anticipated that the responses to

the guiding questions would help to establish an impression of the teachers' educational philosophies and their aptitude for different pedagogical techniques.

I hoped the focus group questions that directly addressed the teachers' methods of preparing students for the interim assessments would engage the teachers in further conversation stemming from the data they interpreted from the Benchmark analysis spreadsheet. In turn, the assumption was that the responses would provide information regarding how the teachers used the data to change their own instructional practices.

The transcripts were analyzed using Hatch's (2002) nine content analysis steps. First, the text was read and read again so the researcher could get a sense of the responses. Then key words and phrases were identified and highlighted. The initial codes were developed, tracked, and then followed by the development of more thematic categories. Information that did not pertain to these categories was disregarded of identifying key words and phrases. Every occurrence of the concept or category was noted and recorded. Finally, I examined the categories and drew conclusions.

Individual Interviews

Yin (2009) considered the guiding questions "Level 2" questions. The questions that were posed based on the interviewees' responses were considered "Level 1" questions. Level 1 questions are those questions that are not created beforehand, but are asked because they are valuable to the flow of the conversation and the documentation of feedback. The individual interview response transcriptions were given to the interviewees for a member check process. The data were reviewed by the participants for accuracy and the presentation of the information. The interview notes were analyzed through a multi-read process and typologically color coded using the same process as the study of the Benchmark Analysis spreadsheet and the focus group

transcripts. The transcripts were analyzed as previously described, using Hatch's (2002) content analysis steps.

Trustworthiness

A panel consisting of two central office personnel, two teachers, and two administrators examined the Benchmark analysis spreadsheet and the focus group open-ended questions for clarity in this evaluative qualitative case study. The open-ended questions for the focus group conversations were modified and added to for transparency, with the expectation that the researcher would be able to collect the most accurate and candid information from the group discussions. The individual interviews were conducted to assist with interpreting the data collected from the Benchmark analysis spreadsheet and the focus group conversations. The transcripts of the individual interviews were provided to the participants to facilitate a member check process, checking for accuracy of the documented conversations.

The quality of this case study was established through the triangulation of the data, as the researcher hoped to discover that the events of modifying instruction based on interim assessment feedback were articulated by more than one data source (Yin, 2009). The transcriptions of the individual interviews were provided to the interviewees for a member check process to improve the transferability of the data. The feedback went through a multi-read process for in-depth typological color coding. The questions posed through the three data collection tools added specificity and definition to the case study, whereby future data collection could commence using the same tools and inquiries (Yin, 2009).

Ethical Considerations

Stake (1994) wrote, "Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics strict" (p. 244). There were ethical

considerations that had to be considered in this evaluative qualitative case study:

1. I was the primary data collection instrument, and was an assistant principal within the school in which the research was being conducted. There were four obvious ethical considerations that had to be discussed and monitored during the research process, because the researcher worked in the target school: a) researcher bias, b) the teachers feeling compelled to participate in the case study, c) inaccurate teacher responses on the Benchmark analysis spreadsheet and during the focus group conversations, and d) not candid pedagogical responses during the individual interviews because I was an administrator in the building. Therefore, I had to be cautious to include all relevant data in the research process, including data that were contradictory to the researcher's views and expectations. The teachers' feedback on the Benchmark analysis spreadsheet during the focus group sessions and throughout the individual interviews was collected and documented as pure data and not responded to by the researcher from an administrator's perspective. I maintained an investigative relationship with the teachers and the data throughout the data collection process. I conducted the focus group conversations in a welcoming and friendly environment and phrased the questions in a manner that did not make the participants feel defensive and uncomfortable.
2. I asked the English and math teachers to participate in the focus group conversations. Their participation was not expected or required, nor did the researcher assume the teachers would be willing participants simply because they worked in the target school.
3. I asked the English and math teachers to allow their Benchmark analysis spreadsheets to be analyzed and used as part of this evaluative qualitative case

study. Again, the teachers' participation was not expected or required.

4. I invited the English and math teachers to individually discuss how they responded to the Benchmark analysis spreadsheet and to add clarification to the responses given during the focus group conversations. The teachers' participation in the process was not expected or required.
5. I incorporated the practice of bracketing in the individual interview process, using a field notebook to organize brief notes regarding the teachers' responses on the left and facial expressions and body language notations on the right. The interview response form was formatted, so direct responses and raw data were noted on the left side, while my assumptions, feelings, and preconceived notions were noted on the right side. The individual interview response transcriptions were presented to the participants for their approval of the documentation of the feedback. The researcher used a multi-read process to analyze and typologically color code the responses.
6. The names of the teachers, the target school, and the students, whose interim assessment scores were an integral part of the research, were not identified. The teachers were referred to by assigned letters (i.e. English A, English B, Math A) when necessary to document the Benchmark analysis spreadsheet information. The transcriptions of the focus group conversations or the individual interviews did not include names or identifiers, only the questions and the responses.

Summary

An evaluative qualitative case study approach was most appropriate for this research study as the researcher was the primary instrument for data collection through fieldwork and employing inductive research strategies through the typological coding process (Merriam, 1998).

The data from the teachers' responses to the Benchmark analysis spreadsheet were reviewed. The same teachers whose Benchmark analysis spreadsheets were studied by the researcher were also involved in the focus group conversations. I conducted the individual interviews with the three teachers who did not clearly respond to similar questions during the focus group conversations.

I collected data from the transcripts of the focus group conversations and the individual interviews by coding the documentation with emerging patterns based on how the teachers responded instructionally to the interim assessment feedback. A purposeful sampling technique was used to recruit from English 11, Algebra I, II, and geometry teachers. Chapter 4 presents the results and analysis of the data and the transcripts in a detailed and comprehensive manner.

CHAPTER FOUR: FINDINGS

Introduction

This qualitative case study was created to examine if and how teachers changed their instructional practices based on interim assessment feedback. This study was guided by two research questions. The first research question was designed to query how high school teachers at one Virginia school used interim assessment data to evaluate their instruction as they prepared students for summative assessments. The second question focused on what, if any, instructional changes participants identified having been made as a result of reviewing interim assessment data.

Three data collection tools were used: a Benchmark analysis spreadsheet, focus group conversations, and individual interviews. The responses from the three tools were read multiple times by the researcher to get a sense of the themes in the responses. Key words and phrases were identified and highlighted, and initial codes were developed. The first four initial codes were developed as I created a plan for analyzing the teachers' responses from the instruments. As expected, the initial codes emerged as I questioned how the teachers modified their instructional practices based on the interim assessment feedback from the Benchmark analysis spreadsheets: planning and delivery, instructional changes based on learning styles, instructional changes based on student motivation and instructional changes based on relating content material to real-life experiences. However, three more thematic codes developed during the review of the Benchmark analysis spreadsheet: creating lists of deficit areas, modeling skills, and instructional

repetition. I color coded the themes during the analysis process. The frequency of the themes was then calculated.

Information that did not pertain to these categories and did not appear frequently in the response data was disregarded, as the outliers did not directly respond to how teachers analyzed the interim assessment data or how they modified instruction based on the feedback. Every occurrence of the concept or category was noted and recorded. I examined the categories and drew conclusions. Following the coding, I double checked the typological color codes for accuracy. The transcripts for the individual interviews also went through a member check process to document accuracy.

Participants

The teachers were given pseudonyms in order to protect their identities during the research process. They were noted as English A, Math A, and so forth. Their backgrounds in education were diverse and several were career switchers who came into education after being in the workforce in other areas. At the time of this case study, teacher English A was in her third year of teaching and her third year with the target school district. She collaborated in English 11 with teacher Collaborative A, who was a special education teacher for 12 years with 11 years of experience in the district. At the time of the case study, English A and Collaborative A had taught together for 2 years. Teacher English B was in English education for 27 years with 11 years of experience with the district.

Teacher Math A was in her first year in the district, but came to RCHS with 9 years of teaching experience at the middle school level. Teacher Math B was in her 19th year of teaching

with 12 years of experience in the district. Teacher Math C was in his fourth year of teaching and his third year as a teacher in the district. Teacher Math D had 2 years of teaching experience, both in the district. Teacher Math E was a career changer who had taught for 9 of her 11 years in the same district as RCHS. Teacher Math F had 17 years of experience in education, 8 years were with the district.

The teachers' backgrounds in education and their own learning experiences were vast. Two of the teachers were in Educational Leadership programs for their master's degrees during the case study. One teacher was a former assistant principal who noted that she missed the direct instruction with the students and decided to return to the classroom. All of the teachers had students in their classes who received some level of special education and English Language Learner support. At the time of the case study or prior to the research, all of the teachers but one had taught in a collaborative classroom environment.

Instruments

Benchmark Analysis Spreadsheets

The English 11, Algebra I, II, and geometry teachers began analyzing the interim assessment data by first studying the questions that less than 60% of the students in the course answered correctly. While looking at these deficit areas, the teachers identified the most selected distracters for these questions, and then developed hypotheses of why each distracter was chosen frequently. The instructors then created plans to address these deficit areas by identifying the students who did not meet the cut score and then outlining a remediation plan that included how students should be monitored and evaluated throughout the support process.

English. As a result of reviewing the Benchmark analysis spreadsheets, I discovered the English 11 teachers identified specific skills that needed to be retaught, as well as portions of the

content that had not yet been covered. Additionally, the teachers were responsible for addressing student deficits in understanding literary terms and struggling with the new Technology-Enhanced Items (TEI) included as simulations for the summative assessments. The teachers also reported dealing with low levels of student motivation, and student test taking endurance.

The two teachers responsible for the collaborative classes identified 28 out of 48 students who did not make the English 11 cut scores established by the district testing coordinator. While completing the Benchmark analysis spreadsheet, the need for instructional repetition by planning and delivering review material, as well as instructional changes based on student motivation and student learning styles were cited as the teachers' designs for addressing the students' areas of weakness. One teacher noted on the Benchmark analysis spreadsheet that she would expose the students to "various types of literature with read-alouds, group work, and individual assessments" to address the need for repetition and work with the different learning styles in the classroom. The same teacher also expressed the need for "consistent and repetitive assessment to ensure mastery" and to help build the students' test-taking endurance, as well as building confidence and motivation.

The English 11 teacher responsible for the college-bound course cited five out of 108 students who did not meet the established cut scores on the interim assessment. This teacher's response to the students' areas of weakness included planning and delivery that reached students' different learning styles and changing his instruction based on motivation. He documented on the Benchmark analysis spreadsheet that he would use "additional readings, practice questions, and selected released items to check recognition skills." All three teachers noted the importance of repetition in learning the Standards of Learning for the English 11 curriculum. They noted that teaching new skills while practicing previously taught skills can easily be done through

thoughtful planning and delivery in the English curriculum. One teacher wrote that "extending vocabulary by incorporating new terms into each unit that directly apply "while reviewing already learned terminology can help develop mastery. Another teacher expressed wanting to incorporate "additional mini-units on roots and affixes" to acknowledge specific areas of weakness discovered through the interim assessment process.

