



The Structure of Time

How Trimester Schedules Impact Teaching and Learning in the Jefferson County Public Schools of Louisville, Kentucky

Meredith L. Foster, Stephen M. Fry, Christian L. Sawyer

Capstone 2011 / Peabody College at Vanderbilt University / May 4, 2011

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Executive Summary

For more than a century, schools have wrestled with the issue of time. The creation of the Carnegie Unit to measure curricular progress and “time served” was an early attempt to measure the outputs of America’s educational system. At that time, it was expected that large numbers of students would not complete high school but that they would be able to contribute to the economy. Today’s technological and global society requires a more educated workforce in order to compete in an ever-evolving workforce (Tirozzi, 2001). With these high stakes, it is more important than ever that schools maximize classroom time.

New graduation requirements were passed by the Kentucky legislature in February, 2006 that increased the number of math courses required for graduation. JCPS officials believed these new requirements would lessen the chances of graduation for those students considered “at risk.” In order to address these concerns, JCPS investigated scheduling models that could maximize credit opportunities and enhance students’ ability to graduate.

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Time to Measure Trimesters

After considering eight possible schedules, district leaders selected the 3X5 trimester. This schedule offers increased credit opportunities to students over their high school career while allowing students to focus on only five classes at a time. During the 2007-08 school year, preparations were made to pilot the trimester schedule in high schools the following year. Principals and site-based management teams were asked to serve on committees and attend symposiums in order to get the collective buy-in necessary towards the shift.

As one of the thirty largest school districts in the nation (enrollment of nearly 100,000 students), JCPS has gained a reputation for leadership in data and accountability management. Still, this was a new system for JCPS and there is little scholarly research available for reference or guidance. Indeed, despite use in other districts, there is scant research regarding the impact of the 3X5 on school cultures, instructional rigor or student performance.

JCPS partnered with our capstone project team to study various aspects of the trimester schedule.

Research Questions

Our project is guided by four primary questions:

To what extent is the trimester configuration impacting

- credit opportunities
- depth of instruction
- personalization
- faculty collaboration

Six schools on trimester were selected as case study schools based on their similarities in terms of student make-up and on the type of previous schedule under which those schools operated. As of the 2010-2011 school year, eleven of the 21 traditional high schools

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have moved to a trimester schedule. Since then a number of the trimester schools have had time to stabilize and more reliable performance data is now available at these schools.

Methods

We selected a mixed methods approach to measure the progress of implementing the trimester schedule in JCPS. We investigated these project questions through multiple data collection methods, including interviews with school principals, assistant principals, teachers, counselors, and students at each of the six case study schools as well as several meetings with district office staff. We also utilized the JCPS data warehouses and met extensively with JCPS executive accountability staff to mine for data regarding graduation rates, student standardized test scores, disciplinary suspensions, and attendance records. These data were extracted for three academic years: 2007-08, 2008-09 and 2009-10 on standardized test scores, absences, disciplinary suspensions, and graduation success along with key demographic and socio-economic data.

Findings

Analyses of these data revealed the following key findings:

Credit Opportunities:

- The shift to trimester is associated with an increase in a senior's odds of successfully graduating on time.
- Students are remediating failed courses.
- Seniors report increased access to elective courses.
- Trimesters pose a challenge to the appropriate configuration of some trimester courses, such as AP courses.
- Meeting the scheduling needs of students in the trimester configuration places great burden on guidance counselors.

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Depth of Instruction:

- A statistically significant increase in ACT scores was detected for students in trimester schools in the 2009-2010 school year.
- Data shows increase in both satisfaction with instruction and in class discussion.

Personalization:

- The move to trimester reflects a decrease in a student's predicted number of absences by one day.
- There was a statistically significant increase in student's feeling of belongingness.
- The shift to trimester is associated with an increase in student disciplinary suspensions, but principals and teachers perceive a positive impact on conduct associated with the shift.
- Based on interview data, personalization is reportedly improved in the following ways:
 - lighter student loads give teachers more individual time with students
 - keeping students with the same teacher for 2 trimesters is preferred
 - better communication with parents

Faculty Collaboration:

- Teacher-to-teacher accountability has increased, as teachers routinely do not have the same students for parts A and B of a course.
- Teachers work together to develop pacing guides and practices to teach a course in only 12 weeks.

Recommendations

Based upon these findings, we have developed corresponding recommendations designed to improve the implementation of those on a trimester schedule. Specifically, our recommendations include the following:

Maximize the benefits of the trimester schedule by:

Credit opportunities

- Allowing students to remediate a failed course immediately rather than moving on in the course sequence
- Providing guidance counselors and the registrars further training in scheduling the trimester schedule
- Monitoring courses which run all three trimesters a year
- Developing a consistent approach to offering advanced placement courses
- Addressing the stigma that the trimester schedule is for failing schools

Depth of Instruction

- Ensuring that all teachers are properly trained and evaluated on their use of the classroom instructional framework
- Creating a framework for peer observation and reflection on best practices

Personalization

- Pursuing opportunities to accelerate students who are performing above expectations
- Utilizing advisory programs at all trimester schools
- Keeping students with the same teachers for both parts of a course whenever possible

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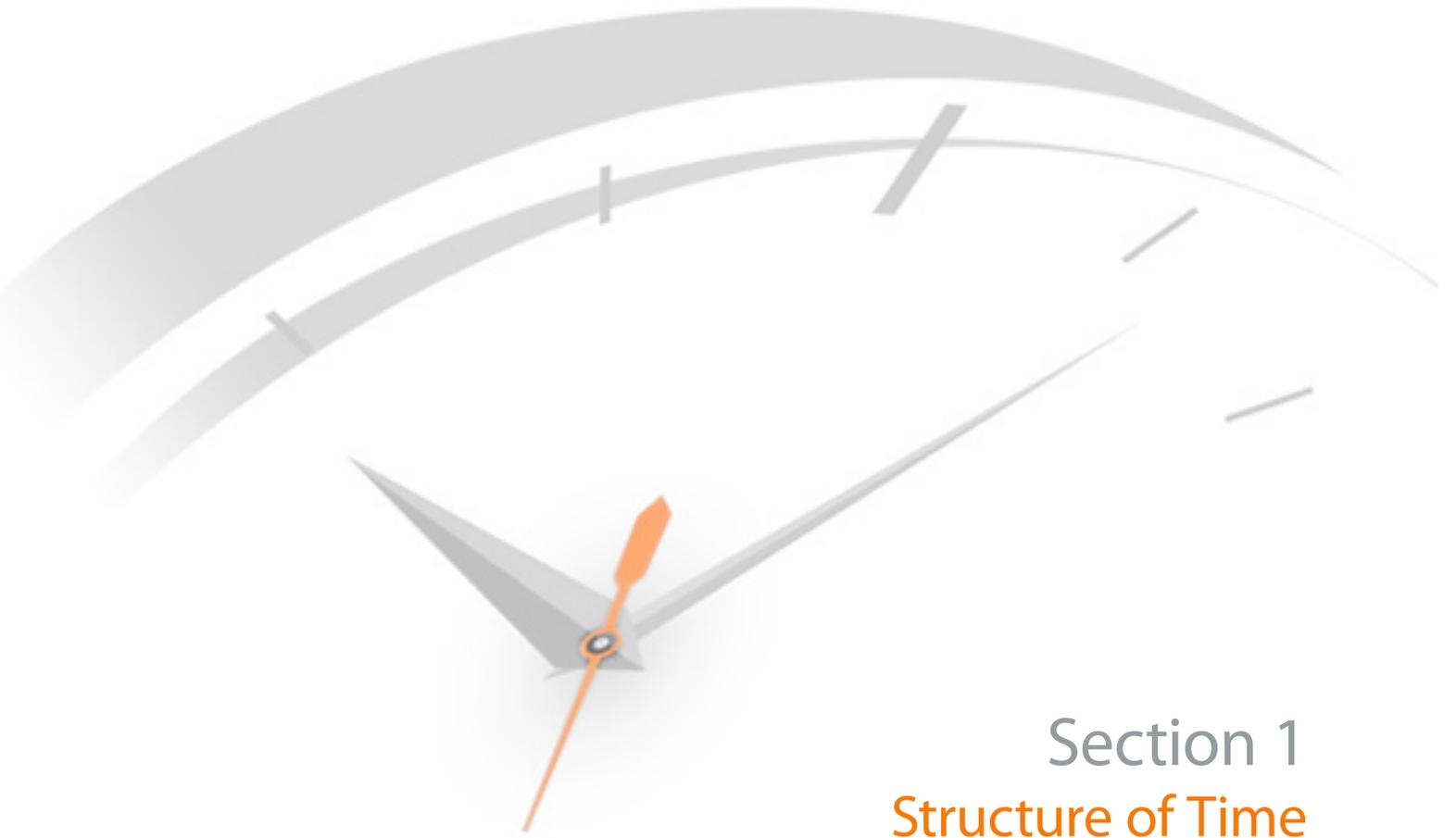


- Improving communication with parents regarding the schedule

Teacher Collaboration

- Offering common planning for same subject teachers
- Allowing teachers release time to observe peers and plan collaboratively

The capstone team applauds JCPS for their transparency, for self-analyzing, and asking difficult questions to make the most informed decisions in an effort to improve teaching and learning in their schools. From our vantage point, we see positive momentum occurring in selected schools after they moved to a trimester schedule. We urge district leaders to continue to self-assess over the next couple of years, refining the process until the full potential of the trimester schedule is given the opportunity to be fulfilled before making definitive decisions regarding this structure of time.



Section 1
Structure of Time



Section 1

Structure of Time: *A Key to Learning and Community*

Of all the stages of life, adolescence is the most volatile – full of promise, energy, and because of newly achieved freedom and potency, substantial peril. In its freshness, adolescence is attractive. In its enthusiasms, it can be, to older folk at least, exhausting. For most people, it is pivotal: it is the time of life when we find out who we are becoming, what we are good at, what and whom we like. What happens in these years profoundly affects what follows (Sizer, 1984, p.1).

Local Dilemma, National Context

Reform efforts related to the structure of time have moved from the school house all the way to the White House.

High school reform remains at the forefront of public discourse as policymakers, politicians, and educators engage businesses and the public in conversations about the high school as a production engine and what kind of skills a student should have upon graduation. Around the nation, more people are asking whether schools are designed to best yield the skilled and thoughtful citizens the future requires.

The history of high school reform has evolved through an “almost incessant criticism of secondary education and the succession of movements to reform the schools” (Powell, Farrar, and Cohen, 1985). The cycle of censure and reform dates back to the Progressive Era in 1893 when the Committee on Secondary School Studies, known as the Committee of Ten, recommended what subjects should be taught, the sequence of subjects, and the length of instruction. Just over a decade later, in 1906, the Board of Trustees of the Carnegie Foundation classified school time as we still know it today. The Carnegie Unit was conceived by this group as a mechanical way to organize both the school day and the school curriculum (Zepeda and Mayers, 2006). In the following decades, reform efforts

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related to the structure of time have moved from the school house all the way to the White House.

Structure of Time: A Key to Learning

As a way to restructure the day, time was organized differently in many high schools in the late 1950s and early 1960s, most notably through the work of Trump (1959), who introduced flexible modular scheduling. Trump's scheduling allowed flexibility in class time meetings by a determination of the predicated needs of the subject matter. Canady and Rettig (1995) report that the flexible modular schedule was abandoned for a number of reasons, including a rise in student discipline due to 30 to 40 percent of the school day being allocated to unstructured independent studies and tutorials.

A Nation at Risk stated that American students "were drowning in a rising tide of mediocrity."

The flexible modular scheduling gave rise to alternate types of scheduling that proliferated in the 1980s and 1990s due to the 1983 report by the National Commission on Excellence in Education, *A Nation at Risk*. This critical report exposed the faults of the American education system, stating that students "were drowning in a rising tide of mediocrity" and that we would not survive international competition from other countries (National Commission on Excellence in Education, 1983). This alarmist document changed the focus of schools from being social panaceas to being responsible for the United States' ability to overcome economic competitors. To do so, it urged education leaders to look at three big issues: expectations, content and time (Aronson, Zimmerman, and Carlos, 1998). Reagan appointed the National Commission on Excellence in Education, who authored the report, to also make suggestions for improvement. To overcome the problems, they said that states should implement four years of core subjects in schools as a minimum core curriculum, that rigorous and measurable objectives be instituted, time spent in school should be lengthened, and teacher quality needed to be addressed.

Time is Not Equal to Learning

While *A Nation at Risk* called for an increase in school calendar days from 180 to 210 or more, findings indicate little or no relationship between allocated time and learning gains. Examples include



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Third International Mathematics and Science Study (TIMSS) data, where a number of nations whose students spend less time in class outperformed U.S. students. In studies comparing U.S. and Asian education systems, higher achievement is attributed to quality of teaching, curriculum, role of parents, and cultural value placed on education – not more time in class (Aronson, Zimmerman, and Carlos, 1998).

