TEACHER PERCEPTION OF PACING GUIDE USE IN
THE SECONDARY CLASSROOM

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DEDICATION

This dissertation is dedicated to my family: First, for my beautiful, joyful daughters, Elena and Rosanna, for whom I have found endless hope and love and who have taught me better than anyone where my life priorities lie. Second, for my husband, John, who has helped me through this process by driving me to always put forth my best effort with kind words and clear direction. Third, for my parents, who have not only showed constant support and encouragement, but have always modeled the open-mindedness, humor, and work ethic that have sustained me through the dissertation process.
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ABSTRACT

Historically, teachers have exercised considerable autonomy in the day-to-day learning that occurs in their classrooms. Now, it is growing increasingly rare for a teacher to experience this type of professional freedom. In response to high-stakes testing, national and state academic content standards, and most recently the common core standards, pacing guides are one of the more recent devices schools are using to implement and monitor curriculum. The purpose of this research project is to investigate teacher opinion toward these pacing guides. An online survey called the Pacing Guide Survey was delivered to secondary regular and special education teachers in core subject areas of mathematics, science, social studies, and language arts. The teachers were asked about whether or not they use pacing guides, their attitude and comfort level in using pacing guides, as well as: Information concerning the population of their high school, such as demographics, enrollment, and single or multiple high schools; Building level factors, such as professional development initiatives, methods of curriculum monitoring, and pacing guide development and revisions processes; Teacher factors, such as years teaching, years using pacing guides, confidence in content area, and educational background. Administrators were also interviewed to form a complete picture of pacing guide development and implementation in the secondary education environment. Quantitative data were analyzed using bivariate Spearman’s rank order correlation and qualitative data were analyzed using a combination of thematic data analysis and quasi-
statistical methods. Recommendations based on the data collected are: Teachers should be provided with the flexibility to address student needs in the classroom. Teacher input into pacing guide development, implementation, and revision process is necessary to ensure that student needs are addressed. Team autonomy is key and teacher teams need to be provided with the necessary support structure to provide meaningful learning experiences for their students.
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CHAPTER I

INTRODUCTION

Ultimately, it is the teachers who determine what students will learn in their classrooms. States determine standards. Districts determine curriculum. Schools determine pace at which curriculum should be taught. Once a teacher is behind closed doors however, the teacher decides whether or not to follow the standards, curriculum, and pace. A pace that in many cases, was determined without input from the teacher. Besides end of the year state assessments, it is very difficult to monitor whether or not a teacher is teaching the content they have been directed to teach. Historically, teachers have exercised autonomy in the day-to-day learning that occurs in their classrooms. Now, it is growing increasingly rare for a teacher to experience this type of professional freedom in their classrooms (Alquest, 2003; Nelson, 2003; Wills & Sandholtz, 2009). High-stakes testing, national and state academic content standards, and most recently the common core standards, have made a drastic effect on the teaching profession. School districts are looking for avenues to make sure students have mastered the curriculum in
response to increasing accountability mandates. Pacing guides are one of the more recent
devices that schools districts are using to implement and monitor classroom curriculum.
The purpose of this research project is to investigate teachers' attitude, comfort level, and
overall perception toward the use of pacing guides in their classrooms.

**Significance of Study**

Before pacing guides, many teachers were provided great autonomy in how, what,
and when they taught material and were only provided teacher reference materials, a
textbook for each student, and sent into the classroom with little or no guidance or
supervisory oversight. Unless the teacher sought help from colleagues or administration,
the teacher would typically work in complete isolation from other teachers (McLaughlin
& Talbert, 2001). In response to state mandated standards and assessment, use of pacing
guides in the classroom has become much more widespread in the last decade. There are
many teachers, new to the profession, who have never experienced the autonomy of
choosing pace and content for their classrooms. At the same time, these new teacher are
working alongside many experienced teachers who are making the transition to using
pacing guides. This provides a unique opportunity to gather data on how teachers are
handling a very significant change in working conditions changes that are taking place in
the teaching profession.

Some teachers welcome the idea of having a pacing guide to follow. Pacing
guides may help new teachers determine how much time they should spend on a certain
topic and also help ensure that students are exposed to all of the main topics they are
supposed to learn in a course. Pacing guides may provide consistency in what students
are learning, which can be helpful for both horizontal and vertical alignment in
curriculum (David, 2008; Jacobson, 2010; O'Shea, 2005). In addition, pacing guides may prevent teachers from spending too much time on one topic at the expense of other equally important topics. Teachers may also find that sharing a similar pace with other teachers in the same content area provides unique opportunities for collaboration in planning lessons, writing common assessments, and student data analysis.

Other teachers may take offense to the control the pacing guides exert on their teaching. Teachers may need to make significant changes in their current teaching practices to meet the requirements of a pacing guide and may resist making these changes. The content of the pacing guide may not agree with what a teacher thinks should be taught in the course. This could stem from differing interpretations of state standards or from the teachers own ideology of what they think should be taught in their course. Teachers may also face significant pressure to keep their students on pace with the pacing guide (Certo, 2006; Gunzenhauser, 2012). This pressure may then result in undesirable learning outcomes that are transferred to the students, especially those students who may need the most assistance from the teacher and are unable to learn at the pace prescribed in the pacing guide (Pylvainen, 2012).

Why should we consider teachers' view of pacing guides? It is easy to say that teachers are paid to teach the curriculum; therefore they need to follow the pacing guide they are assigned to teach. In the meantime these teachers may lack the materials they need to teach the content of the pacing guide or may not have the content knowledge to teach the subject matter included in the pacing guide. The teacher may also have decades of experience teaching the material and have greater knowledge and understanding of how the material should be taught compared those who developed the pacing guides. This
could result negatively effect student learning, influence overall school morale in a
negative manner, and even discourage skilled teachers from continuing in the teaching
profession.

In many schools there are very few if any ways to regulate whether or not
teachers are following the pacing guides, so teachers can decide whether or not to follow
the pacing guides with little or no consequences for the teacher. In cases where the
teachers’ use of pacing guides is monitored, the teacher may follow the pacing guide.
However, the teacher's attitude towards the pacing guide may influence the quality of
learning that takes place in the classroom. If the teacher has a pacing guide that is in line
with what they think should be taught, the teacher may be more likely to be enthusiastic
about the subject matter, than the teacher who does not agree with the content or the pace
of the pacing guide.

**Problem Statement and Research Questions**

For many experienced teachers, the mandated use of pacing guides is a drastic
change in how they were taught when they were students, what they were taught during
student teaching experiences, and how they taught for many years. In the case of teachers
who are new to the teaching profession, pacing guides might be a welcome resource, a
major source of stress, or a combination of both. For this research project, high school
teachers of all levels of experience will be asked to complete a confidential survey on
their opinion regarding the use of pacing guides in their classroom. Their responses will
be used to draw conclusions on the following research questions:

1. Based on teacher self-report, how widespread is the use of pacing guides in the
core subject areas in public secondary schools throughout Ohio?
2. What concerns do teachers have about working with pacing guides and what do teachers view as beneficial about working with pacing guides?

3. How comfortable are teachers in using pacing guides and what influences teacher comfort level with using pacing guides?

4. What is the overall attitude teachers hold toward using pacing guides and what influences teacher attitude toward using pacing guides?

This research project will serve as a tool to document how teachers have responded to this paradigm shift in how curriculum is implemented. By documenting this response, administrators and teachers might gain a better understanding of how to develop pacing guides that best suit schools, teachers, and most of all students.

**Overview of Methodology**

An internet based survey, called the Pacing Guide Survey, with questions, both closed-ended and open-ended, on the use of pacing guides in the secondary classroom will be used as the primary instrument for data collection. Administrators will also be interviewed to discuss the development and implementation process for pacing guides in their schools. The survey will be delivered to regular and special education secondary teachers in the “core” subject areas of mathematics, science, social studies, and language arts. These teachers will be asked a series of questions related to what they identify as benefits and concerns with working with pacing guides, student based and teacher based comfort levels using pacing guides, and their overall attitude toward pacing guides.

Teachers will also be asked to describe their education and teaching background, district population, and building level factors. Quantitative methods will be employed to determine relationships between variables and qualitative methods will be used to
respond to the research questions and to support the findings of the quantitative analysis.

**Limitation of the Study**

Many teachers at the elementary, middle, and secondary level of education are required to use some form of a pacing guide. Depending on grade level of teaching, teachers might have different viewpoints and experience with using pacing guides. Teachers in non-core areas might be more likely to be the only teacher in their school or district teaching a course, which would also provide them with a different viewpoints and experience in using pacing guides. Likewise, teachers in very small districts might be the only teacher for their subject area and may have different areas of concern in regards to pacing guides. In order to keep the data collection within a workable scope of reference, this research will focus primarily on high school level core teachers. However, future research projects could involve non-core teachers or elementary and middle school teachers.

**Definitions of Key Terms**

For the purpose of this research, secondary teachers will be considered teachers of grades 9, 10, 11, and 12. Also, the term pacing guides will refer to teacher or district created documents within a school or school district.
CHAPTER II

LITERATURE REVIEW

While pacing guides as discussed in this project are a relatively new development in education, there have been many curricular decisions related to content and pacing that have affected the American educational system. Most of these decisions have concerned what curriculum students should learn, what students should learn certain curriculum, and how students should learn. Large changes in education have occurred in the past 100 years in terms of who attends school, what is learned in schools, and who decides what is learned in these schools. Methods for preparing children and teenagers for the workplace have also changed during this time, such as the replacement of apprenticeship programs with vocational and career technical programs. Employers expect that schools will prepare students to enter the workforce with skills that were once taught at home or through on-the-job training. Colleges require completion of foreign language, social sciences, language arts, mathematics, and science courses in high school before they will admit students into their programs. Stakeholders in education include students, parents,
educators, future employers, and in the public school districts, the tax payers and school boards. There are definite differences of opinion amongst the major stakeholders as to what type of curriculum best prepares students to enter the workforce, which students should receive certain types of curriculum, and how to resolve equity issues within the various courses of study.

**Historical Context**

Why do students attend high school? Krug (1960) states that the purpose of schools is for the “transmission of culture to the young” with the purpose of developing the individual (p. 81). The culture that is transmitted refers to the accumulated knowledge, wisdom, values, and skills necessary to advance civilized life, both material and non-material. High schools specifically focus on fostering individual development of adolescents into adulthood. This is a key time period for adolescents as they make decisions about college and career pathways. Krug's purpose for schools might be over 50 years old, but the goal of schools for developing the individual still remains. The content of the knowledge however will change with each new generation of students and also differ according to student needs. Currently, in the early discussions for 21st century curriculum, the debate revolves around how to best prepare students with skills and training for career pathways that do not even exist yet.

While there are many career pathways that remain undiscovered, curriculum itself can be described on three different levels (Armstrong, 2003). As a filtering mechanism, curriculum involves the content that is selected or not selected for students to learn. As an ordering mechanism, curriculum prioritizes content and provides an order for which material should be introduced. Or in a more encompassing viewpoint, curriculum is
defined as the “decision making processes and products that focus on preparation and assessment of plans designed to influence students' development of insights related to specific knowledge and skills” (p. 4). In 1890, six to seven percent of all teenagers attended secondary school. In 1900, eleven percent of teenagers attended secondary school. By 1930, over fifty percent of all teenagers attended high school (Kliebard, 2004). At this point in time close to 100 percent of students are in some type of educational program during their adolescent years. What does this mean for teachers who are using pacing guides in the high schools? They are educating students with a wide range of knowledge, skills, and learning abilities. In many academic programs, special education students are included in the regular classroom and teachers are expected to use the same pacing guide with special education students as they do with the regular student population. An important piece of data collected for this research project addresses how the needs of different populations of students, such as special education, general, honors, or advanced placement students, are met in following pacing guides.

Theoretical Viewpoints on Curriculum

Kliebard, in *The Struggle for the American Curriculum*, discusses four theoretical frameworks that have influenced development of curriculum within schools. Humanists proposed curriculum that stressed the power of reason. In response to humanist theories, three reform movements were formed. Developmentalists proposed curriculum “in harmony with the child's interests, needs, and learning patterns (p. 24)” based on study of child and adolescent development and the nature of learning. Social efficiency educators stressed elimination of waste in the curriculum and proposed scientific management techniques that became the forerunners for vocational, science, and technology
curriculum. Social meliorists sought a curriculum that gave schools the power to create social change. Klriebard does not suggest any of these theoretical frameworks have dominated curriculum or that any are particularly better than the others - rather that each group has made contributions and compromises resulting in the curriculum seen today in schools. Teachers today attended high school and currently teach in schools whose curriculum was developed in conjunction with these four theoretical frameworks. What happens when a teacher's philosophy of teaching falls under the developmentalist approach that allows variation for the individual while the pacing guide falls more in line with a social efficiency approach to curriculum? In the survey for this research project, teachers were asked to provide input on their concerns about the use of pacing guides in the classroom.

The debate continues today as to what and how students should learn at each grade level and in each subject area. Concerns that curriculum is too lenient or not rigorous enough for all students have been addressed with the introduction of standards-based curriculum at the national and state level and the subsequent standards-based testing. We now have academic standards within and across subject areas. Examples of national standards include the Common Core State Standards for Mathematics (2010) and Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (2010). In the state of Ohio we are in our second and some cases third generation of academic content standards and accompanying standardized tests. Many states have adopted their own standards that may or may not follow the national standards or that may provide more grade-level specific requirements. The No Child Left Behind Act of 2001 has changed the focus of many high
school academic programs. Idealistically, *No Child Left Behind* is meant to resolve many equity issues for disadvantaged students. In reality, expensive resources, such as materials and well-trained personnel, are needed to meet the requirements of *No Child Left Behind*. School districts continue to struggle with the transitions necessary to meet the mandates of this act and often the implemented curriculum does not match the intended curriculum due to various reasons (Broemmel & Lucas, 2010). These reasons can include lack of resources, level of teacher content knowledge, excessively large classroom sizes, and administrative mandates within the school or district. There is a now an ever present issue in curriculum on whether or not to “teach to the test” and also in how to best implement state level academic content standards. Jenkins (2008) recommends that educators work to make state and national standards more unified and cohesive. It is important that schools understand the importance of teachers knowing both the prior content that students have learned before entering their classrooms and that teachers recognize where the content they teach fits into future content the students will learn. One of the mechanisms that addresses these curriculum issues is the development and use of pacing guides in a school district. O'Shea (2005), identifies curriculum pacing and progress assessment as a means of aligning content to academic content standards. The curriculum pacing guides can be developed by curriculum coordinators and lead teachers to identify critical standards, the order in which the standards should be taught, and the approximate amount of time to be spent on each topic.

**Pacing Guides**

What is a pacing guide? Pacing guides are defined in the *Dictionary of Education* (2005) as “a written schedule displaying the alignment of concepts, topics, and skills
related to a particular curriculum to be addressed over a period of time (p. 163).” Most pacing guides will include the main topics, the learning objectives for each topic, the amount of time to spend on each topic, and an order in which to teach the material. The pacing guides will also include a section on how each learning objective aligns with state or national academic standards. Pacing guides can take many forms, but as the name implies, they are intended to regulate the pace of the course. This can be done by semester, quarter, week, day, or even minute in some cases. While most provide an order in which the subject matter should be taught, some leave the order of teaching up to the discretion of the teacher with a time frame on how long the teacher should spend teaching each portion of the curriculum. Typical pacing guides are constructed in the form of a table or time line with bullets and outlines as opposed to a narrative form.

While pacing guides are not a new concept in education, they are becoming more widespread as school districts align their curriculum with state mandated academic standards and assessments. In the past the prescribed programs might be purchased from a vendor for programs where students were thought to be at risk or for specific math or reading programs at the elementary level. Now teachers of all students of all achievement levels are being asked to follow pacing guides. Some school districts purchase programs of study that provide pacing and content for courses. More often however, districts have teams of teachers write pacing guides for individual courses. For the purpose of this research project, the term pacing guide refers to district or school developed pacing guide documents, not mass marketed programs of study, although teachers will be asked how pacing guides are developed in their districts.

Pacing guides tell teachers the topics to be covered, how much time to spend on
these topics, and the order in which to cover these topics (Squires, 2005). The topics, or content, should be linked with a list of standards or objectives. These standards are often set at the state or national level. Pacing guides are typically not aligned with specific lesson plans, nor do they necessarily identify which topics are most important. Fisher, Grant, Frey, and Johnson (2007) state that pacing guides identify when specific content standards will be taught, describe appropriate instructional materials, and elaborate on the instructional strategies teacher can use. Pacing guides can also include vocabulary lists, formative and summative assessments schedules, and accommodations for working with subgroups of students, such as English language learners, special education students, or gifted students.

**Research on Pacing Guides**

**Standards Based Teaching.** There are not many research articles devoted specifically to teacher use of pacing guides, however this topic is referenced most often in two main areas of research. The first area is in research related to “teaching to the test” that is prevalent in much of the standards based teaching research. One such example of this, would be the high school algebra project described by Neher and Plourde (2012). In response to low passing rates on the Washington State math assessment, a course pacing guide was constructed to better prepare students for the Algebra End of Course Exam. This pacing guide established a clear focus on how to address the state mathematics standards and was intended to enhance student learning and provide teachers with opportunities for collaboration. While this particular research project describes the process for developing pacing guides, it does not provide specifics on the implementation process for individual teachers who used the pacing guides.
Another example of research that references using pacing guides in regards to standards-based teaching is described in Winkler’s (2002) comparison of veteran and newly hired teachers' viewpoints of curricular alignment, or pacing adjustments, made within a school in preparation for the Virginia Standards of Learning test. In her observations, she noted that veteran teachers view the alignment practices as a loss of power and professionalism and felt that their existing beliefs were challenged. These veteran teachers also suffered loss of efficacy in their teaching practices. New teachers welcomed opportunities for collaboration and thought that although they had to stay within the parameters of the curriculum requirements, they still were afforded considerable pedagogical freedom. These teachers had been trained in aligning their lessons to state standards and felt that they were meeting the needs of their students by using pacing guides aligned to the standards. The idea that new teachers are less likely to feel constrained by prescriptive pacing is supported by Kauffman (2005), who surveyed 295 second-year teachers about their teaching experiences. Two-thirds of the teachers reported high levels of prescription, but did not report that their autonomy was challenged. Incidentally, teachers reported that math and language arts were more highly prescribed than science and social studies.

Avila, Zacher, Griffo, and Pearson (2011) report on the challenges of conducting instructional research in elementary schools when the instructional strategies for which they were gathering data conflicted with district mandated pacing guides used for language arts. In this study, elementary teachers in an at-risk school district were recruited to participate in reading comprehension interventions. Although the curricular mandates and instructional strategies were not vastly different, the pressure to adhere to
district pacing guides undermined the ability for teachers to use their professional
freedom or judgment. A second-grade teacher describes the tone and tenor of her
classroom as locked down between pacing guides that are detailed to the specific day and
high-stakes testing. Another claimed that the interventions utilized helped prevent her
from teaching to the middle of the group, as she would have felt the need to do in order to
keep up with the pacing guide. Without these interventions, she would not have been able
to differentiate for higher achieving or lower achieving students. The researchers in
observing the classrooms found that strict adherence to pacing guides reduced teacher-
student interaction time, when teachers felt pressured to follow their pacing guides.
Although the purpose of the particular research project was to evaluate instructional
interventions, it touches on many points of concern when teachers are required to work
with pacing guides.

In the research article, *Paint-by-Number Teachers and Cookie-Cutter Students:*
*The Unintended Effects of High-Stakes*, Scot, Callahan, and Urquhart (2009) explore the
influence of high-stakes testing on gifted student education. As the title indicates, pacing
guides are represented by the authors as coercive dictates used by administration to force
teachers to conform to curricula and instruction mandates, regardless of what the teacher
feels should be taught to best meet the needs of students. The authors identified the use of
curriculum pacing guides as evidence of conformity, uniformity, and rigidity that
narrowed curriculum and removed power from teachers. Teachers in this study, informed
the researchers that the pacing guides are used to tell or prescribe to teachers what they
should teach and that the pacing guides inhibit in-depth learning and understanding, with
no room for innovative teaching. Another teacher feared losing her job if a principal
walked into her room and she was not following the prescribed curriculum. Kaplan (2005) in the advocacy article, *Fighting the War on Academic Terrorism*, charges that “time” is an academic terrorist and that prescriptive pacing charts are designed for the norm of students. While providing these prescribed charts enable accessible curriculum for the general population of students, the needs of gifted students are not considered and will result in underachievement for gifted learners. Shreve (2011) writes of her concerns that the pacing guide she is assigned to use is too extensive and does not permit time for pre-writing or the inclusion of core literature in her 7th grade English class. She writes that she and her colleagues engage in subversive activities in order to teach quality writing skills to students.

The pacing guide from the perspective of students should also be considered. Certo, Cauley, Moxley, and Chafin (2008) interviewed 33 high school students to document how the Virginia standards of learning affected their educational experience. Overall, students viewed their classrooms as “rushed” learning environments, with less overall engagement. Students were concerned that depth was limited and those who wanted to learn more than the standards of learning prescribed, were not afforded these learning opportunities. Teachers who used to have reputations as “legendary” conformed to the standards of learning and were said to have “lost their fire” for teaching. Students also felt that there was more focus on memorizing material for tests and less focus on understanding content.

**Professional Learning Communities.** Common themes that occur in research that touches on teachers using pacing guides is that newer teachers are more likely to see the benefits of pacing guides, while more experienced teachers see pacing guides as a
challenge to their professional freedom. Some of these conflicts may be due to how the pacing guides are implemented in school districts. This leads to the second topic area where pacing guides are most often referenced - professional learning community research.

In research and literature related to professional learning communities, pacing guides are frequently cited as a starting point for forming professional learning communities. Collaborative work amongst teachers all teachers in a school is linked to improving schools and grouping teachers into small groups to work on curricular outcomes is the starting point for this collaboration (Dufour, 1991). Pacing guides are a vital component of the work done in professional learning communities that are currently forming in many high schools (DuFour, DuFour, Eaker, & Many, 2006; Eaker, DuFour, & DuFour, 2002; Rettig, McCullough, Santos, & Watson, 2003). Professional learning communities can take many forms, but all should have the following two goals in common- to clarify what students should learn and to check that the students have met the learning outcomes. The pacing guides are important in meeting these two goals in two respects. First, the pacing guides provide a document to prioritize what standards should be taught, helping teachers to agree upon the meaning and significance of the content they are teaching students. Second, the pacing guides provide a common pace for all teachers by which to implement common formative assessments, a vital part of the professional learning community, in their respective classrooms.