Math. The Algebra I teacher who completed the benchmark analysis spreadsheet, identified 13 out of 49 students from the participating teachers 'classes who did not make the cut score on the Algebra I interim assessment. She noted that students "misinterpreted the questions" and "misinterpreted the algebraic language" on the interim assessment and were the reasons some students selected certain distracters. She also documented that students did not complete mathematical formulas/processes and did not remember algebraic properties when taking the Benchmark. Specifically, the Algebra I teacher commented on the Benchmark analysis spreadsheet that students "didn't solve equations correctly; forgot to multiply the reciprocal; added instead of subtracting; and found the square root instead of the cube root." To address these particular concepts and processes, the Algebra I teacher planned to use different types of instructional delivery: "Focus questions and exit slips are used in my classroom to spiral review most missed questions." She also noted that "Interactive Achievement is being used to give students more practice with online testing" and to address the various learning styles, levels of motivation, and connecting algebraic steps to real life experiences.

The Algebra II teachers identified six out of 105 students who did not make the cut scores on the interim assessment. The areas of concern noted from the spreadsheets were students not reading the questions and distracters carefully and not graphing the actual equations accurately. One teacher wrote, "My students didn't read carefully and graphed the equation given instead of

the inverse of the equation given" and that students "forgot to find domain and range, so they randomly picked all real numbers for both." The teachers were also able to isolate questions that were over material not yet covered and not yet practiced in class. Both Algebra II teachers documented plans to deliver material in a repetitious manner to build skills and confidence in the assessment process. One Algebra II teacher wrote that deficit areas would be "addressed by consistent review of previous material and Algebra fundamentals." Another teacher said, "We will have daily warm-ups [based on missed interim assessment questions] after Christmas break," and students will have remediation opportunities.

The geometry teachers identified 18 out of 251 students through the Benchmark analysis process who did not make the cut score on the interim assessment. The teachers documented concerns for students making mathematical assumptions about equations that were false or inappropriately used, saying students "assumed the same side interior angles were congruent" or "assumed 3x and 2x were complimentary" on a specific question. Some students were confused by the wording of the questions and the corresponding distracters. The teachers also noted a weakness in the students' use of geometric vocabulary. One teacher specifically commented that students missed one strand because they "found parallel slope instead of perpendicular slope" and "counted diagonally instead of using the distance formula." Both geometry teachers wrote that they planned to deliver the material that needed to be reviewed through repetition during "bell ringer review questions pertaining to the SOLs that were most missed" and embedded review days called "Flashback Fridays which go over most missed SOLs." One of the geometry teachers discussed modifying her instruction and class practice based on the different learning styles by "addressing problems with retention and the English language through in-school remediation."

Focus Group Conversations

After conducting the focus group, an outside transcriptionist documented the conversations, and I read the transcripts several times to get a sense of the teachers' responses and the various possibilities for the typological coding process. I then color coded the focus group transcripts with the same initial themes used to thematically code the Benchmark analysis spreadsheets: planning and delivery, instructional changes based on learning styles, instructional changes based on student motivation, and instructional changes based on relating content material to real-life experiences. As hoped, the initial themes were evident in the Benchmark analysis spreadsheet and appeared again in the focus group transcripts. The three additional thematic codes that emerged during the study of the Benchmark analysis spreadsheets also developed as coding themes in the focus group transcripts: Instruction was based on deficit areas, instruction was based on modeling processes, and instruction was based on repetition. The researcher, again, highlighted each reoccurring theme with a specific color. The number of times the themes appeared was then calculated. The focus group conversations were guided with the following questions:

Question 1. *How do you describe the instructional practices you feel you have had success with in addressing the Standards of Learning?* The English teachers agreed that modeling skills is an approach that yields strong results. During the focus group, an English teacher commented,

> Modeling is huge, especially for our group. . . .Sometimes they [students] will look at something that they don't understand, and they automatically give up. So we model how to break it into smaller pieces so that it's more manageable for them to handle.

One English teacher also touted the basics of carefully reading the passages, as well as the questions, for deeper meaning: "I press them to read more deeply and more slowly and carefully."

The math teachers included the cross-curricular approach of reading scenarios that begin with a student making a mathematical error. One Algebra II teacher described the strategy as "we put several questions on there that said, 'This student has made a mistake. Can you circle where the mistake was made? Write a sentence of what the mistake is and then work the problem correctly.'"

Question 2. *How do you isolate the Standards of Learning for which students will be tested during the summative assessments?* Both the English and math teachers highlighted the importance of using the curricula blueprints as guides for isolating the standards that will be measured through the summative assessments. One teacher said in the focus group conversation, "I think for me the very first step is to look at the blueprint for the English 11 SOL, and I make sure that those SOLs are the ones that I've frontloaded in the beginning of the year." One of the math teachers added that the blueprint allows the teachers to know the standards expected to be covered, "We have a whole outline of exactly how many questions there will be and how many of each type."

Question 3. *Based on the tested Standards of Learning for which you are responsible, how do you prepare your students for interim assessments?* Both the English and math teachers discussed the importance of identifying the students' areas of deficit to address the content weaknesses. An English teacher said, "So then we make sure [during] our lessons and whatever else we are reading…we not only go over that skill [once] but we hit it with everything we do."

A math teacher commented, “I start doing daily quizzes on those particular SOLs” in preparation for the assessments.

Question 4. *After giving an interim assessment, how do you analyze the data for students’ strengths and weaknesses?* The English teachers commented that the Benchmark analysis spreadsheet is a tool that is thought-provoking and engaging and helps to guide the instructor through the data analysis process. The English teachers were enthusiastic and smiled as they discussed what they were able to glean from completing the Benchmark analysis spreadsheets, saying, “We get really specific on our data, even to the point where we realize where our weaknesses were…So we actually use the data to plan where we need to go and what we can move on from because if they know it, we have a lot more stuff to cover. We have to move on.”

The math teachers, however, countered the Benchmark analysis spreadsheet’s purpose, noting that the process was too tedious for the statistical nature of the Algebra I, II, and geometry teachers. The math teachers diverted the conversation to expressing their frustrations in the specific format of the Benchmark analysis spreadsheet in regard to the math data collection process. As a digression, with the permission of the participating math teachers, I presented these findings from the focus group to the school testing coordinator and the building principal. The development of a new format for the math Benchmark analysis spreadsheet ensued for further data collection.

The English and math teachers were in agreement, though, saying they can often predict the areas of weakness before they even see the students’ interim assessment feedback. A math teacher commented, “I could have predicted what questions they were going to miss…because that’s what they always miss because they don’t memorize the formulas.” Both content area

teachers explained that they will spiral similar missed items in mini-assessments, so there is a constant review of the material missed, giving extra opportunities for those who are struggling and refreshers for those who understand the skill(s). One teacher said she would take the weakest questions and "spiral those questions in all of [her] tests or quizzes." Another math teacher added,

> I'll do the do now's or "bell ringers" as similar problems with similar answer choices and then that way when they do it on their white board and they hold up their answers, I've got everybody's answers and I can see [a student] missed it because it was perpendicular slope, but[he] did parallel.

The English and math teachers also commented that they read frequently missed questions and the corresponding distracters to see if the most commonly chosen answer had appealing trademarks causing students to choose it. They also stated that sometimes the missed questions were poorly written, making them confusing. One English teacher commented that "it's really important to look at what's being asked and the sample size because sometimes it's just, well, inconclusive. . . .Sometimes it is just a poorly written question."

Question 5. *How do you reflect on and evaluate your instructional practices to address the areas of analysis determined from the interim assessment results*? The English teachers reflected on tailoring assignments to different readings that address the areas of need. Similarly, the math teachers explained processes of reviewing the interim assessments and having students make corrections as a review activity. A math teacher stated that she and her collaborative teacher did not realize "the kids truly didn't get the definition of what a line segment was or what angle was, so we had to go all the way back to chapter one and go over those core definitions." One English teacher noted the example of students having difficulty with suffixes and root

words: "Everybody, across the board, was struggling with it so we built it into our everyday [lessons]. Every day, we're just attacking it." The responses to Question 5 made a natural progression into answering Question 6.

Question 6. *How, if at all, have you changed your instructional practices as a result of reviewing interim assessment data?* While using many specific examples regarding the teaching of literary terms, algebraic equations, and geometric language, the teachers kept reflecting on the importance of repetition through different methods of instruction. To understand the areas of need, both the English and math teachers analyzed the questions and pondered why certain distracters were chosen over others. They also reflected on whether they had missed teaching certain skills to particular blocks of students who seemed to have similar difficulties. One of the English teachers explained,

> I think we have to continue to adjust and tweak and, you know, with every new piece of data that we get. If it's showing the trend moved this way, then we have to go that way with it. So I think we constantly re-evaluate what we're doing and change it as needed. I think if we didn't we'd miss everything that they [the students] needed.

Another English teacher said, "We tailor exactly what we are going to do based on the data."

Question 7. *How do you review the students' areas of strength prior to the actual summative assessments?* The English teachers explained that they spend more time with SOL sample questions in the month prior to the summative assessment. Similarly, the math teachers described students working through test banks through Blackboard and Interactive Achievement and also working on sample questions until mastery is reached. A math teacher explained using Blackboard to establish banks of questions and said, "I could tell Blackboard to give the

responses to incorrect questions, so there is immediate feedback from which students can learn." One of the English teachers described making "interim-interim assessments" or mini assessments. Another English teacher said, "I think we do assessments, not for the sake of assessments, but assessments with a purpose."

Question 8. *How do you assess student understanding in between interim assessment sessions?* The English and math teachers explained that they create mini-assessments or snapshots to help assess student learning in between the interim assessments and leading to the summative assessments. Again, the teachers mentioned spiraling information. One English teacher described using a note card system to "randomly" ask students questions:

> You can hear them explain it [a concept] and then if a student's still struggling with it, you can kind of sculpt the discussion so it is modeled for them or clarified, and then you can always come back around to the same student again.

Another English teacher said,

> As the real testing month comes on the horizon, I'll spend more time sample questions… to talk to the kids about the way questions are presented…so they understand as clearly as possible how the question is asking them to think.

The same teacher continued, "Then we go back and talk through what one would do to arrive at the answer or what part one would look at or skim."