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Furthermore, the cost estimate for each day has been estimated to be between \$2.3 and \$121.4 million for each additional day. Given the weak link between time beyond current norms and achievement gains, and considering the associated cost, the body of research suggests districts work to make better use of existing time rather than adding more (Aronson, Zimmerman, and Carlos, 1998).

Boyer (1983), Goodlad (1984), and Sizer (1984) emphasized, based on their research findings, that time is virtually the most important resource available to schools, and that the use and standardization of time must be re-examined in consideration of prioritization of authentic learning. In the seven years following the release of *A Nation at Risk*, proposals to extend the school calendar were considered in 37 states, but none of them increased the school day beyond the traditional 6-1/2 hours or the school year beyond 180 days (Aronson, Zimmerman, and Carlos, 1998).

In the 1990s schools continued to be blamed for economic inferiority due to continued poor showing on international achievement comparisons. Prompted by continued concern, federal legislation established a special commission to look specifically at the relationship of time and learning. *Prisoners of Time*, the 1994 final report of the National Education Commission on Time and Learning, stated that although we have made progress in addressing two of the three major issues mentioned in *A Nation at Risk*, content and expectations, evidenced by the emergence of standards-based reform, progress towards the third issue, time, had stalled.

Prisoners of Time

High schools in the United States have been criticized for making students and teachers “prisoners of time” according to the commission’s report. The inflexible Carnegie Unit gives priority to seat

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hours over learning outcomes. Students who are on traditional schedules must prepare for the same six to seven courses each day for the entire school year. Modeled after the Tayloristic assembly line style of education, teachers service 150-170 students every day divided into 45-50 minute increments. Each class period attendance, homework collection, and administrative tasks take up as much as a fifth of the time and teachers are forced into the role of lecturer in order to put the information out there for the students. Traditional schedules don't provide the time for students to become engaged in inductive or deductive reasoning, to have classroom discussions of great depth, to do lab work, or to work in collaborative groups.

A Nation at Risk stated that American students “were drowning in a rising tide of mediocrity.”

The national call for restructuring instructional time in high schools in the 1990s gave way to an expansive consideration of alternative schedules that might improve instruction, relieve homework load, and decrease teachers' workload. The block schedule was seen as a way to increase the depth of coverage by extending classroom periods while reducing the fragmentation and extra course load experienced by students moving from one 50-minute class to the next (Cawelti, 1994).

Compounded Research and Support

To further the notions of the Commission's report, in 1994, the National Association of Secondary School Principals (NASSP), in partnership with the Carnegie Foundation for the Advancement of Teaching, appointed a commission of practitioners to study high schools. In the Commission's report, *Breaking Ranks: Changing an American Institution*, NASSP and Carnegie decided to break ranks with traditional thinking about high schools to describe what needs to be accomplished during this important, challenging reformation.

The report emphasized the importance of the structure of time as a vehicle of delivery for the noted aims, which included more rigorous academic standards, developing independent learners who are technology savvy and have an international consciousness, creating schools that act as personalized communities, and teacher accountability for student success.

Observing that educational inequalities were being amplified by schools functioning on a “fixed clock,” the Commission urged



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schools to “reinvent themselves around learning, not time, and to fix the design flaw [by using time] in new and better ways” (p. 29). The exact words of the Commission’s vanguard report are worth noting:

The Commission urged schools to “reinvent themselves around learning, not time, and to fix the design flaw [by using time] in a new and better way.”

(From the NASSP/Carnegie-sponsored report) WE RECOMMEND that state and local boards work with schools to redesign education so that time becomes a factor supporting learning, not a boundary marking its limits.

The conviction that learning goals should be fixed and time a flexible resource opens up profound opportunities for change. . . . Fixing the design flaw also makes possible radical change in the teaching and learning process. New uses of time should ensure that schools rely much less on the 51-minute period, after which teachers and students drop everything to rush off to the next class. Block scheduling—the use of two or more periods for extended exploration of complex topics or for science laboratories—should become more common. Providing a more flexible school day could also permit American schools to follow international practice where between classes students remain in the room and teachers come to them.

A more flexible time schedule is likely to encourage greater use of team teaching, in which groups of teachers, often from different disciplines, work together with students. Greater flexibility in the schedule will also make it easier for schools to take advantage of instructional resources in the community—workplaces, libraries, churches, and community youth groups—and to work effectively with emerging technologies.

Fixing the design flaw means that grouping children by age should become a thing of the past. It makes no more sense to put a computer-literate second grader in *Introduction to Computers* than it does to place a recent Hispanic immigrant in *Introductory Spanish*. Both should be placed at their level of accomplishment. Although the Commission does not believe 15-year olds should leave high school early, meeting high performance standards in key subjects should be the requirement for the high school diploma, not simply seat time or Carnegie units. In the case of genuinely exceptional students who meet these requirements while very young, schools should offer them the opportunity to take advanced courses.

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Above all, fixing the flaw means that time should be adjusted to meet the individual needs of learners, rather than the administrative convenience of adults. The dimensions of time in the learning process extend far beyond whether one student needs more time and another can do with less. The flexible use of time can permit more individualized instruction.

We must not forget that children are like adults in many ways.

We should not forget that students are like adults in many ways. Some are able to focus intensely on demanding materials for long periods; others need more frequent breaks. Many students, like many adults, learn best by reading; some learn best by listening; others, by doing, or even by talking amongst themselves. Offering more frequent breaks, providing more opportunities for hands-on learning, encouraging group work-these techniques and others can parole some of the students who today feel most confined by the school's rigid time demands.

All of these possibilities-and many others-lie within reach if the design flaw is fixed. All of them are much more difficult within the prison of time-bound education. (End Quote).

A second report commissioned by the NASSP, Data-Driven High School Reform, The Breaking Ranks Model, published in 2001 accompanied the NCLB legislation, building on the tenets established in the first NASSP report, providing a context by which data can be used to support a school reform effort. The report describes the Tayloristic methods by which our nation's schools have previously functioned and a call to break that mold:

(Quoted from the report) For more than 100 years, our high schools met the workforce needs of an industrial society by organizing learning around a curriculum delivered in standardized time periods called Carnegie Units. Within this structure, curriculum was defined as a set of units, sequences, and facts. Credentials (Carnegie Units) were based on "time served," and the failure of significant numbers of students was not only accepted, but also regarded as an expected result of norm-referenced testing. For the most part, this system of education prepared generations of high school students to find their place in American society. Where it did not, the economy had a place for people who were willing to work hard even if they lacked basic skills or formal schooling.



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Critical research over the past twenty years questions whether traditional designs serve children well enough in these changing times and what it would take to change them.

The opportunities and demands of today's society are different. Conditions of secondary education that allow high school students to leave school without developing essential competencies or ever being challenged to fulfill their potential are no longer acceptable. Educational failure and undeveloped talent are permanent drains on society, and the current reform movement has shifted the emphasis from access for all to high-quality learning for all (Lachat, 1994). Today's high school students need a very different approach to education as they face the realities and demands of a technological and global society characterized by rapid change and unprecedented diversity. The workplace already demands that individuals understand multidimensional problems, design solutions, plan their own tasks, evaluate results, and work cooperatively with others. These expectations represent a new mission for education that requires high schools to not merely deliver instruction, but to be accountable for ensuring that educational opportunities result in all students learning at high levels (Visher, Emanuel, & Teitelbaum, 1999). (End Quote).

Today, a high school, or even a college diploma, no longer guarantees one a job. Opportunities, however, are vast and constantly emerging. The school principal's job includes having knowledge of what stands at the forefront of the educational scene as technology and globalization continue to push school reform (Daggett, 2011). The school leader should also know the needs of students there, and find ways to facilitate those needs under a flexible framework. The schedule should be a critical structure through which these aims are addressed.

Critical research over the past twenty years questions whether traditional designs serve students well enough in these changing times and what it would take to change them. Prescriptive formulas crafted by experts feel fragmented as a school input unless they are personalized and molded in an organic, contextual manner. Simply importing practices that work well in one place doesn't necessarily lead to greater student learning. Each local school must articulate its core principles and vision for student success and then let the practices emerge from those principles (Meier, 2000). In addition, school design entails an ongoing inquiry process as communities identify goals and problem-solving strategies, which is a continuous cycle as

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schools and communities adapt to continual changes in the greater socio-political context of life (Cushman, 1999). In sum, the thrust of effective reform targets two, broad categories of design and impact: academic press and community.

Schedule as a Mechanism for Academic Press and Community

The most efficacious school reforms and initiatives target strategically improving a school's academic press and school community (Murphy, interview October 9, 2010). Research suggests when these two components are satisfied, the school flourishes (Murphy et al., 2001, p.29). Because of their predominance as key anchor constructs under which schools function, activities that propel schools towards these ends are noted in this project (See Appendix A). As academic press and community are examined, the schedule should be considered as a vehicle for promoting these conditions.

Research reveals that productive high schools develop and maintain robust academic cultures and develop a strong sense of "academic press," or high intellectual activity (Murphy et al., 2001, p. 145). Studies of exemplary high schools indicate that principals in these schools have specific goals and strategies to increase the amount of time students spend learning. Furthermore, emphasis is placed on academic organization, which includes diploma track and the process of assigning students to teachers and courses. The academic organization of the school is viewed as "the primary mechanism influencing both the average level of student achievement and how that achievement is distributed with regard to such background characteristics as race and class" (Lee et al., 1993, p. 229 in Murphy et al., 2001, p. 147).

Not surprisingly, schools that encourage students to challenge themselves, while nurturing those students along the way, produce students who are more engaged in rigorous work and who tend to be more successful academically. Smith and Lee (1996, p. 16) found that:

Academic Press captures the content of a school's normative environment – one that pushes all students into a specific type

The most efficacious school reforms and initiatives target strategically improving a school's academic press and school community.



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of course work and emphasizes the importance of academic learning. It has been argued that pressing all students toward this end may disadvantage less able students, who may not be able to succeed in such courses. Our results suggest that this is not the case. High schools, which have this agenda, show a more equitable distribution in learning” (in Murphy et al., 2001 p. 147).

In studies of highly effective high schools, connections have been consistently drawn between teachers’ expectations and student performance.

Crucial for productive high schools is the belief in pressing all students academically to ensure a high level of competency for all. In studies of highly effective high schools, connections have been consistently drawn between teachers’ expectations and student performance. High expectations translate to convictions held by all involved that students will be successful and achieve high academic goals (Murphy et al., 2001). Furthermore, utilization of effective assessment systems that fall under clearly articulated curricula, collaborative problem solving, attention to at-risk students, rewarding achievement, shared responsibility for success, individualization of student achievement goals, curriculum as relevant, multicultural sensitivity, and instructional leadership were identified as critical components needed to support high academic press in schools (Murphy et al., 2001).

While a necessity, academic rigor cannot be effectuated with a whip and a whistle, but instead comes hand in hand with its partner, community. School becomes community when it feels like a personal place – a home away from home – where students, staff, parents, and local community members come together for a joint productive purpose. With school community, students feel a sense of belongingness, pride, and ownership about their school, and the school reciprocally provides inspiration to students through its many offerings and attributes. Bryk, Lee & Holland (1993) report that the key to creating a cohesive, nurturing environment for students lies in having a school populated by caring adults. Research strongly supports the idea that high school students want and need – and perform better for – adults who care about them (in Murphy et al., 2001).

The recipe for school success may be the perfect mixture of academic press and community; however, schools don’t exist in a vacuum. We know students come to school with any number of issues keeping them pre-occupied and distracted from the academic

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lesson that awaits them. However, if the classrooms they enter each day can greet them as individuals and engage them in meaningful lessons, school becomes a special where students want to be. Murphy et al. (2001) reiterate the importance of school being a community and discuss three main elements of personalization that hinge on student-adult relationships: engagement of students in a cohesive, nurturing culture; teachers working in a positive, professional community; and a culture committed to student achievement driven by strong student-adult relationships. Ogden and Germinario's research confirms this notion in their studies of effective schools. They write, "The best schools actively seek ways to enrich the school environment for students such that it has a welcoming feel by providing a climate that values student involvement in school decision-making and creates opportunities for students to build sustained relationships with teachers and other adults" (Murphy et al., 2001 p. 162).

Research strongly supports the idea that high school students want and need – and perform better for – adults who care about them.

For a culture of learning to be complete, teachers too, must operate in a professional atmosphere that centers around the sharing of best practices. Teachers who can work and plan together, who are involved in school decision-making and feel that they have valued input into school processes will be more motivated to be instructional leaders. Research also points to necessary resources and adequate professional development being provided for teachers in effective schools (Murphy et al., 2001).