Teachers will not be able to work together as a professional learning community without first being able to clarify the knowledge students should learn and the skills they should be learning (Dufour & Eaker, 1998). Furthermore, teachers cannot focus on
student learning until they clearly establish what students need to learn (Dufour, 2002). Developing a common pacing guide is identified as a first step for committing to a formative assessment cycle within a building (Fisher, Grant, Frey, and Johnson, 2007) and common assessments are usually written directly into the pacing guide (Fisher & Frey, 2009). Before teachers can develop common assessments essential for gathering student progress data for the professional learning communities, the teachers first needed to develop course pacing guides.

For this research project, professional learning communities (often called PLC’s) will be the term used to describe teachers working in collaborative groups in specific subject areas, although there are several other common terms that are used to describe these groups. Some districts call these collaborative groups teacher-based-teams (TBT’s) or teach learn collaborate teams (TLC’s). While the effectiveness of professional learning communities is beyond the scope of this particular research project, professional learning communities were included as a checkbox for professional development initiatives accompanying the use of pacing guides.

Much depends on how the pacing guides are implemented. Pacing guides should provide curriculum guidance and not prescriptive pacing (David, 2008). These guides should chunk material, place the topics in a sensible order, identify resources, and set reasonable time frames for how long each element of the pacing guide should take, while at the same time allowing for unpredictability due to differences in individual classrooms. Teachers should be allowed input on making adjustments to the pacing guides. Ideally, pacing guides should function as a working document that professional learning communities can use to guide student learning. This working document should be
flexible enough for teachers to meet the learning needs of their students.

DuFour and Eaker (1998) further stress the importance of teacher input with their five assumptions regarding curriculum development in professional learning communities. Teachers should work together to write a research-based curriculum. The curriculum clarifies the specific knowledge, skills, and dispositions that the students should acquire. The curriculum should focus on essential and significant learning by reducing the content. The curriculum process should be easy to monitor by individual teachers, teacher teams, and the school. Implementation of the curriculum and subsequent assessments should foster a commitment to continuous improvement.

Both the standards-based curriculum reforms and the work of professional learning communities fall in line with the idea that schools should follow a more corporate like model in their approach to the decision making process. In the past some of these programs have been counterproductive, for example Shipps (2006) proposes that the most serious failing of corporate reform is the indirect approach to teaching and learning found in the Chicago school system from 1880 to 2000. The teachers are the essential instrument for teaching and learning, yet teachers were not trusted to teach their students. The scripted lessons and “teaching to the test” are familiar issues in education and are often boring for the performing students and frustrating for poorly performing students who need individualized instruction based on their needs. The corporate model might work in education for selecting vendors, building schools, or even operating a human resources department, but often fall short when working with students. Businesses have the opportunity to choose the best starting products. Most schools do not have a choice in their main starting product, the students. To apply the same managerial
techniques to principals and teachers places pressure and stress on educators who are already overburdened. Educators cannot send their starting product back to a supply company if they are unsatisfied. Educators do need to be held accountable, but high stakes tests and prescribed curriculum do not provide the opportunity to solve the problem. They are only a means of identifying problems, offer few remedies for solving these problems once they are identified, and may add further difficulty to an already stressful situation.

In a research study conducted with 20 principals, on instructional leadership, all 20 identified curricular alignment as important (Reitzug, West, & Angel, 2008). Most of the buildings where these principals worked used pacing guides determined by the county. While one principal appreciated having curriculum broken down and aligned to state standards, none of the principals addressed what to do when students were not able to keep up with the mandates of the pacing guides. Using pacing guides appeared to take the needs of the students out of the picture and negated research on the constructivist nature for learning in the classroom.

**Teacher Autonomy.** Some teachers could view use of pacing guides as a challenge to professional autonomy in the classroom and curriculum policies in relationship to teacher autonomy are cited in the literature. Archibald and Porter (1994) surveyed math and social studies teachers in high schools considered to have low, medium, and high levels of curriculum control policies, on the influence of factors such as state and district curriculum guides, department decisions and guidelines, testing policies, and student and teacher abilities. Despite differences in curriculum control policies, teachers at all three types of high schools reported high degrees of personal
content control and pedagogical autonomy. Math teachers were more likely of the two content groups to have their content decisions driven by control policies. The authors also noted a shrinking zone of teacher discretion as curriculum policies increase. Pearson and Moomaw (2005) report an inverse relationship between curriculum autonomy and job stress, a direct relationship with professionalism and empowerment, and little relation between curriculum autonomy and job satisfaction using the Teaching Autonomy Scale. Perceived empowerment and professionalism were the most strongly linked.

**Theoretical Framework**

While teacher attitude toward pacing guides are referenced in some research projects, there are no research projects that are specifically devoted to teacher attitude toward pacing guides. Also, pacing guides are more likely to be discussed in qualitative case studies, where only a few teachers or schools were involved. With many schools either initiating or continuing implementation of professional learning communities (Hord & Sommers, 2008), this project offers a timely moment in educational reform to document a major change in how schools operate. The goal for this project is to provide a large number of teachers with a venue in which to voice their opinions about the use of pacing guides.

**Researcher's Perspective.** My experiences with pacing guides assisted greatly in creating the research questions and pacing guide survey. I work in the seventh largest district in the state of Ohio where I have taught chemistry for sixteen years and have served as the chairperson of the science department in one of the districts' three high schools for twelve years. In this time, I have experienced and witnessed drastic changes in teacher autonomy, mostly in response to state mandates. For the first ten years that I
taught, the pace and order in which I structured the chemistry curriculum in my classroom was completely determined by myself. This provided me with a tremendous growth opportunity to change things from year to year based on what worked best for students, as well as my own abilities as a teacher. I had the freedom to select the order in which I taught content and also had a great deal of flexibility in the duration and depth of each unit. I had some accountability in preparing my students for the science portion of the Ohio Graduation Test, but was told that as long as I addressed the chemistry portion of the Ohio Academic Content Standards, then my curriculum was acceptable.

After my first few years of teaching, I along with the other teachers in my district were asked to create curriculum maps to document content taught and how this content aligned with the state standards. These curriculum maps could then be compared and shared throughout the district. While these were helpful for sharing with new teachers, the curriculum maps remained and were expected to be individual to the teacher. These were also documented after the fact to describe what was taught- not written as a plan for what should be taught.

In my tenth year of teaching, I was invited to be a member of the chemistry curriculum writing team for our district. This team was responsible for writing a pacing guide and common midterm exams and final exams for all chemistry teachers in the three different high schools in our district. Our first task was to decide on the order that content was taught and approximate quarterly guidelines for the duration of each unit. Once we had an idea of what would be taught each semester, we wrote a test bank for the midterm exams and final exams aligned with our pacing guide. I was fortunate in that all of the writing team members were like-minded in their basic philosophy of teaching chemistry
and we constructed a pacing guide that provided guidance, while still allowing for
differences between teachers and students within the classrooms. Five years later, the
original team regrouped to revise the original pacing guide to provide more specific
ranges of time to be spent on each unit, check for alignment with the Ohio Chemistry
Syllabus, and also to write common midterm exams and common final exams to replace
the original test bank. I also teach two other levels of chemistry, Honors and Advanced
Placement, which currently do not have a district wide pacing guide.

I am also the science department chair and am frequently asked to send members
of my department to sit on writing committees for other content areas in science. These
groups are asked to complete similar tasks to what was completed by the chemistry
group. In the case of chemistry, there are only six to seven teachers per year in the district
teaching chemistry, which makes for a relatively smooth process for gathering input,
making adjustments to the existing pacing guide, and implementing the same pacing
guide district wide. There are also no special education co-teachers in any of the
chemistry classes. The limited numbers of special education students who elect to take
chemistry are easily accommodated within the classroom. In other content areas, such as
the entry year science course that all special education and regular education students
take, there may be 15 to 20 regular education and special education teachers who are
required to follow the pacing guide written by the writing team of four or five teachers.
This presents unique challenges in gathering input to write the pacing guide and
providing support to help teachers implement the pacing guide in their classroom. In most
cases, the teachers have taught the content for many years, have strong opinions on how
best the content should be taught, and writing a pacing guide that is universally accepted
is almost impossible.

While some of these pacing guides have been written for several years, many of the pacing guides were initially presented as recommended courses of study and teachers had some flexibility in straying from the order outlined in the pacing guides. What has really driven many teachers to follow these pacing guides is the work done in professional learning communities that were implemented three years ago in the district. Many teams in these professional learning communities found that they could not meet the district mandate for professional learning communities without having all teachers of the same content area teach the same thing at the same time.

Many of the questions in the pacing guide survey were developed based on my experiences writing and following a pacing guides as well as my experiences in assisting my fellow department members in writing and following their assigned pacing guides. Many of the case studies referenced in the literature review echoed my experiences with pacing guides, as well as my interactions with colleagues who are also using pacing guides. With the increasing trend towards both accountability in the classroom and the need for pacing guides in order for professional learning communities to function, I recognize that pacing guides are an artifact of education that will most likely continue to be used in the future. However, I also recognize the need to provide teachers with a voice to document their viewpoints on pacing guides, and use these viewpoints to best implement pacing guides in the classroom.

**Research Method Selection:** In order to provide a large number of teachers a voice in regards to using pacing guides, both quantitative and qualitative methods were considered in the research design. Descriptive statistics and Spearman rank order
correlation will be utilized for quantitative analysis. Since there will be a large number of participants, quantitative methods provide a practical means of gathering and reporting overall results and determining if there is a statistically significant relationship with teacher attitude and comfort level with pacing guides with other factors related to the teacher and the teacher's work setting. Qualitative methods provide a means for participants to clarify and explain their responses to quantitative questions, as well as voice overall opinions toward pacing guides. The quantitative and qualitative research strategies will be described further in the methodology section.

One of the more challenging factors in constructing this project is reconciling the use of an online survey with qualitative research methods. Mann and Stewart (2000) discuss how internet technology can be used to collect and analyze qualitative data and relate computer-mediated communication (CMC) to more traditional face-to-face (FTF) methods. They refer to synchronous CMC and asynchronous CMC, where synchronous refers to real-time communication such as “chatting” online and asynchronous refers to e-mail messages or other methods where a participant can electronically send responses to the researcher. Benefits of CMC include extended access to participants, cost savings, time savings, elimination of transcription bias, easier means of data analysis, and addressing common participant concerns, such as confidentiality and anonymity, providing a safe environment, and minimizing requirements of the participant to a computer and internet access. Drawbacks of CMC include not being able to able to observe the participant directly. Additional challenges of using online qualitative research methods include the researcher's understanding of how the internet works, researcher's knowledge of how to construct a Web-page-based survey programming in HTML or
other method of website writing, using of file transfer protocols, and writing the scripts necessary to transfer participant responses to the host server.

Merriam (2002) discusses qualitative research with an interpretive orientation that seeks to find understanding, emancipation orientation that critiques a system typically in order to empower some group in the system, and deconstruction orientation, where researchers question the existing reality. This project sought to gather information on how teachers have responded to the use of pacing guides in their classrooms. Also, this research provides teachers with a voice to provide their viewpoint on the use of pacing guides. In further describing interpretive qualitative research, Merriam (2002) describes some key characteristics that describe interpretive research. The first characteristic is that the qualitative researcher seeks to understand the meaning people construct about the world. Again, this research project provided an opportunity to view the affect pacing guides have on the everyday lives of teachers. Another key characteristic is that the qualitative researcher is the primary instrument for collecting and analyzing data. In the case of this project, there was be no face-to-face time between the researcher and the participants. However, the CMC survey operated similarly to a standardized interview and the researcher wrote the survey using similar considerations that would be provided for in a FTF interview. Qualitative research is also inductive, which means the data collected were used to build concepts or theories to describe some phenomena. In the case of this project, pacing guides are a more recent phenomena that have effected the high school classroom and the researcher seeks to conceptualize the overall perception of pacing guides experienced by the teachers in these classrooms. A final characteristic is that the end product of qualitative research is richly descriptive, where words and pictures
are used to demonstrate what the researcher has observed. Several open-ended questions are included in the survey and responses will be used to construct a rich description of teacher attitude, comfort level, concerns, and benefits of using pacing guides.
CHAPTER III
METHODOLOGY

This chapter will describe the methods used to collect data on teacher experience with, attitude toward, and comfort level in using pacing guides, as well as what teachers identified as benefits and challenges of working with pacing guides. All data were collected from teachers using The Pacing Guide Survey (Appendix A). Initial steps toward gathering data included the approval of the research prospectus and requesting participation from building principals (Appendix B). This was followed by submission to and approval of the research project with the Cleveland State Institutional Review Board (Appendix C). Once approval was granted through building or district administration, high school teachers were contacted to complete the survey online (Appendix D). District and high school lists were extracted from the Ohio Department of Education website and teacher contact information was obtained from individual school and district websites or from the school administration when this information was not provided on the school website. In some schools, teacher survey participation was followed up with a phone
interview with district administration to provide background information on district or high school pacing guide use.

Participants

High school teachers in the core subject areas of language arts, social studies, mathematics, and science throughout Ohio were asked to participate in an anonymous online survey on their use of pacing guides in their classroom. No data related to the teacher's identity, school, or district, beyond basic demographics, were collected. Teachers were encouraged to complete the survey on non-work computers if they were concerned about their school district having access to their responses to the questions on the survey. Teachers provided consent to participate in this research through a consent page that was submitted prior to entering the online survey (Appendix A). This form of consent is in line with similar online surveys (Barchard & Williams, 2008) and was also recommended by the Cleveland State University Institutional Review Board as an acceptable manner to obtain electronic consent.

Teacher Contact Process

Teacher school based email addresses were utilized as the primary method for contacting teacher participants and were mostly gathered from online staff directories posted on district websites. In a small number of cases, email addresses were not posted online and the building principal was contacted for assistance in providing a staff email list. In one case, the principal refused to provide teacher emails and provided the survey link and password directly to teachers. In other cases, the principal provided staff email lists directly or the researcher worked with the district technology department to provide the list.
Email address lists were grouped by subject area for each school or district contacted and placed on an Excel spreadsheet. The email addresses were then copied and pasted, in groups of 15 to 20, to a Word document where they could then be pasted in the blind carbon copy field of the email request. The researcher limited each email request to 15 to 20 recipients and limited use of internet links and non-text characters to prevent the request being identified as spam or junk mail by district email servers.

**Pacing Guide Survey**

Data collection through the use of an online survey follows patterns similar to other web-page-based surveys (Barchard & Williams, 2008; Kiernan, N. E. Kiernan, M., Oyler, & Gilles, 2005; Steward & Mann, 2000; Van Selm, Martine, & Jankowski, 2006). This method was chosen in order to best reach a large number of teachers, while still maintaining teacher anonymity. The survey included questions intended to collect both qualitative and quantitative responses and all survey data were collected online through the website: pacingguidesurvey.com. The text for the Pacing Guide Survey is provided in Appendix A, along with the type of question and associated research question. The first page provided information about the survey and included the online participant consent form.

All participants were asked the same demographic information questions. The survey then divided into two parts – one part for teachers currently using pacing guides and another part for teachers not currently using pacing guides. The introductory questions were intended to collect data on years of teaching experience, years in current teaching position, educational background, size and demographic population of the high school and district, grade level, subject area, the type of course or courses taught by the
teacher, and teacher comfort level teaching in the content area. For teachers using pacing
guides, the questions related to the type of pacing guide they use as well as their
experiences, comfort level, and attitude in using pacing guides. The questions for
teachers not currently using pacing guides related to what they think would be concerns
or benefits of using pacing guides, comfort level, and attitude toward pacing guides
should they be required to initiate use of pacing guides. Both close-ended questions and
open-ended questions were included in both portions of the survey and both sections
included questions on professional development initiatives and curriculum monitoring
currently used within the participating high schools.

No psychometric data or reference scores were available for the Pacing Guide
Survey, since this was the first time this survey was used to collect data and was written
specifically for this research project. The Pacing Guide Survey HTML code and common
gateway interface script was written using Evrsoft First Page 2006 Version 3.00 and
posted online using Netfirms as the web host. HTML resource books, survey writing
books, and PERL books were used as references to construct the survey (Birnbaum,
2001; Brace, Kemp, & Snelgar, 2006; Castro, 2001; Castro, 2007; Fraley, 2004; Quigley,
2007; Rossi & Lipsey, 2004). The source code for the participant consent form, the
survey, and common gateway interface code are provided in Appendix E. The researcher
did have professionals in the field of education review the survey script and online design
to verify face validity of the survey. Also, the survey underwent extensive editing and
was coded to verify construct validity in line with recommended procedures in the
literature (Agarwal, 2011) and to make sure that the survey questions were aligned with
the research questions as shown in Appendix A. The researcher selected to author the
website independently as opposed to using an online survey service provider in order to have more freedom in the design of the survey, data collection, and data storage.

Data Collection and Organization

All data gathered from the survey were initially stored using the Netfirms server database. The data were then downloaded from Netfirms using a Firefox based file transfer protocol program in the form of a text document. This text document was then checked for identifiable errors and use of text symbols that would not transfer well to a spreadsheet and was then exported to an Excel spreadsheet for further cleaning of the data. In the Excel spreadsheet form, the data were checked for incomplete or unusable survey results. The spreadsheet was then used to calculate simple tallies and averages and organized for proper usage to be transported to SPSS.

Supporting Data Collection

For each high school involved, a member of the district administration was contacted to discuss the use of pacing guides within the school through a phone or face-to-face interview. The interview questions are provided in Appendix F.

Data Analysis

There are four main research questions involved with this project. The following describes how each research question will be addressed:

Research Question 1: Based on teacher self-report, how widespread is the use of pacing guides in the core subject areas in public secondary schools in Ohio?

In response to this question, the number of districts who provided site approval and the number of districts who did not provide site approval was determined, as well as the number of participants contacted and the total number of responses submitted. The
The number of teachers who submitted their answers to the survey questions and whether or not they are using pacing guides in their classrooms was also compared. This data were further broken down based on whether or not teachers are mandated to use the pacing guides, which subjects areas are more likely to have pacing guides in place, and the general demographics of teachers who are using or not using pacing guides. Descriptive statistics included total sample size and teachers reporting by grade/course level, subject area, years of teaching experience, and demographic of school district.

**Question 2: What concerns do teachers have about working with pacing guides and what do teachers view as beneficial about working with pacing guides?**

For this research question, teachers were asked to rate their concerns regarding content, pace, sequence, and flexibility in using pacing guides. The participants were also asked to rate the benefits of using pacing guides in regards to collaboration with other teachers, providing consistency between teachers of the same course, and providing specific guidelines for new teachers to follow. Descriptive statistics were determined for the overall group as well as subgroups for both concerns and benefits.

Teachers were also asked to explain their responses about these benefits and concerns as well as provide additional information on what they see as concerns and benefits of using pacing guides. Data provided for these responses were analyzed using a combination of thematic data analysis and quasi-statistical techniques. Thematic data analysis methods were selected to review responses, identify categories and determine codes for these categories, and identify similarities and differences amongst responses (Ratcliff, 2004). Methods such as what Holton (2007) describes as the constant comparison/grounded theory analysis process as theoretical saturation, whereby
indicators found in the data were constantly compared until properties and dimensions of categories or codes emerge, were originally considered. However, reflection on the qualitative data analysis and emergent results indicate that the methods utilized were at best categorized as grounded theory ‘lite’ as described by Braun and Clark (2006), or better described as thematic analysis. The methods used did not necessarily occur in specific steps, but through a process of coding and conceptual memoing until recurrent themes emerged. The quasi-statistical approach was selected to identify the frequency (Maxwell, 2010) of occurrence of specific themes and proved useful to determine the weight accorded each theme amongst multiple responses provided by pacing guide users and non-pacing guide users.

Upon receipt of responses, each concern and benefit explanation and additional comments were reviewed and a list of common concerns and benefits was assembled in an open coding process as described by Cresswell (2007). After all responses were received, these responses were posted to a Wordle word cloud application and the researcher created a word cloud which provided a visual display of the more frequently used terms. This preliminary analysis method was selected since it provided a quick, visually rich qualitative/thematic analysis (McNaught & Lam, 2010) and tool for selecting areas of interest for additional analysis (Williams, Parkes, & Davies, 2013), as well as determining the frequency of occurrence in the early development of central phenomena through use of a coding paradigm (Cresswell, 2007). A list based on individual word counts was created using this application and a list of common terms found in the responses was constructed. All original responses were then transferred to a Microsoft Word document and the Microsoft Word advanced finder was used to highlight
common terms and selectively code the exact context of how the term was used, such as negative or positive, in an axial coding process. The word-processing method was utilized to prevent technology entrapment that potentially impairs creative conceptual ideation as forewarned by Holton (2007), while allowing for simple statistical counts to be determined and emphasized amongst responses. Through this process, the researcher constructed a list of themes of how the benefits and concerns were explained as well as additional benefits and concerns identified by both pacing guide and non-pacing guide users, the frequency in which each theme occurred, and noted specific responses to include in the findings. To double check for additional themes, the responses were transferred to a Microsoft Excel spreadsheet and the researcher again noted the frequency of each theme.

Additional research assistants familiar with the research process and familiar with the project topic were employed to verify and confirm findings through independent analysis of the response transcripts. For this process, three research assistants were employed, one for each of research questions two, three, and four. Each was provided with the responses for the survey question(s) related to their assigned research question. They were then asked to review the responses and summarize their findings with a written statement to highlight specific recurring themes. This process was not as thorough as the process conducted by the primary researcher, nor was it expected to be, but was conducted to find affirmation or disagreement with the primary researcher’s findings, as well as to reveal additional codes or themes. Upon receipt of the research assistants’ results, the primary researcher reviewed the findings and compared these to the original results and found that these independent findings closely resembled those determined in
Question 3: How comfortable are teachers in using pacing guides and what influences teacher comfort level with using pacing guides?

Participants were asked how comfortable they are with the idea of students being educated with the use of pacing guides and how comfortable they feel as an individual in using pacing guides. These two areas of comfort level with the use of pacing guides were determined for the entire group, as well as pacing guide and non-pacing guide users.

Initially, analysis of variance was to be used to relate each area of teacher comfort level to individual teacher factors including years of teaching, confidence in the content area, and educational background. Low sample size, moderate to high skewness of data-especially within dependent variables, and significant (p < 0.050) homogeneity of variance during initial analysis of variance trials using SPSS indicated the need for nonparametric statistical analysis. The research questions instead, were investigated using nonparametric techniques. Null hypothesis one for comfort level: there is no statistically significant relationship between teacher comfort level with the idea of educating students using pacing guides and years of teaching experience, confidence in the content area, and educational background. Null hypothesis two for comfort level: there is no statistically significant relationship between individual teacher comfort level in using pacing guides and years of teaching experience, confidence in the content area, and educational background.