Question 9. *How do you reteach and reassess concepts while still moving forward with the curriculum?* The conversation naturally transitioned from the snapshots in Question 8 to re-teaching and moving forward with the curricula. The math teachers used a term called "spiraling" to describe how they embed repetition of skills in lessons covering new material. While the English teachers did not use the term "spiraling," they described the same process of

incorporating review materials while moving on to new material in grammar and literature. One English teacher said, " You can always get done what needs to be done and still be talking about the essential ideas in the work, while still just kind of restructuring it a little bit to revisit areas or concepts they're weak with." Thus, both groups of teachers recognized the need to stay on pace with the stated curriculum, but that students still needed to have dedicated time in class to review prior content.

A math teacher added that his technique for reviewing and building on skills is the "Warm-Up" at the beginning of class: "That's how I've always done it and once I teach something, it is fair game to go on the Warm-Up. It doesn't matter if it was the first thing I taught." Another math teacher said, "I think you have to spiral backwards or come May you're in trouble…most of our [math] courses spiral by nature." Wrapping up the math focus group conversation, another teacher commented, "The coaches always said, 'You're going to be a better soccer player if you touch the ball more than anybody else,' so I say, 'You're going to be a better math student the more you touch the math.' The more you touch it, the more you're engaged." The math teachers reiterated the idea of comprehensive teaching and assessment, meaning that all prior content needed to be included on interim assessments to ensure students remembered all standards and topics taught.

Individual Interviews

The guiding questions for the individual interviews were developed in preparation for possible areas of further exploration after the focus group conversations were concluded:

1. Describe how you disaggregate the data from interim assessments?
2. Describe how you reflect on this data and evaluate your instructional practices?
3. Describe some ways you have made modifications to your classroom instruction as a

result of data. If you have not made changes to your instruction as a result of data analysis, can you explain why?

4. How do you use data to make decisions about instruction?
5. How do you find the assessment feedback valuable?
6. How are you able to use the interim assessment responses as predictors for curriculum strengths and weaknesses?
7. What successes/barriers do you find with using data to make decisions about instruction?

As I read and typologically coded the Benchmark analysis spreadsheets and the transcripts of the focus group conversations, the information was rich with consistent themes, as well as areas of future study. The originally developed questions for the individual interviews appeared redundant and needed to be tailored to the missing information that needed to be clarified from the focus group conversations. There were two questions that needed further exploration through the individual interviews. The researcher conducted these interviews with those teachers who did not clearly respond to similar questions during the focus group conversations. The following questions were used to develop a better understanding of how teachers cultivate plans for modifying their instruction.

Question 1. *For teachers new to the interim assessment and data collection process, what would you tell them to use as a starting point for collecting their data?* The English and math teachers all described looking at individual classes' data and then comparing the feedback to all the students taking the same course. One math teacher responded during the individual interview, "Usually, your classes of the same level have the same places where they're deficient and where they're strong, not consistently, but usually." An English teacher commented, "I have to ask why they are all missing the same strand. Is it a new strand, or was it my delivery? What

did I do differently?" This teacher recognized the importance of the idea that interim assessments can be used as an instrument to inform and make adjustments in teaching.

They noted the importance of reflecting on whether the missed questions were expected or if they were surprised that students missed the material. A math teacher said, "You have to look at which questions are missed. Is it a topic that needs remediation? Was it just a tough question? Are there specific distracters that are chosen? Are there some distracters not chosen? Why?" The teacher continued, "A lot of times you can look at it, because you know your subject well, you know where they're going to make the mistakes." However, "if there's a question that they missed, and you didn't expect them to miss it…it's important to see why." Another commented, "Was there something wrong with your teaching, or was there something wrong with the test because every now and again you get a question where all the kids miss it, and you're like, 'That shouldn't have gotten missed.'"

Once the areas of need were defined, the teachers explained how they addressed the questions again through repetition and working with the students' different modalities, as they were assessed again for understanding/mastery. One math teacher detailed how she encouraged students to understand why they were making mathematical mistakes, saying that "a good multiple choice question anticipates what mistakes you are going to make." She recognized the fact that students needed to know what distractors were included in answer choices on summative assessments and also why the wrong answers were wrong, in addition to knowing why the right answers were right.

Question 2. *Once you realize what piece of material you need to be attacking, whether it's the students or the instruction, how do you go back and change it? Do you repeat what you have done, or do you go back and actually change the way you have instructed?* Both the

English and the math teachers responded with detailed descriptions of embedding repetition of content in the everyday lessons. An English teacher reflected on how English "lends itself to repetition. . . .You don't have to go back to the exact same short story, if it's something you need to repeat. . . .[However,] sometimes, I'll completely change the instruction to fit whatever we're currently reading." The teachers listed spiraling skills through different pieces of literature and writing activities, bell ringers, online activities through Blackboard and Interactive Achievement, and "Flashback Friday's." This teacher recognized that many of the concepts or standards in English are taught and reinforced all year, but must be presented with different materials and in different ways to engage students and to alter the complexity of content.

A math teacher discussed the importance of listening to the students as they verbalize the mathematical processes, "If I can think of a way that would make more sense to them, I'll go that route. Sometimes I'll have a student who says 'Hey, it makes sense to me this way,' and I'll teach the rest of the class that way, as well." Another math teacher reiterated the use of repetition, "Because of my subject area, the 'going back to it' happens all the time. . . .I'm constantly going back to those formulas, so there is repetition." Listening to students and modeling self-reflection empowers the students to apply critical thinking to solve problems and affords the teacher the ability to analyze how students are synthesizing and applying information.

Themes

Initially, four themes were defined for thematically coding the teachers' responses to the Benchmark analysis spreadsheets, the focus group conversations, and the individual interview transcripts: a). planning and delivery; b). instructional changes based on learning styles; c). instructional changes based on student motivation; and d). instructional changes based on relating content material to real life experiences. As the researcher reviewed the feedback, three

more themes emerged from the responses from all three data collection tools. The following themes were added to the typological coding process: creating lists of deficits, modeling skills, and instructional repetition.

Planning and Delivery

The thematic code of planning and delivery is an umbrella theme that was essentially part of the reflection process in which the teachers participated as they completed the Benchmark analysis spreadsheet. During the focus group conversations and the individual interviews, the teachers spoke about the importance of thoughtful planning when trying to address students' weaknesses and move forward with the curricula. One math teacher explained the process of planning for review opportunities in class, "In addition, focus questions and exit slips are used in my classroom to spiral review the most missed questions." Meanwhile, another math teacher wrote that he planned for "bell ringer review questions pertaining to the SOLs that were most missed…and Flashback Friday's which go over the most missed SOLs."

During the focus group conversations, the math teachers continued to discuss how they planned their delivery of review information, as well as new information:

> The first thing I have to do when I am getting ready for the [interim] assessment is to figure out what is going to be on them. Ideally, what SOLs are going to be tested at that time, and I start doing daily quizzes on those particular SOLs. I start to increase rigor as much as I can.
>
> An English teacher commented, "I determine what skills they seem to have and what they really, really need."

The responses in the individual interviews proved to be centered around the planning and delivery of curricula as the teachers determined the deficit areas, also. One math teacher said,

> When I go over my interim assessments with the kids, if I can't figure out why that one was chosen, I'll just say, 'Okay, who picked this one [answer]? Why'd you do it? What did you do that caused you to pick this answer?'

A teacher continued, "Sometimes the kids will come up with stuff where I'm like, 'Oh, I didn't even think that that might be an error there." Another teacher discovered the importance of teaching students how to approach the new Technology Enhanced Items (TEIs), known as drag and drop questions to the teachers and students.

> I was hearing [the teachers] say 'Wow, our kids can't do similar triangles. That doesn't make any sense. Our kids should be able to do similar triangles. Why can't our kids do similar triangles? And when you really looked at what the thing [item] said, it was a drag and drop question. It was aligning the justifications, so if you don't get all of them [answers], it's wrong.'

Instructional Changes Based on Learning Styles

The responses on the Benchmark analysis spreadsheets highlighted how teachers used different methods of instruction to address the different modalities represented in the classroom. One math teacher listed implementing the use of peer tutors through the school's Beta Club, as well as using "Interactive Achievement to give students more practice with online testing." Another math teacher wrote that she used the "current [interim] assessment scores and informal assessment (question, etc.)" to monitor student progress.

Throughout the focus group conversations, the math teachers discussed the different levels and learning styles of the students. One math teacher discussed having students practice going through test-taking steps, "I have them circle it [the first step] and put a one on it. Then, this is the second [step], and put a two." Another math teacher added, "There's a lot of

competition…and they do like that…with Jeopardy or Millionaire." One of the English teachers explained her method for modifying her instruction to help support the different learning styles,

> We set up an interactive notebook in which they…do word studies for a section. We do literary terms for a section, and then we do reading for a section. And they pull that out every day and they're going through and adding new stuff, while they have the old stuff to look at.

During the individual interviews, an English teacher commented on modifying instruction, "I'll just completely change the instruction to fit whatever it that we're reading." In agreement to looking at the different learning styles in the classroom, one math teacher added during her interview, "There is a 'go back and teach it' in a different way. Most of the time, I find for myself that the concepts that are missed are usually missed because it's something that just needs more practice."

Instructional Changes Based on Student Motivation

The English 11 and math teachers both discussed having to address student motivation through instruction on the Benchmark analysis spreadsheets. In fact, one math teacher commented that she was not sure of some students' level of commitment to performing on the interim assessment: "Since the interim assessment doesn't affect his grade, I don't feel he took it seriously." Motivation is often directly connected to student attendance. Another math teacher wrote on the Benchmark analysis spreadsheet that she had specific conversations about the impact of attendance on grades. One English teacher wrote that a student's "performance relative to this score and her general demeanor cause me to question her effort on the interim assessment." The teacher then listed using reviews of "dramatic conventions and figurative

languages types [and] additional mini-units and quizzes on roots and affixes" to assist with motivating the student to learn the necessary material.

As the focus group conversations continued on instruction based on student motivation, one math teacher described having students look to the future for motivation to perform well in the present: "I explain to them that they have to have [pass] the SOL to be exempt from the final exam. In Algebra II, I have basically told them, 'You want to pass the SOL and be exempt because you don't want to have to take the final exam.'" Competition amongst students and classes also appeared as a method of motivation. Another math teacher commented during the focus group, "We do these things and we play games and we try to get them to buy into it, that this is something that you're going to want to get done." A math teacher added, "I wish I could just go home and teach all of them one-on-one. They could get it because I have their attention. You know, they're not being influenced by anybody else in the room."