Knowing the critical components of effective schools include an array of subtopics under the umbrella of academic press and school community (see Appendix A), leaders have to find ways to internalize the key elements such that they make sense and are contextualized to their schools. As individual school needs arise, research recommends moving towards the liberation from inflexible frameworks and looking for ways to press rigorous academics through a caring and personal culture of learning.

Block Scheduling

The alternative to the traditional schedule known as a block schedule has been identified as a reform strategy (Zepeda & Mayers, 2006), and although there are variations within models, they include the Alternate Day Block, the 4X4 Semester Block Schedule,



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Research recommends moving towards the liberation from inflexible frameworks and looking for ways to press rigorous academics through a caring and personal culture of learning.

the Copernican Plan, and the Trimester Plan (Carroll, 1990; Canady and Rettig, 1995). Block scheduling is defined as a restructuring of the school day into classes longer than the traditional fifty-minute period classes (Adams & Salvaterra, 1997). By 1996, approximately 50 percent of high schools in the U.S. were using some type of block scheduling (Canady and Rettig, 1995). These schedules allow classes to be organized in larger blocks of time, giving teachers and students more flexibility when participating in instructional activities. Blocks have been noted to have benefits over traditional schedules in other areas including improved student conduct, lower dropout rates, increased course offerings, and in some cases better student performance (Geismar and Pullease, 1996).

The 4X4 follows a university model, wherein students begin new courses twice a year and the school day is divided into four roughly equivalent blocks of time, usually 80 to 90 minutes. In the A/B block, students meet every other day throughout the school year and typically enroll in six to eight classes, each lasting between 70 and 90 minutes. Some schools choose a hybrid block model, which uses components of the A/B, the 4X4 and the traditional 40-50 minute period all in one. Proponents of the 4X4 champion that students have only four classes for which they must prepare daily as opposed to six or seven and teachers must only prepare for three and have far less daily class loads. On the other hand, the disadvantages are that missing one day of school on the block is like missing two on the traditional schedule, so it is harder to catch up when absent. Also often a student takes a course such as Algebra I first term and often does not have Algebra II or the next math until the second term of the next year. By this time, the student has forgotten the content of the course and finds it harder to build upon prior knowledge with the span of time being so long.

According to Zepeda and Mayers, "The Copernican Plan has two main configurations, each combining block periods of differing lengths during the day. In the first configuration, students enroll in one four-hour macro-class each day (typically a core course such as Algebra or English) and then in two or three shorter classes lasting between seventy and ninety minutes each. Approximately every

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thirty days, students receive a new schedule. In the second configuration of the Copernican Plan, students enroll in two classes lasting approximately two hours each and receive new schedules every 60 days.”

Another variation is the trimester schedule, in which the year is divided into three terms instead of two, as in the 4X4. This schedule, in particular, has grown in popularity over the past five years. For example, since 2006, one-third of Michigan public high schools have reorganized to trimester block scheduling (Bair & Bair, 2010). Students take five courses at a time for approximately twelve weeks and classes are 68-75 minutes long (Trimesters.org, 2010). The trimester schedule follows the traditional seasons of fall, winter, and spring and traditional “year-long” classes run two trimesters. One major benefit to the trimester schedules is the increased opportunity for students to earn credits in an age where high school students have more rigorous academic requirements than ever before. Also, another boon is the fact that it has built-in remediation and enrichment opportunities for students. If students fail a course, they can retake it the next trimester and the schedule’s flexibility also allows students to move up to an Honors or AP course in one subject, while not necessarily being on the Honors “track.” There are more available places on the schedule to add elective courses, an option which encourages student personalization because students have more voice in the array of courses they take. The structure of the trimester also dictates more teacher collaboration and strict pacing of coursework (Bower, 2000).

“Since 2006, one-third of Michigan public high schools have reorganized to trimester block scheduling.”



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Sample Trimester 4-Year Plan

Sample 4 Year Plan	Fall	Winter	Spring
9th Grade	<ol style="list-style-type: none"> 1. English 9A 2. U.S. History A 3. Band A 4. Algebra 1 A 5. Computers 	<ol style="list-style-type: none"> 1. Physical Education 2. Biology A 3. Band B 4. Algebra 1 B 5. Spanish 1 A 	<ol style="list-style-type: none"> 1. English 9B 2. U.S. History B 3. Band C 4. Biology B 5. Spanish 1 B
10th Grade	<ol style="list-style-type: none"> 1. English 10A 2. Intro. Physics 3. Band A 4. Geometry A 5. Spanish 2 A 	<ol style="list-style-type: none"> 1. English 10 B 2. Economics 3. Band B 4. General Business 5. Earth Science 	<ol style="list-style-type: none"> 1. Government 2. Intro. Chemistry 3. Band C 4. Geometry B 5. Spanish 2 B
11th Grade	<ol style="list-style-type: none"> 1. Adv. Composition 2. Chemistry A 3. Band A 4. Algebra 2 A 5. Accounting 1 A 	<ol style="list-style-type: none"> 1. Sur. Of Amer. Lit. 2. Chemistry B 3. Band B 4. World Geography 5. ACT Prep 	<ol style="list-style-type: none"> 1. Speech 2. Accounting 1 B 3. Band C 4. Algebra 2 B 5. Art
12th Grade	<ol style="list-style-type: none"> 1. AP English A 2. Trig. A 3. Band A 4. AP Biology A 5. Cont. Hist. Lecture 	<ol style="list-style-type: none"> 1. AP English A 2. Trig. B 3. Band B 4. AP Biology B 5. Adv. Phy. Ed. 	<ol style="list-style-type: none"> 1. AP English A 2. Parenting & Child. 3. Band C 4. AP Biology C 5. Arch. Drawing
Totals	English 4.5 Math 4.0 Science 5.0 Social Studies 3.0	Foreign Lan. 2.0 Business 1.5 Music 6.0 Phy. Ed. 1.0	Electives 3.5 Required Classes Total Credits 30

(Source: <http://www.trimesters.org>)

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What We Know About Block Scheduling

While studies have been conducted regarding the effectiveness of block scheduling versus traditional scheduling, there is very little empirical research specifically focused on trimesters. Instead, much of the published literature is either testimonials or anecdotal accounts of experiences on the trimester schedule (Bair & Bair, 2010). One problem with the research on block scheduling is that many published studies do not provide adequate information about the type of block schedule adopted. Studies tend to group all block schedules as a single intervention, thus making it difficult to decipher whether a variation among the block schedules could make a difference in the outcome. For example, Zepeda and Mayers (2006) analyzed 58 published studies of block schedules, which comprised all of the existing research on the topic at the time. Their investigation revealed that despite the existence of various block formats, 31 of the 58 studies (53 percent) failed to identify the type or types of block scheduling in use at their research sites. Furthermore, 47 of the studies included no description of possible limitations of their studies. Three studies provided no information about the methodologies used, the data collected, or how the data were analyzed.

One troubling aspect about the studies that have been conducted on block scheduling is the lack of information regarding a rationale for changing to a block schedule. If an intervention is to be put in place – in this case changing how time is used by modifying the schedules in which students learn – there is only a superficial change until people dig deeper to answer questions about why there is a need to change and what are the intended and unintended consequences of change. Few articles recounted a school or district's experience in implementing a new schedule or offered suggestions for how to choose or implement a block schedule (Zepeda and Mayers, 2006).

Block scheduling has been promoted as tool through which instructional time in schools may be maximized (Canady & Rettig, 1995). Block scheduling as a classification has been credited with (1) reducing the number of students for whom teachers must prepare for daily and gives them more preparation time for those students; (2) reducing the number of classes students are responsible for

Block scheduling has been promoted as a tool through which instructional time in schools may be maximized.



Teachers consistently reported decreased student absenteeism, fewer student discipline problems, less class preparation, and decreased student anxiety.

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keeping up with on a daily basis, and this includes homework load; (3) alleviating the fragmentation associated with short periods in traditional schedules so that labs and extensive practice work can be completed in one period; (4) giving teachers the daily time needed to incorporate instructional practices that encourage student participation, discussion, collaboration, and inquiry-based learning as opposed to the traditional lecture and drill (Hottenstein, 1999).

A review of literature regarding block scheduling reveals that research regarding block schedules can be grouped into five major categories: (1) teachers' instructional practices and perceptions of block scheduling; (2) change and block scheduling; (3) effects of implementing block scheduling; (4) effects of block scheduling on student learning; and (5) students' perceptions of block scheduling.

Teachers' Instructional Practice

While findings on the topic of teachers' instructional practices and perceptions of block schedules were mixed, teachers consistently reported decreased student absenteeism, fewer student discipline problems, less class preparation, and decreased student anxiety. Some reports showed teachers with more experience had a more positive perception of the block, while others showed less-experienced teachers to have better feelings about it than the more-experienced teachers. The evidence regarding whether there was a change in instructional practices due to the block was equally as inconclusive. Some reports said there was a change in assessment and instructional design, and others reported no change (Zepeda and Mayers, 2006).

Change Associated with Block Scheduling

The underlying questions in these studies included why there was a need to change, what was done to prepare for the change, and what were the differences in school leadership as it pertained to instructional supervision after a school moved to the block schedule. The results of the one study that included events conducted in preparation for the block indicated that teachers were initially resistant to implementing a change to the block. This sentiment was attributed to poor communication between administration and teachers as well

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as a lack of trust on behalf of the teachers and suspicions about the motivation behind the change, as along with teacher complacency.

Overall, the teachers reported that teaching in a block schedule was less stressful than in a traditional schedule, and their planning periods were more productive. Moreover, the stress was not as dramatic for innovative teachers as opposed to those who tried to force traditional methods and activities into the new schedule. It was reported that although teachers may have initially attempted new instructional strategies, these teachers tended to fall prey to the regression effect, where they reverted back to traditional lecture and notes methods. The research suggested that the relationship between administration and teachers is critical for buy-in and creating ownership and support for change, and that school principals play a key role in the implementation of change in schools (Zepeda and Mayers, 2006).

Overall, the teachers reported that teaching in a block schedule was less stressful than in a traditional schedule, and their planning periods were more productive.

Block Schedule: Effects of Implementation

This category included many subtopics such as attendance, student discipline and instructional practices. Most of the studies implemented a mixed methods approach utilizing quantitative data including grade point averages, AP and ACT exam scores, focus group interviews with parents and students, surveys of school climate in schools with both traditional and block schedules, student disciplinary records, etc. Eleven of the studies examined the effects of block scheduling on standardized test scores and the results were contradictory. Some studies showing improvement after implementation of the block schedule and others showed that scores dropped slightly. The results were more consistent in the area of student discipline than in any other area, and showed an improvement in student discipline after implementation of the block. The data on student attendance was less conclusive (Zepeda and Mayers, 2006).

Effects of Block Scheduling on Student Learning

Results were inconsistent and thus, inconclusive, in this category. In some studies, block-scheduled students scored higher on standardized tests than their traditionally-scheduled counterparts, while other studies showed the opposite (Zepeda and Mayers, 2006).



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Student Perceptions of Block Scheduling

These studies examined the relationship between students' perceptions of block scheduling and the number of years they had been in the block schedules as well as whether there was a relationship between the type of diploma sought and students' perceptions of block scheduling. Surveys and factor analyses were also utilized to investigate whether student achievement levels affected their perceptions of the schedule.

Most of the findings consistently reported that students have positive connotations of block scheduling, and some were overwhelmingly positive. There was no significant relationship in the students' positive feelings about the block and the number of years their school had been on the block, but there was a positive relationship between high-achieving students and positive perceptions about the block schedule as a means to prepare them for college (Zepeda and Mayers, 2006).

Results Can't Be Generalized

Most teachers and students like the block, and student grades and grade point averages increased.

The results of studies regarding the effectiveness of block schedules on other outcomes are inconclusive because the findings are inconsistent. Zepeda and Mayers' (2006) analysis of 58 empirical studies concluded that, "The research failed to provide the evidence necessary to declare unequivocally that teachers' practices and student learning had changed." There are trends and insights that are noteworthy, although making generalizations is difficult when there is a change in context due to the unique characteristics of individual schools. Intervening variables can cause spurious outcomes. Examples include a lack of professional development to accompany or prepare for a change to block scheduling or if there was no perceived change in teachers' instructional practices. When circumstances are different from school to school, other variables as mentioned can cause a change in the outcome of the intervention – block scheduling.