Teacher comfort level in using pacing guides was also analyzed with regard to potential relationships to school and district factors such as the pacing guide writing and revision process, educational initiatives used in the school, as well as how pacing guide
use is monitored. Null hypothesis three for comfort level: there is no statistically significant relationship between teacher comfort level with the idea of educating students using pacing guides and author of pacing guide, revision process, monitoring of pacing guides, and other educational initiatives. Null hypothesis four for comfort level: there is no statistically significant relationship between individual teacher comfort level with using pacing guides and author of pacing guide, revision process, monitoring of pacing guides, and other educational initiatives. The level of teacher input will also be considered.

A priori power analysis conducted with G*Power indicated the need for a sample size of at least 305 subjects to have 95% power for detecting a medium sized (F= 0.25) effect for statistical significance (p < 0.05) for the analysis of variance to be used with five levels of teacher comfort with using pacing guides. This sample size was not met during the data collection process, and nonparametric statistical analysis were selected to explore individual components of each hypothesis.

Chi-Square test of independence was going to be used to determine if there is a relationship between the two areas of comfort and the teacher content area – language arts, science, math, and social studies in a 5 x 4 design, as well as the level of students the teacher works with - special education students, general education students, honors/AP students in a 5 x 3 design. A priori power analysis conducted with G*Power indicated the need for a sample size of at least 253 subjects (df = 8) to have 95% power for detecting a medium sized (w= 0.3) effect for statistical significance (p < 0.05) for the Chi-Square to be used to relate five levels of teacher comfort with student level taught (5 x 3 design). The w refers to input parameters provided on the G*Power program and is used to
indicate effect size for Chi-Square goodness of fit and contingency tests (Cohen, 1992). A priori power analysis conducted with G*Power indicated the need for a sample size of at least 288 subjects (df = 12) to have 95% power for detecting a medium sized (w = 0.3) effect for statistical significance (p < 0.05) for the chi square to be used to relate five levels of teacher comfort with teacher subject area (5 x 4 design). As with the ANOVA concerns, insufficient sample size hinders the use of Chi-Square, as well as insufficient cell-size for supporting or not supporting the null hypothesis. Also, multiple teachers reported teaching more than one subject area and more than one level of type of class, which violates the assumptions underlying Chi-square. Attempts to recode multiple subject areas or course level were considered. However, an even greater sample size would be needed to determine statistical significance for the 5 x 6 design for content area and 5 x 4 design for student level if an additional category of multiple subjects and multiple levels were determined and multiple cell sizes with less than five cases hampered these attempts. Descriptive statistics were determined instead for subject area and course level.

Participants were asked to describe what influences their comfort level with using pacing guides. Data provided for these responses were analyzed utilizing a similar process to that described for analysis of qualitative responses provided for the benefits and concerns for research question two. However, as expected these responses were more open-ended since a pre-determined list of possible benefits and concerns were not included. These responses were then compared to the statistical relationships determined between each independent and dependent variable.

**Question 4: What is the overall attitude teachers hold toward using pacing guides and**
what influences teacher attitude toward using pacing guides?

Overall teacher attitude toward the use of pacing guides were analyzed using descriptive statistics for each category. Much like in research question three, analysis of variance was intended for use to relate teacher attitude toward the use of pacing guides to years of teaching, confidence in the content area, and educational background. However, similar concerns of low sample size, skewness of data, and low homogeneity of variance prevented further investigation using of this statistical technique, and each null hypothesis will be explored using nonparametric techniques. Null hypothesis one for attitude: there is no statistically significant relationship between teacher attitude toward the use of pacing guides and years of teaching experience, confidence in the content area, and educational background.

Teacher attitude toward the use of pacing guides will also be related to other influences such as the pacing guide writing and revision process, educational initiatives used in the school, as well as how pacing guide use is monitored, also using nonparametric analysis. Null hypothesis two for attitude: there is no statistically significant relationship between teacher attitude toward the use of pacing guides and author of pacing guide, revision process, monitoring of pacing guides, and other educational initiatives. The level of teacher input will also be related to teacher attitude.

Chi square test of independence was intended to be used to determine if there is a relationship between teacher attitude toward the use of pacing guides and the teacher content area, as well as the level of course- special education, regular education, or honors and advanced placement, that the teacher works with. Similar concerns as those found in research question three hindered these attempts and descriptive statistics were
determined instead.

Teachers were asked to describe what influences their attitude toward the use of pacing guides. Data provided for these responses were analyzed utilizing a similar process to that described for analysis of qualitative responses provided for research questions two and three. The final question on the survey requested that participants provide any additional information regarding the use of pacing guides. These responses were coded in similar methods used for research questions two, three, and four to be embedded throughout all research questions.

Cost

Costs associated with this project were limited to modest fees needed to maintain the URL address for the survey website and maintain the Netfirms hosting account. No additional computers or software were purchased to complete this project.

Nonparametric Methods and Further Explanation of Independent Variables

Nonparametric methods were used in place of parametric methods, primarily due to low sample size and skewness from normal found in the data. Transformation of data through square root or logarithmic methods were considered to accommodate the skewness of the data. However, the benefits of nonparametric methods, such as ease of use with low sample size and rank-ordered data, outweighed the potential need for multiple transformations, difficulties inherent in analyzing transformed data, and concerns of Type I and Type II errors (Leech & Onwuegbuzie, 2002; Erceg-Hurn & Mirosevich, 2008). Sample sizes were matched against those determined using G*Power for each research question, QQ plots were determined, and dependent variables were checked for normality, as suggested by Corder and Foreman (2014). Two-tail Spearman
rank order correlation was selected as the primary nonparametric technique for relating the independent variables to the three dependent variables of comfort level with students being educated with pacing guides, comfort level for teachers teaching students with pacing guides, and overall attitude toward pacing guides to each of the independent variables. The two-tail correlation was selected since this was the first time the Pacing Guide Survey instrument was utilized and due to the exploratory nature of this project.

*Population Factors.* Spearman’s rank order correlation was used for the independent variable of demographic, rank ordered from rural to urban, and size, also rank ordered from small to large. Biserial correlation was selected for the number of high schools within the district, reported as single or multiple, due to continuous dichotomous variability. A continuous dichotomous variable implies some type of order for two conditions (Corder & Foreman, 2014), such as one school or multiple schools.

*Building Level Factors.* Spearman rank order correlation was selected for all building level factors, except for the continuous dichotomous variable of whether or not the pacing guides users are afforded the opportunity to provide pacing guide input, which was related to the dependent variables using biserial correlation. The total number of reported within school professional development initiatives and methods for administrative monitoring of curriculum were tallied for each participant and coded as a continuous variable, to indicate increasing ranks of initiatives and monitoring. For pacing guide users, the degree of district use of pacing guides was reported as some, most, or all courses have pacing guides and for non-pacing guide users, a level of no courses with pacing guides was included in the assigned rankings. Also, for non-pacing guide users, district adoption policies were ranked on seven levels ranging from no pacing guides with
no implementation plans to all course using pacing guides. The differentiation was
deeded necessary as some non-pacing guide users may work in districts where pacing
guides are provided, however the participant may not use the provided pacing guides. For
pacing guide users only, the collaborative level of pacing guide development was rank
ordered on three levels from district provided pacing guides, individually written pacing
guides, to collaboratively developed pacing guides. These questions were not included in
the survey provided for non-pacing guide users, since they were specifically related to
working with an actual pacing guides.

Teacher Factors. Participants also reported their years teaching and years using
pacing guides, which were compared to the dependent variables using Spearman rank
order correlation. Course level and confidence in content area were also rank-ordered for
correlation.

Limitations

The participants for this project were limited to core high school regular and
special education teachers in order to keep the study, since these teachers were the most
likely at the high school level to have state-wide assessments to prepare for and have in
the past, been less likely to follow prescribed curriculums. However, this study could also
be extended to middle school and elementary teachers as well. There were also additional
stakeholders such as parents, students, and administration that could be included in future
studies. Another limitation within the methodology is that this study primarily addresses
only teacher perception of pacing guides and administrator input, but does not identify
student evaluation of concerns or benefits, or student assessment data to determine if
there is a relationship between using pacing guides and student learning.
The use of one self-report method to collect data and one type of participant presented possible concerns of common method variance. Accommodations to address common method variance during the data collection process included using two methods of gathering data: open-ended and close-ended questions and maintaining participant anonymity to decrease social desirability bias (Woszczynski & Whitman, 2004). Also, administrators were interviewed to discuss the nature of the use of pacing guides within the participating schools. The researcher also reported factors that might significantly influence teacher opinions of pacing guides, such as administering the survey during a school year where many schools districts have started using the new Ohio Teacher Evaluation System to evaluate teachers, where a significant portion of the teacher evaluation is based on student growth measures. Also, new testing policies were expected to influence teacher input on the survey, since schools were initiating the two component Partnership for Assessment of Readiness for College and Careers (PARCC) for math and language arts, as well as the two component American Institutes for Research (AIR) assessments for social studies and science for the first time. Many of the participants work in districts where following a pacing guide could be considerably hampered by the use of anywhere from 7 to 13 calamity days during the year the survey was completed as well as the prior school year. Post hoc measures as discussed by Richardson, Simmering, and Sturman (2009) and Podsakoff, P. M., MacKenzie, Lee and Podsakoff, N. P. (2003) were considered and based on these recommendations, all means possible were utilized to guarantee response anonymity and to keep independent variable determination separate from dependent variable determination. For example, demographic questions, school professional development initiatives, and curriculum monitoring questions were placed
on separate pages from the dependent variables.
CHAPTER IV

FINDINGS

This chapter will provide a summary of qualitative responses and a statistical analysis of quantitative teacher responses to the pacing guide survey, as well as an overview of the administrator interviews.

Research Question 1: Based on teacher self-report, how widespread is the use of pacing guides in the core subject areas in public secondary schools in Ohio?

Survey Response Rate. Teacher participation in the survey was limited to high schools and districts that provided site approval to conduct research. 742 individual high schools were contacted with a total of 42 high schools providing building or district level approval for teacher participation. An email address list for principals was assembled based on data collected from the state department of education website and was edited as needed based on email server rejections upon initial request for site approval. Principals who did not respond were contacted at least three times by email and principals in the local region of the researcher were also contacted by phone. In accordance with
preserving the confidentiality of the survey participants and schools involved, specific names of participating high schools and districts will not be reported.

In some cases, the researcher was provided with district level teacher rosters, not building level rosters, which makes reporting out data on the number of core teachers per building contacted problematic. It should be noted however that some of the schools had only twelve core teachers, while other schools had well over 60 core teachers due to differences in school enrollment.

Teachers were contacted to complete the survey between October 2014 and March 2015. Upon receiving site approval from principals, staff lists and email address lists were assembled and the researcher tallied how many teachers were contacted within each high school based on content area. 1554 participants were contacted either by the researcher or the building principal by email. Initial email requests were followed-up by two to three additional reminders to complete the survey, depending on conditions of approval granted by principals and school districts. 187 usable surveys were submitted with a response rate of 12%.

**Participant Data:** On average, participating teachers had 14 years of teaching experience with an average of 10 years teaching experience in their current assignment. The number of teachers who had attained master’s degrees either in their content area or education was 152 and six earned their doctorate. Based on teacher self-report, demographic school representations were: 27% urban, 36% urban/suburban, 25% suburban, 5% suburban/rural, and 7% rural. School enrollment figures were: 18% over 1501, 33% between 1201 and 1500, 13% between 1001 and 1200, 10% between 801 and 1000, 14% between 500 and 800, and 12% under 500. 55% of the participants responded
that they work in a district with more than one high school in the district.

96 teachers identified that they teach 9th grade, 94 teach 10th grade, 113 teach 11th grade, and 109 teach 12th grade. Within content areas, 51 of the 363 contacted math teachers responded, 65 of the 315 contacted science teachers responded, 50 of the 338 contacted English language arts teachers responded, 35 of the 268 contacted social studies teachers responded, and 77 of the 270 contacted special education teachers responded. In some districts, special education teacher rosters were fully merged departmentally with regular education teachers, preventing the researcher from distinguishing these teachers within teacher rosters. However, 65 of the participants identified that they work with inclusion students, 12 with self-contained students, 92 with general studies, 86 with college preparatory students, 61 with honors students, and 48 with advanced placement students. Teachers were able to identify multiple grade levels of students, multiple content areas, and multiple skill levels of students that they teach.

142 of the participants are currently using pacing guides, with 57 identifying that they use a district provided pacing guide, 32 use a pacing guide that they have written on their own, and 54 have written pacing guides in collaboration with other teachers. 45 of the participants do not currently use pacing guides, with 30 teachers identifying that their school has no plans to adopt pacing guides, three noting their school district is moving toward adopting pacing guides, and 12 claiming they do not use the district provided pacing guide.

**Administrator Interview:** 42 requests were made for administrator interviews with a total of five administrators and one teaching coach agreeing to participate. While some of the administrators had served in their school or district for only a few years, they
identified that their schools had been adopting pacing guides over the course of the last one to seven years. Reasons provided for adopting pacing guides included ensuring that teachers followed academic content standards, providing consistent education for students for both vertical and horizontal alignment, and to meet district annual yearly progress goals. While the methods for writing pacing guides cited by administrators varied, most are written by collaborative teams, either within a building or with representation from different buildings in districts with more than one high school and curriculum coaches or assistant superintendents oversee the writing of pacing guides. Administrators identified that implementation methods also vary. In some schools, department heads are asked to oversee that pacing guides are followed and that gaps in curriculum are addressed. In other schools, pacing guides are monitored through the work of professional learning communities with team-based decision processes, where common assessments and ongoing preparation for the Ohio Teacher Evaluation System are considered. One administrator provided extensive documentation of the common assessment writing and data collection process. One administrator from a small high school identified that pacing guides are beneficial to provide to incoming teachers when there is teacher turnover in a subject with only one teacher. Another principal identified that the pacing guide process is working and cited the “triplet effect,” which he described as triplets with three different teachers having access to “guaranteed and viable curriculum” regardless of their assigned teacher.

Response to Research Question One. The goal for research question one was to identify how widespread the use of pacing guides is in the core subject areas in public secondary schools, based on teacher self-report. Of the usable surveys provided, 24% of
the participants currently do not use pacing guides and 76% of the participants are currently using pacing guides. Breakdown of these participants based on demographic indicates that 28.87% of the teachers currently using pacing guides and 20.45% on non-users of pacing guides classify their school as urban. 37.32% of the teachers currently using pacing guides and 29.55% of non-users of pacing guides classify their school as suburban/urban. 25.35% of the teachers currently using pacing guides and 25.00% of non-users of pacing guides classify their school as suburban. 3.52% of the teachers currently using pacing guides and 9.09% of non-users of pacing guides classify their school as suburban/rural. 4.93% of the teachers currently using pacing guides and 15.91% of non-users of pacing guides classify their school as rural. Percentages are provided for comparison purposes due to the large difference in sample size for pacing guide users and non-pacing guide users and are shown in bar graphs in Figure 1.

In terms of school enrollment: 18.44% of teachers currently using pacing guides and 15.56% of teachers not using pacing guides reported a school enrollment of over 1501. 37.59% of teachers currently using pacing guides and 20.00% of teachers not using pacing guides reported a school enrollment between 1201 and 1500. 14.18% of teachers currently using pacing guides and 11.11% of teachers not using pacing guides reported a school enrollment between 1001 and 1200. 8.51% of teachers currently using pacing guides and 15.56% of teachers not using pacing guides reported a school enrollment between 801 and 1000. 12.06% of teachers currently using pacing guides and 17.78% of teachers not using pacing guides reported a school enrollment between 500 and 800. 9.22% of teachers currently using pacing guides and 20.00% of teachers not using pacing guides reported a school enrollment under 500. Data for these figures as well as single or
multiple high school are represented in Figure 1.

Figure 1.
*Demographic, Enrollment, and Single or Multiple High Schools for Pacing Guide and Non-Pacing Guide Users*
The pacing guide users surveyed were more likely to teach in more urban, larger enrollment, multiple high school districts, in comparison to non-pacing guide users who had high percentages of teachers working in more rural, smaller enrollment, single high school districts in comparison to pacing guide users.

Based on content area and type of course taught: 40 of 51 math teachers, 52 of 65 science teachers, 32 of 50 English language arts teacher, 26 of 35 social studies teachers, and 60 of 77 teachers of special education students currently use pacing guides. 73 of 92 general studies teachers, 62 of 86 college preparatory teachers, 47 of 61 honors teachers, and 34 of 48 Advanced Placement teachers surveyed currently use pacing guides. Percentages for each group above are not provided, since teachers were able to identify multiple subject areas and types of courses. Percentages based on corrections for teachers of multiple subject areas are provided in Figure 2:

*Figure 2.*

*Subject Area for Pacing Guide and Non-Pacing Guide Users*
Question 2: What concerns do teachers have about working with pacing guides and what do teachers view as beneficial about working with pacing guides?

Quantitative Identification of Concerns: Participants were provided with a checklist of possible concerns for non-pacing guide users and concerns for pacing guide users. These concerns were in relation to content, pace, sequence, and flexibility as pertain to working with pacing guides. 11% of teachers surveyed cited incorrect content. 45% too much content, 9% too little content, and 42% cited no concerns related to content. 60% were concerned that the pacing guide pace is too quick, 5% that the pace is too slow, and 35% had no concerns regarding pace. 44% of participants were concerned about poor sequence fit and 54% had no concerns regarding sequence fit. 46% were concerned that pacing guides are not flexible enough, 4% think pacing guides are too flexible, while 48% have no concerns regarding flexibility. Percentages for content, pace, sequence, and flexibility are based on the total count of participants and may not add up to 100%, since participants could select multiple options in each area. Further summary of concerns based on pacing guide users, non-pacing guide users, and total for all participants can be found in Table 1:
Table 1

*Teacher Concerns Related to Using Pacing Guides*

<table>
<thead>
<tr>
<th></th>
<th>Pacing Guide Users</th>
<th>Non-Pacing Guide Users</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect content</td>
<td>7</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Too much content</td>
<td>62</td>
<td>22</td>
<td>84</td>
</tr>
<tr>
<td>Too little content</td>
<td>11</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>No concerns related to content</td>
<td>68</td>
<td>10</td>
<td>78</td>
</tr>
<tr>
<td><strong>Pace</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pace too quick</td>
<td>84</td>
<td>29</td>
<td>113</td>
</tr>
<tr>
<td>Pace too slow</td>
<td>1</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>No concerns related to pace</td>
<td>58</td>
<td>8</td>
<td>66</td>
</tr>
<tr>
<td><strong>Sequence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor sequence</td>
<td>56</td>
<td>26</td>
<td>82</td>
</tr>
<tr>
<td>No concerns related to sequence</td>
<td>87</td>
<td>14</td>
<td>101</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not flexible</td>
<td>58</td>
<td>29</td>
<td>87</td>
</tr>
<tr>
<td>Too flexible</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>No concerns related to flexibility</td>
<td>81</td>
<td>9</td>
<td>90</td>
</tr>
</tbody>
</table>

**Qualitative Identification of Concerns:** Participants were asked to explain their responses to the possible concerns related to content, pace, sequence, and flexibility and
were asked to provide additional concerns not included in the checklist. Of the 187 participants, 121 explained their concerns and 46 provided additional comments related to concerns. Based on the open coding and axial coding of the responses completed by the researcher and then independently by research assistants, common themes emerged regarding too much content, pacing issues, alignment with content standards, state and district assessment policies, depth of coverage, special education students, lack of compliance, and autonomy/freedom.

Content: Thirteen current pacing guide users and three non-pacing guide users identified that there is too much content required to be covered by district and/or state standards. A teacher who is currently using pacing guides cited concerns that there is no time for re-teaching concepts that students struggle with. Another reiterated this idea stating that pacing guides assume students “get it” on the first time, and an additional concern of note was that teachers felt they had to move on even if they had not finished teaching the content. Pacing guides were also cited as being too broad and general in content- “depth is better than breadth”, with limited recommendations on how to address various learning levels of students. On the other side of the spectrum, one comment was made that necessary curriculum content was reflected in the pacing guide and a different participant specifically cited that they are not concerned about content:

I think that pacing guides make sure that all courses cover the same content at approximately the same pace. In a large district- where many different teachers teach the same course - it helps ensure that all students are learning the same material regardless of teacher or building (Pacing Guide User).
Most content related comments made by current pacing guide users, however, expressed concerns that there was too much content, with 23 discrete mentions of “covering” content.

For non-pacing guide users four of the 46 pacing guide users who provided responses, specifically used the word “cover,” with references to covering material a mile wide and an inch deep. Four non-pacing guide users specifically cited concerns about lack of depth for student learning, with one participant who does not currently use pacing guides commenting that there is a tendency to want to cover too much content and this becomes more important than student learning, while another participant identified balancing of topics where too much time is spent on some topics and not enough time on other topics. Amongst the comments made was that there are multiple ways to teach the same content: teaching thematically versus chronologically, teaching with texts by which the teacher can best engage students, and teaching in a manner that holds students accountable for retaining content they are taught. One teacher commented on the need for vertical alignment of curriculum from middle school through high school and another commented that pacing guides are poorly written and difficult to understand.

**Pacing:** Both pacing guide users and non-pacing guide users described that pacing influenced their concerns. Ten pacing guide users confirmed that the pace was too quick for their students, while three non-pacing guide users cited that they currently work at a pace suitable for students without pacing guides. One teacher who is currently using pacing guides cited the absurdity of mandated tight timelines that confuse the pace of teaching with the pace of true student learning. Other references were made about the expectation to fly through material, insufficient time allotments that do not allow for re-
teaching of material, arbitrarily and randomly prepared pace, unrealistic expectations that students at different schools of different types of populations should be held to the same pace, and impossible calendar expectations where the number of weeks allocated in the pacing guide exceed the school calendar year. One teacher referred to prior experience with pacing guides that teachers called “racing guides” that were provided by the school, but no one was expected to follow. Pacing guides with built in days to accommodate student learning were identified as a positive and some teachers had no trouble with pacing, but were concerned that the pace used by other teachers was too slow. A non-pacing guide user claimed student need would drive classroom pace and that this pace would change from year to year depending on the students.

*Content Standards and Assessment Policies:* Ten teachers using pacing guides and two teachers not using pacing guides specifically mentioned content standards in relation to concerns. These concerns related to too much content to cover, the need for revisions to address new standards, and vertical alignment of standards. 21 pacing guide users and five non-pacing guide users expressed concerns addressing state and district testing and assessment policies, with many expressing concern that current pacing guides do not address new state policies in testing and changes need to be made to existing pacing guides. Student Learning Objectives (SLO), Performance Based Assessments (PBA), End of Course (EOC) exams, and Partnership for Assessment of Readiness for College and Careers (PARCC), are recently adopted secondary assessment programs adopted by the state of Ohio and were referenced as a point of concern by seven participants in terms of pacing guide order and need for revisions:

The pacing guide no longer reflects the reality of the PARRC testing.
Because we are on blocks- my students are taking their PARCC PBAs and EOY for English and Math right now. Based on these tests- which I have never seen before- I can honestly say that the pacing guide needs serious editing and revision (Pacing Guide User).