The English teachers continued to discuss having to "adjust and tweak with every new piece of data," including the level of student engagement during lessons. An English teacher discussed how much time was spent on motivating students "to read more deeply and more slowly and carefully," so they can perform well on the assessments.

Instructional Changes Based on Relating Material to Real Life Experiences

Just as the teachers noted the importance of changing their instruction based on student learning styles and their motivation levels, they also realized the importance of relating the material to real-world experiences, specifically the format of the interim and summative assessments. One math teacher explained, "Interactive Achievement is being used to give students more practice with online testing." During the focus group conversations, the math teachers also discussed using banks of questions on Blackboard, so students could practice

manipulating data to answer the technology enhanced items (TEIs) on the interim and summative assessments. One math teacher commented,

> On Blackboard, when you create your own questions, you can tell it to give them response feedback to incorrect answers. So, for example, if we were doing factoring and a kid chose one particular option instead of another, I could tell Blackboard to give them the 'incorrect response' feedback of, 'You chose this option, but the sign pattern should be minus/plus when it's this type of question.'

During the math focus group, a teacher was discussing the peer learning she establishes in her room. For instance, "I was thinking to say 'it's the space between, but the kids were, and that's what was needed, a little of that peer instruction to help them really clarify." In the individual interview process, an English teacher described incorporating skills into what the students are currently reading in order to show the students how concepts can be applied to different material in different situations. The English teacher said, "You can apply whatever that [concept] was to the piece that you're reading now."

Creating Lists of Deficits

A starting point for instruction that was identified by all English 11 and math teachers was to develop a list of the deficit areas, as well as identify students who are struggling with the content, all together. The importance of creating the lists of deficits was exhibited in the detailed information provided by the teachers on the Benchmark analysis spreadsheets. The teachers were asked to identify the specific SOLs covered on the interim assessment, the questions that fewer than 60% of the students were able to answer correctly, then to summarize the most selected distracter, and to contemplate why the students selected that particular answer choice. In the math focus group conversations, a teacher said, "You know, you realize that there's that

group of kids that somehow have been able to answer questions reasonably enough that you didn't realize that, 'Wow, you still really don't know what an angle is!'"

Through this analysis process, the teachers were able to list specific areas of concern in math and English. One math teacher listed that students "relied on the calculator and didn't use parenthesis correctly, didn't solve [a] specific equation correctly, forgot to multiply by the reciprocal, and misinterpreted the algebraic language." An English teacher documented the students' deficit areas on the Benchmark analysis spreadsheet as "students are not recognizing the term 'allusion,' students failed to see the main idea of the poem, I suspect students did not scan back over the text effectively, and students took the [noted] remark for face value, not detecting the sarcasm."

While both the English 11 and math teachers discussed the amount of time it took to complete the Benchmark analysis spreadsheet, all the educators noted the importance of developing a list of deficits as a guide for instruction. During the focus group, one English teacher said creating a deficit list helps to "get a sense of what direction we're going in." Another teacher stated that the deficit lists help the teachers decide how they can "tailor individually." During the individual interview, a math teacher reiterated the importance of studying the interim assessment feedback and creating a guide for areas that need to be supported. "I would look at the most missed question. Usually, I pick a top five and I say, 'Why do they miss it?'''

Modeling Skills

Once the teachers created their lists of deficits, they discussed how they incorporated support into their lesson plans. While not directly identified on the Benchmark analysis spreadsheet as "modeling," the practice of using focus questions and bell ringers and warm ups

in class can be considered a method of modeling how to read test questions and how to attack the specific processes being assessed. During the focus group conversations, one math teacher described modeling, "I figure out what I need to cover and then I start doing mini-daily quizzes on particular SOLs, and I start increasing the rigor as much as I can." Adding to the discussion on modeling techniques, another math teacher added, "Mine's the warm up. Once I teach something, it is fair game to go on the 'warm up.' I'll bring back the first nine weeks in the third nine weeks." Another math teacher addressed the use of modeling test-taking skills while instructing. She explained the importance of students understanding the process behind the mistakes that are made. She noted in the individual interview that "good multiple choice questions anticipate mistakes" that students are going to make and include the incorrect answer as a distracter.

One English teacher discussed a literary term that she thought many of the students would know but was proven wrong when she analyzed the interim assessment feedback, "There may have only been two questions…but there was a real dip there, so we'll be hitting it repeatedly." The English teacher continued to say that she will look to model certain skills repeatedly "with group instruction [that] will give a lot of bang for the buck." Another English teacher commented that modeling is one of the instructional practices that have proven to yield successes in class. She said, "sometimes [the students will] look at something they don't understand and they automatically give up. . . .So we break it into smaller pieces and model *how* to break it into smaller pieces so it's more manageable." The English teachers have embedded modeling into their planning to encourage student growth and fill learning gaps.

Instructional Repetition

The thematic code of instructional repetition emerged throughout the responses on the Benchmark analysis spreadsheets, during the focus group conversations, and the in the individual interview transcripts. The method of revisiting material was referred to by the math teachers as the act of spiraling material. One teacher wrote in the teacher response plan on the Benchmark analysis spreadsheet that "focus questions and exit slips are used in my classroom to spiral review [the] most missed questions." Another math teacher wrote that his/her response plan was to address the deficit areas "by consistent review of previous material and Algebra fundamentals." An English teacher documented repetition through "additional readings and practice questions [and] selected released items to check recognition skills."

The English 11 and math teachers referred back to instructional repetition as they brainstormed how they supported struggling students. One English teacher commented, "I can kind of tailor the types of comprehension tests that I ask them to do with an assigned reading to reflect what appears to be an area of weakness." During the English focus group, a teacher explained how the English curriculum naturally lends itself to repetition. The teacher detailed this idea, "I think it's probably easier in English than almost anything. . . .It kind of blends together and we can pick up a little bit as we go. . . .So many of the works that we do can cover so many different things."

When the math teachers discussed modeling concepts through warm ups, bell ringers, and do now's, they described the process they go through to identify the most missed questions and then recreate those questions for review. One math teacher commented, "The snapshots or daily quizzes…just keep it in the forefront, but you can keep moving forward, even though you keep spiraling back to the other material." A math teacher added that she will show a problem on the

ActiveBoard and say, “Okay, here’s a problem, have at it! While everyone’s working, you can do a quick one-on-one with that kid who can’t seem to get started.”

Frequency of Themes in the Benchmark Analysis Spreadsheets

Yin (2009) wrote that quantitative data can be valuable to qualitative case studies when the data are subjected to statistical analyses, but the qualitative data remains the overall focus of the study. Frequency counts were implements in this qualitative case study to evaluate the number of times themes were represented in the data at large. However, the themes were the emphasis of the case study.

There were 33 responses noted for addressing the areas of weakness described on the English 11 benchmark analysis spreadsheets. The thematic codes that were presented 100% of the time in the teachers’ plans for helping students master the noted skills were as follows: a) planning and delivery, b) instruction changed based on student learning styles, c) instruction changed based on student motivation, and d) instructional repetition. There were 35 responses given on the Algebra I, II, and geometry Benchmark analysis spreadsheets. The thematic codes that were presented 100% of the time in the teachers’ plans were planning and delivery, modeling skills, and instructional repetition. Three thematic codes were represented with a frequency of only: instruction changed based on student learning styles, instruction changed based on student motivation, and instruction changed based on relating content material to real-life experiences.

Frequency of Themes in the Focus Group Conversations

There were 105 responses to the nine questions posed during the English 11 focus group conversation. The feedback was coded for the initial four themes and then again with the three additional themes that emerged during the rereading process. Ninety-four (89.5%) of the 105

responses noted the importance of the planning and delivery process. Twenty-three (21.9%) of the responses explained that instruction needed to be changed based on the students' learning styles, while 22 (20.9%) responses described that instruction changed based on student motivation. The English 11 teachers explained in 29 (27.6%) of the 105 responses that instruction needed to be changed based on relating content material to real-life experiences. Sixty (57.1%) responses included creating lists of the students' deficits, 61 (58%) responses used modeling skills as a way to help students achieve mastery, and 36 (34%) of the 105 responses focused on instructional repetition for encouraging learning. Focus group results indicated that English teachers overwhelmingly focused on the importance of instructional planning and delivery and modeling skills. An English teacher captured the importance, though, of including student needs when she commented, "I determine what skills they seem to have and what they really, really need." Another English teacher discussed planning lessons in preparation for the summative assessments, "I'll base two or three lessons around the released sample questions from the [VADOE]. . . .I don't think of it as gaining test-taking strategies as much as making sure they understand. . .how the question is asking them to think." Another English teacher echoed the sentiments on planning and preparation when she said, "You're foolish if you haven't really familiarized yourself with what's going to be asked and how they are going to ask it." English teachers also honed in on the importance of repetition as a way to improve student achievement, indicating that the curriculum spirals skills and content," It kind of blends together and we can pick up a little bit as we go. . . .So many of the works that we do can cover so many different things." One English teacher commented, "I can kind of tailor the types of comprehension tests that I ask them to do with an assigned reading to reflect what appears to be an area of weakness." During the English focus group, a teacher explained how the English

curriculum naturally lends itself to repetition. The English teachers also highlighted how important it is to model skills for students, including testing endurance, "We make them get up in between [the different practice passages]. I have to do this too. You have to just click your brain out for a minute and then come back to it. For struggling readers, they just don't have the stamina to go all the way through all seven [passages and question banks] sometimes." The collaborative teacher added that the passages on the summative assessments are not always interesting to the reader, so they model test taking strategies using "really dry stuff. . . .You can't just tune out because it's not interesting and you can't just tune out because it's really thick and dense and you can't get through it." The data from the English focus group exhibited the amount of repeated attention given to modeling for the students who to understand the philosophy of the summative assessment and how to endure the length of the test.