Two qualitative generalizations about block scheduling seem to be supported conclusively by the literature: (1) most teachers and students like the block, and (2) student grades and grade point averages increased. While the explanation for these conclusions is

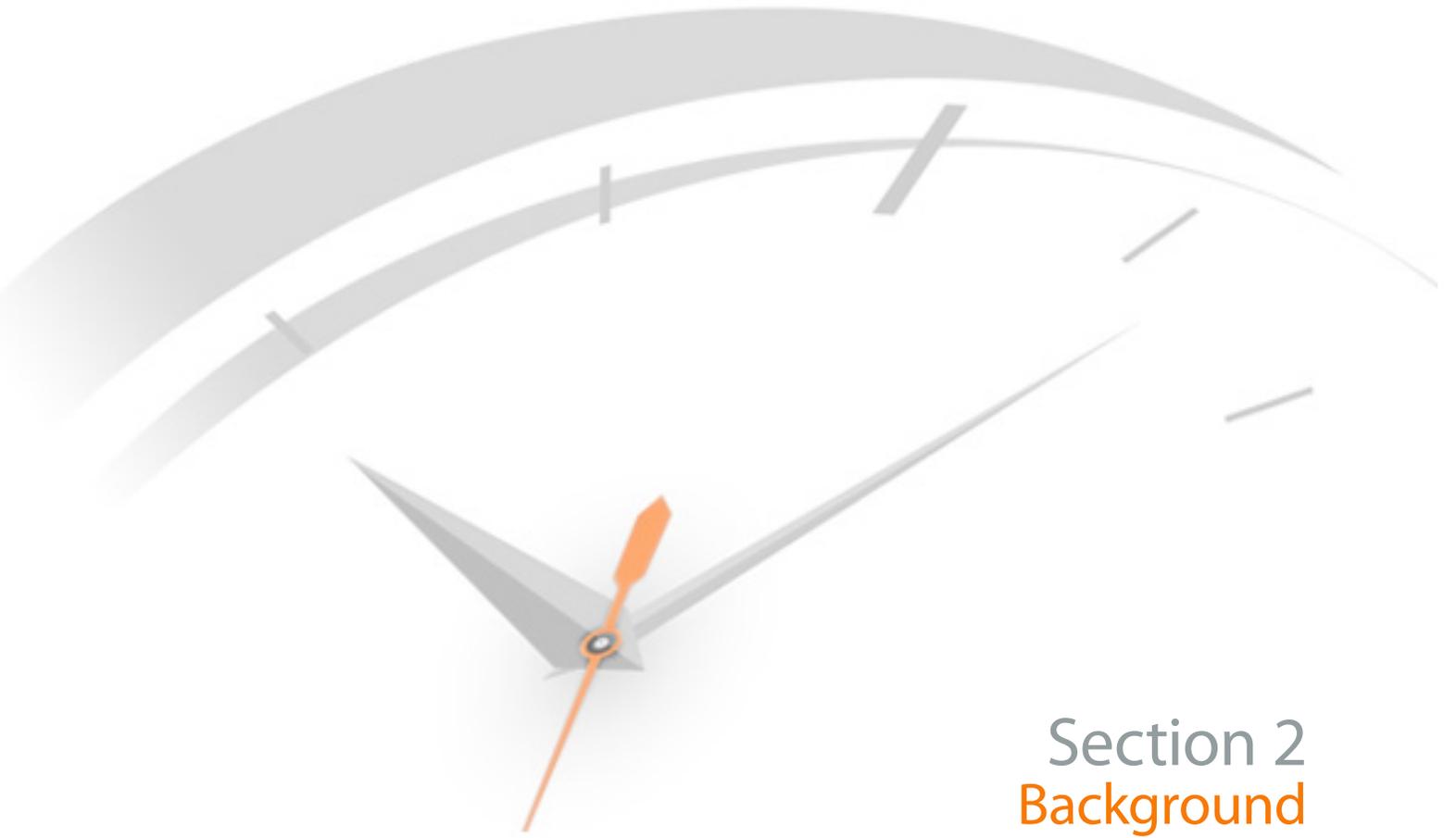
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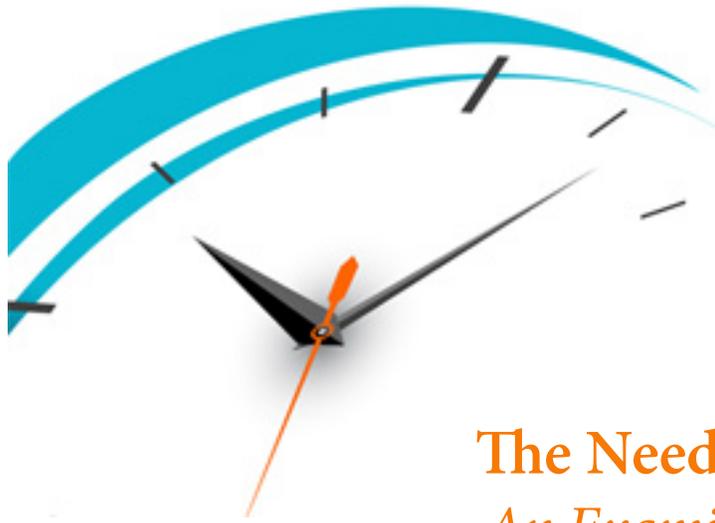
unclear, one known benefit of the block seen by both parties was the increased opportunity for student-teacher interaction that the block schedule brings. Across the five areas of study teachers reported “increased student attendance rates, better student discipline, increased interaction with students, and the opportunity to try new teaching strategies. Student reported that they had more interactions with teachers and earned better grades. Administrators asserted that teachers had the opportunity to experiment with new teaching strategies and that student discipline improved (Zepeda and Mayers, 2006).” There is contradictory information regarding a difference in the quality of instructional practices as well as student performance on standardized tests when comparing the block to traditional schedule.

One known benefit of the block was the increased opportunity for student-teacher interaction.

The lack of consistency among studies about block scheduling warrants recommendations for more longitudinal studies in order to clarify the mixed results that were delivered through the majority of previous studies. JCPS will be contributing to the extant body of research by commissioning this Capstone Project. In the next section a background of the project is introduced, which will provide contextual information about scheduling within JCPS.



Section 2
Background



Section 2: Background

The Need for a New Schedule: *An Examination of Trimester Scheduling*

The need for JCPS to investigate new scheduling models was a direct result of increased graduation requirements mandated by the state of Kentucky. Legislation passed in February, 2006, increased the math requirements beginning with the class of 2012. Under these new guidelines, three specific math credits were required for graduation: Algebra I, Geometry, and Algebra II. Pre-algebra or lower level math courses could be counted as electives but would not count towards the mathematics requirement (JCPS High School Student Progression, Promotion, and Grading Handbook 2010-2011). Students who failed a semester or year-long math course under the new guidelines would be in jeopardy of falling behind their classmates unless they completed summer school to stay on track to graduation. The previous graduation standard included Algebra I, Geometry, plus one math elective. JCPS officials expressed concern over how increased requirements would influence high school completion rates and the opportunities for students to enroll in elective courses.

An increase in graduation requirements also had implications on the schedules of many JCPS students. The increased mathematics requirement placed students in a more prescriptive track of courses and did not allow for as much flexibility in students' schedules. For many upper level students, the additional math course came at the expense of elective courses. As JCPS began investigating schedules, they sought to find a schedule that provided students with the new increased graduation requirement, while still offering them the opportunity to personalize their schedules with elective courses.

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The increased graduation requirement was seen as being potentially damaging to students who were at risk of dropping out. Due to this, JCPS sought a schedule that would allow students the opportunity to make up for a setback in a course without forcing them to endure summer school or electronic coursework in order to stay on track to graduate in four years, with their classmates. The goal was that the new schedule provide the opportunity for credit recovery. This would keep students motivated and enrolled in a JCPS school that complemented their future aspirations. District officials also hoped a new schedule would increase the depth of instruction and allow teachers to maximize instructional time..

Trimester Scheduling Emerges

In anticipation of this new legislation, JCPS had begun considering how it would adapt its high schools to these new requirements. JCPS district leadership began researching different scheduling models in light of the new, more challenging state graduation standards. Eight schedules, including the three already at use in JCPS, were considered as possible fits for the district (JCPS Conference Call, 7-6-2011). An early favorite that emerged was a modified block schedule called the 3X5 trimester schedule, which had been successfully implemented in many smaller districts across the country. After further investigation, the 3X5 model was presented to the Board of Education early in the 2007-2008 school year as a possible solution for the challenges presented by the increasing graduation requirements in the state.

JCPS district leadership began researching different scheduling models in light of the new, more challenging state graduation standards.

The 3X5 trimester schedule was seen as having many benefits for student outcomes and teacher effectiveness. The 70-minute-periods that compose this schedule offer sufficient time to engage students in the material and seem to provide sufficient time for guided practice by the instructor (Cawelti, 1994). Lab courses and other classes involving labor-intensive set up were seen as benefiting from this new configuration of time. In addition, students would only need to focus on five courses at any one time in the trimester schedule.

A plan to further investigate the feasibility of 3x5 was launched with the following steps:

- Conduct site visits to trimesters schools across several states
- Offer informational workshops to high school SBDM teams
- Create a symposium for faculty and parents
- Communicate the proposed schedule to all stakeholders
- Investigate professional development opportunities for faculty
- Propose 3X5 school calendar to the Board of Trustees

Source: 2007 PowerPoint by Joe Burke, Assistant to Superintendent, High Schools to Jefferson County Board of Trustees

The 3X5 trimester schedule was seen as having many benefits for student outcomes and teacher effectiveness.

Teams of educators from JCPS made trips to Mason, Ohio, and Bloomington, Indiana, as well as schools in Michigan and Colorado to visit trimesters schools and better understand how this schedule benefited students in these districts (Conference call, 7-6-2011). After gathering generally favorable feedback on the 3X5 model, the JCPS Central Office came to the forefront of the initiative to support the trimester schedule. Teacher leaders, administrators, and guidance counselors from district high schools were included in trimester visits and were subsequently asked to relate their findings to fellow faculty members. Despite the potential benefit of trimesters, some constituents within JCPS worried that trimesters would not be successful. It had never been implemented in a district as large as JCPS.

How the 3X5 Trimester Works

The trimester schedule allows students to focus on only five academic classes per marking period as opposed to students juggling six, seven, or even eight courses at a time under the old system. The schedule also shortens the amount of time students spend in a marking period from 18 weeks to 12 weeks. As this schedule lessens the perceived burden on students, it also cuts teachers' maximum class load significantly – an added benefit. Teachers working in trimester schools are guaranteed, by contract, to instruct no more than 124 students at a time.

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Structure of Time

Schedule Type	6 Period	7 Period	A/B Block	3X5 Trimester
Credits	24	28	32	30
Student classes	6	7	8	5
Class length	55 min	48 min	90 min	70 min
Max Teacher load	5 classes 150 students	6 classes 180 students	6 classes 180 students	4 classes 124 students
Cost (1 least – 4 greatest)	1	4	3	2

Head-to-Head Schedule Comparison

Schedule Type	6 Period	7 Period	A/B Block	3X5 Trimester
Period length	54 minutes	44 minutes	86 minutes	66 Minutes
Meetings per week	5	5	2.5	5
Course length	36 weeks	36 weeks	36 weeks	24 weeks
Contact minutes	9720	7920	7740	7920

Source: 2007 PowerPoint by Joe Burke, Assistant to Superintendent, High Schools to Jefferson County Board of Trustees

Goals of the Trimester Schedule

After significant research, JCPS leadership created five goals for the trimester model:

- Allow students the opportunity to maximize credit opportunities on the path to graduation
- Allow for increased depth of instruction in the classroom
- Allow further personalization of students' schedules through increased elective opportunities as well as credit recovery and acceleration
- Allow meaningful faculty collaboration and professional development to improve instruction

There is clear evidence that students were negatively impacted by the lack of continuity from high school to high school.

According to JCPS, one of the goals of the trimester schedule was to have each high school in the district on the same schedule. JCPS leaders referred to the district as having “a system of schools rather than a school system” (Conference Call, 9-8-2010). There is clear evidence that students were negatively impacted by the lack of continuity from high school to high school. System-wide there were 300 student transfers per day within the district. Students shuffling from high schools with A/B block into a school with a 6 or 7 period day, or vice versa, caused great confusion for students and put them in jeopardy of not being able to complete their high school degrees.

Another attractive element of the 3X5 trimester was the ability of schools to implement advisory programs into the schedule. Advisory programs have been adopted by some SBDM teams within JCPS high schools as part of the move towards small learning communities within high schools. The 3X5 schedule allows classes to be shortened to 60 minutes once per week or every other week in order to allow for a more meaningful advisory session to take place. Schools implementing advisories see them as furthering the efforts to provide a personalized experience for their students.

Challenges of Trimester Scheduling

JCPS realized from the outset of their study that there is no silver bullet when it comes to creating a common schedule for use in all high schools in the district. The strengths of various schedules could be argued along with which schedule met the financial needs of the district. The decision to implement trimesters was made at the school level by individual site-based management teams. Contrary to district hope, not all schools embraced the trimester concept.