School-based formative and summative assessment cycles were also mentioned. The term “test-centric” was used by a non-pacing guide user concerned that a pacing guide would shift the focus toward testing and away from student learning.

Special Education Considerations: Nine pacing guide users and two non-pacing guide users cited concerns that pacing guides overlook the needs of special education students, both self-contained and inclusion. One non-pacing guide user noted the following:

As a special education teacher- I can control how fast the content is delivered if I am in the resource room. The problem is with mainstreaming. Special education students need extra time to process and regular education teachers do not always understand this aspect (Non-pacing Guide User).

While two teachers mentioned differentiation, these were in reference to lack of provisions and resources to properly differentiate. Fast pace and lack of flexibility were the main points of concern for working with special needs students.

Compliance: One pacing guide user and one non-pacing guide user referenced pacing guides as directives and another pacing guide user referred to pacing guides as a district mandate. Six pacing guide users were concerned about following pacing guides, while 4 separate references were made to the lack of consequences for teachers who do
not use pacing guides. One pacing guide user commented that:

Any concerns I may have are tempered by the fact that there is no real oversight of the pacing guides. Our quarterly short cycle assessments (common assessment) are roughly aligned to this map— but these scores are not used once recorded (Pacing Guide User).

**Autonomy/Freedom:** Nine pacing guide users cited the need for flexibility to address student needs in using pacing guides. Loss of creativity, loss of freedom to address student learning needs, and inability to include projects not on pacing guides were provided in these descriptions. Two participants identified that working with colleagues on curriculum-based teams to ensure that teachers have the flexibility to meet student needs was beneficial. Teachers who work on such teams stressed that their concerns were alleviated by these interactions, with the experience described as follows:

The pacing guide that I use has been developed by myself and my TBT team of Biology teachers. We often revise the pacing guide because there are so many interruptions in the regular schedule (assemblies—snow days—teacher illness). We have a sequence of units that we follow. Then we create a rough pacing guide at the beginning of each quarter. We then revise on a bi-weekly basis (Pacing Guide User).

**Quantitative Identification of Benefits:** Participants were provided with a checklist of possible benefits for non-pacing guide users and benefits for current pacing guide users of working with pacing guides related to collaboration, consistency, and new teachers. 72% of teachers surveyed identified that collaboration with other teachers in relation to using pacing guides is very important, 19% somewhat important, 3%
somewhat unimportant, 1% not important at all, and 2% had no opinion. 58% of teachers surveyed identified that use of pacing guides to provide consistency between teachers of the same course is very important, 33% somewhat important, 3% somewhat unimportant, 2% not important at all, and 0.5% had no opinion. 58% of teachers surveyed identified that use of pacing guides to provide new teachers with specific guidelines is very important, 33% somewhat important, 4% somewhat unimportant, 0.5% not important at all, and 0.5% had no opinion. Further summary of benefits based on pacing guide users, non-pacing guide users, and total for all participants can be found in Table 2.
Table 2

*Teacher Benefits Related to Using Pacing Guides*

<table>
<thead>
<tr>
<th></th>
<th>Pacing Guide Users</th>
<th>Non-Pacing Guide Users</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboration Benefits</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Important</td>
<td>105</td>
<td>29</td>
<td>134</td>
</tr>
<tr>
<td>Somewhat Important</td>
<td>25</td>
<td>11</td>
<td>36</td>
</tr>
<tr>
<td>Somewhat Unimportant</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Not Important at All</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>No Opinion</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Consistency</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Very Important</td>
<td>83</td>
<td>25</td>
<td>108</td>
</tr>
<tr>
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<td>50</td>
<td>12</td>
<td>62</td>
</tr>
<tr>
<td>Somewhat Unimportant</td>
<td>3</td>
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<td>6</td>
</tr>
<tr>
<td>Not Important at All</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>No Opinion</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Specific Guidelines for New Users</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Very Important</td>
<td>83</td>
<td>26</td>
<td>109</td>
</tr>
<tr>
<td>Somewhat Important</td>
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<tr>
<td>Not Important at All</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>No Opinion</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Qualitative Identification of Benefits: Participants were asked to explain their responses to benefits in relation to collaboration, consistency, and new teachers. 81 of the 187 participants explained their concerns and 46 participants provided additional comments related to benefits. Common themes in the responses included further explanation of benefits of and for collaboration, consistency, and new teachers, as well as the role of pacing guides in focusing on addressing content.

Collaboration: 14 pacing guide users and six non-pacing guide users described the importance pacing guides lend to collaboration for teacher teams. One pacing guide user described that “collaboration is critical for change to occur and for discussion to take place. Otherwise- implementation is random and arbitrary.” Benefits of collaboration were related to the creation of interdisciplinary units, mentoring new teachers, providing consistency and fairness, and providing students with the best possible teaching. Two pacing guide users referred to teacher-based-teams with one saying:

My teaching teams are comprised of teachers who know and respect each other- even though we all have very different levels and types of training. We are committed to making sure that our students can achieve understanding as defined by the standards (Pacing Guide User).

The above benefits were further clarified by another pacing guide user as follows:

I think it is critical that teachers of the same subject stay on pace with each other. This helps with the implementation of common formative and summative assessments. Teachers can then compare data and discuss possible interventions for struggling students during their meetings. Teachers can also discuss ways to challenge students who are gifted
One pacing guide user found that collaboration is frustrating when members of the team follow the pacing guide no matter what, without allowing for students to master skills and another referred to not needing constant paperwork as evidence of collaboration. One non-pacing guide user cited that teachers can have collaboration and consistency without using pacing guides, while another supported this by referring to collaboration in terms of vertical alignment, where collaboration between teachers can help one teacher prepare students for the next level. Collaboration was also cited as a form of ensuring teacher buy-in for implementing pacing guides.

*Consistency.* The term “consistent” was used by 12 pacing guide users, and the term “same” was used by 19 pacing guide users in providing students with the same experience. One specifically referred to the “triplet effect,” mentioned by one of the administrator participants, and the benefits for transfer students within the same building or district were referred to three times. The necessity of consistency in preparing students for common formative, summative, and state assessments were also mentioned. One non-pacing guide user did not think maintaining consistency was necessary and not being required to follow pacing guides could allow for more creativity.

*Support for New Teachers.* 14 current pacing guide users and four non-pacing guide users identified the importance of pacing guide for new teachers. Identification and accountability of and to standards, instructional guidelines and framework, and providing new teachers the opportunity to be their best were all cited as benefits of providing new teachers with pacing guides. The guidelines provided by pacing guides were described by one teacher as a way to prevent new teachers from “shooting arrows in the dark.” One
current pacing guide user provided the following explanation:

As a young teacher it is very helpful using a pacing guide because it gives you a general idea how long it should take you to complete a unit. It allows a good skeleton structure to stay on pace to ensure you teach everything that you need to (New Teacher).

This is in contrast to the experience of a non-pacing guide user who described the following:

I also think it is important that new teachers are given a guide. I was not given a guide and it was ‘sink or swim’ this leaves much room for error. It also makes young teachers ‘burn out’ quickly and we need as many good teachers as we can get (Former New Teacher).

Another non-pacing guide user referenced that often new teachers are provided with a textbook and standards and are left to “figure it out through trial and error.”

Not all participants favored providing teachers with pacing guides. One pacing guide user was concerned that new teachers should be “unleashed and given freedom to make mistakes” to develop teaching skills and another compared providing new teachers with pacing guides to telling a robot what to do. Two other pacing guide users stressed that new teachers need guidelines, but should not feel overwhelmed to follow pacing guides.

**Addressing Content:** Participants were asked to provide additional benefits of using pacing guides. 13 current pacing guide users and one non-pacing guide user added that pacing guides provide a valuable tool for organizing and planning content. Ensuring all content and standards are taught, staying focused throughout the school year, and
staying on track were themes found amongst these comments. The non-pacing guide user described the following:

I feel pacing guides would be beneficial from the standpoint of making certain all teachers have a black and white plan from the beginning of the year. It's too easy to spend more time on some subjects when not necessary. There is also a tendency to keep adding activities or lessons and not get rid of things that aren't effective. In my opinion- pacing guides and the annual review of them would encourage teachers to be reflective (Non-Pacing Guide User).

A pacing guide user provided the following details regarding pacing guide use:

If working outside of a team or pacing guide- I'd be tempted to spend too many class sessions going into depth on topics- meaning that students would not be prepared for their standardized assessments. Also- if I didn't follow the pacing guides- then my students would not be able to study with friends or siblings enrolled in other teachers' course sections. Finally- utilizing a common pacing guide and many shared materials prevents the unpleasant effect of having students feeling that others are receiving either a stronger or weaker--or more difficulty graded--course than themselves (Pacing Guide User).

Much like the response above that refers to focus provided by following pacing guides, preparation for standardized assessments, and focus on student needs, many of the responses for both concerns and benefits were coded for multiple themes, such as flexibility and new teacher benefits.
Evaluation for Normality and Nonparametric Methods

Initial investigation of dependent variables for questions three and four yielded concerns—first for low sample size and second for lack of normality. All pacing guide user dependent variables yielded $p < 0.001$ and all non-pacing guide user dependent variables yielded $p < 0.01$ for the Shapiro Wilk test for normality. Sample size, skewness and kurtosis values are reported in Table 3. In light of low sample size and lack of normality, bivariate Spearman’s rank order correlation was used to relate the population factors building factors and teacher factors with each of the dependent variables.

Table 3

*Evaluation for Normality of Dependent Variables*

<table>
<thead>
<tr>
<th></th>
<th>Pacing Guide Users</th>
<th>Non-Pacing Guide Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com. with students being ed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w. pacing guides</td>
<td>-.963</td>
<td>-.348</td>
</tr>
<tr>
<td>Skewness</td>
<td>.224</td>
<td>-.508</td>
</tr>
<tr>
<td>Kurtosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Com. Level Using PG</td>
<td>-1.261</td>
<td>-.286</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.503</td>
<td>-.836</td>
</tr>
<tr>
<td>Kurtosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Attitude Toward PG</td>
<td>-.466</td>
<td>.101</td>
</tr>
<tr>
<td>Skewness</td>
<td>-.760</td>
<td>-.405</td>
</tr>
<tr>
<td>Kurtosis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Research Question 3: How comfortable are teachers in using pacing guides and what influences teacher comfort level with using pacing guides?

Teacher participants were asked to provide input on their comfort level with the idea of students being educated with pacing guides and their personal comfort level using pacing guides. They were then asked to explain the influences on their comfort level.

Quantitative Interpretation of Research Question Three. Most participants reported very comfortable to somewhat comfortable levels of comfort for both student and teacher considerations. In comparing pacing guide users to non-pacing guide users, pacing guide users expressed higher overall comfort levels. The number of responses for each comfort level are provided in Table 4.
Table 4

*Teacher Comfort Level with Pacing Guides*

<table>
<thead>
<tr>
<th>Comfort Level with Students being Educated with Pacing Guides</th>
<th>Pacing Guide Users</th>
<th>Non-Pacing Guide Users</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Comfortable</td>
<td>63</td>
<td>11</td>
<td>74</td>
</tr>
<tr>
<td>Somewhat Comfortable</td>
<td>41</td>
<td>10</td>
<td>51</td>
</tr>
<tr>
<td>Neutral</td>
<td>24</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Somewhat Uncomfortable</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Very Uncomfortable</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comfort Level with Using Pacing Guides</th>
<th>Pacing Guide Users</th>
<th>Non-Pacing Guide Users</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Comfortable</td>
<td>70</td>
<td>8</td>
<td>78</td>
</tr>
<tr>
<td>Somewhat Comfortable</td>
<td>49</td>
<td>13</td>
<td>62</td>
</tr>
<tr>
<td>Neutral</td>
<td>16</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Somewhat Uncomfortable</td>
<td>15</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Very Uncomfortable</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Students being educated with pacing guides. Spearman rank order correlation was used to relate teacher comfort level with students being educated with pacing guides. Based on the following significant correlations for teacher comfort level with students being educated with pacing guides, the null hypotheses were rejected for the indicated population, building level, and teacher variables: There was a weak, significant positive correlation for the population factors of demographic (r = -0.231, N = 137, p = 0.007, two-tailed) and number of high schools (r = -0.194, N = 138, p = 0.023, two-tailed) for pacing guide users with teacher comfort level with students being educated with pacing guides. In other words, teachers in more urban-like settings, in districts with more than one high school are less likely to be comfortable with students being educated with pacing guides. Building level factors of collaborative level of pacing guide development (r = 0.212, N = 139, p = 0.012, two-tailed), frequency of pacing guide revisions (r = 0.362, N = 115, p < 0.0001, two-tailed), and teacher input (r = 0.326, N = 136, p < 0.0001, two tailed) yielded weak to moderate statistically significant positive correlations as well. This indicates that when pacing guides are developed collaboratively, revised frequently, and teachers are provided input, teachers are more likely to be comfortable with students being educated with pacing guides. Teacher factors of confidence in content area (r = 0.196, N = 138, p = 0.021, two tailed) and years using pacing guides (r = 0.264, N = 128, p = 0.003, two tailed) also showed a weak positive correlation with pacing guide user comfort level with students being educated with pacing guides. Thus teacher comfort level educating students with pacing guides is weakly associated with high levels of teacher confidence in content area and longer number of years working with pacing guides. For non-pacing guide users, the only significant correlation was a
moderate negative correlation for teacher comfort level with students being educated with pacing guides with total years teaching \( (r = -0.319, N = 39, p = 0.048, \text{two tailed}) \), which indicates that teachers with higher years of teaching experience are less likely to be comfortable with students being educated with pacing guides. For all other areas, the null hypotheses were accepted and Tables 5, 6a, 6b, 7a, and 7b provides results for all correlations.

Teacher comfort level using pacing guides. For pacing guide users, no population factors were significantly correlated with teacher comfort level teaching students with pacing guides. Based on the following significant correlations for teacher comfort level teaching students with pacing guides, the null hypotheses was rejected for the indicated building level and teacher variables: Building level factors of number of school professional development initiatives \( (r = 0.168, N = 139, p = 0.048, \text{two tailed}) \), collaborative level of pacing guide development \( (r = 0.204, N = 139, p = 0.016, \text{two tailed}) \), frequency of pacing guide revisions \( (r = 0.367, N = 115, p < 0.0001, \text{two tailed}) \), and teacher input for pacing guide revisions \( (r = 0.286, N = 136, p = 0.001, \text{two tailed}) \) yielded weak to moderate significant positive correlations. This indicates that increased levels of school professional development, higher collaborative development level of pacing guides, higher frequency of pacing guide revisions, and increased levels of teacher input are associated with higher teacher comfort level teaching students with the use of pacing guides. The teacher factor of years using pacing guides also yielded a weak positive correlation with teacher comfort level using pacing guides \( (r = 0.224, N = 128, p = 0.011, \text{two tailed}) \), which indicates that the more years teacher have used pacing guides, the higher the comfort level attained. There were no statistically significant correlations
for non-pacing guide users with teacher comfort level teaching with pacing guides and the null hypotheses was accepted for all population, building and teacher variables. Bivariate Spearman’s correlation coefficients, significance, and sample size for each area of comfort level in relation to each independent variable are reported in Tables 5, 6a, 6b, 7a, and 7b.
Table 5

*Bivariate Spearman’s Correlation Data for Population Factors*

<table>
<thead>
<tr>
<th></th>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Overall teacher attitude toward pacing guides</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pacing Guide Users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographic</td>
<td>Coefficient: -.231**</td>
<td>-.112</td>
<td>-.195*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .007</td>
<td>.191</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>N: 137</td>
<td>137</td>
<td>134</td>
</tr>
<tr>
<td>Enrollment</td>
<td>Coefficient: -.044</td>
<td>-.070</td>
<td>-.073</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .610</td>
<td>.417</td>
<td>.405</td>
</tr>
<tr>
<td></td>
<td>N: 137</td>
<td>137</td>
<td>134</td>
</tr>
<tr>
<td>Single or multiple high schools</td>
<td>Coefficient: -.194*</td>
<td>-.140</td>
<td>-.263**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .023</td>
<td>.100</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>N: 138</td>
<td>138</td>
<td>135</td>
</tr>
<tr>
<td><strong>Non-Pacing Guide Users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographic</td>
<td>Coefficient: -.054</td>
<td>-.253</td>
<td>-.164</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .742</td>
<td>.126</td>
<td>.312</td>
</tr>
<tr>
<td></td>
<td>N: 39</td>
<td>38</td>
<td>40</td>
</tr>
<tr>
<td>Enrollment</td>
<td>Coefficient: .139</td>
<td>.063</td>
<td>.059</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .399</td>
<td>.705</td>
<td>.714</td>
</tr>
<tr>
<td></td>
<td>N: 39</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Single or multiple high schools</td>
<td>Coefficient: .010</td>
<td>-.060</td>
<td>-.014</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed): .951</td>
<td>.717</td>
<td>.931</td>
</tr>
<tr>
<td></td>
<td>N: 39</td>
<td>39</td>
<td>41</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).*
### Table 6a

**Bivariate Spearman’s Correlation Data for Building Level Factors**

<table>
<thead>
<tr>
<th>Pacing Guide Users</th>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Overall teacher attitude toward pacing guides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Professional development initiatives</td>
<td>.161</td>
<td>.059</td>
<td>.168*</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>139</td>
<td>139</td>
</tr>
<tr>
<td>Pacing guide/curriculum monitoring</td>
<td>-.010</td>
<td>.904</td>
<td>.017</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>139</td>
<td>139</td>
</tr>
<tr>
<td>Collaborative level of development</td>
<td>.212*</td>
<td>.012</td>
<td>.204*</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>139</td>
<td>139</td>
</tr>
<tr>
<td>District adoption level of pacing guides</td>
<td>-.077</td>
<td>.372</td>
<td>-.007</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>138</td>
<td>138</td>
</tr>
<tr>
<td>Arrangement of pace of pacing guide</td>
<td>.082</td>
<td>.358</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>126</td>
<td>126</td>
</tr>
<tr>
<td>Frequency of pacing guide revisions</td>
<td>.362**</td>
<td>.000</td>
<td>.367**</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Teacher input for pacing guide revisions</td>
<td>.326**</td>
<td>.000</td>
<td>.286**</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>136</td>
<td>136</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Table 6b

**Bivariate Spearman’s Correlation Data for Building Level Factors**

<table>
<thead>
<tr>
<th>Non-pacing guide users</th>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Overall teacher attitude toward pacing guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional development initiatives</td>
<td>Coefficient .203</td>
<td>.176</td>
<td>.169</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.215</td>
<td>.283</td>
<td>.291</td>
</tr>
<tr>
<td>N</td>
<td>39</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Pacing guide/curriculum monitoring</td>
<td>Coefficient -.006</td>
<td>.023</td>
<td>-.015</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.970</td>
<td>.888</td>
<td>.927</td>
</tr>
<tr>
<td>N</td>
<td>39</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Teacher level of pacing guide use</td>
<td>Coefficient -.047</td>
<td>-.146</td>
<td>-.115</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.775</td>
<td>.376</td>
<td>.473</td>
</tr>
<tr>
<td>N</td>
<td>39</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>District adoption level of pacing guides</td>
<td>Coefficient .015</td>
<td>-.129</td>
<td>-.057</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.930</td>
<td>.442</td>
<td>.728</td>
</tr>
<tr>
<td>N</td>
<td>38</td>
<td>38</td>
<td>40</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

* Correlation is significant at the 0.05 level (2-tailed).
Table 7a

*Bivariate Spearman’s Correlation Data for Teacher Factors*

<table>
<thead>
<tr>
<th>Pacing Guide Users</th>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Overall teacher attitude toward pacing guides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Years teaching</td>
<td>.085</td>
<td>.320</td>
<td>.035</td>
</tr>
<tr>
<td></td>
<td>138</td>
<td>138</td>
<td>135</td>
</tr>
<tr>
<td>Level of education</td>
<td>.051</td>
<td>.559</td>
<td>.058</td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>135</td>
<td>132</td>
</tr>
<tr>
<td>Level of courses taught</td>
<td>.018</td>
<td>.830</td>
<td>-.066</td>
</tr>
<tr>
<td></td>
<td>139</td>
<td>139</td>
<td>136</td>
</tr>
<tr>
<td>Confidence in content area</td>
<td>.196*</td>
<td>.021</td>
<td>.113</td>
</tr>
<tr>
<td></td>
<td>138</td>
<td>138</td>
<td>135</td>
</tr>
<tr>
<td>Years using pacing guides</td>
<td>.264**</td>
<td>.003</td>
<td>.224*</td>
</tr>
<tr>
<td></td>
<td>128</td>
<td>128</td>
<td>125</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).**
Table 7b

*Bivariate Spearman’s Correlation Data for Teacher Factors*

<table>
<thead>
<tr>
<th>Non-pacing guide users</th>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Overall teacher attitude toward pacing guides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Years teaching</td>
<td>-.319*</td>
<td>.048</td>
<td>-.311</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>39</td>
<td>N</td>
</tr>
<tr>
<td>Level of education</td>
<td>Coefficient</td>
<td>-.150</td>
<td>-.188</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.370</td>
<td>.260</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>38</td>
<td>N</td>
</tr>
<tr>
<td>Level of courses taught</td>
<td>Coefficient</td>
<td>-.255</td>
<td>-.169</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.118</td>
<td>.303</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>39</td>
<td>N</td>
</tr>
<tr>
<td>Confidence in content area</td>
<td>Coefficient</td>
<td>-.306</td>
<td>-.286</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.059</td>
<td>.077</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>39</td>
<td>N</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).
Insufficient cell size for Chi square and low sample size inhibits a determination for relating teacher subject area and level of teaching to either area of comfort level and the null hypotheses for comfort level and subject area cannot be properly evaluated using the data available. To accommodate teachers of multiple subject areas, a new category of multiple subjects was added and mean scores for each dependent variable were determined based on subject area and course level. Results are provided in Table 8 and Table 9.