The Algebra I, II, and geometry teachers shared 100 responses to the nine focus group conversations. Of the 100 answers, 58 (58%) were coded for the planning and delivery theme for attending to student learning. One math teacher explained the planning process leading up to the interim assessments, "I'll put old SOL questions [on tests], so when I test each chapter, I'll nod to the SOLs. . . .And then leading to the Benchmarks, I'll do snapshots off of IA [Interactive Achievement] for each chapter. The teacher continued to explain how far in advance the planning for instruction happens, "So the three periods prior to our Benchmark tests, I'll do three snapshots for the three chapters that were covered the nine weeks." Another example of planning and delivery is evidenced by the time put into creating supplemental materials in the specific areas. One math teacher described creating the questions on Blackboard and setting the parameters so incorrect questions were received with an immediate response about why the distracter was the wrong choice. Again, the math teachers discussed having to plan for

instructing the students to pay attention to the feedback. One said, "The problem is getting them to read the incorrect response feedback because they'll learn from it, but they're not used to getting it [responses to incorrect choices] and reading it." Fifteen (15%) responses centered on instruction changing based on student learning styles, 32 (32%) responses were coded as instruction changed based on student motivation, and 23 (23%) of the answers were coded as instruction changed based on relating material to real life experiences. The math teachers' feedback included creating lists of the students' deficit areas 29 (29%) of the time, while modeling skills was used to help students in 45 (45%) of the answers and instructional repetition was mentioned 43 (43%) times during the focus group conversations. The math teachers, again, tended to focus much more on planning and delivery and instructional repetition. The math teachers intentionally spiraled material and planned review of the most frequently missed questions. One teacher wrote in the teacher response plan on the Benchmark analysis spreadsheet that "focus questions and exit slips are used in my classroom to spiral review [the] most missed questions." Another math teacher wrote that his/her response plan was to address the deficit areas "by consistent review of previous material and Algebra fundamentals."

Frequency of Themes in the Individual Interviews

Three teachers were invited to participate in the individual interviews based on their responses during the math and English focus groups. As I read the focus group transcripts and my bracketed notes on facial expressions and body language, I realized that two of the math teachers appeared to be absorbing the conversation and processing what their peers were saying. However, they did not give in depth responses in the focus group conversations, so I wanted to revisit their thoughts in the individual interviews. The English focus group was smaller than the math group with three teachers representing the English 11 curriculum. The English teachers

had a very robust conversation that flowed through the guiding questions and beyond. However, I felt I needed to reach out to the less senior English teacher for her thoughts on where teachers who are new to using interim assessment data should begin. While she had discussed this thoroughly in the focus group conversation and my bracketed notes of body language did not lead me to believe she had more to add, I wanted to see if she had more insight once she had time to reflect on the group conversation.

The three teachers who participated in the individual interview process gave 20 answers to the two clarifying questions. Overwhelmingly, 50% of those responses focused on the importance of planning and instructional delivery as a starting point for collecting data on student performance and using those data for future instruction and feedback. One math teacher commented that the first issues for planning instruction was to figure out which questions were missed, "Is it a topic? And if it's a topic then that's important for me to recognize which topics are weak." The teacher continued to discuss the process of reflecting on the questions when planning, "What in that question made *that* question difficult?" The English teacher noted that looking at the incorrect answers could lead to the realization that the mistake was in the instruction, "You have to look across your classes and see if this is a strand that all the kids are missing. Are they all missing identifying the main idea? If they are [all missing the same concepts], then it could be your delivery as a teacher."

The other half of the responses (45%) included teachers describing how they created lists of the students' deficit areas. An English teacher discussed isolating the areas of weakness. She said, "I would say look at the specific SOL strands that the individual students missed and then you need to note that SOL, so you can compare [future assessments] and see if they are still missing the same strand." One math teacher described what he discovered when he listed the

deficit areas from an interim assessment, “I know on the last interim assessment that I gave, three of the top five most missed questions were because they didn’t read the question fully. It was a reading error!”

Forty percent of the responses to addressing the deficit areas focused on repetition to assist students with mastery of skills. One math teachers explained giving students multiple opportunities to cover concepts. He said he gave the students similar problems, “Here are five questions about the most missed [items]. After we do them, we see if they got them all right. If not, [I] explain how the process works and kind of re-teach, not necessarily re-teach the whole section, but re-teach it slowly in a five to 20 minute session before we move forward.”

Twenty percent of the responses expressed changing instruction based on the students’ learning styles as an important technique for addressing the needs of the learners. A math teacher commented, “If I can think of a way that would make more sense to them, I’ll go that route. If I have a student who says, ‘Hey, it makes sense to me this way!’ I’ll teach the rest of the class that way, as well.” Another math teacher had a similar response when she reflected on changing instruction based on the different learning styles, “I’ll just say, ‘Okay, who picked this one? Why’d ya’ do it? Sometimes, the kids will come up with stuff and I think, ‘Oh, I didn’t even think that that might be an error there.’”

Finally, only two of the responses focused on changing instruction based on relating material to real-life experiences. A math teacher explained “If you find a distracter or two that has a lot more kids picking it or if there’s a distracter that no one’s picking, then you want to look at why that distracter is or is not getting picked. What are the students relating it to?” Changing instruction based on student motivation and modeling skills were only mentioned one time as ways to assist with student learning. In sum, the most prominent themes that emerged for

responding to interim assessment feedback were planning and delivery, followed by creating lists of deficit areas and using instructional repetition to help students master skills in English 11, Algebra I, II, and geometry.

Presentation of Results by Research Question

Research Question 1

How do high school teachers at one Virginia school use interim assessment data to evaluate their instruction, as they prepare students for the Virginia Reading, Literature, and Research (RLR) and the Algebra I, II, and Geometry Standards of Learning (SOL) assessments? Based on the themes that developed through the Benchmark analysis spreadsheets, the focus group conversations, and the individual interviews with the English 11, Algebra I, II, and geometry teachers, I concluded that the teachers used the interim assessment data to initiate reflection on why students missed specific items. Both the English and math teachers described examining the wording of the missed questions and analyzing the chosen distractors, as well as concentrating on how the content was originally presented to the students. The participants noted that teachers need to pay close attention to questions that are missed and that are surprising to the teachers. The missed questions that the teachers thought would be easily answered by the students should prompt questions about problems with the items, problems with the instruction, problems with the processes students go through to choose answers, or problems with the students' attention to details or motivation when choosing distracters. During the individual interview process, one math teacher stated, "If there's a question that they missed and you didn't expect them to miss it…it's important to see why." An English teacher discussed that the problem could be the student or it could be the instruction, "We thought they knew this stuff…there were four or five, they didn't. So we said 'Ok, we have got to feed these [concepts]

into everything that we're doing now too.'"

Research Question 2

What, if any, instructional changes do participants identify as having made as a result of reviewing interim assessment data? The data collected from the three instruments defined some prominent themes for responding to the research questions developed for this qualitative case study. The participants identified planning and delivery as key areas of scrutiny when devising plans for addressing the interim assessment feedback. Under the umbrella of planning and delivery, the themes of instructional repetition and modeling skills, as reactions to the lists of the students' deficits, were also frequently noted. In fact, instructional repetition appeared in the responses more frequently than the teachers changing their instruction based on student learning styles, motivation, or relating content to real-life experiences. An English teacher responded regarding repetition, "I guess that's the great thing about English, you can keep on, and keep on, and keep on. . . ." Another added, "pulling the old stuff in every single time." The math teachers agreed with embedding repetition in the lesson plans. One said during the focus group conversations, "You have to spiral backwards or come May, you're in trouble."

Summary

Both the English and math teachers described how the two disciplines naturally lend themselves to the repetition of already covered skills while the teacher introduces new material. During the focus group conversations and the individual interviews, the participants described the importance of understanding the specific curricula, Standards of Learning, and the information presented in the blueprints for English 11, Algebra I, II, and geometry, so the teachers can successfully troubleshoot why students miss specific questions and how teachers can better cover the material. Chapter 5 highlights the principle findings of the students and how

they relate to the literature studied regarding interim assessments and modifying instruction based on the feedback from the benchmarks.

CHAPTER FIVE: CONCLUSIONS, SUMMARY, AND RECOMMENDATIONS

Introduction

The role of data analysis to inform teaching and learning has become commonplace in schools. Teachers and building leaders routinely use interim assessment data to develop thoughtful and robust instructional plans that address identified areas of student need. The link between the interim assessment data collection and student learning includes instructional changes that teachers implement. However, teachers do not always know how to use the data for this purpose or do not always make necessary changes in their instruction. As a result, student achievement goes unchanged.

This study was conducted in an effort to investigate how teachers used interim assessment data to improve student achievement in one Virginia high school. The goal of the researcher was to develop a better understanding of how teachers viewed, understood, and applied data to inform instruction. Twelve high school English, math, and special education teachers who also used interim assessment data to evaluate their instruction, participated in the study. The techniques used to disaggregate the data and later used to modify instructional practices were researched through focus group interviews with inquiries based on an examination of the Benchmark analysis spreadsheet completed by the teachers and individual teacher interviews. The discovery process highlighted how the teachers used the interim assessment data, their own content knowledge, and pedagogical skills to change their instructional approaches to the content based on the interim assessment feedback. This chapter provides a summary of the

conclusions, as well as a discussion of the related literature regarding the use of interim assessments and modifying instruction in the area of research are also discussed.

Summary of the Findings

Once data collection was completed, transcripts and the Benchmark analysis spreadsheets were coded. Creswell (2007) discussed the use of inductive data analysis as the researcher's process for going between the themes and the data base until a thorough and descriptive set of themes is established. The frequencies of the themes were documented in their repeated presence in the feedback from the three data collection tools; thereby, responding to the case study's research questions. Seven themes were represented through a typological color coding process of the Benchmark analysis spreadsheets and transcripts of focus group conversations and individual interviews conducted with the participating English 11, Algebra I, II, and geometry teachers. These included: a). planning and delivery; b). instructional changes based on learning styles; c). instructional changes based on student motivation; d). instructional changes based on relating content material to real life experiences; e). creating lists of deficits; f) modeling skills, and e) instructional repetition.

The most prominent theme presented from both groups of teachers included the important of using formative assessment for the planning and delivery of instruction. Teachers spoke about the importance of thoughtful planning when trying to address students' weaknesses and plan subsequent lessons. During the focus group conversations, the math teachers continued to discuss how they planned their delivery of review information, as well as new information:

> The first thing I have to do when I am getting ready for the [interim] assessment is to figure out what is going to be on them. Ideally, what SOLs are going to be tested at that

time, and I start doing daily quizzes on those particular SOLs. I start to increase rigor as much as I can.

This finding mirrored prior research by Perie, Mario, and Gong (2009) who recommended that teachers focus on what they need to learn from assessments, who will use the information gathers, what action steps to take with the data, the professional development and action steps that need to be taken, and a reflection on how results can be used to improve student learning. While these questions are important to understanding the purpose of interim assessments, this case study recorded the self-reflective questions that were uncovered through the participants' conversations.

Furthermore, Greenstein (2012) noted that educators must respond to assessment data through aligned and focused curricula, and also posing reflective questions about instruction. What are we doing in our lessons? What do we want to students to learn? How are they learning the objectives? Where are we supporting their learning? How can we improve? These are guiding questions teachers can use as they use data to plan for instruction (Greenstein, 2012).