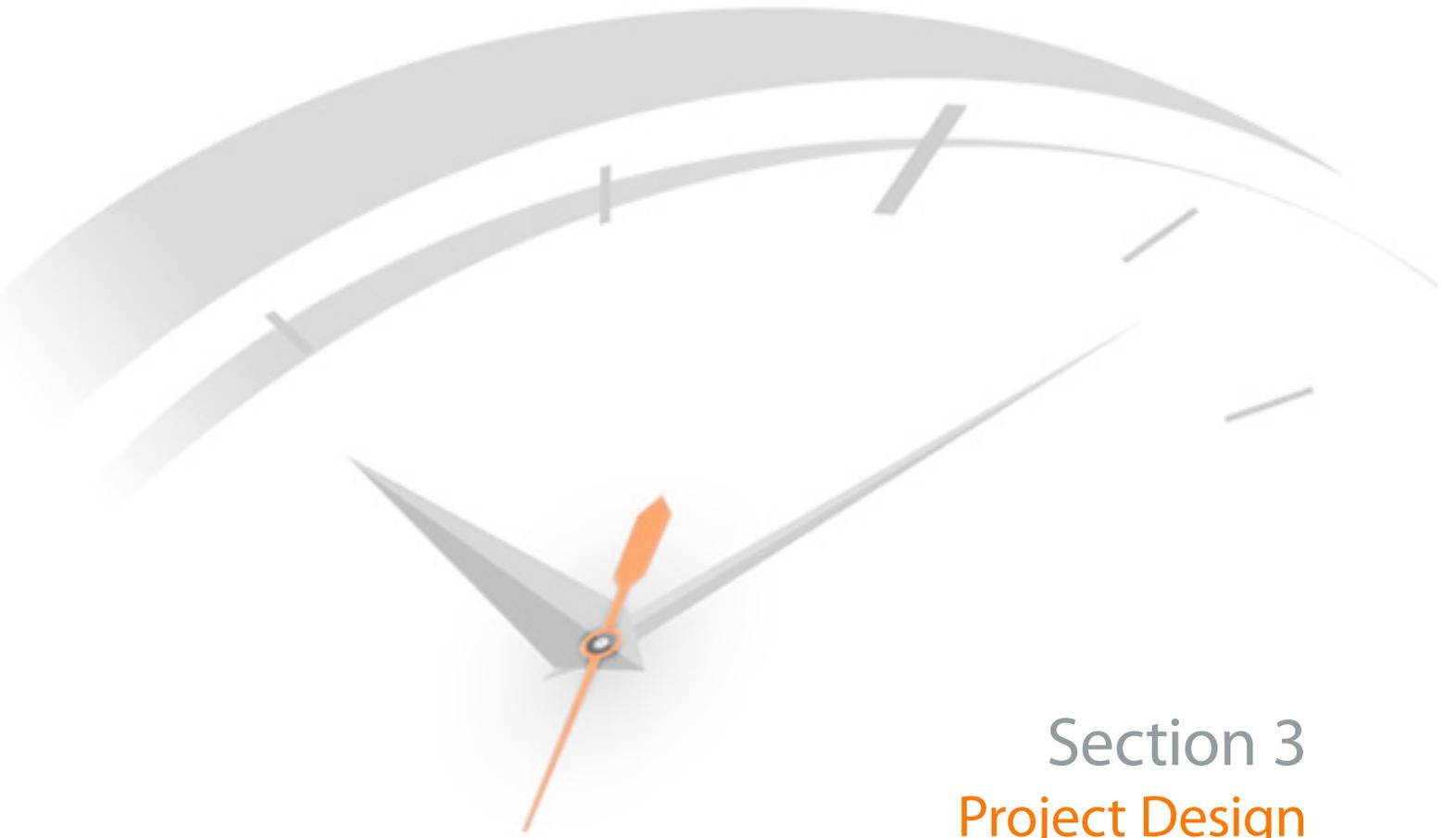
The transition to the trimester schedule presented challenges to students, teachers, and administration. Students had to adjust to seventy-minute periods and three sets of courses throughout the year rather than two. Teachers adapted their previous curriculum to fit within the confines of the 12-week trimester block. Teaching strategies and activities needed to be adjusted to engage students through a seventy-minute class. Administrators and counselors were forced to create a master schedule that offered flexibility for students to remediate or accelerate, as well as allowed common planning time for teachers.

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Our Approach to Studying 3X5 in JCPS

The next section outlines the methods used to investigate the implementation of trimesters in JCPS. A measured approach was necessary as not all schools in the district chose to adopt trimester schedules. JCPS leadership offered unlimited access to student performance data as well as results of the Comprehensive School Survey from all constituent groups. The district also arranged onsite interviews with administrators, teachers, counselors, and students to gain further understanding of the trimester schedule from principal stakeholders.



Section 3
Project Design



Section 3

Project Design

Our project design undertook a disciplined inquiry through an exploratory, mixed-methods field study (Shulman, Cronbach & Suppes, as cited in Smith and Glass, 1987). The thrust of our capstone investigation focuses on the trimester schedule and the elements of academic press and community in six JCPS high schools.

We designed our project around four questions:

- (1) *To what extent is the trimester schedule impacting students' credit opportunities?*
- (2) *To what extent is the trimester schedule impacting depth of instruction?*
- (3) *To what extent is the trimester schedule impacting the personalization of school for students?*
- (4) *To what extent is the trimester schedule impacting collaboration among teachers?*

Overall project design

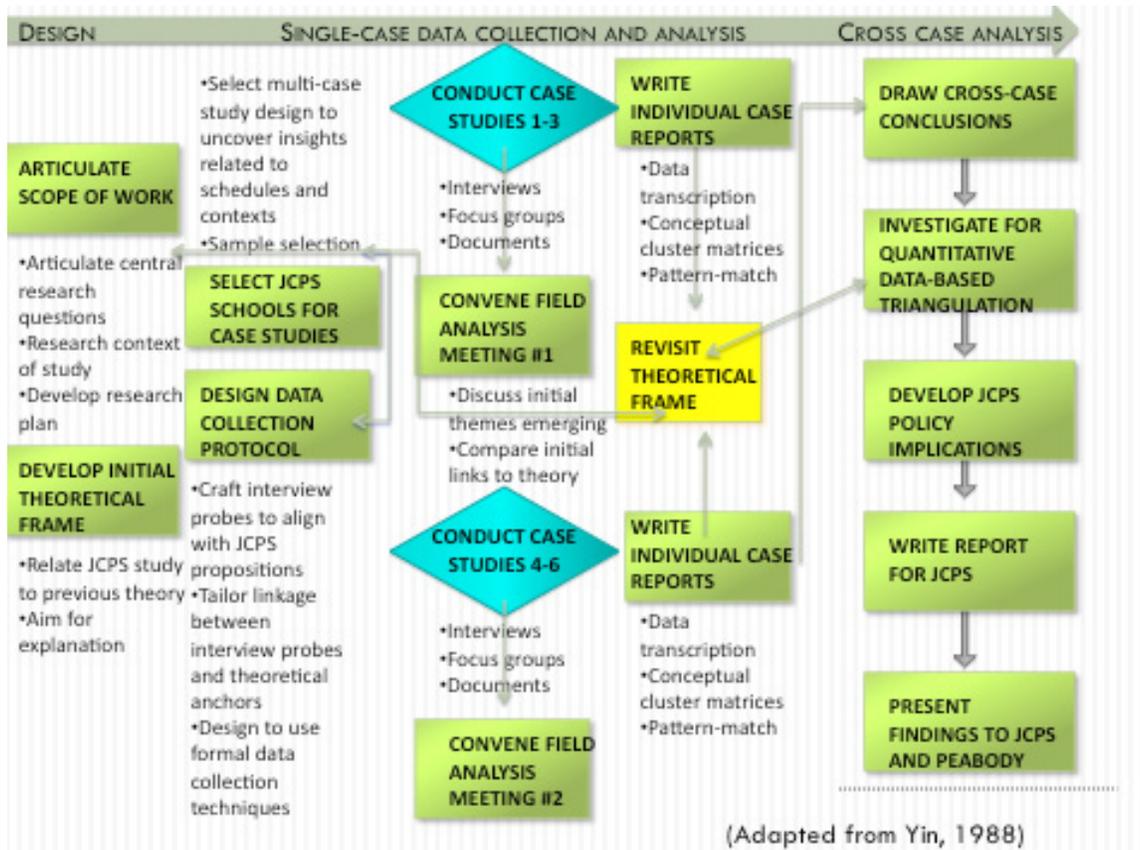
Multiple-case study design

We selected a multiple-case study research design because it best fit the scope of our project—to gather comprehensive, systematic, and in-depth information about the trimester schedule in the context of JCPS (Noor, 2008; Patton, 2002; Stake, 1995). Moreover, our mixed-methods design involved the combined use of qualitative and quantitative methods to answer exploratory and confirmatory questions about the trimester schedule, thereby strengthening the inferences drawn from our investigation (Tashakkori & Teddlie, 2003; Brock, 2005).

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Diagrammatic Representation of Project Design



Qualitative data collection and analysis

Introduction

Since little is known about the trimester schedule’s impact on schools nationally or within JCPS, our team set out to understand, through qualitative interviews and document analyses, the nature of the interaction between the trimester schedule and our case-study schools. We approached this part of our inquiry open to discovering whatever emerged from the data (Patton, 2002). Particularly, we aimed to use our qualitative interviews and document analyses to uncover both a finer definition of the project questions to be investigated and a deeper understanding of the trimester schedule itself.

Through discussions with JCPS administrative decision-makers and document-based analysis, our team worked first to unpack “the

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We approached this part of our inquiry open to discovering whatever emerged from the data (Patton, 2002).

story” of the trimester schedule as it unfolded in JCPS. We spoke for many hours with district leaders and collected multiple sources of data towards uncovering the problem needing investigation. As aforementioned, our consultation with literature commenced simultaneously and helped reveal key constructs involved in the greater phenomenon of the trimester schedule. Through our interactions with JCPS sources, our analysis of extant literature, and our consultation with Prof. Joseph Murphy, a national expert in K-12 school reform, we parceled out two anchor constructs in the problem to be investigated: academic press and community, both situated at the crux of understanding the trimester schedule in JCPS. Subsequently, our team discovered and constructed a theoretical map of the core sub-constructs embedded in the trimester schedule (see Methodological Appendix).

Designing our interview protocols

From this theoretical map, we designed several drafts of interview protocols for the different groups of key informants we aimed to interview in our case studies. Each question on any of our interview protocols was tied directly back to each element of our theoretical map to ensure that each interview conducted probed the interviewee for his/her perspective on the issues embedded in each of the major elements of the theoretical explication of our inquiry (Yin, 1988). While each interview protocol was designed to have questions covering each of the core constructs in our theoretical map, the questions in each protocol were designed to fit the case-study context and the nature of the interviewees. Thus, for example, the interview protocol used with students had questions covering each of our key theoretical constructs, though the questions were specifically tailored to capture the students’ unique perspectives (Patton, 2002). *Interview protocols and a graphic connecting protocols to our conceptual framework can be found in the Methodological Appendix.*

Case study site selection

In attempting to gather the most complete portrait of the trimester schedule, our team worked with JCPS to select case-study schools that would each provide an important piece in unpacking the trimester schedule’s impact on academic press and community. As Patton (2002) asserts, the logic and power of purposeful sampling

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exists in selecting “information-rich” cases for study in depth. The ability to construct a random sample of high schools was limited by the size and distribution of the district’s trimester pilot phase. Likewise, our project’s limited data collection timeframe and small budget restricted our ability to collect qualitative insights from informants at each of the 12 trimester high schools.

From our discussions with JCPS leaders and our analysis of internal documents, we discovered that JCPS high schools were diverse across multiple dimensions relevant to our project. First, we found that the trimester schools were moving to the new trimester schedule from different, previous schedules—some were previously on A/B block; some on 6-period traditional; others, 7-period traditional. JCPS leaders also classified the school populations in different ways, describing some as “more rural,” some as “more suburban,” and yet others as “more urban” than the rest of the high schools. Analysis of district data confirmed that demographic and economic diversity also varied across the system and group of trimester high schools.

Considering these dimensions of diversity within JCPS, six high schools were selected from the greater pool of trimester pilot high schools. As determined by a compilation of school-level data and insights gleaned from conversations with JCPS leaders and analysis of internal documents, each of the six contributed important elements to maximize the heterogeneity and comparability of our sample. More specifically, our sample of six sites included two that had shifted to trimester from A/B block; two from 6-period traditional; and two from 7-period traditional schedules. Moreover, our sample included high schools considered by JCPS to represent varying types of geographic context found in their district as well as high schools that represent varying demographic and economic patterns in the broader pool of JCPS high schools.