Table 8

*Mean Scores in Relation to Subject Area*

<table>
<thead>
<tr>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Language Arts</th>
<th>Science</th>
<th>Math</th>
<th>Social Studies</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Guide Users</td>
<td>3.89</td>
<td>4.19</td>
<td>4.09</td>
<td>4.17</td>
<td>3.83</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>3.57</td>
<td>3.75</td>
<td>3.57</td>
<td>4.00</td>
<td>3.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Language Arts</th>
<th>Science</th>
<th>Math</th>
<th>Social Studies</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Guide Users</td>
<td>4.11</td>
<td>4.34</td>
<td>4.31</td>
<td>4.25</td>
<td>4.33</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>3.46</td>
<td>3.44</td>
<td>3.57</td>
<td>3.86</td>
<td>2.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall teacher attitude toward pacing guides</th>
<th>Language Arts</th>
<th>Science</th>
<th>Math</th>
<th>Social Studies</th>
<th>Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Guide Users</td>
<td>3.46</td>
<td>4.00</td>
<td>4.06</td>
<td>3.83</td>
<td>3.33</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>3.27</td>
<td>3.22</td>
<td>3.50</td>
<td>3.57</td>
<td>3.75</td>
</tr>
</tbody>
</table>
Amongst pacing guide users, science teachers indicated the highest mean comfort level with students being educated with pacing guides and comfort level teaching students using pacing guides and math teachers had the highest mean overall attitude toward pacing guides. For pacing guide users, teachers of multiple subject areas indicated lowest mean comfort levels with students being educated with pacing guides and overall attitude toward pacing guides and language arts teachers indicated the lowest mean comfort level with educating students with pacing guides. For non-pacing guide users, social studies teachers indicated the highest mean comfort level with students being educated with pacing guides and comfort level teaching students using pacing guides and teacher of multiple subjects had the highest mean overall attitude toward pacing guides. For non-pacing guide users, language arts teachers indicated lowest mean comfort levels with students being educated with pacing guides, teachers of multiple subjects indicated the lowest mean comfort level working with pacing guides, science teachers showed the lowest mean and overall attitude toward pacing guides.
Table 9

*Mean Scores in Relation to Course Level*

<table>
<thead>
<tr>
<th>Teacher comfort level with students being educated with pacing guides</th>
<th>Course Level</th>
<th>Course Level</th>
<th>Course Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Special Education</td>
<td>General Education</td>
<td>Advanced Placement/Honors</td>
</tr>
<tr>
<td>Pacing Guide Users</td>
<td>3.89</td>
<td>4.09</td>
<td>4.12</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>4.33</td>
<td>3.75</td>
<td>3.48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher comfort level teaching students with pacing guides</th>
<th>Course Level</th>
<th>Course Level</th>
<th>Course Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Guide Users</td>
<td>4.33</td>
<td>4.39</td>
<td>4.20</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>3.67</td>
<td>3.73</td>
<td>3.32</td>
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</table>

<table>
<thead>
<tr>
<th>Overall teacher attitude toward pacing guides</th>
<th>Course Level</th>
<th>Course Level</th>
<th>Course Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacing Guide Users</td>
<td>3.94</td>
<td>3.89</td>
<td>3.83</td>
</tr>
<tr>
<td>Non-pacing Guide Users</td>
<td>4.00</td>
<td>3.15</td>
<td>3.33</td>
</tr>
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</table>

Amongst pacing guide users, advanced placement/honors teachers indicated the highest mean comfort level with students being educated with pacing guides. General education teachers showed the highest mean comfort level teaching students using pacing guides, and special education teachers had the highest mean overall attitude toward pacing guides. For pacing guide users, teachers of special education students indicated lowest mean comfort levels with students being educated with pacing guides and advanced placement/honors teachers showed the lowest mean comfort level with...
educating students with pacing guides and overall attitude toward using pacing guides. For non-pacing guide users, special education teachers indicated the highest mean comfort level with students being educated with pacing guides and overall attitude toward pacing guides and general education teachers showed the highest mean comfort level teaching students using pacing guides. For non-pacing guide users, advanced placement/honors teachers showed the lowest mean comfort levels with students being educated with pacing guides and comfort level working with pacing guides, and general education teachers showed the lowest mean and overall attitude toward pacing guides. One weak, but noticeable trend is that for pacing guide users, mean comfort level educating students with pacing guides increases with increasing course level, while the reverse is true for non-pacing guide users.

**Qualitative Interpretation of Research Question Three.** For pacing guide users, 90 of 143 participants provided explanations, and for non-pacing guide users, 22 of 45 participants provided responses. In explaining what influences comfort level with pacing guide use, similar themes as what were mentioned in the concerns and benefits responses were cited by participants. However, the comments extended on these themes in relation to teaching students using pacing guides as well as what influences comfort level on an everyday basis.

*Addressing Content and Standards.* For content-based themes, 18 pacing guide users and four non-pacing guide users expressed appreciation that pacing guides ensured content was taught and/or concerns of rushing through content at the expense of student learning. For example, one pacing guide user liked the idea of using pacing guides to ensure all teachers within a subject area are on the same page, but also saw need for
revisions and more teacher input on the speed. Another, teacher also identified that they provide a tool for planning, but do not allow for additional time to spend on extra concepts. This is also mirrored in the following statement:

"It's not hard to follow a pacing guide and it helps in planning your lessons. I'm very uncomfortable with students being educated in a classroom that follows a pacing guide because there are times when review of material is needed in order for the students to be successful in the current lesson and those are days used that must be considered when under a strict pace. Our students come in already behind- so in math I must review or refresh their memory on many things in order to teach the material. Being held to a pacing guide- forces me to skip some lessons in order to stay at the district's pace." (Pacing Guide User).

One non-pacing guide user addressed that teacher professional judgment should be respected and teachers may need to re-teach content, especially if there are gaps in students’ prior knowledge from previous coursework. In addressing comfort level with pacing guides, a pacing guide user noted that “I would probably not fit in all the content I needed to cover for the year,” without using a pacing guide and another referred to the pacing guide as a simple template that ensures all content is taught.

**Quality of Pacing Guides.** 13 references were made to comfort levels increasing due to experienced teachers writing the pacing guide or using pacing guides that are written at a reasonable pace, especially if flexibility is built in to the pacing guide. One pacing guide user noted comfort with a pacing guide that “was created by a team of teachers who have experience teaching the subject in the classroom” and “sets a
reasonable pace and allows for some flexibility.” This is further explained in the following:

I trust my teaching team and administrative teams. All members of both teams are highly skilled and experienced- and all have the learning success and positive personal growth of the students as the center focus of planning. Our work together improves every lesson and assessment- and by following common time lines and using common assessments- we promote consistency for our students. We also save each other work time (Pacing Guide User)!

Another participant reported high comfort levels due to the “collaborative teacher- driven design” that was developed “at the initiative of TBT’s – not because we were ‘told we have to.’” While, another pacing guide user referred to the expertise of the pacing guide creator, where unrealistic or low expectations can make pacing guides frustrating to follow. Teachers who write their own individual pacing guides reported positive experiences such as:

I think I have had a positive experience since I make my own. I have heard horror stories from teachers at other schools where their pacing guides give them no wiggle room- are very strict- and are not always realistic when moving from paper to real life application in the classroom (Pacing Guide User).

Several teachers reported that they volunteered to be on the writing team and some appreciate that teachers who are not on the writing team may not appreciate the guidelines provided. Two non-pacing guide users expressed concerns as to how pacing
guide use would be enforced in the classroom and three expressed that their comfort level would be influenced by the quality of the pacing guides and two non-pacing guide users would appreciate pacing guides, given that flexibility in pace was provided.

**Research Question 4:** What is the overall attitude teachers hold toward using pacing guides and what influences teacher attitude toward using pacing guides?

Teacher participants were asked to provide their overall attitude toward pacing guides and were then asked to explain what influences their overall attitude.

**Quantitative Interpretation of Research Question Four.** Most participants reported very positive to somewhat positive attitudes toward pacing guides. In comparing pacing guide users to non-pacing guide users, pacing guide users expressed higher overall attitude. Response reports for each attitude level are provided in Table 10.

<table>
<thead>
<tr>
<th>Overall Attitude Toward Pacing Guides</th>
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<tr>
<td></td>
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<tr>
<td><strong>Pacing Guide Users</strong></td>
</tr>
<tr>
<td>Very Positive</td>
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<tr>
<td>Somewhat Positive</td>
</tr>
<tr>
<td>Neutral</td>
</tr>
<tr>
<td>Somewhat Negative</td>
</tr>
<tr>
<td>Very Negative</td>
</tr>
<tr>
<td><strong>Non-Pacing Guide Users</strong></td>
</tr>
<tr>
<td>Very Positive</td>
</tr>
<tr>
<td>Somewhat Positive</td>
</tr>
<tr>
<td>Neutral</td>
</tr>
<tr>
<td>Somewhat Negative</td>
</tr>
<tr>
<td>Very Negative</td>
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<tr>
<td><strong>Total</strong></td>
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**Teacher overall attitude toward pacing guide use.** Spearman rank order correlation was used to relate overall teacher attitude with the independent variables. Based on the following significant correlations teacher overall attitude toward pacing guides, the null hypotheses was rejected for the indicated population, building level, and teacher variables: There was a weak, but significant negative correlation for the population factors of demographic ($r = -0.195$, $N = 134$, $p = 0.024$, two tailed) and number of high schools ($r = -0.263$, $N = 135$, $p = 0.002$, two tailed) for pacing guide users with teacher attitude. This indicates that pacing guide users in more urban-like districts with multiple high schools have lower overall attitudes toward pacing guides. Building level factors of collaborative level of pacing guide development ($r = 0.329$, $N = 136$, $p < 0.0001$, two tailed), frequency of pacing guide revisions ($r = 0.314$, $N = 114$, $p = 0.001$, two tailed), and teacher input ($r = 0.261$, $N = 133$, $p = 0.002$, two tailed) yielded weak to moderate statistically significant positive correlations with attitude as well, which indicates that higher levels of collaborative pacing guide development, increased frequency of pacing guide revisions, and providing teachers with more input are more likely to have higher overall attitudes toward pacing guides. Teacher factors of confidence in content area ($r = 0.180$, $N = 135$, $p = 0.037$, two tailed) and years using pacing guides ($r = 0.181$, $N = 125$, $p = 0.044$, two tailed) showed weak positive correlations with pacing guide user attitude. Thus, teachers who expressed greater confidence in the content area and higher years of experience teaching with pacing guide were more likely to have a higher overall attitude toward pacing guides. For non-pacing guide users, the only significant correlation was a moderate negative correlations for teacher attitude and level of educational background ($r = -0.328$, $N = 40$, $p = 0.039$, two
tailed), which indicates that teachers with masters or doctorate degrees were more likely to have lower overall attitude toward pacing guides. The null hypotheses for teacher overall attitude was accepted in all other areas. Bivariate Spearman’s correlation coefficients, significance, and sample size for overall attitude in relation to each independent variable are reported in Tables 5, 6a, 6b, 7a, and 7b. Insufficient cell size for Chi square and low sample size inhibits a determination for relating teacher subject area and course level to overall attitude and the null hypothesis could not be accepted or rejected. Table 8 and Table 9 include the mean scores for relating teacher attitude to teacher subject area and course level. Although the mean scores were very close, math teacher had the highest mean scores for overall attitude and language arts teachers had the lowest mean scores for overall attitude. For non-pacing guide users, social studies teachers had the highest mean score for overall attitude and science teachers had the lowest mean score for overall attitude. For course level the mean scores were also very close, where special education teachers had the highest score for overall attitude, with advanced placement/honors teachers indicating the lowest overall attitude amongst pacing guide users. The difference in means for non-pacing guide users was large with special education teachers scoring highest and general education teacher scoring lowest for overall attitude toward pacing guides.

**Qualitative Interpretation of Research Question Four.** Participants were asked to describe what influences their attitude toward pacing guides. 64 of the 142 pacing guide users provided responses and 15 of 45 non-pacing guide users provided responses. Similar themes such as teacher content focus, flexibility, teacher input, and team collaboration as described in earlier research questions and participant responses
were repeated, but these responses focused on the teacher’s overall attitude.

Teacher Input. Eight individual pacing guide users identified that having a say and providing input influences their attitude toward pacing guides. One pacing guide user described the following:

It is important to me that teachers have a say in the process. I think that the teachers should be the ones to complete the pacing guide. Even more importantly- the teachers should have access to all the testing information for students- so the pacing guide can actually be effective and reflective of how students' skills and growth are measured (Pacing Guide User).

One non-pacing guide user also discussed adapting curriculum to student needs and claimed “I don’t want to be told what to teach and when to teach it” and that student needs should come first.

Implementation. Five pacing guide users identified that the implementation process influenced their attitude. One pacing guide user provided the following response:

They can be used well when they are used as a guide- created by intellectual teachers- and implemented with some degree of flexibility. When they are made by irrational administrators and forced to be implemented by the minute detail- they can be frustrating and squash what little autonomy we have (Pacing Guide User).

This sentiment is echoed by one non-pacing guide user: “Our district has made a helter-skelter attempt to create and implement pacing guides which has been frustrating and has largely felt like a waste of time. While the philosophy is sound- the implementation has been faulty.” Other teachers also referred to the implementation process in reference to
the degree of flexibility influencing their attitude. One even pointed out that when implemented properly, the resulting success displayed influences overall attitude and another pointed out that the ability to make changes as seen fit by the teachers were important factors.

**Participant Remarks.** For the final question of the survey, participants were asked if they would like to provide additional information about pacing guide use. 18 of 143 pacing guide users provided additional remarks and two of 45 non-pacing guide users provided additional remarks. For pacing-guide users, two provided an extensive description of benefits and pitfalls of using pacing guides, three elaborated on the need for flexibility, and one discussed special education concerns. For the non-pacing guide users, one identified that the philosophy of pacing guides is sound, but the implementation process if frustrating and the other comment provided that curriculum is more important. These comments will be embedded in the discussion for all research questions.
CHAPTER V
DISCUSSION

Survey Response Rate: Although principals were contacted by email at least three times to request site approval, the researcher received approval to contact teachers in only 42 high schools. Seven principals responded that they did not wish to participate and 693 principals never provided a response. While most of the principals did not provide reasons for non-approval, other principals were concerned that survey participation would interfere with other high school teacher activities such as professional development, Student Learning Objectives (SLO’s), and the Ohio Teacher Evaluation System (OTES). Also, some principals did not see the value of teacher participants who were not working with pacing guides, even with further clarification of the need for non-pacing guide users.

The researcher attempted different methods of contacting principals. The text and subject line of each email request varied to prevent principals from discarding the email as spam and also to further clarify the nature of the site approval request. Although the
requirements for site approval were delineated in the email request, several of the principals did not understand the need for a signed letter on district letterhead and the researcher requested the additional paperwork needed for approval. Two principals provided site approval by email, but did not provide the signed letter on school letterhead necessitated by the Cleveland State University Institutional Review Board and did not respond to researcher request for further documentation. While the large number of high school principals contacted was prohibitive toward phone contact with each principal, the researcher did attempt to call multiple principals local to the researcher with zero of the principals providing a return phone call. Five principals from larger districts did respond to the email based request and required the researcher to submit a separate school board required detailed research application to the school district, similar to the Institutional Review Board process at the university level. At the time of writing this dissertation, four of the five districts provided limited or full site approval to contact high school teachers in the district and one of the five districts had not provided a response.

Teacher participation in the online survey also varied. Factors that influenced response rate included the number of requests sent from the researcher and whether or not the researcher or the principal sent the request. Zero responses were provided from the high school where the principal refused to provide an email list to the researcher. One large district requested that the researcher send only one request to teachers and another district provided approval on the condition that only three requests be sent and only within a three week time period and by a certain deadline that would not interfere with another project taking place within the district. Since requests for participation were sent over the course of several months, the researcher was able to monitor response rates after
each round of requests, with multiple responses typically provided within the first day or two after the request and dwindling response rates in the next few days. The researcher was able to identify three districts where the survey website was blocked by the district internet filter. The identification of this issue was made based on email responses from participants and also low response rates after participation requests were sent. The researcher followed-up on internet filter issues by contacting district administration to remove the survey site from the district internet filter. In two of the cases, the website was unblocked for participant use. However, the failure of the first request, may have lead possible participants to not trust the website or the researcher. In the other case, the researcher was unsuccessful in correcting the issue and sent another email request to teachers detailing the issue for teachers and asking teachers to use non-school computers to complete the survey.

Discussion of Research Question One

The goal for research question one was to identify how widespread the use of pacing guides is in the core subject areas in public secondary schools in Ohio, based on teacher self-report. While low sample size prevents drawing conclusive results somewhat hinders extrapolation of pacing guide use to the state of Ohio, there is an apparent relationship between demographics and school enrollment and the use of pacing guides, where teachers that teach in schools with larger student populations in more suburban and urban areas are more likely to be using pacing guides. For example, amongst pacing guide users, only 4.93% teach in a rural district and 28.87% teach in an urban district and for non-pacing guide users, 15.91% teach in rural districts and 20.45% teach in urban districts. Also, amongst pacing guide users only 21.28% teach in a high school with
enrollment under 800 students and 56.03% teach in a high school with over 1201 students and for non-pacing guide users, 37.78% teach in a high school with enrollment under 800 students and 35.56% teach in a high school with over 1201 students. Adoption of pacing guides within this sample of high schools may actually be higher than appears, since 12 of the teachers who claim they do not follow pacing guides are provided with pacing guides by their school district, but choose not to use them. Amongst these teachers, none work in a district classified as rural or suburban/rural, 6 work in districts large enough to support more than one high school, and only one works in a high school with enrollment less than 800 students. The researcher further investigated this relationship using correlation. Correlation of teachers working in high schools where pacing guides are provided yielded a weak significant positive correlation between pacing guides provided and enrollment ($r = 0.243$, $N = 185$, $p < 0.0005$, one-tailed) and a moderate significant positive correlation between pacing guides provided and school demographic ($r = 0.315$, $N = 184$, $p < 0.0005$, one-tailed).

Amongst the teachers who responded, science teachers were most likely to be using pacing guides (80.00%), followed by math teachers (78.43%), social studies (74.29%), and English language arts (64.00%). This only partially mirrors Kauffman’s (2005) survey of 295 teachers that reported higher prescription in math and language arts in comparison to science and social studies. This also does not echo the researchers own experiences where math and language arts curriculum mandates are more likely to be prioritized in response to Annual Yearly Progress goals set by the state report card system. It is worth noting that amongst the non-pacing guide users, six English language arts, six math, two social studies, and four science teachers are provided with pacing
guides, but do not use them.

111 of the 142 current pacing guide users and 34 of 45 non-users cited professional learning communities or work on a departmental team as an educational initiative in their school. This is in line with the expected adoption of pacing guides for teacher subject area teams cited in professional learning community research (DuFour, DuFour, Eaker, and Many, 2006; Eaker, DuFour, and DuFour, 2002; Rettig, McCullough, Santos, and Watson, 2003) and is also similar to the researcher’s own experiences for undergoing training for team development.

Administrator Interview: Although a limited number of administrators were interviewed, reasons for pacing guide adoption within the high schools were different in small schools. For example the principal at a smaller high school cited the importance of pacing guides for continuity during teacher turnovers and alignment with state standards. While the principal from a larger district cited equity issues for students, common assessment schedules, and teacher-based-teams as rationales for pacing guides. The tone from all of the interviews was overwhelmingly positive in favor of the use of pacing guides, with principals citing pacing guides as a proactive measure to ensure that students have equal opportunities for learning. None of the administrators provided negative comments about the adoption and implementation process, which may suggest that these participants chose to participate in order to share their successful experiences with pacing guides. The use of pacing guides for standards alignment, as well as not discussing what to do with students who are unable to learn in a class structure dictated by pacing guides echoes the results of Reitzug, West, and Angel (2008), where 20 principals were part of an instructional leadership research study. There may also be bias in providing responses
due to the researcher disclosing her role as a teacher and department chair in the high
school setting, which could results in the administrators not wanting to openly discuss
issues related to working with pacing guides.

Discussion of Research Question Two

The goal for research question two was to provide an opportunity for teachers to
identify and explain concerns and benefits of working with pacing guides. Survey
questions were both qualitative and quantitative. Response rates to the qualitative
questions for concerns were higher than for qualitative questions for benefits. However,
benefits were explained in some of the qualitative responses for concerns and participants
may not have seen the need to repeat their explanations in the benefits section. It is also
possible that since the concerns section of the survey was placed before the benefits
section, participants may have experienced some survey fatigue by the time they reached
the benefits portion of the survey. If this project were to be repeated, the researcher will
consider randomly varying question order.

Concerns and Benefits: Questions for concerns were related to content, pace,
sequence, and flexibility and participants were asked to explain their concerns. The
quantitative questions for concerns were coded as checkboxes on the survey and teachers
were able to identify multiple concerns even if the concerns conflicted. For example a
teacher might work with one pacing guide where the pace was too quick, at the same time
working with a pacing guide where pace is not a concern or work with the same pacing
guide that is too slow in some areas, but moved too quickly in others. Also, non-pacing
guide users may not have had any experience with pacing guides and could have multiple
and possibly conflicting concerns. Two pacing guide users and one non-pacing guide user
cited concerns that pacing guides have both too much content and too little content. Five non-pacing guide users cited concerns that pacing guides would move too quickly and too slowly. All other participants provided only one response in each possible area of concern.

The survey questions related to benefits were not checkboxes. Instead, a Likert scale was used where teachers were asked to identify the importance of pacing guides in regards to collaboration, consistency between teachers of the same course, and providing specific guidelines. Participants were only able to select one level in each area, and most identified that collaboration, consistency, and specific guidelines for new teachers were very important in relation to pacing guides. Very few participants had no opinion, or cited that these possible benefits of working with pacing guides were unimportant.

In reviewing and analyzing the survey quantitative and qualitative responses for concerns and benefits, many of the aspects of pacing guides described as concerns by some teachers were addressed as benefits by other teachers. For example, while one teacher was concerned that pacing guides were too rigid, another teacher appreciated having clear-cut guidelines to follow in the classroom. The remainder of the discussion for research question two will elaborate on this dichotomy of viewpoints.

Group Differences: The sample size for non-pacing guide users was low in comparison to teachers currently using pacing guides. However, these participants were less likely to cite that they had no concerns about pacing guides than current pacing guide users. For example 48% of pacing guide users claimed they had no concerns about content, while 22% of non-pacing guide users surveyed had no concerns about content. Similar disparities were present for pace with 41% of pacing guide users versus 18% of
non-pacing guide users having no concerns about pace, sequence 61% versus 31%, and flexibility 57% versus 20%. These disparities could be explained by some of the positive factors expressed by current pacing guide users who cited rewarding experiences working with pacing guides in the explanations related to concerns. This is counter to the negative factors cited by non-pacing guide users based on former experiences with pacing guides, fear of how pacing guides might be implemented in their schools, as well as concerns about meeting student needs. Each of which relates to teacher buy-in to the process of pacing guide implementation and autonomy teachers are able to maintain throughout this process. This is similar to other research studies, such as the work of Turnbell (2002), where amongst other factors, teacher control over implementation of reforms in their classrooms and school-level support influenced the likelihood that teachers would buy-in to educational reforms initiated by their district. Dufour (2007), also delineates the role of appropriate leadership and teacher buy-in for initiating reform within a school.