The second and third most prominent themes that emerged as a result in the study included the use of repetition and modeling by the teacher to ensure student mastery of skills. The theme of modeling skills showed significance in the frequency counts, as the participants detailed the ways they *show* students the skills they need to repeat over and over for mastery. The teachers talked about asking students how they chose answers on the interim assessments, so the teachers could better understand the thought processes that went into responding to the test items. If the process for answering was correct, the teachers discussed modeling the process. If the process was incorrect and resulted in the wrong answer, the teacher had still gained an understanding of how the students were interpreting the question and how to better model the

content material. Teachers noted strategies such as focus questions, bell ringers and warm ups in class as modeling techniques to help students read test questions and know how to attack the specific processes being assessed.

The act of instructional repetition was described by the teachers as grasping every teachable moment to work on the necessary content. Teachers mentioned the use of revisiting material, use of exit slips, practice questions, and use of additional readings as repetition activities. Math teachers also mentioned do now's, describing the process they go through to identify the most missed questions and then recreating those questions for review. Sometimes these moments were developed through new ways of learning the same material, sparked their motivation and helped them make the connection between American literature and geometric slopes and the world around them today. Popham (2008) noted that interim assessments are designed to allow teachers to develop instructional responses to the interim assessments, addressing areas of concern. Mantero (2002) noted that repetition, among other factors such as modeling, feedback, rewards and punishments, direct instruction, explaining, questioning, and structuring student-centered activities based on the students' interests helped them retain information. Teachers in this study used many of these techniques as well.

In alignment with modeling and repetition, another theme mentioned by teachers was that of noting student deficits on interim assessments and then implementing processes to improve those. The participants described the list of weaknesses as a guide for what to teach next. Once the list of deficits was developed, the teachers detailed the significance of the theme of planning and delivery as evidenced by the teachers' discussion of using pedagogical reflection to develop plans for helping students learn. The theme of instructional repetition was termed spiraling by the math teachers when tackling the list of deficit areas. Both the English and math

teachers encouraged the use of repetition of old concepts through new pieces of literature. Meanwhile, the math teachers talked about the curriculum naturally building skill upon skill, allowing for students to review old material while learning new concepts.

The themes of instructional changes made based on learning styles, motivation, and relating material to real-life experiences emerged some in the study, and were intertwined with the participants' responses of embedding instructional repetition and segments of modeling skills in the delivery of material. Beghetto (2004) presented results that indicated students with goal-oriented behaviors tended to include the ability to establish self-improvement and set self-standards and wanted to be recognized for their efforts. In contrast, students who avoided performance goals tended to view themselves as less capable than others in achieving academic success. Thus, teachers could use this information for training and further reflection to round out their instructional set. Most responses focused on the acts of planning and delivering instruction rather than creating classroom conditions conducive to success and student performance. The classroom characteristics can harbor a positive learning and testing environment that produces successful scores. On the other hand, the environment can contribute to lack of motivation and inconsistent performance on assessments.

For the purpose of this case study, the interim assessment process was used for two of the possible intentions noted by Perie, et al. (2009) by *evaluating* instructional methodology and *improving* instruction techniques for one student, a group of students, or an entire class. Teacher participants showed how they evaluated instructional planning and delivery in direct response to interim assessment data that, in turn, resulted in improved instruction that afforded students the opportunities to assimilate, accommodate, and engage in socially stimulating learning experiences. The interim assessment data served as a tool for evaluating learning, as

well as a diagnosis of possible instructional weaknesses (Dunn & Mulvenon, 2009). Mistakes made on the interim assessments were turned into positive learning experiences by the teachers who were focused on disaggregating the interim assessment feedback for instructional purposes (Cauley & McMillian, 2009). Teachers recognized the importance of modeling skills, and continually reviewing previously taught content, while also presenting new material. However, teachers did not focus as much on student motivation, learning styles and real life experiences as tools to engage students. This emerged as a goal for future research.

The data collected through this case study indicated that it is imperative for teachers to work through a reflection process when studying the interim assessment feedback, isolating the possible reasons for students missing specific questions, and changing instructional practices to meet the needs of the students. Rudman (1989) wrote that testing and teaching are collaborative efforts. The case study participants explained how to look at data and pinpoint areas of need, how to reflect on the instructional techniques already used, and how to modify their teaching based on the students' needs. DiRanna et al. (2008) described the importance of engaging in systematic reflection when analyzing student data for instructional purposes. Often, however, the reflection process became personal. Mezirow (1997) wrote that points of view and philosophies are open to change as adults reflect on information or the process in which information is collected and problems are solved. As the teachers uncover the students' areas of weakness, they need to reflect on the reasons for the gaps in learning and modify their thinking (Mezirow, 1997).

The participating teachers' responses and plans of action to the interim assessment feedback were in direct correlation with the theoretical framework of Mezirow's theory of transformative learning. Mezirow (1990) wrote that teachers go through a phase of interpreting

the interaction of habit or how the learner routinely learns and the specific event in question. The phase of interpretation happens through reflection on the styles of learning taking place (Mezirow, 1990). Mezirow's transformation theory applied to the instructors' way of changing perceptions and ideas based on reflection and student progress. Teachers must go through an assimilation and accommodation process as they decide how to study interim assessment feedback and how to address areas of concern.

Popham (2008) wrote that using assessments is about decision making. A teacher must decide if an instructional adjustment is needed and then what kind of adjustment is necessary. The participants gave their insight on analyzing data for the areas that need an "adjustment." The teachers then defined their own practices for choosing how to adjust their teaching to support the students. Sharratt and Fullan (2012) noted that teachers make students' achievement visible by learning about the students and then implementing instructional strategies to support their learning.

According to the focus group conversations and the individual teacher interviews, teachers need to be able to read questions and distracters and determine why the students chose the incorrect answers. However, sometimes the reason for students' missing material on interim assessments boils down to the instruction provided by the teacher. Heritage et al. (2009) wrote that teachers have to know what responses to implement from evidence they have obtained, so they can adapt their instruction to meet the students' academic needs and bridge the gap between the learners' current level and the desired goal for achievement.

Furthermore, McMillan (2000) cited the importance for teachers to understand "essential measurement evidence skills (para. 5)," so they can comprehend and translate the meaning of interim assessment data and conclude the students' strengths and weaknesses. For successful

learning to occur as a result of using interim assessment feedback, the teachers noted the importance of planning and delivering material (78% of the time), through instructional repetition (53% of the time), and modeling skills (48% of the time) in response to creating guiding lists of students' deficits (33% of the time). The frequency percentages of the themes that follow ranged from 23% to 34%: instruction changed based on student motivation, learning styles, and relating content material to real-life experiences.

Implications

The use of interim assessments to check for the level of learning and understanding in classes is proving to be common place in school systems across the nation. However, for the interim assessments to be valuable tools for teachers and building leaders, the users must know what to do with the students' feedback. The case study was designed to analyze how teachers study their students' responses to the specific questions and then how those same teachers translate student performance into instructional change. Marsh, Pane, and Hamilton (2006) referred to data-driven-decision making as a cyclical process. Information becomes actionable knowledge when the data are prioritized and analyzed for problem areas and possible solutions. The actionable knowledge can help instructional leaders use data to inform, identify, or clarify, and make changes (Marsh, et al., 2006). Once the choice is made to respond based on the data, the new data can be collected and studied for effectiveness and for establishing new goals. This process leads to a cycle of data collection and decision making (Marsh, et al., 2006). Teachers have the data in hand to create an educationally competitive environment when using interim assessments in the classroom. However, often the teachers do not know what to do with the data and how to break down the process of disaggregating the information and using in-depth reflection to assemble a plan to help students bridge the learning

gaps. Thus, practical training and time to practice these skills is important to establishing an effective and productive data collection and information cycle.

School systems are formally measuring the students' progress and publicizing the schools' growth and the system's rankings in the state based on the standardized tests. What stakeholders do not often see are the tools used to devise instructional plans for students. School systems are budgeting for the use of interim assessment companies, providing teachers with numerical feedback that can be overwhelming to a new teacher, as well as a senior educator. This case study gives insight into how teachers in one Virginia school break down the barriers of data-driven-decision making and make the data work for them as they reflect on modifying their instructional techniques based on the assessment feedback. The teachers, as the instructional leaders in the classrooms, must have the skill set and support to use the interim assessment data to implement interventions that allow all students to gain the skills necessary to experience an authentic 21st-century education (Duckor, 2014).

One unexpected finding from this research was the fact that teachers mostly focused on use of data to plan and deliver instruction. Less focus was put on how to create classroom environments conducive to learning and on student goal-setting, as well as taking responsibility for their learning. Fisher and Frey (2008) wrote that one way to encourage independent learning is to release the responsibility of learning from the teacher to the student. The authors went on to discuss how teachers can develop classroom environments based on modeling ways of thinking, peer collaboration, and student goal setting (Fisher & Frey, 2008).

Jacobsen (2013) wrote that students with a fixed belief want to look smart and see the classroom as a stage. Meanwhile, students with a growth belief want to learn more and be smarter. Instructional leaders have the "power to change the classroom from a stage to a

learning forum" (Jacobsen, 2013, p. 42). These are areas that research has noted are important components of student achievement so future development for this high-performing group of participating teachers could focus on these factors.

Recommendations for Future Research

This evaluative qualitative case study explored how teachers analyzed interim assessment feedback and then initiated pedagogical changes to help students master skills in English 11, Algebra I, II, and geometry. The study identified the importance of embedding instructional repetition and modeling skills as ways to address areas of student weakness. Through the typological color coding process, the researcher identified several emerging outliers. While these outliers did not present with a frequency that noted a high importance to this particular study, the themes were intriguing. Instructional leaders could benefit from future studies in the following areas:

1. A qualitative, instrumental case study on the influence of professional camaraderie on instructional practices and student success, motivation, and growth.
2. A qualitative study on teacher perceptions regarding how classroom climate and student self-efficacy influence learning.
3. A quantitative, correlational study on the influence of the students' attitudes toward learning on instructional success, motivation, and growth.
4. A qualitative, evaluative case study on the influence of the teachers' attitudes on learning and school-specific processes on student success, motivation, and growth.
5. A quantitative, correlational study on the influence of using data collection tools, like the Benchmark analysis spreadsheets, which are tailored to the content areas being analyzed.