The chart below provides demographic and achievement data on the six trimester schools included in this project as well as the other trimester and non-trimester schools examined. Each school in the trimester project group shares similar demographic trends achievement patterns. As illustrated in the chart, the non-project trimester schools tend to follow similar trends in performance and student demographic backgrounds as present in sites selected for our project. There is a marked difference in student performance and demographic patterns among the trimester and non-trimester

In attempting to gather the most complete portrait of the trimester schedule, our team worked with JCPS to select case-study schools that would each provide an important piece in unpacking the trimester schedule’s impact on academic press and community.

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schools. Specifically, non-trimester schools have fewer students receiving free and reduced priced lunch and higher achievement on standardized testing compared to their trimester counterparts.

Demographic and Performance Data for Project and Non-Project Schools

Project School	2010-2011 Enrollment	% FRL	% African American	% Other	Overall Graduation Rate	ACT Mean (class of 2010)	2009 Math % Proficient	2009 Reading % Proficient
Doss	907	74.4	45.8	6.9	77.2	15.0	17.4	15.0
Seneca	1484	62.7	40.6	11.1	80.8	16.1	28.5	16.1
Fairdale	1009	70.4	20.8	9.7	78.8	14.8	26.0	14.8
Southern	1263	67.5	32.0	7.8	70.8	14.3	25.0	14.3
Iroquois	1104	84.5	53.0	10.6	56.9	13.6	15.3	13.6
Waggener	852	71.8	49.8	13.6	71.1	13.6	25.9	13.6
Mean of project schools	1103	71.8	40.3	10.0	72.6	14.6	23.0	14.6
Mean of trimester, non-project schools	1077	69.7	43.8	5.7	66.6	14.5	21.9	14.4
Mean of non-trimester high schools	1292	40.5	35.6	7.7	89.5	19.2	48.6	20.9

Selection of interviewees

In order to capture a richer sense of the trimester schedule, our team recognized the importance of interacting with different layers of key informants in our case study schools (Yin, 1988; Patton, 2002; Gibson & Duncan, 2005). We aimed to capture perspectives on the trimester from students, teachers, principals, and counselors in order to capture a more complete portrait of the phenomenon.

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To select our sample of interview subjects, we employed a hybrid of stratified random and stratified purposeful sampling procedures to build homogenous sample groups in each case-study habitat. Each homogenous sample would provide a data source that would allow us to uncover this particular sub-group's perspective more in depth on the trimester schedule (Patton, 2002; Willis, 2007; Yin, 1988).

We used stratified purposeful sampling to build our teacher, counselor, and assistant principal focus groups. We specifically wanted to gather and capture perspectives from "information rich" informants on the faculty, such as teacher-leaders and counselors with a high degree of influence over the scheduling processes within schools (Smrekar, 2009). This purposeful element of our design was aimed to improve the validity of the insights we gleaned from the qualitative interviews in that qualitative validity has less to do with the random-nature and sample-size of selection but more with the "information-richness" of the cases selected and the analytical techniques of the researcher (Smrekar, 2009).

Of note, we built into our selection protocol for teachers and counselors the important stipulation that all informants selected for interview must have been present in the school prior to its adoption of the trimester schedule. Our team felt that such a trait would increase the depth of insight our subjects could provide not only because of the increased time they would have interacted in the site but also because of the meaningful perspectives they would have likely developed in experiencing the transition from one schedule of time into the trimester schedule.

For our student sample of interview subjects, we used stratified random, purposeful sampling procedures. Operationally, JCPS extracted a list of all senior-level students in each of the case-study schools who had been enrolled in the school for all four years, sorted by school and program type. Importantly, we built the constraint for seniors who had been enrolled in the school for all four years into our sampling in order only to create a pool of students who had been present in the school prior to the shift to the trimester schedule. We also stratified the group by the condition of whether the student was considered an "honors" student or not so that we could gain a balanced perspective across student program types. Again, we felt that the "richness" of the student insights and perspectives

We aimed to capture perspectives on the trimester from students, teachers, principals, and counselors in order to capture a more complete portrait of the phenomenon.

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would be deepened by selecting a diverse sample of students who had experienced the transition from one type of schedule into the trimester schedule.

However, due to the sizes of the pools of eligible students at each case study school, our team utilized a random purposeful sampling technique generated by a computer module to select a group of senior-level students from the pool and then constructed focus groups from these randomly-selected students. This random step in sampling, as Patton (2002) writes, adds credibility to the sample we selected from the purposeful sample because the potential purposeful sample of eligible students at each case-study school was larger than what our team could handle. Moreover, the random nature of our selection from the pool of eligible students reduced our selection-bias within the purposeful student stratum (Patton, 2002).

Our project interviewed 162 key informants in JCPS

Number of Informants Interviewed by Site

Site	Teachers	Students	Guidance Counselors	Assistant Principals & Principals
Doss	6	17	2	2
Seneca	7	18	2	2
Fairdale	6	12	3	3
Southern	6	12	2	3
Iroquois	12	15	4	2
Waggener	8	12	4	2
Total	45	86	17	14

The Structure of Time



Our project interviewed 162 key informants

Semi-standardized interviews

Specifically, our team chose to use a semi-standardized, open-ended interview structure at each of our six sites. Interview questions were written out in advance the way they were to be asked in the interviews and the questions were formed in such a way that allowed for our interviewees to offer their perspectives in open-ended ways. As articulated by Patton (2002), there were three reasons our team chose to use a form of standardized, open-ended interviews for our investigation: (1) the exact interview instruments used in our investigation would be available for inspection and transparency by JCPD decision-makers and information users; (2) variation among our three interviewers was minimized; and (3) our interviewers were highly focused so that our interviewees' very limited time was carefully used.

More specifically, the semi-structured interview approach ensured that all questions on the protocol would be asked of each group but allowed our interviewers to ask questions as they would more naturally emerge in the conversation. But, in total, this design minimized interviewer effects by asking the same questions of each respondent in a largely systematic way, thereby reducing interviewer judgment or allowing for groups to have been asked different questions or probed on different constructs. Additionally, we selected the standardized, open-ended interview approach partially because it often makes data analysis more efficient in that researchers can link each respondent's answers to similar questions quickly and organize questions and answers that are similar (Patton, 2002; Yin, 1988).

Our interviews were purposefully conducted in focus group formats for teachers, counselors, assistant principals, and students. Focus groups allowed us to bring people together of similar dimensions (ie, teacher or student) and experiences to participate in a group interview about issues related to the trimester schedule impacting them (Smrekar, 2009). We also faced considerable time and space constraints, so focus group formats allowed for more efficient capture of more data in less time. Focus groups can also make some interview subjects more comfortable and willing to share their in-

Our interviews were purposefully conducted in focus group formats for teachers, counselors, assistant principals, and students.

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sights and perspectives with interviewers, particularly younger participants (Smrekar, 2009; Patton, 2002).

Document analysis

We utilized random, purposeful sampling to select senior-level students for focus group interviews.

Towards complementing our qualitative interviews, our team conducted on-going, qualitative document analysis of artifacts related to the trimester schedule in JCPS. Documents such as parent newsletters from schools adopting the trimester schedule, local newspaper articles referencing the trimester schedule, power-point presentations used in trainings, and sample student schedules are just some of the hundreds of document samples reviewed by our team.

These documents provided, as Patton writes, particularly rich sources of insight and a “behind the scenes” look at the phenomenon and how it came about. More strategically, document analysis increased (1) our knowledge and understanding of the trimester schedule and (2) our ideas about the important questions to pursue through our inquiry (Patton, 2002).

Interview data analysis

While working inductively to interact with as much data as we could through sources in documents and interview subjects, our team attempted to make sense of our data. Upon gathering such data and feeling that dimensions were forming within our gathered data (ie, student-level patterns within a particular case-study school), our team began to apply more structured, analytic techniques such as cross-classification across the different dimensions, in an interpretive effort to “re-see,” categorize, cut apart, and synthesize our data. For example, our team compared emerging patterns across the teacher-dimension of interview data, looking to identify any cross-cutting themes in teacher perceptions of the trimester across the sample of case study schools. Such a qualitative technique aims to reduce the amount of information into a smaller set of categories, themes, or propositions “without losing the essential quality or meaning in the data” (Smith & Glass, 1987).

More concretely, our analysis of data was conducted in a multi-phased approach, beginning with site meetings conducted directly after each site visit. Together, our team of researchers met after each

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site visit, sat quietly with our data, and wrote up analytic accounts in the form of organizational charts that captured our team's initial sense of how the data were converging and diverging around emerging themes and definitions. The purpose of this interim stage included not only capturing our team's initial impressions but also sifting through important and unimportant elements of our site interactions. In this early stage, we discussed our emerging understanding of the trimester phenomenon, key sub-constructs involved, and our initial sense of interactions with and across different interview strata.

From our initial pass through data in our site meetings, we moved into our next phase of data interpretation, involving a more structured analysis of verbatim transcripts from our interviews. Interview recordings were transcribed verbatim from digital recordings and aggregated in a cumulative data record, along with our site notes. Once transcriptions were completed, our team read over exact transcripts and extensive site notes to collect original impressions of the data and identify illustrative quotes from different strata.

During this second reading, our team revisited the themes we initially culled in our site-meetings and began to identify more concrete, grounded analytic bins and frameworks related to our original concept map and emerging project questions. Taken together, we used these insights to construct a three-layered schedule of analytic, interpretive matrices for the different strata of interview data we collected. All three levels of analyses worked cumulatively to filter the interview data through a "sense-making" process driven by the frames of investigation inherent in the project questions and mirrored in our interview protocols and theoretical mapping (Smrekar, 2009).

We employed concept-clustered matrices in our interpretive analysis because they provide a framework that enhances a qualitative investigator's ability to manage data and display succinctly the patterns, themes, and relationships in qualitative data (Smrekar, 2009). In many ways, filtering narrative text through a matrix-guided interpretive journey helps qualitative researchers "re-see" their data and find arcs between data and the theoretical framework scaffolding the inquiry itself (Smrekar, 2009). As such, each level in our three-levels of analytic matrices was directly related to our theoretical concept map of the greater project exploration and our interview

We employed concept-clustered matrices in our interpretive analysis because they provide a framework that enhances a qualitative investigator's ability to manage data and display succinctly the patterns, themes, and relationships in qualitative data (Smrekar, 2009).

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protocols, thereby allowing our interpretive process to draw arcs of connection among the data and the theory undergirding our exploration. Further, each level of matrix-guided interpretation facilitated our group's ability to interrelate patterns among the different units of analysis (interview, subject group, school, district).

As data began to fall into categories, our team was able to begin the process of making conceptual sense of the data and looking for patterns and relationships within it towards revealing project insights.

Operationally, our first level of analysis focused on each interview as it stood alone, coding all of the data from each particular interview into a level I analytic matrix. Then, once all similar-dimension interviews in the school were coded into a level I matrix, our team applied a level II matrix to the data that analyzed for patterns across that dimension in the case-study school's data, such as across all student interviews in the school. Our level II matrices displayed convergent and divergent patterns across interview strata within case-study schools. For example, key quotes and insights revealed by a school's student informants could be compared against themes emerging from teacher samples. Finally, our team used a third level analytical matrix to capture cross-cutting insights that emerged across all strata (students, teachers, administrators, and counselors) within concept clusters on the matrix. *For a sample of analytic matrices used in our analysis, see the Methodological Appendix.*

Developing "grounded" conclusions

Using these three levels of cross-classifications matrices, our team moved back and forth between logical construction and actual data in search of meaningful patterns lending insight into the trimester schedule. In that the form of our analytic matrices developed alongside our interaction with the data, our team applied a form of a constant-comparative method, one in which researchers comb through data looking for categories or topics that make better sense of the data.

As data began to fall into categories, our team was able to begin the process of making conceptual sense of the data and looking for patterns and relationships within it towards revealing project insights. In this way, the conclusions that emerged from this analytic process worked to both explain the data and contribute to understandings about the trimester schedule specifically "grounded," or anchored, in its JCPS context (Smith & Glass, 1987).

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Quantitative data collection and analysis

As described earlier, our project design initiated with a qualitative exploration into the trimester construct in JCPS. Early insights and understandings gained through this interaction with the trimester allowed us to use quantitative analysis to probe for any insights related to emerging themes emanating from the qualitative layer. Further, the juxtaposition between quantitative indications and qualitative insights provided our project analysis a powerful interactive mechanism to unpack the trimester construct from multiple forms of data.

Data for our project were derived from an array of internal data files provided by JCPS. Our team worked in close collaboration to mine data warehouses in the district in order to find data that would empower our analysis of the trimester’s impact on academic press and sense of community in JCPS high schools. Our project made use of quantitative data at student, school, and district levels, depending on the nature of the project hypothesis that was being investigated.