**Content Standards and Assessment Policies.** As expected testing and assessment policies, as mentioned by Shipps (2006), Scot, Callahan, and Urquhart (2009), and Neher and Plourde (2012) were frequently cited as concerns with one teacher referring to a “test-centric” environment and teachers citing the need for revisions to pacing guides in light of changes in testing. It should be noted that this is the first school year for mandated Partnership for Assessment and Readiness for College and Careers (PARCC) tests in math and English language arts and American Institutes for Research (AIR) exams in science and social studies. All four of these assessments are given in two parts, performance based tests and end-of-course tests, across multiple courses, with the first set administered between mid-February and mid-March and the second set administered
between mid-April and Mid-May. This was also the last year for the Ohio Graduation Test (OGT) to be used as a graduation requirements with mid-March as the administration week and the 2014-2015 cohort of sophomores will be the last group who will need to pass the OGT to meet the testing portion of graduation requirements, with all future students being required to take the PARCC and AIR exams to fulfill graduation testing requirements, at the time of this research project. This testing cycle followed a brutal winter with many schools forced to schedule multiple calamity days during January, February, and March. Since most of the surveys were completed between October 2014 and March 2015, concerns related to teaching correct content, at an appropriate pace in time for these assessments were evident in the responses provided by participants.

While comments related to these exams were mostly negative in nature, pacing guides were cited as being a helpful resources to clarify content, meet testing deadlines—both district and state based, and stay focused on content standards, which echoes the purpose of pacing guides as discussed by Squires (2005) and Fisher, Grant, Frey, and Johnson (2007). The beneficial role pacing guides play in vertical alignment was also discussed by the teacher participants, where pacing guides can be used to identify curriculum gaps as well as hold students accountable for knowledge of the material they were taught in prior courses. This supports the research of Jenkins (2008) who cited the importance of teachers knowing prior content students have learned as well as how the content in their classrooms fits into the next course a student takes.

Addressing Student Needs: Certo, Cauley, Moxley, and Chafin (2008) found that students described a pacing guide lead classroom as “rushed”, less engaging, less focused
on depth of content, and more focused on memorization. These sentiments were found in many of the concerns explained by teachers, especially in regard to special education students, where teachers felt that not all students learn at the same pace and differentiated pacing guides as well as instructional strategies are required in the implementation process. This is also in line with Kaplan (2005), who claimed that pacing charts are only designed for the norm of students and Shreve (2011), who identified lack of time to include pre-writing activities or core literature due to pacing guide constraints. On the other end of the spectrum, pacing guides were viewed by participants as a way to provide equal education for students within the same school and district, especially if the student needs to change teachers. If the pacing guide provides a quality instructional plan for teachers to follow, all students of that course will benefit.

_New Teacher Benefits._ Many veteran teachers, such as the primary researcher for this project, started their teaching careers without being provided with a pacing guide. Since these teachers, as well as the researcher, are still in the classroom, the lack of a pacing guide did not deter them from teaching careers and many were “unleashed,” as one participant worded the process, and free to make mistakes in their first few years of teaching, hopefully to grow into effective classroom instructors. This same participant identified that the work done by teams are celebrated and new teachers are able to jump right in and join the team, but also questioned how much of the classroom materials shared within the team were originally created by new teachers. In the past, the unleashing process could actually be viewed as a benefit for the new teacher who was provided with a tremendous growth opportunity, as well as the school who benefited from the new ideas and creativity that a new teacher, usually just graduated from college,
could offer. While this was only one of two comments that specifically viewed pacing
guides as negative for new teachers, it does reflect on possible unintended consequences
of the paradigm shift from an individual approach to a team approach to teaching
students. This viewpoint also is in line with Winkler’s (2002) research that veteran
teachers viewed curricular alignment practices negatively, while newly hired teachers
viewed them favorably.

With the reality of high stakes tests, however, student achievement in the
classroom would be hindered and school and district report cards scores may decrease,
while new teachers “figure” things out “through trial and error.” What happens when the
new teacher is not successful and is not able to determine appropriate content, pace, or
instructional materials? Pacing guides were overwhelmingly viewed as important (91%) by
the participants for providing specific guidelines for new teachers and is in line with
the research of Kauffman (2005) who determined that two-thirds of the second-year
teachers did not report issues that their autonomy was challenged by high levels of
prescription. The main cautionary note supported by participant comments was that
pacing guides should act to provide a guideline for new teachers and that mandates to
follow pacing guides should not become a source of stress for new teachers.

Collaboration and Autonomy. Lack of freedom, depth, flexibility, and creativity
were all expressed as concerns in relation to teacher autonomy to address student needs
when mandated to follow pacing guides. These concerns about loss of teacher autonomy
under curriculum mandates are similar to those reported by Avila, Zacher, Griffo, and
Pearson (2011), Scot, Callahan, and Urquhart (2009), and Kaplan (2005). While,
Archibald and Porter (1994) reported that math and science teachers reported high
degrees of autonomy in the classroom even under high curriculum controls, it is possible that the zone of teacher discretion has indeed shrunk as testing requirements and standards-based teaching have taken over many education policies.

The concerns of loss of teacher autonomy reported by participants were tempered by reports of team autonomy, where teachers worked as a team to modify pace, content, and instruction. For example, one pacing guide user provided the following comment: “I am delighted to say that all of my current colleagues are fully engaged in collaborative efforts to improve the quality of education that we provide our students.” Another provided the following experience:

I was hired onto this staff specifically because of my experience at another school where teachers planned mutually and held each other accountable for this planning and to meeting standards. When I first joined the staff-collaboration in some of the teams was NOT truly collaborative. Teachers met to tell the others what they'd be doing without any sense of responsibility for modifying their own plans. Several of the most resistant teachers retired- then true collaboration began. Every year- our collaborations have increased in quality- such that now the planning improves all of our teaching and lessons all of our loads. Because we are committed to sticking with the pacing guides and common assessments/lab reports- we even reduce the grading load by having particular staff grade the same sections of assessments or reports for all the teachers in the group. Our student standardized test scores have improved as the result of our true collaboration (Pacing Guide User).
While this project was not intended to document popular educational initiatives such as professional learning communities, it does strongly align, as expected with current trends toward team-based models for teachers (DuFour, DuFour, Eaker, & Many, 2006; Eaker, DuFour, & DuFour, 2002; Rettig, McCullough, Santos, & Watson, 2003). If these teams do feel that they have autonomy and are able to edit and revise their pacing guides as they see fit, this would match the link between curriculum autonomy, professionalism, and empowerment cited by Pearson and Moomaw (2005). However, instead of personal autonomy of one individual, a group of teachers act as an autonomous team.

**Discussion of Research Question Three**

The goal for research question three was to determine teacher comfort level with students being educated with pacing guides and teacher comfort level utilizing pacing guides. Survey questions were both quantitative and qualitative, with one Likert-style question for each area of comfort and one open-ended response to explain the score provided. Most pacing guide users reported neutral to high levels of comfort in both areas, which gave a left-skewed curve for both areas of comfort with pacing guides. The non-pacing guide user results were not as highly skewed as the pacing guide users, but were also skewed to the left as well. Reasoning for the left-skewed responses will be addressed in the bias section. The discussion for this research question will relate how the qualitative responses compare to the Spearman’s correlation determination for each independent variable.

*Population Factors.* For pacing guide users, there was a weak but statistically significant negative correlation between school demographic and teacher comfort level with students being educated with pacing guides ($r_s = -0.231$, $N = 137$, $p = 0.007$) and
number of high schools and teacher comfort level with students being educated with pacing guides ($r_s = -0.194, N = 138, p = 0.023$). For pacing guide users, this may suggest that teachers in more urban-like school districts are less comfortable with students being educated with pacing guides. This concept is supported in the qualitative responses as well. One pacing guide user in an urban district who expressed very low comfort levels with pacing guides referred to as the “law of the land” that teachers have no choice on whether to use or not use. Another pacing guide user, who identified as being somewhat uncomfortable with students being educated with pacing guides, in an urban district claimed “the more restrictive they are promotes only limited low level education at the knowledge and application level.” This is in contrast to a pacing guide users who expressed high comfort levels with students being educated with pacing guides – one from a suburban district who claimed “the pacing guides are designed to cover the material yet allow for educational freedom” and one from a rural district who stated “students should expect to come out of the class with an education similar to those students in other districts” and “the pacing guide addresses this.”

There was no significant correlation between enrollment and teacher comfort level with students being educated with pacing guides ($r_s = -0.044, N = 137, p = 0.610$) for pacing guide users. While it was somewhat expected that comparisons for demographic would be similar to results for enrollment, the data collected for both figures were subject to the participants opinion. Some of the participants may not know specific enrollment figures and some may include both junior and senior high schools in one enrollment figure, which limits making comparisons based on reported enrollment figures. Also, the urban demographic did not necessarily indicate a large high school as
only five of the 26 pacing guide users working in districts with 1501 or more students reported working in urban districts. If this project were to be repeated, the researcher would also gather more specific data on the specific number and type of high schools within the district, rather than the option of single or multiple high schools. In this area, there could also be confusion for the participants due to some high schools having schools within schools, such as a freshman academy, STEM academy, or virtual academy housed in the same high school.

There was no significant correlation for any of the population factors for non-pacing guide users and teacher comfort level with educating students with pacing guides. Table 5 provides correlation coefficients, significance, and sample size. This may be due to the fact that many of the teachers had never experienced working with pacing guides and were only speculating what their comfort level would be in the event that they were asked to follow pacing guides. Also, small sample size for non-pacing guide users could skew the data or prevent identification of a correlation.

In relating teacher comfort level using pacing guides to the population factors of demographic, school enrollment, and number of high schools there were no statistically significant correlations for pacing guide users or non-pacing guide users as reported in Table 5. Many teachers in each of the population observed cited comfort and experience with content area, the manner in which flexibility was addressed, and collaboration influenced their comfort level using pacing guides, while concerns for students mitigated comfort level with educating students through the use of pacing guides.

Building Level Factors. In relating pacing guide user comfort level with students being educated with pacing guides, only variables related to the development and
revision process showed a weak to moderate positive correlation. These variables included collaborative level of pacing guide development ($r_s = 0.212, N = 139, p = 0.012$), frequency of pacing guide revisions ($r_s = 0.362, N = 115, p < 0.001$), and teacher input for pacing guide revisions ($r_s = 0.326, N = 136, p < 0.001$) and are aligned closely with the qualitative responses for concerns and benefits of pacing guides and the explanations provided for comfort level. For example, a pacing guide user who reported being somewhat comfortable educating students with pacing guides stated, “if the pacing guide is collaboratively developed- revised- and appropriate for the student population- then I think it can be a useful tool.” Another pacing guide user who reported being somewhat uncomfortable with students being educated with pacing guides claimed “flexibility to allow students to obtain a deep understanding of content” as an influence on comfort level. Concerns about student learning, pacing, and flexibility mirror the concerns expressed by students in Certo, Cauley, Moxley, and Chafin (2008) that curriculum mandates often focus more on tests and covering content than true understanding of content.

District professional development initiatives were only mentioned by one participant who referred to pacing guides as a politically motivated “flavor of the month.” For pacing guide monitoring, one pacing guide user referred to past experiences where pacing guides were strict and restrictive at a former school and reported high comfort levels education students with pacing guides at a new school. While too quick of a pace for students and flexibility to accommodate student needs were frequent themes, only one pacing guide user specifically noted that being told specific amounts of time for covering material would influence attitude. There were no statistically significant correlations for
non-pacing guide users and building level factors in either area of comfort. Again, this could be due to lack of experience working with pacing guides or be due to low sample size for non-pacing guide users.

Results for building level factors in relation to teacher comfort level using pacing guides were similar to teacher comfort level with students being educated with pacing guides, but with the addition of a weak positive correlation with district professional development initiatives ($r_s = 0.168, N = 139, p < 0.048$). This suggests that skills and training gained from building level professional development may better equip teachers for using pacing guides. Also, in terms of teacher comfort levels, one pacing guide user explained high discomfort levels with students being educated with pacing guides and high comfort levels with personally using pacing guides. While this teacher cites that following pacing guides is not that hard, keeping students on pace with pacing guides can pressure teachers to skip necessary review or lessons, which is similar to other research studies (Certo, 2006; Gunzenhauser, 2012).

Teacher Factors. For pacing guide users, the teacher factor of confidence in content area was weakly correlated with teacher comfort level with students being educated with pacing guides ($r_s = 0.196, N = 138, p = 0.021$), as well as years using pacing guides ($r_s = 0.264, N = 128, p =0.003$). Years teaching, educational background, and course level were not statistically significantly correlated. One pacing guide user simply stated, “experience” in explaining high comfort levels. Others identified having used them for years and never teaching in any other way, content area knowledge, and current experience with pacing guides as major influences for reporting high comfort levels. For pacing guide users, a weak positive correlation with years using pacing guides
was the sole significant correlation in relating teacher factors to teacher comfort level teaching students with pacing guides, which suggests that teachers become more comfortable using pacing guides with increasing years of use.

The lack of correlation between years of teaching and comfort level for pacing guide users was not aligned with Winkler’s (2002) observation that veteran teachers were more likely to view curriculum alignment processes in a negative manner or Kauffman’s (2005) report that new teachers feel less constrained than veteran teachers by pacing guides. It is possible that growing trends in collaboration (DuFour, DuFour, Eaker, & Many, 2006; Eaker, DuFour, & DuFour, 2002; Rettig, McCullough, Santos, & Watson, 2003) amongst teachers mitigates possible negative attributions toward pacing guides. For non-pacing guide users, the only significant correlation for teacher factors and comfort level was a moderate negative correlation between years teaching and teacher comfort level with students being educated with pacing guides ($r_s = -0.319$, $N = 39$, $p = 0.048$). This discrepancy between pacing guide users and non-pacing guide users could be due to lack of collaborative teams between non-pacing guide users, and this is supported by multiple reports of teams and collaboration amongst pacing-guide users, and no reports of teams collaboration from non-pacing guide users. **Discussion of Research Question Four**

The goal for research question four was to determine what overall attitude and what influences overall attitude toward pacing guides. Survey questions were similar to research question three, with one Likert-style question for overall attitude and one open-ended response to explain the score provided. Most pacing guide users reported neutral to very positive overall attitude, which gave a left-skewed curve. However, the skewness
level was lower for overall attitude than that found for both comfort areas for both pacing guide and non-pacing guide users. The non-pacing guide user results were not as highly skewed as the pacing guide users, but were also skewed to the left as well. Reasoning for the left-skewed responses will be addressed in the bias section. No pacing guide users and no non-pacing guide users reported an overall very negative attitude toward pacing guides, which differs from what might be expected in comparison to Scot, Callahan, and Urquhart (2009), who represented pacing guides as forced, coercive curriculum mandates and Shreve (2011) who reported that teachers resorted to subversive teaching activities against the mandates of pacing guides. The discussion for this research question will relate how the qualitative responses compare to the Spearman’s correlation determination for each independent variable.

**Population Factors.** For pacing guide users, there was a weak but statistically significant negative correlation between school demographic and overall teacher attitude and number of high schools ($r_s = -0.195$, $N = 134$, $p = 0.024$) and overall teacher with students being educated with pacing guides ($r_s = -0.263$, $N = 135$, $p = 0.002$). These results for population factors are similar to the negative correlations determined for teacher comfort level with students being educated with pacing guides and are likely due to similar concerns found within certain demographics and with multiple schools within a school district. Likewise, teachers cited student concerns, such as too fast of a pace and lack of differentiation for student population as reasons for somewhat negative overall attitude, with another teacher citing:

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It encourages rushing through the content- and not teaching skills to mastery. There is not enough flexibility of time or final
```
assessments/projects—so I cannot use best practices of reading- writing- and technology. I am a teacher of students— not a teacher of content

(Pacing Guide User).

On the other end of the spectrum, pacing guide users with overall very positive attitudes toward pacing guides identified equity benefits of consistent curriculum and rigor for students regardless of the assigned teacher for students. Similar to results found for population factors and comfort levels, there were no significant correlations for non-pacing guide users between population factors and overall attitude.

Building Level Factors. Pacing guide user overall attitude in relation to building level factors also mirrored the results for teacher comfort level with students being educated with pacing guides. Similar weak to moderate correlations included collaborative level of pacing guide development ($r_s = 0.329, N = 136, p < 0.001$), frequency of pacing guide revisions ($r_s = 0.314, N = 112, p = 0.001$), and teacher input for pacing guide revisions ($r_s = 0.261, N = 133, p = 0.002$) and are also aligned closely with the qualitative responses for overall attitude. One pacing guide user, provided an overall attitude of somewhat negative due to having only one pacing guide for the entire district. Another identified the “lack of input from ALL staff members.” A pacing guide user with very positive overall attitude claimed, “as long as classroom teachers have a part in the process or if they don’t they are in a situation that allows them to be flexible for the good of the students.” Another explained that “success a feeling that we are all in it together for the school— not ourselves there is a sense of -ok- feeling if all are experiencing the same pacing concerns and we can solve our problems together,” while others simply cited that having teachers write them, influences very positive attitudes.
Similar to the results for comfort level for non-pacing guide users, there were no significant correlations between overall attitude and the building level variables that were collected.

*Teacher Factors.* For pacing guide users, the teacher factor of confidence in content area was weakly correlated overall attitude ($r_s = 0.180$, $N = 135$, $p = 0.037$), as well as years using pacing guides ($r_s = 0.181$, $N = 125$, $p = 0.044$). Years teaching, educational background, and course level were not statistically significantly correlated with overall attitude. These results also matched the results for teacher comfort level with students being educated with pacing guides. While no teachers specifically cited content area knowledge or experience using pacing guides, this was the second to last question in the survey, and these themes had already been discussed in prior questions. For non-pacing guide users, there was a moderate negative correlation between teacher education level ($r_s = -0.328$, $N = 40$, $p = 0.039$) and overall attitude toward pacing guides. One non-pacing guide user with a master’s degree in education, who also achieved National Board Certification claimed that pacing guides remove professional judgment from teachers. While a teacher with a doctorate degree in education claimed “I have yet to see a realistic pacing guide.”

**Bias and Limitations**

There are possible sources of biases that should be identified within the research methodology. First, the researcher sought participants by contacting building principals for site approval, as required by the Cleveland State Institutional Review Board, with 693 principals providing no response. It is possible that many of the principals who provided site approval worked in schools where teachers had positive training and experiences
with pacing guides and those principals who ignored site approval requests did not wish for their teachers to participate due to negative experiences with pacing guides. In larger districts, the researcher was able to gain site approval through the district research office, in place of the principal, and this may have balanced out bias, based on sole principal authorization gatekeeping access to teacher participation. In the future, the researcher would consider posting the survey on social media cites or professional blogs frequently visited by teachers to gather additional and more diverse participants. Second, participants predominantly cited high comfort levels and positive attitudes toward pacing guides. Teachers may have been resistant to participate if they had negative opinions toward pacing guides, not wanting to publicly decry a popular curriculum initiative, even in a confidential survey. Third, although all requests for site approval clearly stated that both pacing guide users and non-pacing guide users could participate, non-pacing guide users may have been reluctant to participate due to lack of experience working with pacing guides. Also, due to the difficulties in gathering site approvals and low survey response rate, the methods used for this project may not be repeatable without making adjustments to the research process that would make verification of results difficult.

Spearman’s rank order correlation of quantitative data and coding of qualitative responses were the primary tool for data analysis. Analysis of variance and parametric correlations were considered and although these methods may have held up to robustness for statistical analysis as recommended by Norman (2010), other sources identified the need for nonparametric analysis based on low sample size, lack of normality, and lack of homogeneity of variance in attempts using ANOVA (Corder & Foreman, 2014).
CHAPTER VI

CONCLUSION

Based on participant responses, teachers continue to address the task of balancing student learning concerns with practical concerns of teaching required content standards and preparing students for building level and state-mandated assessments. As determined in the discussion of research question two, many concerns about using pacing guides, such as flexibility, pace, and implementation factors, were offset by the benefits of providing equitable experiences for all students, using pacing guides as a resource to focus on key content, especially for new teachers, and collaborative approaches for teachers in pacing content for students. This dichotomy of concerns and benefits were again identified in research questions three and four as primary influences on teacher
comfort level and attitude toward pacing guides. The original purpose of this project was to inform the curriculum alignment process through use of pacing guides as educators continue to adjust to curriculum mandates and student assessments. Recommendations for this process are:

Recommendation One: Teachers should be provided with the flexibility to address student needs in the classroom. Dictates that are often inherent with the implementation of pacing guides must be adjusted to accommodate these student needs. Participants frequently noted the lack of flexibility characteristic of using pacing guides. This was evident in both the qualitative responses and quantitative responses provided. Comments from participants that refer to pacing guides as “racing guides” or the “law of the land” indicate some teachers feel pacing guides are prohibitive in providing teachers flexibility to meet the needs of their students. Schools where teachers are currently using pacing guides should consider embedding differentiation strategies within the pacing guide framework to help support the learning of students with differing needs. Schools should also identify essential standards that students must master in the event that a teacher is not able maintain the pace of the pacing guide, and incorporate these essential standards throughout the pacing guide for students who may not master these standards the first time. For schools considering the implementation of pacing guides, front-loading these differentiation strategies and mastery standards during the development process of pacing guides, may alleviate the lower comfort levels and more negative attitudes anticipated by non-pacing guide users.

Recommendation Two: Teacher input into pacing guide development, implementation, and revision process is necessary to ensure that student needs are
addressed.

The data collected support that teachers will have higher comfort levels and more positive attitude toward pacing guides when provided with input toward pacing guides. This suggests that top-down approaches, where teachers are not provided input into the development, implementation, and revision of pacing guides, takes the person most likely to understand student needs out of the picture. One non-pacing guide user referred to the need to adjust pacing according to the needs of the students in the class. This may change yearly, depending on students differing skill levels and backgrounds. Having one fixed document in place for this teacher would not be helpful and pressure to follow one pre-determined pacing guide may cause undue stress for both teachers and students. However, pacing guide documents that allow for teacher input and ongoing revisions would better help teachers serve the needs of their students.

*Recommendation Three: Team autonomy is key and teams need to be provided with the necessary support structure to provide meaningful learning experiences for their students.*

While it was expected that work done in professional learning communities would be frequently cited as a school professional development initiative, many teachers cited pacing guides as important for guiding work done by their professional learning community in their qualitative responses as well. Many also cited that their teams developed and continually revise their pacing guides to prepare students for standardized exams as well as in response to formative and summative assessment cycles conducted with their students. In turn, this team autonomy increased comfort levels and improved overall attitude toward pacing guides. This could also alleviate concerns related to the
top-down approach. The team approach allows for ease of curriculum modifications to address the needs of students, and teachers can make meaningful changes as a team to better student learning. In order for this to occur, teachers must be properly trained on the goals for professional learning communities and how to work together as a team. Some teachers cited that their team did not “really work” until veteran teachers retired, that some teachers refused to stray from the original pacing guide even when student data suggested modifications were needed, and that excess paperwork related to the team process impeded the work conducted by these teams. Perhaps, this problem could have been avoided with better training or “buy-in” strategies in the original implementation process and that proper training, implementation, and empowerment of professional learning communities is imperative in order to maximize the benefits that the team approach can provide. This call for team autonomy also suggests that local control may be beneficial and that larger districts with multiple high schools may have to sacrifice top-down strategies, in favor of providing teams with the autonomy to make changes in response to student learning needs.
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APPENDIX A

PACING GUIDE SURVEY

Teacher Opinion of the Use of Pacing Guides in the Secondary Classroom
Cleveland State University
College of Education: Doctoral Studies
Principal Investigator: Donna Turner
Faculty Advisor: Dr. Jeromy Genovese
Participants: Secondary teachers in core subject areas

Dear Participant:

My name is Donna Turner and I am doing research on teacher opinions on the use of pacing guides in the secondary classroom. You have been asked to take part in this research study because you are a secondary teacher in a core subject area. All special education and regular education teachers of Language Arts, Math, Science, and Social Studies are invited to participate.

Participation in this survey is completely voluntary and you may withdraw at any time. There is no reward for participating or consequence for not participating. There are no foreseeable risks for your participation in this study, although you may want to consider completing the survey on your home computer and not your work computer if you have concerns about answering questions on a public computer.

Your responses to this study will be anonymous. Only demographic information will be collected. You will not be asked to provide your name, high school, or school district. All participants will use the same password, therefore your password cannot be used as a means of identification.

For further information regarding this research please contact Dr. Jeremy Genovese at (216) 523-7130, email: J.genovese@csuohio.edu at Cleveland State University or myself at (440) 223-8495, email: d.m.smith98@vikes.csuohio.edu.

If you have any questions about your rights as a research participant you may contact the Cleveland State University Institutional Review Board at (216)687-3630.

Sincerely,

Donna Turner
Graduate Student, Cleveland State University College of Education

I am 18 years or older and have read and understood this consent form and agree to participate.

I understand that if I have any questions about my rights as a research subject I can contact the CSU Institutional Review Board at (216)687-3630.
By clicking the "Start Survey" button below you are consenting to participate. You can withdraw at any time by closing your browser and any data collected before you withdraw will not be used in the study.

<table>
<thead>
<tr>
<th>Question</th>
<th>Type of Question</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How many years have you been a teacher?</td>
<td>input</td>
<td>demographic</td>
</tr>
<tr>
<td>2. How many years have you taught in your current position?</td>
<td>input</td>
<td>demographic</td>
</tr>
<tr>
<td>3. Which of the following describes your educational background?</td>
<td>checkbox</td>
<td>demographic</td>
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<tr>
<td>Bachelors in Education</td>
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<tr>
<td>Content Area Teaching Certificate</td>
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<tr>
<td>Bachelors in Content Area</td>
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<tr>
<td>Masters in Education</td>
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<tr>
<td>Masters in Content Area</td>
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<tr>
<td>Doctorate in Education</td>
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<tr>
<td>Doctorate in Content Area</td>
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<tr>
<td>National Board Certification</td>
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<td>4. Which best describes the demographic of your high school?</td>
<td>radio</td>
<td>demographic</td>
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<tr>
<td>Urban</td>
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<tr>
<td>Urban/Suburban</td>
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<td>Suburban</td>
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<tr>
<td>Suburban/Rural</td>
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<tr>
<td>Rural</td>
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<tr>
<td>5. What is the enrollment in your high school?</td>
<td>radio</td>
<td>demographic</td>
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<tr>
<td>Under 500 Students</td>
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<td>500-800 Students</td>
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<td>801-1000 Students</td>
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<td>1001-1200 Students</td>
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<td>1201-1500 Students</td>
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<tr>
<td>Over 1501 Students</td>
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<tr>
<td>6. Is there more than one high school in your school district?</td>
<td>radio</td>
<td>demographic</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. What grade level(s) do you teach? checkbox demographic
   9
   10
   11
   12

8. What subject area(s) do you teach? checkbox demographic
   Language Arts
   Social Studies
   Mathematics
   Science

9. Describe the type of course(s) you teach: checkbox demographic
   Special Education Inclusion
   Special Education Self-Contained
   General Studies
   College Preparatory
   Honors
   Advanced Placement

10. How comfortable do you feel teaching in your content area? radio demographic
    Very comfortable
    Somewhat comfortable
    Neutral
    Somewhat uncomfortable
    Very uncomfortable

11. Please click on one of the six options below which best describes your current use of pacing guides:
    I do not use pacing guides because there is no pacing guide.
    I do not use pacing guides, however one is currently in progress
    I do not use pacing guides, although one is provided
    I use a pacing guide provided by my school district
    I use a pacing guide I wrote for my own course for my own individual use
    I use a pacing guide written collaboratively by myself and other teachers in my school or district

Non-Pacing Guide User Questions
12. How would you describe your districts' use of pacing guides? 
   - No pacing guides are used with no plans of implementation
   - No pacing guides are used, however my district is moving in that direction
   - Some courses have pacing guides, but my course(s) do not
   - Some course(s) have pacing guides, including my course(s)
   - Most courses have pacing guides, but my course(s) do not
   - Most course(s) have pacing guides, including my course(s)
   - All courses have pacing guides

13. How does your district monitor that you are teaching the curriculum for your course(s)?
   - Teacher evaluation
   - Administrator walk-through
   - Submission of lesson plans
   - Submission of curriculum maps
   - Curriculum teams (PLC's, TLC's, Departmental Teams)
   - Student Learning Objectives
   - No monitoring system
   - Other:

14. Pacing guides are often used in conjunction with other educational initiatives. Which of these initiatives are used in your school?
   - Marzano 9
   - Understanding by Design
   - Curriculum teams (TBT's, PLC's, TLC's, Departmental Teams)
   - Response to Intervention
   - Common Assessments
   - Curriculum Maps
   - Student Learning Objectives
   - None of these
   - Other initiatives in your school:

In the future if you are required to use a pacing guide, you may experience some challenges in implementing the pacing guide in your classroom.
What are some of the concerns that you have? Mark all that

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apply for each:

15. Content of pacing guide:
   - Incorrect content
   - Too much content
   - Too little content
   - I have no concerns about content

16. Pace of pacing guide:
   - Pace will move too quickly
   - Pace will move too slowly
   - I have no concerns about pace

17. Sequence of pacing guide:
   - Sequence will not be a good fit
   - I have no concerns about sequence

18. Flexibility of pacing guide:
   - Not flexible enough
   - Too flexible
   - I have no concerns about flexibility

19. Please explain your responses to the above answers:

20. Are there any additional concerns you have about using pacing guides?

21. How comfortable are you with the idea of students being educated in a classroom that follows a pacing guide?
   - Very comfortable
   - Somewhat comfortable
   - Neutral
   - Somewhat Uncomfortable
   - Very Uncomfortable

22. How comfortable do you think you would be in using pacing guides?
   - Very comfortable
   - Somewhat comfortable
   - Neutral
   - Somewhat Uncomfortable
   - Very Uncomfortable

23. Please explain what influences your comfort level toward the use of pacing guides?

24-27. In the future if you are required to use a pacing guide, you may experience some benefits related to the use of pacing guides. How important do you think these things are in relation to the use of pacing guides?
24. Collaboration with other teachers
   - Very important
   - Somewhat important
   - Somewhat unimportant
   - Not important at all
   - No opinion

25. Consistency between teachers for the same course
   - Very important
   - Somewhat important
   - Somewhat unimportant
   - Not important at all
   - No opinion

26. Specific guidelines for new teachers to follow
   - Very important
   - Somewhat important
   - Somewhat unimportant
   - Not important at all
   - No opinion

27. Please explain your responses to the above answers: open-ended

28. What other benefits of using pacing guides are important to you? open-ended

29. Overall, how would you rate your attitude toward the use of pacing guides? Radio
   - Very positive
   - Positive
   - Neutral
   - Negative
   - Very Negative

30. What factors influence your attitude toward the use of pacing guides? open-ended

31. Before submitting your survey answers, please provide any additional information you would like to include regarding the use of pacing guides: open-ended

Pacing Guide User Questions

12. How would you describe your districts' use of pacing guides? radio
   - Some courses have pacing guides
   - Most courses have pacing guides
   - All courses have pacing guides

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13. How is teacher use of pacing guides monitored in your district?
   - Teacher evaluation
   - Administrator walk-through
   - Submission of lesson plans
   - Submission of curriculum maps
   - Curriculum teams (PLC's, TLC's, Departmental Teams)
   - Student Learning Objectives (PLC's, TLC's, Departmental Teams)
   - No monitoring system
   - Other:

14. Pacing guides are often used in conjunction with other educational initiatives. Which of these initiatives are used in your school?
   - Marzano 9
   - Understanding by Design
   - Curriculum teams (TBT's, PLC's, TLC's, Departmental Teams)
   - Response to Intervention
   - Common Assessments
   - Curriculum Maps
   - Student Learning Objectives
   - None of these
   - Other initiatives in your school:

   You may have experienced some problems with implementing pacing guides. Describe your experiences with the following:

   Mark all that apply for each:

15. Content of pacing guide:
   - Incorrect content
   - Too much content
   - Too little content
   - I have no concerns about content

16. Pace of pacing guide:
   - Pace moves too quickly
   - Pace moves too slowly
   - I have no concerns about pace

17. Sequence of pacing guide:
   - Sequence is not a good fit
   - I have no concerns about sequence

18. Flexibility of pacing guide:
   - Not flexible enough
   - Too flexible
I have no concerns about flexibility.

19. Please explain your responses to the above answers: open-ended benefits / concerns

20. Are there any additional concerns you have about using pacing guides? open-ended benefits / concerns

21. How long have you been using pacing guides? input demographic

22. How is the pacing guide that you are using arranged? radio / demographic input

   Content is scheduled by...
   Minute   Day   Week   Month   Quarter   Semester   Other:

23. How often is your pacing guide revised? radio / demographic input

   On an ongoing basis
   On an ongoing basis during curriculum meetings
   By semester
   By year
   We do not make revisions
   Other:

24. Do you have a say in making pacing guide revisions? radio demographic

   Yes       No

25. How comfortable are you with the idea of students being educated in a classroom that follows a pacing guide? radio comfort

   Very comfortable
   Somewhat comfortable
   Neutral
   Somewhat Uncomfortable
   Very Uncomfortable

26. How comfortable are you in using pacing guides? radio comfort

   Very comfortable
   Somewhat comfortable
   Neutral
   Somewhat Uncomfortable
   Very Uncomfortable

27. Please explain what influences your comfort level in using pacing guides? open-ended comfort

28-30. The following have been identified as benefits of using pacing guides. How important do you think these things are? radio benefits / concerns

28. Collaboration with other teachers
   Very important
   Somewhat important
   Somewhat unimportant
29. Consistency between teachers for the same course
   - Not important at all
   - No opinion
   - Very important
   - Somewhat important
   - Somewhat unimportant
   - Not important at all
   - No opinion

30. Specific guidelines for new teachers to follow
   - Not important at all
   - No opinion
   - Very important
   - Somewhat important
   - Somewhat unimportant
   - Not important at all
   - No opinion

31. Please explain your responses to the above answers:
   - Open-ended

32. What other benefits of using pacing guides are important to you?
   - Open-ended

33. If you have multiple high schools in your district, how are pacing guides implemented?
   - One course pacing guide for each separate high school
   - One course pacing guide for the entire district
   - We only have one high school in our district

34. Overall, how would you rate your attitude toward the use of pacing guides?
   - Very positive
   - Somewhat positive
   - Neutral
   - Somewhat negative
   - Very negative

35. What factors influence your attitude toward the use of pacing guides?
   - Open-ended

36. Before submitting your survey answers, please provide any additional information you would like to include regarding the use of pacing guides:
   - Open-ended
APPENDIX B

SAMPLE PERMISSION REQUEST LETTER TO PRINCIPALS

Email Subject Line: Site Approval Request for Pacing Guide Research

Start Email Text

Dear Administrator,

My name is Donna Turner and I am a doctoral student student in the Urban Education program at Cleveland State University. I am conducting a research project on teacher perception of the use of pacing guides in the secondary classroom and with your permission, would like the teachers in your school/district to participate. In response to state mandated standards and assessment, many schools districts are requiring that teachers use common pacing guides. This transition provides unique opportunities to gather data on how teachers have responded to significant changes in working conditions. By documenting this response, administrators and teachers will gain a better understanding of how to develop and implement pacing guides that best serve the needs of schools, teachers, and most of all students.

With your consent, I will contact Language Arts, Math, Science, and Social Studies regular education and special education teachers in your school/district, to complete an online survey of their views on using pacing guides. Teacher responses to this study will be anonymous and only demographic information will be collected about your school. Teachers will not be asked to provide their name, high school, or school district.

If you do grant approval, I need a letter of permission, with your signature on school letterhead. This letter can be scanned and returned to me in one of the following three manners:

email: d.m.smith98@vikes.csuohio.edu
fax: 216-875-9697 to the attention of Dr. Jeremy Genovese
mail: Dr. Jeremy Genovese
    Cleveland State University
    College of Education and Human Services
    Doctoral Studies
    2121 Euclid Avenue
    Julka Hall 215
    Cleveland, OH 44115

If you would like further information regarding this research please contact Dr. Jeremy Genovese at (216) 523-7130, email: J.genovese@csuohio.edu at Cleveland State
University or myself at (440) 223-8495, email: d.m.smith98@vikes.csuohio.edu.
Sincerely,
Donna Turner
Graduate Student, Cleveland State University College of Education

End Email Text
APPENDIX C

IRB APPROVAL

Memorandum
Institutional Review Board

To: Jeremy Genovese
   Education, Doctoral Studies

From: Bernie Strong (b.r.strong@csuchico.edu, X3624)
   IRB Coordinator
   Sponsored Programs & Research Services

Date: June 16, 2014

Re: Results of IRB Review of your project number: #30101-GEN-HS
   Co-Investigator(s): Donna Turner
   Title: Teacher Perception of the Use of Pacing Guides in the Secondary Classroom

The IRB has reviewed and approved your application for the above named project, under the
category noted below. Approval for use of human subjects in this research is for a one-year period
as noted below. If your study extends beyond this approval period, you must contact this office to
initiate an annual review of this research.

By accepting this decision, you agree to notify the IRB of: (1) any additions to or changes in
procedures for your study that modify the subjects' risk in any way; and (2) any events that affect
that safety or well-being of subjects. Notify the IRB of any revisions to the protocol, including the addition
of researchers, prior to implementation.

Thank you for your efforts to maintain compliance with the federal regulations for the protection of
human subjects.

Approval Category: Expedited (7)

Approval Date: June 9, 2014
Expiration Date: June 8, 2015

cc: Project file
Appendix D

Sample Teacher Invitation to Participate

Email Subject Line: Teacher Opinion of Pacing Guides: Research Participant Request

Start Email Text
Teacher Internet Link: pacingguidesurvey.com
Login:
Password:

Dear Educator,

My name is Donna Turner and I am a doctoral student student in the Urban Education program at Cleveland State University. I am conducting a research project on teacher perception of the use of pacing guides in the secondary classroom and would like to include your viewpoint in my project. In response to state mandated standards and assessment, many schools districts are requiring that teachers use common pacing guides. This transition provides unique opportunities to gather data on how teachers have responded to significant changes in working conditions. By documenting this response, administrators and teachers will gain a better understanding of how to develop and implement pacing guides that best serve the needs of schools, teachers, and most of all students.

I have contacted you, because you have been identified as a Language Arts, Math, Science, or Social Studies regular education or special education teachers in your school/district. Even if you are not currently using a pacing guide, you are invited to provide your viewpoint. All responses to this study will be anonymous and only demographic information will be collected about you and your school. You will not be asked to provide your name, high school, or school district.

The survey should take about 15 to 30 minutes of your time to complete. There are several open-ended and close-ended questions related to your teaching background, school, and viewpoints on using pacing guides. If you would like to participate, you can click on pacingguidesurvey.com link or copy and paste the link to your browser window. The survey is password protected, so please enter the login and password information. The login and password are the same for all participants, so this information will not be linked to your identity.

If you would like further information regarding this research please contact Dr. Jeremy Genovese at (216) 523-7130, email: J.genovese@csuohio.edu at Cleveland State University or myself at (440) 223-8495, email: d.m.smith98@vikes.csuohio.edu.
I thank you in advance for your support in this research endeavor.

Sincerely,
Donna Turner
Graduate Student, Cleveland State University College of Education

End Email Text
APPENDIX E

PACING GUIDE SURVEY SOURCE CODE

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">

<html>
<head>
<title>PacingGuideSurvey</title>
<meta content="Evrsoft First Page" name="GENERATOR">
<script type="text/javascript">
function Validate()
{
    if(!validateForm())
    alert("Please acknowledge that you have read the informed consent information by marking the checkbox provided.");
    return false;
}
return true
}
function validateForm()
{
    var c=document.getElementsByTagName('input');
    for (var i = 0; i<c.length; i++){
        if (c[i].type=='checkbox')
        {
            if (c[i].checked){return true}
        }
    }
    return false;
}
</script>
</head>

<body bgcolor="#FFFFCC" text="#006633" topmargin="150" marginheight="150" leftmargin="150"
marginwidth="150" rightmargin="150" bottommargin="150">
<form action = 'pacingguidesurvey2.html' onsubmit="return Validate()" METHOD = 'post'
<input type = 'checkbox' name = 'pacingguidesurvey'>
</form>
</body>
```

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My name is Donna Turner and I am doing research on teacher opinions on the use of pacing guides in the secondary classroom. You have been asked to take part in this research study because you are a secondary teacher in a core subject area. All special education and regular education teachers of Language Arts, Math, Science, and Social Studies are invited to participate. You do not have to be a pacing guide user to participate. It should take you about 15 to 30 minutes to complete the survey.

Before proceeding to the survey, please read the following:

Benefits of this Study: While there may be no direct benefits to you as a participant, you will have the opportunity to voice your opinion about pacing guides. Your opinion along with many others will be presented in a dissertation and may possibly be published in educational journals or presented at research conferences. If you would like to read the final product, please send a request to the Principal Investigator.

Confidentiality: Your responses to this study will be kept completely confidential. Only demographic information will be collected and you will not be asked to provide your name, high school, or school district. Your computer IP address will not be collected. All participants will use the same password, therefore your password cannot be used as a means of identification. Multiple participants will be contacted, so it is very unlikely that your identity will be linked to you as an individual in any way, during the data analysis process. Any open-ended responses you provide will be aggregated with all other responses.

Risks or Discomforts: Although there are no foreseen risks or discomforts anticipated, you may want to consider responding to the survey on a secure personal computer, if you have concerns about posting your opinions of pacing guides on a public computer.

Decision to quit at any time: You may skip any questions that you are uncomfortable answering, except for question 11, which will route you to the portion of the survey that pertains to your pacing guide experience. Your participation is voluntary and you can withdraw from participating in the survey at any time by closing your browser window. None of your responses to the survey will be submitted until you click submit at the end of the survey.

Contact Information: For further information regarding this research please contact:
Donna Turner - (xxx)xxx-xxxx, email: xxxxxxxx@vikes.csuohio.edu.
Dr. Jeremy Genovese - (xxx)xxx- xxxx, email: xxxxxxxx@csuohio.edu

By clicking the checkbox, you acknowledge the following:
1. I am 18 years or older, have read and understood this consent form, and agree to participate.

2. I understand that if I have any questions about my rights as a research subject I can contact the CSU Institutional Review Board at (216)687-3630.

Please click the "Start Survey" button below to enter the survey.

Participation in this survey is completely voluntary. Responses to the survey reflect the opinion of the participant only and do not represent the philosophy or opinion of participating school districts.
1. How many years have you been a teacher?
<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='text box' maxlength='3' size='5' name=v1> <br>
<br> 2. How many years have you taught in your current position?
<br>
3. Which of the following describes your educational background?

- Bachelors in Education
- Content Area Teaching Certificate
- Bachelors in Content Area
- Masters in Education
- Masters in Content Area
- Doctorate in Education
- Doctorate in Content Area
- National Board Certification

4. Which best describes the demographic of your high school?

- Urban
- Urban/Suburban
- Suburban
- Suburban/Rural
- Rural

5. What is the enrollment in your high school?

- Under 500 Students
- 500-800 Students
- 801-1000 Students
- 1001-1200 Students
- 1201-1500 Students
- Over 1501 Students

6. Is there more than one high school in your school district?

- Yes
- No
7. What grade level(s) do you teach?<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v14' value='1'> 9<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v15' value='1'> 10<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v16' value='1'> 11<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v17' value='1'> 12</p>

8. What subject area(s) do you teach?<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v18' value='1'> Language Arts<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v19' value='1'> Social Studies<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v20' value='1'> Mathematics<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v21' value='1'> Science</p>

9. Describe the type of course(s) you teach:<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v22' value='1'> Special Education Inclusion<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v23' value='1'> Special Education Self-Contained<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v24' value='1'> General Studies<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v25' value='1'> College Preparatory<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v26' value='1'> Honors<br>
   &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='checkbox' name='v27' value='1'> Advanced Placement</p>

10. How comfortable do you feel teaching in your content area?<br>
    &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v28' value='5'> Very comfortable<br>
    &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v28' value='4'> Somewhat comfortable<br>
    &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v28' value='3'> Neutral<br>
    &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v28' value='2'> Somewhat uncomfortable<br>
    &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v28' value='1'> Very uncomfortable
11. Please click on one of the six options below which best describes your current use of pacing guides:<br>

- [ ] I do not use pacing guides because there is no pacing guide.<br>
- [ ] I do not use pacing guides, however one is currently in progress.<br>
- [ ] I do not use pacing guides, although one is provided.<br>
- [ ] I use a pacing guide provided by my school district.<br>
- [ ] I use a pacing guide I wrote for my own course for my own individual use.<br>
- [ ] I use a pacing guide written collaboratively by myself and other teachers in my school or district.