Summary

This evaluative qualitative case study was established to analyze the methods by which the participating teachers studied interim assessment feedback in English 11, Algebra I, II, and geometry class. Additionally, the case study also calculated the frequency of themes presented in the teachers' responses regarding how they used the interim assessment data to modify their instruction, if they changed their pedagogical processes at all. The outcome of this research supported the philosophy that teachers must put the interim assessment feedback through a personal disaggregation process to discover valuable information regarding student learning and instructional practices that can assist students with content mastery. While data collection from interim assessment responses can seem overwhelming to those who have not yet worked through the analysis progression, the reflection process, lesson plan development, and instructional implementations are rational steps that support learning through assessment methods.

REFERENCES

Alkharusi, H. (2008). Effects of classroom assessment practices on students' achievement goals. *Educational Assessment, 13*, 243-266. doi: 10.1080/10627190802602509

Bambrick-Santoyo, B. (2008). Data in the driver's seat. *Educational Leadership, 65*(4), 43-46.

Beghetto, R. A. (2004). Toward a more complete picture of student learning: Assessing students' motivational beliefs. *Practical Assessment, Research & Evaluation, 9*(15), 1-9.

Black, P. & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education, 5*(1), 7-74.

Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 81-90.

Brundage, S. & Hancock, A. (2010). Commentaries. *International Journal of Therapy and Rehabilitation, 17*(11), 586.

Cauley, K. & McMillan, J. (2009). Formative assessment techniques to support student motivation and achievement. *Clearing House, 83*(1), 1-6.

Chenoweth, K. (2010). Leaving nothing to chance. *Educational Leadership, 68*(3), 16-21.

Creighton, T. B. (2007). *Schools and data: The educator's guide for using data to improve decision making*. Thousand Oaks, CA: Corwin Press.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches.* Thousand Oaks, CA: Sage Publications.

Culbertson, J. A. (1981). Three epistemologies and the study of educational administration. *University of California Educational Administration Review, 22*(1), 6.

Davidson, J. (2008). Exhibiting authentic achievement. *Principal Leadership, 9*(1), 36-41.

DiRanna, K, Osmundson, E. Topps, J. & Gearhart, M. (2008). Reflections on assessment. *Principal Leadership, 9*(1), 23-28.

Duckor, B. (2014). Formative assessment in seven good moves. *Educational Leadership, 71*(6), 28-32.

Dunn, K. E. & Mulvenon, S. W. (2009). A critical review of research on formative assessment: The limited scientific evidence of the impact of formative assessment in education. *Practical Assessment, Research & Evaluation, 14*(7), 1-11.

Fisher, D. & Frey, N. (2008). Releasing responsibility. *Educational Leadership, 66*(3), 32-37.

Fraenkel, J. R. & Wallen, N. E., (2000). *How to design & evaluate research in education*. Boston, MA: McGraw-Hill.

Ginsberg, M. B. & Brown, C. (2009). A day's worth of data. *Educational Leadership, 66*(4), 75-79.

Greenstein, L. (2012). Beyond the Core: Assessing authentic 21s century skills. *Principal Leadership, 13*(4), 37-42.

Goren, P. (2010). Interim assessment as a strategy for improvement: Easier said than done. *Peabody Journal of Education, 85,* 125-129. doi: 10.1080/01619561003673938

Hackman, M. Z. & Johnson, C. E. (2009). *Leadership: A communication perspective*. Long Grove, IL: Waveland.

Harlen, W. (2005). Trusting teachers' judgment: Research evidence of the reliability and validity of teachers' assessments used for summative purposes. *Research Papers in Education, 20*(3), 245-270. doi: 10.1080/02671520500193744

Hatch, J. A. (2002). *Doing qualitative research in education settings*. Albany, NY: State University of New York Press.

Heritage, M., Kim, J.,Vendlinski, T., & Herman, J. (2009). From evidence to action: A seamless process in formative assessment? *Educational Measurement: Issues and Practice, 28*(3), 24-31.

Hess, F. M. (2009). The new stupid. *Educational Leadership, 66*(4), 12-17.

Hess, F. M. & Mehta, J. (2013). Data: No deus ex machine. *Educational Leadership, 70*(5), 71-75.

Hoy, W. K. & Miskel, C. G. (2008). *Educational administration: Theory, research, and practice*. Boston, MA: McGraw Hill.

Interactive Achievement onTRAC. (2013). [Computer database]. Roanoke, VA: Interactive Achievement.

Jacobson, M. D. (2013). Afraid of looking dumb. *Educational Leadership, 71*(1), 40-43.

Jorgenson, M. A. & Hoffmann, J. (2003). *History of the No Child Left Behind Act (2001) NCLB*. Retrieved from: http://www.pearsonassessments.com/research/researchpub/researchlist.type.Research_Archive.html

Kouzes, J. M. & Posner, B. Z. (2007). *The leadership challenge*. San Francisco, CA: John Wiley & Sons, Inc.

Lai, E. R. (2009). *Interim assessment use in Iowa elementary schools (Doctoral dissertation*, University of Iowa). Retrieved from http://ir.uiowa.edu/etd/393

Li, Y., Perie, M., Marion, S., & Gong, B. (2010). An approach for evaluating the technical quality of interim assessments. *Peabody Journal of Education, 85,* 163-185.

Liang, X. (2010). Assessment use, self-efficacy and mathematics achievement: Comparative analysis of PISA 2003 data of Finland, Canada and the USA, *Evaluation & Research in Education, 23*(3), 213-229.

Lim, S. M. & Rodger, S. (2010). The use of interactive formative assessments with first-year occupational therapy students. *International Journal of Therapy and Rehabilitation, 17*(11), 576-586.

Mandinach, E. B., Honey, M., & Light, D. (2006, April). *A theoretical framework for data-driven decision making*. Paper presented at the annual meeting of American Educational Research Association, San Francisco, CA. Retrieved from http://olms cte.jhu.edu/olms/data/resource/4955/DDDM%20to%20Knowledge.pdf

Mantero, M. (2002). Evaluating classroom communication: In support of emergent and authentic frameworks in second language assessment. *Practical Assessment, Research & Evaluation, 8*(8), 1-7.

Marsh, J. A., Pane, J.F., & Hamilton, L.S. (2006). *Making sense of data-driven decision making in education.* Retrieved from www.rand.org

Marshall, K. (2008). Interim assessments: A user's guide. *Phi Delta Kappan: The Journal for Education, 90*(1), 64-68.

Marzano, R. J. (1996). *Eight questions about implementing standards-based education. Practical Assessment, Research & Evaluation, 5*(6), 1-7.

Marzano, R. J, Waters, T., & McNulty, B.A. (2005). School leadership that works: from research to results. Alexandria, VA: Association for Supervision and Curriculum Development.

McMillan, J. H. (2000). Fundamental assessment principles for teachers and school administrators. *Practical Assessment, Research & Evaluation, 7*(8), 1-8.

Mehrens, W.A. (1989). Preparing students to take standardized achievement tests. *Practical Assessment, Research & Evaluation, 1*(11), 1-4.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass Publishers.

Mezirow, J. (1990). Fostering critical reflection on adulthood. San Francisco, CA: Jossey-Bass Publishers.

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education, 1997*(74), 5-12.

Miller, T. (2009). Formative computer-based assessment in higher education: The effectiveness of feedback in supporting student learning. *Assessment & Evaluation in Higher Education, 34*(2), 181-192.

Olah, L. N., Lawrence, N. R., & Riggan, M. (2010). Learning to learn from benchmark assessment data: How teachers analyze results. *Peabody Journal of Education, 85*, 226-245.

Pearson Access (2013). [Computer database]. Upper Saddle River, NJ: Pearson Education, Inc.

Perie, M., Marion, S., & Gong, B. (2009). Moving toward a comprehensive assessment system: A framework for considering interim assessments. *Educational Measurement: Issues and Practice, 28*(3), 5-13.

Piaget, J. (1969). *Science of education and the psychology of the child*. New York, NY: Viking.

Popham, W. J. (2008). *Transformative assessment.* Alexandria, VA: Association for Supervision and Curriculum Development.

Popham, W. J. (2009). Anchoring down the data. *Educational Leadership, 66*(4), 85-86.

Pryor, J. & Crossouard, B. (2008). A socio-cultural theorization of formative assessment. *Oxford Review of Education, (34)*1, 1-20. doi: 10.1080/03054980701476386

Reeves, D. B. (2006). Leading to change: Preventing 1,000 failures. *Educational Leadership, 64*(3), 88–89.

Richardson, J. (2008). Evidence of learning: A conversation with Jay McTighe. *Principal Leadership, 9*(1), 30-34.

Rudman, H. (1989). Integrating testing with teaching. *Practical Assessment, Research & Evaluation, 1*(6), 1-4.

Sawchuck, S. & Cain, J. (2009). Testing faces ups and downs amid recession. *Education Week, 28*(31), 1-17.

Schafer, W. & Moody, M. (2004). Designing accountability assessments for teaching. *Practical Assessment, Research & Evaluation*, *9*(14), 1-17.

Schmoker, M. (2009). Measuring what matters. *Educational Leadership, 66*(4), 70-74.

Sharratt, L. & Fullan, M. (2012). Putting faces on the data. *Principal Leadership, 13*(4), 48-52.

Shepard, L. A. (2010). What the marketplace has brought us: Item-by-item teaching with little instructional insight. *Peabody Journal of Education, 85*, 246-257.

Smith, L. W. (2008). *Using formative assessment results to predict student achievement on high stakes tests* (Doctoral dissertation, Liberty University). Retrieved from www.digtial commons.liberty.edu

Smith, R., Johnson, M., & Thompson, K. D. (2012). Data, our GPS. *Educational Leadership, 69*(5), 56-59.

Stake, R. E. (1994). *Handbook of qualitative research.* Thousand Oaks, CA: Sage.

Sullivan, G. P. (2006). *The impact of high stakes testing on curriculum, teaching, and learning*. (Unpublished doctoral dissertation). Virginia Polytechnic Institute and State University, Blacksburg, VA.

Tienken, C. & Wilson, M. (2001). Using state standards and tests to improve instruction. *Practical Assessment, Research & Evaluation, 7*(13), 1-9. Retrieved from http://PAREonline.net/getvn.asp?v=7&n=13

Toffler, A. (1971). Future shock. New York, NY: Bantom Books.