Our project made use of quantitative data at student, school, and district levels, depending on the nature of the project hypothesis that was being investigated.

Array of Quantitative Analytic Strategies*

- Analysis of descriptive statistics
- Item reliability analysis
- T-test for independent means
- Ordinary least squares (OLS) regression
- Logistic regression

**Please see methodological appendix for detailed review of quantitative analytic strategies*

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JCPS student-level data

In order to investigate aspects of academic press and community, our team worked with data miners in JCPS to extract student-level data for three academic years, 2007-2008, 2008-2009, and 2009-2010 on standardized test scores, absences, disciplinary suspensions, and graduation success.

In order to investigate aspects of academic press and community, our team worked with data miners in JCPS to extract student-level data for three academic years, 2007-2008, 2008-2009, and 2009-2010 on standardized test scores, absences, disciplinary suspensions, and graduation success. We also extracted key demographic and socioeconomic data for each high school student for each year. However, due to district data storage and tracking limitations, longitudinal data across years was not available per student, thereby limiting our ability to track a student's growth across multiple years. Instead, student-level data was available for the three, separate academic years; each student in each school year was assigned a unique case identification number.

We also analyzed the array of schools in the system and, in consultation with JCPS leadership, sorted out of the data set for JCPS "special schools," including the alternative/behavioral modification schools, behavioral health centers, the juvenile corrections center, and other such programs that JCPS leaders felt were not appropriate to include in the comparative analysis because of their outlier status in the system. Though not classified as a "special school," DuPont Manual High School/YPAS (a non-trimester school) was excluded from our analyses upon multiple consultations with JCPS leadership not only because its data were determined to be outliers from the rest of the high school fleet but because of its rigorous, non-comparable selection criteria. Of note, upon multiple consultations with JCPS, we included Jefferson County High School (a non-trimester school) in our analysis, even though its structure includes a non-traditional format. However, we ran an analysis of graduation-related patterns without Jefferson County High School for confirmation. *A complete listing of how schools were classified can be found in the Methodological Appendix.*

Climate survey data

We also utilized data from the JCPS Comprehensive School Survey (CSS), an annual survey administered across the system to capture student levels of satisfaction with their school experiences and related teacher perceptions. The CSS is administered in the Spring of each academic year at each school in the form of a Likert-scale survey

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containing 25 items. Students and teachers complete the survey on a bubble-sheet during school hours, usually during a homeroom or advisory period. The student survey is not anonymous but JCPS briefs administrators on a strict code of expectations for ethical survey administration and protection of student confidentiality. The teacher survey is anonymous but linked to school locations. Once the survey is completed, school administrators then collect and scan results of the survey into a district data management system for JCPS to analyze and publish.

Results of the CSS surveys are tabulated and a report is produced for each discrete group of respondents by location, level and district. Since the survey has remained in its current form since its 2007-2008 administration, our project was able to analyze for insights from this data set in the year just prior to the trimester implementation, in 2007-2008, through the most recent year of comparable data, 2009-2010. The student response rate for students in our years of interest, 2007-2008 and 2009-2010, were 62 percent and 75 percent, respectively. The response rate for the certified staff CSS was 54 percent in 2007-2008 and 56 percent in 2009-2010.

As in the other data sets, we transformed each student's CSS location code, which captured the student's high school of enrollment for the academic year he/she was completing the survey, into a binary variable, TRIMESTER, set to 1 if the student was enrolled in a trimester school. For the 2007-2008 academic year prior to the trimester pilot initiated, we created a binary variable, FUTURETRI, set to 1 if the student was enrolled in one of the high schools that would shift to trimester either in 2008-2009 or in 2009-2010 academic years. Any item in any that was left blank by a student was considered "missing" and omitted from the analysis. The number of missing responses was not large enough to be a concern.

A complete explanation of key, quantitative measures and descriptive statistics can be found in the methodological appendix.

We also utilized data from the JCPS Comprehensive School Survey (CSS), an annual survey administered across the system to capture student levels of satisfaction with their school experiences and related teacher perceptions.

We elected for a semi-structured format so that our informants would feel more comfortable, almost as if in a dialogue with us.

Limitations of the project design

Qualitative interviews

An additional step that we employed to improve our qualitative validity was to base our designs on the coaching and instruction of a national expert in qualitative inquiry into social science and education

Interviews help researchers build an understanding of a construct as it exists in situ and communicate the essence of what is “really happening” to others (Collins as cited in Willis, 2007). In many ways, interviewing is a powerful way to gain understanding of a story you are going to tell others. However, as in all research methodology, interview data must be interpreted with a sense of their limitations in mind. Interviewing is a complex act of human interaction (Willis, 2007), and as such interviews are inherently limited because participants and staff only report their perceptions of and perspectives on what has happened, accounts subject to personal bias, anger, anxiety, politics, lack of awareness, their emotional state, and recall error (Patton, 2002).

Given these limitations, our team took purposeful steps to design and conduct semi-structured interviews that were guided by protocols. We elected for a semi-structured format so that our informants would feel more comfortable, almost as if in a dialogue with us. Despite the strengths in this design, there are embedded limitations. In a semi-structured format, questions can be asked in the order that best meets the interviewer’s assessment of the dialogue (Patton, 2002). As such, we cannot fully estimate the impact a difference in order of the questions had on informant responses. Moreover, semi-structured interview formats allow for follow-up questions to be asked by interviewers when they feel necessary (Patton, 2002). The fact that some groups received follow-ups and not others could impact the validity of our analysis. Further, we cannot estimate the threat to validity existing in the nature of the follow-up questions that were asked and how these questions potentially influenced informants’ responses in subsequent questions.

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Validity and reliability measures employed in our project design

Tests	Case study tactic	Phase of research
<i>Construct validity</i>	<ul style="list-style-type: none"> Multiple sources of evidence University researchers review designs, analyses, and preliminary reports Theoretical framework 	Data collection and composition
<i>Internal validity</i>	<ul style="list-style-type: none"> Pattern matching (analytic matrices) Stratified, random purposeful sampling for students Stratified, purposeful sampling for adults 	Data analysis
<i>External validity</i>	<ul style="list-style-type: none"> Replication through multiple case studies 	Project design
<i>Reliability</i>	<ul style="list-style-type: none"> Interview protocols 	Data collection

(adapted from Yin, 1988)

Moreover, interviews for students, teachers, counselors, and assistant principals were conducted in focus groups. Though our project design explicitly stated to all informants their anonymity, the degree to which interaction among the informants in a focus group impacts the nature of their responses cannot be estimated and could be a threat to the validity of our analysis (Patton, 2002).

Our sampling procedure for selecting interview participants is another potential limitation in our qualitative design. While students were selected using stratified, random purposeful sampling, our teachers were selected using non-random, purposeful sampling. Principals decided which teachers could ultimately be interviewed for our study, though they were given stipulations requiring a diverse array of teachers who had to have been present in the school prior to the shift to trimester. However, even with these stipulations, some principals may have selected teachers who were more aligned with the principal's agenda or feeling about the trimester. Thus, selection bias is a threat to validity (Patton, 2002). Moreover, students classified as special education or non-English speakers were removed from the student pool for potential selection due to district concerns of resource capacity to accommodate these students' needs in interviews. Insight from this sub-sample of students was not gathered in our interviews.

Our analysis does not claim to identify any causal link between enrollment in trimester and outcomes.

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Moreover, the interviews were limited by the nature of time we were able to devote to each interview. Due to school scheduling and team resource constraints, each interview could only last between 30-45 minutes, which at times posed a challenge for establishing rapport with informants and gathering insight into the array of constructs. Additionally, the design accommodated only one interview per group, thus not allowing for follow-up interviews, which could have enhanced validity.

An additional step that we employed to improve our qualitative validity was to base our designs on the coaching and instruction of a national expert in qualitative inquiry into social science and education (Smrekar, 2009).

Quantitative analysis

First, it is important to note that our analysis seeks understanding of any potential relationship between being enrolled in a school with trimester and aspects of academic press and sense of community; it does not claim to identify any causal link between enrollment in trimester and these outcomes. Rather, our project only analyzes for any associations among the shift to trimester and variables of interest. However, even in analyzing the impact of enrollment in a school with trimester, our modeling only captured, at most, 46 percent of the variation in the dependent variable of interest. Our linear regression modeling of absences and suspensions was unable to account for more than 20 percent of the variation in the dependent variables of interest (see appendices for further information). Further, in all of our regression modeling, the role of grade point average is a key element not accounted for in the variation of these constructs. Freshmen retention data is also not included, so it is important to realize our graduation data is based on the group of students classified as seniors at the start of each academic year and their probability of graduating at the end of that academic year. Thus, for example, students who did not persist prior to their senior year are not accounted for in our modeling. Nor is a formal measure of student motivation included in the model. These constructs could be included in future analyses to help account for variation in the dependent variables related to enrollment in schools with trimester schedules.

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Moreover, the OLS and logistic regression models we constructed do not account for nesting effects that can interact with patterns of data being analyzed. Likewise, since between 2007 and 2010, the effects of history threaten the validity of our analytic strategies and findings. For example, teachers and staffing changes had occurred at trimester schools; advisory programs were reintroduced; some administrative changes occurred at principal and assistant principal levels. Our analysis of patterns in dependent variables of interest cannot account for the impact of these changes and confounding variables on patterns in the dependent variables. Thus, while we attempted to regress our dependent variable onto enrollment in a school with trimester and a host of control variables in order to account for as much variation as possible in the dependent variables of interest, our design cannot with certainty isolate the impact the trimester schedule itself had on the dependent measures (Sweet & Grace-Martin, 2008).

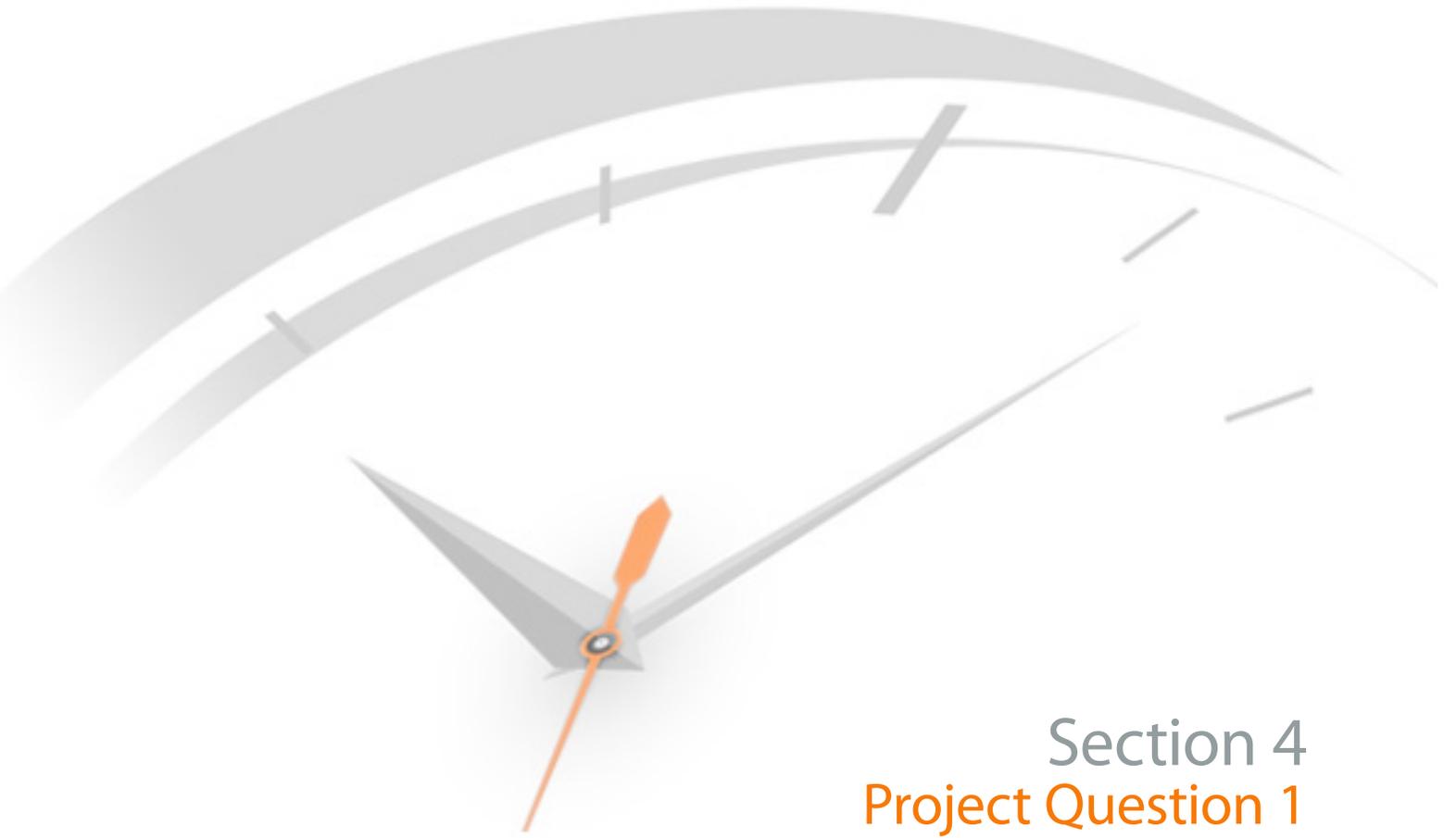
One additional step our team took to strengthen our project design was to conduct a “face validity session” with JCPS.