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lesson plans<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v34' value = '1'> Submission of curriculum maps<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v35' value = '1'> Curriculum teams (PLC's, TLC's, Departmental Teams)<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v36' value = '1'> Student Learning Objectives<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v37' value = '1'> No monitoring system<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;Other: <input type='text box' maxlength='50' size='25' name='v38'></p>

14. Pacing guides are often used in conjunction with other educational initiatives. Which of these initiatives are used in your school?<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v39' value = '1'> Marzano 9<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v40' value = '1'> Understanding by Design<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v41' value = '1'> Curriculum teams (TBT's, PLC's, TLC's, Departmental Teams)<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v42' value = '1'> Response to Intervention<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v43' value = '1'> Common Assessments<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v44' value = '1'> Curriculum Maps<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v45' value = '1'> Student Learning Objectives<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v46' value = '1'> None of these<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;Other initiatives in your school: <input type='text box' maxlength='50' size='25' name='v47'></p>

<p>15. Content of pacing guide:<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v48' value='1'> Incorrect content<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v49' value='1'> Too much content<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v50' value='1'> Too little content<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type = 'checkbox' name = 'v51' value='1'> I have no concerns about content</p>

16. Pace of pacing guide:
14. Pace will move too quickly  
15. Pace will move too slowly  
16. I have no concerns about pace

17. Sequence of pacing guide:  
18. Flexibility of pacing guide:  
19. Please explain your responses to the above answers:  
20. Are there any additional concerns you have about using pacing guides?

21. How comfortable are you with the idea of students being educated in a classroom that follows a pacing guide?  
22. How comfortable do you think you would be in using pacing guides to teach your classes?
comfortable <br>
<input type='radio' name='v63' value='3' > Neutral <br>
<input type='radio' name='v63' value='2' > Somewhat Uncomfortable <br>
<input type='radio' name='v63' value='1' > Very Uncomfortable </p>

<p>23. Please explain what influences your comfort level toward the use of pacing guides?<br></p>

<textarea name='v64' cols='50' rows='6' wrap='virtual'></textarea><br>

<input type="button" id="B7" value="Go Back" onClick="showLayer('page6')">
<input type="button" id="C8" value="Continue" onClick="showLayer('page8')">

24-27. In the future if you are required to use a pacing guide, you may experience some benefits related to the use of pacing guides. How important do you think these things are in relation to the use of pacing guides?<br>

24. Collaboration with other teachers<br>
<input type='radio' name='v65' value='5' > Very important
<input type='radio' name='v65' value='4' > Somewhat important
<input type='radio' name='v65' value='3' > Somewhat unimportant
<input type='radio' name='v65' value='2' > Not important at all
<input type='radio' name='v65' value='1' > No opinion

25. Consistency between teachers for the same course<br>
<input type='radio' name='v66' value='5' > Very important
<input type='radio' name='v66' value='4' > Somewhat important
<input type='radio' name='v66' value='3' > Somewhat unimportant
<input type='radio' name='v66' value='2' > Not important at all
<input type='radio' name='v66' value='1' > No opinion

26. Specific guidelines for new teachers to follow<br>
<input type='radio' name='v67' value='5' > Very important
<input type='radio' name='v67' value='4' > Somewhat important
<input type='radio' name='v67' value='3' > Somewhat unimportant
27. Please explain your responses to the above answers:

<TEXTAREA name='v68' COLS='50' ROWS='6' WRAP='virtual'></TEXTAREA>

28. What other benefits of using pacing guides are important to you?

<TEXTAREA name='v69' COLS='50' ROWS='6' WRAP='virtual'></TEXTAREA>

29. Overall, how would you rate your attitude toward the use of pacing guides?

<TEXTAREA name='v70' COLS='50' ROWS='6' WRAP='virtual'></TEXTAREA>

30. What factors influence your attitude toward the use of pacing guides?

<TEXTAREA name='v71' COLS='50' ROWS='6' WRAP='virtual'></TEXTAREA>

31. Before submitting your survey answers, please provide any additional information you would like to include regarding the use of pacing guides:

<TEXTAREA name='v72' COLS='50' ROWS='6' WRAP='virtual'></TEXTAREA>

12. How would you describe your district's use of pacing guides?

Some courses have pacing guides
Most courses have pacing guides.

All courses have pacing guides.

13. How is teacher use of pacing guides monitored in your district?

Teacher evaluation

Administrator walk-through

Submission of lesson plans

Submission of curriculum maps

Curriculum teams (PLC's, TLC's, Departmental Teams)

Student Learning Objectives (PLC's, TLC's, Departmental Teams)

No monitoring system

Other: ____________________________

14. Pacing guides are often used in conjunction with other educational initiatives. Which of these initiatives are used in your school?

Marzano 9

Understanding by Design

Curriculum teams (TBT's, PLC's, Departmental Teams)

Response to Intervention

Common Assessments

Curriculum Maps

Student Learning Objectives

None of these

Other initiatives in your school: ____________________________

Pacing guides are often used in conjunction with other educational initiatives. Which of these initiatives are used in your school?
You may have experienced some problems with implementing pacing guides. What are some of the concerns that you have? <br>
15. Content of pacing guide:<br>
- Incorrect content
- Too much content
- Too little content
- I have no concerns about content

16. Pace of pacing guide:<br>
- Pace moves too quickly
- Pace moves too slowly
- I have no concerns about pace

17. Sequence of pacing guide:<br>
- Sequence is not a good fit
- I have no concerns about sequence

18. Flexibility of pacing guide:<br>
- Not flexible enough
- Too flexible
- I have no concerns about flexibility

19. Please explain your responses to the above answers: <br>

20. Are there any additional concerns you have about using pacing guides? <br>

Please explain your responses to the above answers:
21. How long have you been using pacing guides? <input type='text box' maxlength='3' size='5' name=v105>

22. How is the pacing guide that you are using arranged? Content is scheduled by...
<input type='radio' name='v106' value='1'> Minute
<input type='radio' name='v106' value='2'> Day
<input type='radio' name='v106' value='3'> Week
<input type='radio' name='v106' value='4'> Month
<input type='radio' name='v106' value='5'> Quarter
<input type='radio' name='v106' value='6'> Semester
Other: <input type='text box' maxlength='50' size='25' name=v107>

23. How often is your pacing guide revised?
<input type='radio' name='v108' value='1'> On an ongoing basis
<input type='radio' name='v108' value='2'> On an ongoing basis during curriculum meetings
<input type='radio' name='v108' value='3'> By semester
<input type='radio' name='v108' value='4'> By year
<input type='radio' name='v108' value='5'> We do not make revisions
Other: <input type='text box' maxlength='50' size='25' name=v109>

24. Do you have a say in making pacing guide revisions?
<input type='radio' name='v110' value='1'> Yes
<input type='radio' name='v110' value='2'> No

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25. How comfortable are you with the idea of students being educated in a classroom that follows a pacing guide?
<input type='radio' name='v111' value='1'> Very comfortable
<input type='radio' name='v111' value='2'> Somewhat comfortable
<input type='radio' name='v111' value='3'> Neutral
<input type='radio' name='v111' value='4'> Somewhat Uncomfortable
<input type='radio' name='v111' value='5'> Very Uncomfortable
26. How comfortable are you in using pacing guides in your classroom? 

- Very comfortable
- Somewhat comfortable
- Neutral
- Somewhat Uncomfortable
- Very Uncomfortable

27. Please explain what influences your comfort level in using pacing guides?

28. Collaboration with other teachers

- Very important
- Somewhat important
- Somewhat unimportant
- Not important at all
- No opinion

29. Consistency between teachers for the same course

- Very important
- Somewhat important
- Somewhat unimportant
- Not important at all
- No opinion
30. Specific guidelines for new teachers to follow<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v116' value='5'> Very important<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v116' value='4'> Somewhat important<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v116' value='3'> Somewhat unimportant<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v116' value='2'> Not important at all<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<input type='radio' name='v116' value='1'> No opinion</p>

31. Please explain your responses to the above answers:<br>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&n...
35. What factors influence your attitude toward the use of pacing guides?

36. Before submitting your survey answers, please provide any additional information you would like to include regarding the use of pacing guides:

---

#!/usr/bin/perl

use CGI;
$q = new CGI;

$v1 = $q->param('v1');
v2 = $q->param('v2');
v3 = $q->param('v3');
v4 = $q->param('v4');
v5 = $q->param('v5');
v6 = $q->param('v6');
v7 = $q->param('v7');
v8 = $q->param('v8');
v9 = $q->param('v9');
v10 = $q->param('v10');
v11 = $q->param('v11');
v12 = $q->param('v12');
v13 = $q->param('v13');
v14 = $q->param('v14');
v15 = $q->param('v15');
v16 = $q->param('v16');
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v29 = $q->param('v29');
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$v31 = $query->param('v31);
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$v33 = $query->param('v33');
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$v114 = $query->param('v114');
$v115 = $query->param('v115');
$v116 = $query->param('v116');
$v117 = $query->param('v117');
$v118 = $query->param('v118');
$v119 = $query->param('v119');
$v120 = $query->param('v120');
$v121 = $query->param('v121');
$v122 = $query->param('v122');

($sec, $min, $hour, $mday, $mon, $year, $wday, $yday, $isdst) = localtime (time);

$ip = $query->remote_addr();
$ref = $query->referer();

open(INFO,">>$ENV{'DOCUMENT_ROOT'}/www/data/savedata3.txt");
print INFO "$mon/$mday/$year, ";
print INFO "$hour:$min:$sec, ";
print INFO "endline \n";
close (INFO);
print $query->header;
print $query->start_html(-title=>'Thank You');
print "<body
bgcolor='#FFFFCC'
text='#006633'
FONT FACE = 'arial'
SIZE = '15'>
<center><br><br><br><br>
<i><big><big><big><small>Dear Participant, <br>
Thank you so much for your participation in this research!<br>
If you would like to read the results of this research project,<br>please send your request to the original survey participation email. <br>I will forward you a copy of the results when I complete this project. <br>Again, thank you so much for your valuable input. <br>Sincerely,<br>Donna Turner<br>Graduate Student<br>Cleveland State University <small></big></big></big></i></center> </FONT>";
print $query->end_html
APPENDIX F

ADMINISTRATOR INTERVIEW

Administrator participant interview questions:
These questions will be asked by the investigator in a face-to-face or phone interview. The investigator will document responses by hand. Only administrators in secondary schools using pacing guides or in the process of implementing pacing guides will be interviewed.

- How long have the teachers in your school used pacing guides?
- For what reason or reasons did your school initiate the use of pacing guides?
- What process does your school use to write pacing guides?
- What process does your school use to implement pacing guides in the classroom?
- Do you have additional information you would like to share about the use of pacing guides in your school?
## APPENDIX G
### SAMPLE PACING GUIDE

General Chemistry Pacing Guide

<table>
<thead>
<tr>
<th>Unit, Topic, and Timeframe</th>
<th>Learning Targets</th>
<th>Alignment with ODE Chemistry Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quarter One</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unit 1 Intro to Chemistry</strong>&lt;br&gt;Chemistry and the Scientific Method&lt;br&gt;Lab Safety&lt;br&gt;7-10 days</td>
<td>Understand the importance of learning chemistry&lt;br&gt;Define chemistry&lt;br&gt;Recognize general steps scientists use in solving problems.&lt;br&gt;Apply the scientific method&lt;br&gt;Learn and practice classroom procedures and laboratory safety&lt;br&gt;Learn the location and use of laboratory equipment</td>
<td>Classifying Matter: Quantifying materials: Scientific measurement and communication metric prefixes significant digits scientific notation standard units derived units error analysis dimensional analysis</td>
</tr>
<tr>
<td><strong>Unit 1 Intro to Chemistry</strong>&lt;br&gt;Measurement (Data Manipulation)&lt;br&gt;10-15 days</td>
<td>Express numbers using scientific notation&lt;br&gt;Use English, metric, and SI systems of measurement&lt;br&gt;Use the metric system to measure length, volume, and mass&lt;br&gt;Learn how uncertainty in a measurement arises and express uncertainty using significant figures&lt;br&gt;Determine the number of significant figures in a calculated result&lt;br&gt;Use dimensional analysis to solve various types of problems&lt;br&gt;Learn the three temperature scales and convert from one to another&lt;br&gt;Minimum Lab Experience&lt;br&gt;Measurement Lab</td>
<td>Classifying Matter: Distinguishing characteristics of different materials</td>
</tr>
<tr>
<td><strong>Unit 2</strong>&lt;br&gt;Properties and Types of Matter&lt;br&gt;7-10 days</td>
<td>Define and calculate density and its units&lt;br&gt;Describe matter in terms of its three states&lt;br&gt;Understand what makes a substance an element or a compound&lt;br&gt;Distinguish between mixtures and pure substances</td>
<td>Classifying Matter: Distinguishing characteristics of different materials</td>
</tr>
</tbody>
</table>
| Unit 3 Atomic Structure 10-15 days | Distinguish between physical and chemical properties and changes  
Learn methods of separating mixtures  
Demonstrate the law of conservation of mass  
Minimum Lab Experience:  
Physical and Chemical Changes Lab  
Separation of a Mixture Lab  
Density  
| Explain the history and models of the atomic theory through Democritus, Dalton, Thomson, Rutherford, Chadwick, Bohr, and the electron cloud model  
Describe how Dalton’s atomic theory has changed over time  
Identify the parts of the atom  
Define atomic number, mass number, and atomic mass and use these values to calculate protons, neutrons, and electrons  
Interpret the general information on the Periodic Table  
Calculate atomic mass using the isotopes of an atom  
Distinguish between cations and anions and how they are formed and note how the number of electrons change  
| Structure of Matter:  
Atomic Structure Evolution of atomic models/theories  
Computations based on number of subatomic particles-atomic number, atomic mass, percent abundance  
<p>| Total 34-50 days |</p>
<table>
<thead>
<tr>
<th>Unit, Topic, and Timeframe</th>
<th>Learning Targets</th>
<th>Alignment with ODE Chemistry Curriculum</th>
</tr>
</thead>
</table>
| Unit 4 Formulas and Nomenclature 12-15 days | Use the periodic table to determine the ion that an atom is likely to form  
Memorize common polyatomic ions  
Assign chemical names, given the chemical formula for both ionic and molecular formulas  
Assign chemical formulas, given the chemical name for both ionic and molecular  
Assign names and formulas to acids  
Differentiate bonding between ionic compounds and molecular compounds  
Draw simple Lewis Structures for ionic and covalent compounds | Interaction of Matter  
Intramolecular Nomenclature Chemical Bonding |
| Unit 5 Chemical Quantities 12-15 days | Describe the mole concept  
Calculate the molar mass of a compound  
Use dimensional analysis method to calculate the mass of a substance given a certain number of moles and vice versa  
Use dimensional analysis method to calculate the number of atoms or molecules of a substance given the mass or the number of moles and vice versa  
Use dimensional analysis method to calculate the volume of a gas at standard conditions  
Determine the percent composition of a given compound  
Given experimental data, calculate the empirical formula and molecular formula of a compound  
Optional: Include solutions and molarity  
Minimum lab experience  
Mole conversion  
Water content in a hydrate | Interaction of Matter  
Intramolecular Stoichiometry |
| Unit 6 Chemical Reactions 10-15 days | Identify signals that show a chemical reaction has occurred  
Identify the characteristics of a chemical reaction and the information given by a chemical equation  
Write balanced equations for chemical reactions  
Classify reactions  
Predict products of reactions  
Identify solids that form in a precipitation | Interaction of Matter  
Intramolecular Reactions |
<table>
<thead>
<tr>
<th>Quarter Three</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit, Topic, and Timeframe</strong></td>
</tr>
<tr>
<td><strong>Unit 7</strong></td>
</tr>
<tr>
<td>Math of Chemical Reactions</td>
</tr>
<tr>
<td>10-15 days</td>
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<tr>
<td><strong>Unit 8</strong></td>
</tr>
<tr>
<td>Electrons in the Atom</td>
</tr>
<tr>
<td>5-7 days</td>
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</tbody>
</table>

| **Unit 9** | Describe the development of the Periodic Table | Structure of Matter: |

<p>| Total 34-45 days | | |</p>
<table>
<thead>
<tr>
<th>Periodic Table (Trends)</th>
<th>10-12 days</th>
<th>Describe the arrangement of the modern Periodic Table, including names of important families</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>State the general trend for and arrange elements according to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- atomic size</td>
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<tr>
<td></td>
<td></td>
<td>- ionization energy</td>
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<tr>
<td></td>
<td></td>
<td>- density</td>
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<tr>
<td></td>
<td></td>
<td>- electronegativity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- metallic character</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- melting point</td>
</tr>
<tr>
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<td></td>
<td>Use the periodic table to determine the ion that an atom is likely to form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum Lab Experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Periodic trends puzzle or lab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Periodic Variation:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Atomic size, ionization, electronegativity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Trends in properties-density, melting point, phase at room temperature, conductivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atomic Structure:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Properties of valence electrons</td>
</tr>
</tbody>
</table>

| Unit 10 Advanced Bonding (Shapes, Polarities) | 8-12 days | Draw and describe models to describe ionic and covalent bonds                           |
|                                              |          | Describe how the nature of bonds relates to electronegativity                          |
|                                              |          | Use Lewis structures to determine the molecular geometry and polarity for a molecule  |
|                                              |          | Describe metallic bonds and their affect on the properties of metals                   |
|                                              |          | Minimum lab experience:                                                               |
|                                              |          | Ball and stick model                                                                  |
|                                              |          | Interactions of matter                                                               |
|                                              |          | - Intramolecular                                                                     |
|                                              |          | - Chemical bonding                                                                   |

| Unit 11 Energy | 5-10 days | Explain the types of energy                                                          |
|               |          | Observe the changes in energy that occur during a state change                       |
|               |          | Learn the difference between heat energy and temperature                             |
|               |          | Complete temperature conversions between Kelvin, Celsius, and Fahrenheit             |
|               |          | Describe how different substances heat capacities vary                                |
|               |          | Calculate some basic calorimetry problems                                            |
|               |          | Minimum Lab Experience                                                               |
|               |          | Calorimetry lab                                                                      |
|               |          | Interactions of matter                                                               |
|               |          | - Intermolecular                                                                    |
|               |          | - Changes of State (energy considerations of phase changes)                          |

| Total 46-56 days |          |                                                                                      |
|                 |          | Quarter 4                                                                             |

162
<table>
<thead>
<tr>
<th>Unit, Topic, and Timeframe</th>
<th>Learning Targets</th>
<th>Alignment with ODE proposed Chemistry Curriculum</th>
</tr>
</thead>
</table>
| **Unit 12** States of Matter (Intermolecular Forces) 5-10 days | Describe properties of water  
Describe and calculate heat of fusion and heat of vaporization of water  
Use heating curves to describe phase changes  
Use phase diagrams to predict the phase of a substance at certain temperatures and pressures  
Describe the following intermolecular forces:  
- London dispersion forces  
- dipole-dipole attraction  
- hydrogen bonding  
Describe the relationship among vaporization, condensation, and vapor pressure | Interactions of matter  
Intermolecular Properties of solids, liquids, and gases |
| **Unit 13** Behavior of Gases 8-10 days | Describe atmospheric pressure and how a barometer works  
Convert between units of pressure  
Describe the relation between moles, pressure, temperature, and volume of a gas quantitatively and qualitatively using:  
- Boyle’s Law  
- Charles’ Law  
- Combined Gas Law  
- Ideal Gas Law  
- Graham’s Law of Diffusion  
- Dalton’s Law  
Describe the postulates of the kinetic molecular theory and use this to describe the behavior of gases  
Minimum lab experience:  
Gas laws lab | Interactions of matter  
Intermolecular Properties of solids, liquids, and gases  
Changes of state, gas, behavior, laws, measuring |
| **Unit 14** Solutions 8-12 days | Describe the process of dissolving and factors that influence dissolving  
Interpret the data in a solubility curve  
Describe solutions using the terms saturated, unsaturated, supersaturated, dilute, and concentrated  
Describe solutions using molarity and molality  
Calculate boiling point elevation and freezing point depression for solutions | Interaction of Matter  
Intramolecular Stoichiometry  
Intermolecular Properties of solids, liquids, and gases |
### Minimum Lab Experience:

**Solutions lab**

<table>
<thead>
<tr>
<th>Acids and Bases</th>
<th>8-10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the properties of acids and bases.</td>
<td></td>
</tr>
<tr>
<td>Differentiate three acid-base models: Arrhenius, Bronsted-Lowry, and Lewis.</td>
<td></td>
</tr>
<tr>
<td>Find the concentration of a strong base by titration with a strong acid.</td>
<td></td>
</tr>
<tr>
<td>Calculate $[H^+]$ or $[OH^-]$ given a pH or concentration of the other quantity.</td>
<td></td>
</tr>
<tr>
<td>Calculate pH, given $[H^+]$ or $[OH^-]$ for strong acids and bases.</td>
<td></td>
</tr>
<tr>
<td>Minimum Lab Experience: Titratin lab.</td>
<td></td>
</tr>
<tr>
<td>Properties of acids and bases.</td>
<td></td>
</tr>
</tbody>
</table>

### Interaction of Matter

**Intramolecular - Acids/Bases:**

- Differentiation between acids and bases.
- Calculation of hydronium and hydroxide ions.
- Identification of common acids/bases.

### Stand Alone Unit - this unit must be included somewhere during 3rd or 4th quarter

<table>
<thead>
<tr>
<th>Topic</th>
<th>Objectives</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 15 Nuclear Chemistry</td>
<td>Describe the types of radioactive decay.</td>
<td>Structure of Matter: Nuclear changes and reactions:</td>
</tr>
<tr>
<td>5-7 days</td>
<td>Write nuclear equations that describe radioactive decay.</td>
<td>Nuclear stability.</td>
</tr>
<tr>
<td></td>
<td>Describe how one element is changed into another by nuclear bombardment.</td>
<td>Nuclear equations (alpha, beta).</td>
</tr>
<tr>
<td></td>
<td>Describe radiation detection instruments.</td>
<td>Radioactive decay: unstable nucleus, nuclear force, decay of nucleus (integer level half-life and characteristics of products).</td>
</tr>
<tr>
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<td>Calculate ½ life problems.</td>
<td>Fission.</td>
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<tr>
<td></td>
<td>Describe benefits and hazards of radioactivity.</td>
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<tr>
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<td>- Radioactive dating.</td>
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<td>- Tracers.</td>
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<td>- Fusion and fission reactions.</td>
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<td>- Radiation damage to human tissue.</td>
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<tr>
<td></td>
<td>- Production of nuclear energy.</td>
<td></td>
</tr>
</tbody>
</table>

**Total 34-49**

164