U.S. Department of Education, National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Retrieved from http://datacenterspps.org/uploads/SOTW_A_Nation_at_ Risk_1983.pdf

U.S. Department of Education. (2001). *No Child Left Behind*. Retrieved from http://www2.ed.gov/policy/elsec/leg/esea02/index.html

U.S. Department of Education. (2007). *Strengthening No Child Left Behind.* Retrieved from http://www2.ed.gov/nclb/overview/intro/reauth/index.html

U.S. Department of Education. (2012). *ESEA Flexibility.* Retrieved from http://www2.ed.gov/policy/elsec/guid/esea-flexibility/index.html

VA Department of Education. (2011). *SOL assessment development and committees*. Retrieved from http://www.doe.virginia.gov/ testing/test_administration/index.shtml#development

VA Department of Education. (2012-a). *Joint agreement on Virginia's college and career ready mathematics and English performance expectations.* Retrieved from http://www.doe.virginia.gov/

VA Department of Education. (2012-b). *What parents and students should know about the new Virginia mathematics standards of learning.* Retrieved from http://www.doe. virginia.gov/

VA Department of Education. (2013). *Graduation requirements*. Retrieved from http://www.doe.virginia.gov/

VA Department of Education. (2014). *Standards of learning*. Retrieved from http://www.doe.virginia.gov/testing/index.shtml

VA Department of Education. (2009). *VA Standards of Learning Assessments: Blueprint End-of-Course Algebra I.* Retrieved from http://www.doe.virginia.gov/-test-sol-blueprints-math_blueprints-blueprints_algebra.pdf.url

VA Department of Education. (2009). *VA Standards of Learning Assessments*: *Blueprint End-of-Course Algebra II.* Retrieved from http://www.doe.virginia.gov/-test-sol-blueprints-math_blueprints-blueprints_algebraII.pdf.url

VA Department of Education. (2009). *VA Standards of Learning Assessments: Blueprint End-of-Course Geometry*. Retrieved from http://www.doe.virginia.gov/-test-sol-blueprints-math_blueprints-blueprints_geometry.pdf.url

VA Department of Education. (2010). *VA Standards of Learning Assessments: Blueprint End-of-Course Reading.* Retrieved from http://www.doe.virginia.gov/-test-sol-blueprints-math_blueprints-blueprints_eoc-reading.pdf.url

Vygotsky, L. S. (1978). *The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Yin, R. K. (2009). *Case study research: Design and methods*. Washington, DC: SAGE Publications, Inc.

Appendix A
Benchmark Analysis Worksheet

Benchmark Analysis Interim Assessment #_____

Teacher_____ Course_____ Date_____

Score Analysis	Score Analysis Specific direction to complete this step: Step 1: Identify questions with scores less than 60% by using the top row of the printed report. Step 2: Using the printed report, **Look down** the column to **Identify the Most Selected Distracter.** Step 3: On IA, select the **Blue** Icon at the top of the question that was missed to View the Question, the Correct Answer, and the Distracters. Step 4: Using this information, state why this distracter was the most selected.		
Identify each SOL tested(# and description) and the overall pass score for that SOL	Identify questions with pass scores less than 60% (List ?# and percent correct)	Identify the most selected distracter	Why do you believe this distracter was selected?

*Continued on next page

Teacher Response Section	Teacher Response Section Step 1. Locating your classes' scores Step 2. Identifying the students who did not meet the current cut score Step 3. Identify the deficit areas		
Identify the students who did not score $\geq$ 60 on the IA (Student names were generated on Print Sheet #1)	Identify deficit areas	Explain how these deficit areas will be addressed within the classroom setting. Briefly outline your remediation plan; include how you will evaluate/monitor student progress.	Additional Concerns

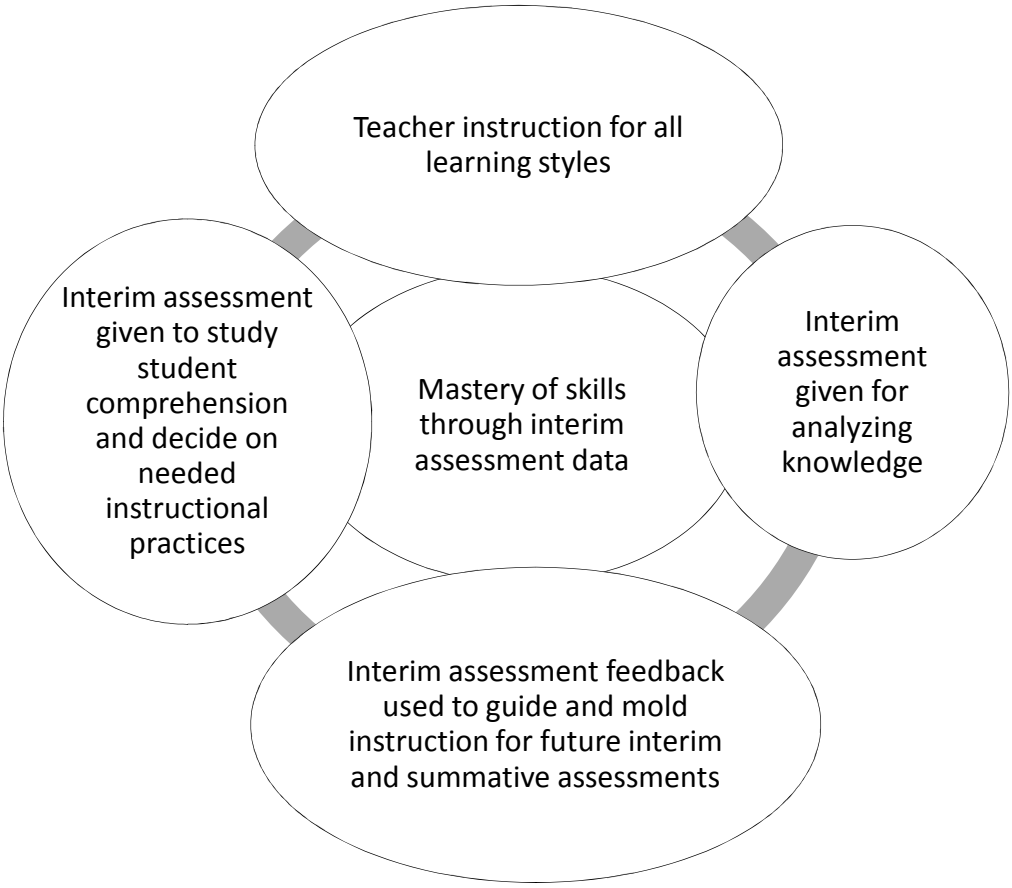
Appendix B
Focus Group Guiding Questions

1. How do you describe the instructional practices you feel you have had success with in addressing the Standards of Learning?
2. How do you isolate the Standards of Learning for which students will be tested during the summative assessments?
3. Based on the tested Standards of Learning for which you are responsible, how do you prepare your students for interim assessments?
4. After giving an interim assessment, how do you analyze the data for students' strengths and weaknesses?
5. How do you reflect on and evaluate your instructional practices to address the areas of analysis determined from the interim assessment results?
6. How, if at all, have you changed your instructional practices as a result of reviewing interim assessment data?
7. How do you review the students' areas of strength prior to the actual summative assessments?
8. How do you assess student understanding in between interim assessment sessions?
9. How do you reteach and reassess concepts while still moving forward with the curriculum?

Appendix C
Individual Interview Documentation

Guiding Questions:	Bracketed Notes:
1. For teachers new to the interim assessment and data collection process, what would you tell them to use as a starting point for collecting their data? 2. Once you realize what piece of material you need to be attacking, whether it is the students' learning or the instruction, how do you go back and change it? Do you repeat what you have done, or do you go back and actually change the way you have instructed?	

Appendix D
Cycle of Learning Using
Interim Assessment Data



Appendix E
Consent for Participation

CONSENT FORM

Interim Assessment Data:
A Case Study on Modifying Instruction based on Benchmark Feedback

Tracey M. Lange
Liberty University
Education Department

You are invited to be in a research study of the use of interim assessment data to modify instructional practices. You were selected as a possible participant because you are a teacher of English 11, Algebra I, II, and geometry at the targeted school. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Tracey M. Lange and the Liberty University Education Department.

Background Information:

The purpose of this evaluative qualitative case study was to explore how high school teachers used interim assessment data to evaluate their instruction and if or how they made resulting changes in that instruction as they prepared students for the Virginia Reading, Literature, and Research (RLR), as well as the Algebra I, II, and Geometry Standards of Learning (SOL) assessments in one school located in Virginia. A secondary purpose of the study was to explore the pedagogical changes teachers had made, if any, in response to reviewing this data.

Procedures:

If you agree to be in this study, we would ask you to do the following things:

There are three data collection tools/processes that would require your participation: a Benchmark analysis spreadsheet, a focus group coding worksheet, and an individual interview documentation sheet.

- The Benchmark analysis spreadsheet used for the data collection process is the same tool used in the interim assessment analysis process at "RCHS."
- The focus group transcripts are developed during a group discussion about how the teachers analyze the interim assessment data and how their instruction changes based on the interim assessment feedback. The focus group conversations are expected to last between 30 and 45 minutes. The discussions will be digitally recorded for transcription purposes. The researcher will have another party transcribe the recordings.
- The individual interviews will last approximately 15 to 20 minutes and will focus on clarifying information that emerges through the data collection process. The interviews will be bracketed, nonverbal cues will be documented in the field notebook, and the transcriptions will go through a multi-read process. The transcriptions will then be provided to the interviewees for a member check process of content validation.

Risks and Benefits of being in the Study:

The risks in this case study are no more than the participant would encounter in everyday life.

Participation will benefit society, as well as the participant's self-reflection on pedagogical practices.

Compensation:

You will receive payment via a personal gift card from the researcher upon completion of the case study. Amounts will not be prorated due to early withdraw from the data collection process.

Confidentiality:

The records of this study will be kept private. In any report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records. Audiotapes and transcriptions will only be used for the purpose of gathering documentation. The participants, who complete the Benchmark analysis spreadsheet, participate in the digitally recorded focus group and individual interview conversations will not be identified. Students' names will not be released for any purpose. The researcher cannot assure that other participants in the focus groups will maintain confidentiality and privacy.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University, Roanoke County Public Schools, or Cave Spring High School. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Tracey M. Lange. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them at tmlange@liberty.edu or 540-761-9111.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:

- I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.
- I give permission to be audiotaped during the focus group conversations.

Signature: _____ Date: _____

Signature of Investigator:_____ Date: _____

IRB Code Numbers: **IRB Expiration Date:**

Appendix F
IRB Approval Letter

LIBERTY
UNIVERSITY

The Graduate School at Liberty University

July 17, 2013

Tracey M. Lange
IRB Approval 1630.071713: Interim Assessment Data: A Case Study on Modifying Instruction Based on Benchmark Feedback

Dear Tracey,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Please retain this letter for your records. Also, if you are conducting research as part of the requirements for a master's thesis or doctoral dissertation, this approval letter should be included as an appendix to your completed thesis or dissertation.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

LIBERTY
UNIVERSITY.

Liberty University | Training Champions for Christ since 1971