In this light, since our design aimed to analyze for changes in patterns before and after the trimester schedule was implemented, we must realize that comparisons drawn do not account for the fact that each year included a different schedule of students. Thus, we cannot dismiss the potential impact of different groups of students being compared over time as a threat to validity.

Additionally, the implementation timeline included all pilot high schools shifting together to trimester in 2008-2009, except for Waggener High School, which shifted the subsequent year, in 2009-2010. Thus, the validity of our project’s findings may be threatened by this uneven implementation timeline.

Lastly, the response rate on the CSS metric used to analyze student and teacher satisfaction ratings of their schools did not exceed 90 percent, which is a threat to the validity of our findings related to this data (Goldring, 2008).

One additional step our team took to strengthen our project design was to conduct a “face validity session” with JCPS. In this three-hour session, JCPS research leaders were presented with our project’s quantitative design, testing, and preliminary results for detailed feedback and analysis. Important insights were shared, collected, and internalized in our final analysis. Moreover, our designs were informed by leading experts in the field of quantitative analysis of social science and education (Braxton, 2011; Doyle, 2011).



Section 4
Project Question 1



Section 4

Project Question 1

To what extent is the trimester schedule impacting students' credit opportunities?

A keystone consideration in the arrangement of school time involves a schedule's impact on student credit opportunities, both on the diversity of courses available to students and on their ability to earn credits needed to graduate (Bair & Bair, 2010; Geismar and Pullease, 1996). One of the central reasons JCPs leaders adopted the trimester was to target improving the diversity of course offerings available to students and to improve students' ability to earn credits needed to graduate on time.

As such, our first project question explores the relationship between the adoption of the trimester schedule and its impact on course offerings and students' abilities to earn needed credits to graduate on time. Accordingly, we designed specific clusters of questions in our interview protocols to collect data related to these constructs across our case study school sites and informant groups. Additionally, we gathered and analyzed student-level data for insights into graduation trends associated with the trimester.

Impact on Gaining Graduation Credits

An eventual increase in odds of graduation Modeling of graduation data from 2007-2010 uncovered a marked increase in a student's probability to graduate in the 2009-2010 school year if he/she was enrolled in a school with the trimester schedule. We began by analyzing student-level graduation data for the two groups of JCPs high schools, trimester schools and non-trimester schools, by first testing for any differences in graduation patterns between the two groups that may have existed prior to the trimester pilot.

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Our testing of 2007-2008 data did not find a statistically significant difference in a senior's odds of graduation based on enrollment in one of the schools that would shift to trimester schedule in the future ($p > .10$). Our further regression modeling revealed similar results in the next year, 2008-2009, the first year of the trimester pilot ($p > .10$). However, by 2009-2010, the second year of the trimester pilot in most of the pilot high schools, testing revealed a marked change: enrollment in a school with trimester schedule increased a senior's chances of graduating on time. In fact, enrollment in a school with trimester increases a senior's odds of graduating 2 times ($p < .01$). Importantly, as discussed in our methods section, we cannot claim that this change in a student's odds of graduation was caused by the trimester schedule. Instead, there is only an associated increase in a senior's odds of graduation and enrollment in a school with the trimester schedule. *Please see the Results Appendix, Table 1: Summary of Logistic Regression Analysis for Variables Predicting Graduation for JCPS Seniors, controlling for background variables (including Jefferson County High School), for statistical details.*

Ameliorating effect However, because of the consideration about Jefferson County High School's inclusion in our data set used to analyze graduation odds, we ran confirmatory testing on the senior data specifically excluding Jefferson County High School from our analysis. Interestingly, in this scenario, enrollment in a pilot school had a significantly negative impact on a senior's likelihood of graduating in 2007-2008, prior to the shift to trimester ($p = .011$). However, by 2009-2010, after the shift to trimester, our analysis detected that enrollment in a pilot trimester school no longer had a significantly negative impact on a seniors's likelihood of graduating ($p = .091$). Moreover, the coefficient of interest, associated with enrollment in a pilot school, became less negative, from -0.718 in 2007-2008 ($p = .011$) to -0.364 in 2009-2010 ($p = .091$). In this senario, our analysis found that the shift to trimester is associated with an ameliorating effect on a student's likelihood of graduation. As aforementioned, we cannot claim that this change in a senior's odds of graduation was caused by the trimester schedule. Instead, there is only an associated change. *Please see the Results Appendix, Table 2: Summary of Logistic Regression Analysis for Variables Predicting Graduation for JCPS Seniors, controlling for background variables (omitting Jefferson County High School), for statistical details.*

Modeling of graduation data from 2007-2010 uncovered an associated improvement in a senior's odds of graduating on time.

In this scenario, our analysis found that the shift to trimester is associated with an ameliorating effect on a student's likelihood of graduation.

Section 4: To what extent is the trimester schedule impacting students credit opportunities?

Credit recovery improved The analytic finding that the shift to trimester schedule is associated with an improvement in a senior's odds of graduating is corroborated by insights reported by principal, teacher, guidance counselor and student groups across our case study sites. Repeatedly, informants at different levels commented that the trimester schedule helps students retake parts of courses they failed and earn credits to graduate.

“With a six period day, they (students) had 24 opportunities to get 22 credits for graduation; now they have 30 opportunities.”
(counselor)

As a guidance counselor told us, students have “those three extra opportunities and three extra credits by the end of the year that you know if they mess up a couple times they're still going to be on grade level, rather than being a whole year behind.” A counselor at a different high school confirmed this, stating that, “With a six period day, they (students) had 24 opportunities to get 22 credits for graduation; now they have 30 opportunities.” Further, a different counselor stated that, “Seniors are making up classes all year long, and there's lots more room for that. Otherwise, there would be some seniors that wouldn't graduate. There's just no way because they got to get two semesters of everything in the old way.” And another counselor reported that, “we would typically have 30 or 40 kids in remedial classes in summer for World Civ or US History. Last summer, we only had 10.”

“I had a rough time my third year. If not for trimester, I would not be in the 12th grade right now.”
(student)

Senior students also reported that the trimester schedule helps them earn their needed credits. As one student said, “I like trimesters a lot better because if you mess up, you take the class again and not miss anything. Like you can just not take that art class and retake English.” Another student at a different school also noted that, “I had a rough time my third year. If not for trimester, I would not be in the 12th grade right now.” Another student simply stated, “We get more chances for credit with the new system.” Principals also stated that the trimester helps students recover credits and continue towards graduation. As one principal said, “it's helping our retention rate tremendously.”

More balanced course load In addition to helping students retake parts of courses they failed and earn back those failed course credits guidance counselors, principals, and teachers commented that the trimester schedule's focus on five classes per day rather than six or seven in the traditional schedule or eight in the block schedule was a “smarter” load for students and helped improved retention.

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As one guidance counselor stated, “Retention is a problem, so just having the five classes everyday definitely helps.” A counselor at another school moving from A/B block to trimester shared that, “I think (the trimester) is less confusing and less overwhelming...I think five (classes) is a lot more doable.” A principal whose school moved from A/B to trimester stated that, students “only have five teachers to deal with rather than eight. Also, for students, instead of having over two days up to eight classes of homework to do, they only have five.” Students also expressed similar perceptions, such as one who shared that, “it’s a lot less of a load because that one class can make a lot of a difference.”

“I think (the trimester) is less confusing and less overwhelming...I think five (classes) is a lot more doable.”

(counselor)

Compressed timeline may motivate many, but some more

Guidance counselors consistently reported that the trimester motivates students to push through a challenging course because of the reduced number of days in the course cycle. Guidance counselors’ statements at different schools elucidated some of the connections between the structure of course time and the fragility of persistence for at-risk students. One guidance counselor explained that, “I think (the trimester) definitely opens up doors to kids who may give up, who may have given up otherwise. If the student is not successful in the class and it looks like they’re not going to make the credits for the year, you know that right there’s enough to start making them think of the dropping out factor.” Another linked the trimester to improving students’ persistence when she reported that, “I think students get a better image of themselves when they have these opportunities and can get back on track and feel like they still are a part of school and they have a chance to get back with their friends rather than just be tossed aside because ‘oh you know you didn’t make it this year.’” Another counselor also noted the trimester’s ability to strengthen at-risk students’ success when she explained that, “I am able to encourage them more to stick with it because the trimester is a 12-week period. I’m able to get them to buy into ‘okay, I have five weeks left in this class, so you can hang in there; you can do anything for five weeks...It’s more realistic than saying, ‘okay you’ve got 16 weeks left, let’s hang in there.’”

“I think (the trimester) definitely opens up doors to kids who may give up, who may have given up otherwise.”

(student)

Trimester helps in-district transfer students Related to credit attainment is the credit-challenge associated with high mobility rates in urban districts like JCPD. In this context, the trimester ben-

Section 4: To what extent is the trimester schedule impacting students credit opportunities?

efits students who move within the district, those characterized as “highly transient students.” As one principal stated, “Our district is a very transient district. When we are all primarily on trimester, to get these kids on the same schedule makes it so much easier to schedule them when they come in. When we were on a different schedule, if they had come from a 6-period day school, then we had to find two new classes to plug them in...it was a huge struggle. I think that is a true benefit.”

Impact on Course Offerings and Choices

“When you’re doing the master schedule, you have more scheduling options. On a six period day, you had 12 periods; now we have 15...you have a little more flexibility.”
(counselor)

Flexibility lends potential for course creativity Our study aimed to analyze not just the schedule’s impact on credit attainment but also its impact on the array of course selection available to students, since JCPS aimed to use the trimester to increase the diversity of course offerings for students. Our interviews revealed that in most of the case study schools, informants sensed that the potential for single-trimester electives is an important aspect in the trimester and is being realized in the implementation. Informants in some schools described new offerings afforded by the trimester schedule, such as courses in film studies, women’s literature, astronomy, great books, and the Holocaust. They also explained that many seniors are able to do more work study cooperatives with partners like UPS. Also, members of the student band are given the chance to take more electives than just band, according to informants.

As one counselor explained, “when you’re doing the master schedule, you have more scheduling options. On a six period day, you had 12 periods; now we have 15...you have a little more flexibility.” Another counselor at a different school stated that, “You know with the six period day, you’re so structured. In the junior year, they have so many things they have to take, they weren’t taking a lot electives; they couldn’t fit (band and orchestra) in their schedule, and the trimester seemed to give them a lot more options.” As one student stated, “You have to take your English and Math all year,(but) then I have all this other time...I could be aide; I can take gym again; you know I have all these things I can do.” Another student stated that, (on trimesters) “we obviously get a lot of our credits done. So once we get those out of the way we have a lot of free space in our schedules...it opens it up.”

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Electives may be linked to student persistence This broadened array of course offerings may be improving student persistence. Because the trimester increases school's ability to offer more electives, many informants believe that students may be more motivated to come to school, particularly at-risk students.

As one principal stated, "This is giving (students) a chance to earn more credits in the classes they are passionate about, so ultimately they're dialed into what they like....they get to explore a little more for just a 12-week snapshot." Further, a teacher said that prior to the trimester, students were "double-blocked" in core courses with which they were struggling. According to this teacher, "those students were being punished because they weren't able to take as many electives as other students because they were already locked into this....(for struggling students), they can still get the curriculum but they can also get some of those electives as well." A student reported that, "I feel connected to my elective teachers because I know we have similar interests." Another student continued that, "I took three business classes because that's what I want to do when I get out. The business classes make me more prepared."

"This is giving (students) a chance to earn more credits in the classes they are passionate about, so ultimately they're dialed into what they like.... they get to explore a little more for just a 12-week snapshot."

(principal)

The "three-tri" dilemma While increased elective opportunities for students may improve student persistence, there may be a catch embedded in the scheduling of the trimester. According to informants, the latitude for students to enroll in electives is reduced by each three-trimester course added into a student's schedule. In the trimester conception, a course credit is earned in two trimesters, allowing students then to take electives and/or accelerate or remediate as necessary. According to informants at all case study sites, schools are designing trimester schedules so that students are enrolled in many of their core, tested courses such as Algebra and English for three trimesters, rather than two, with the first trimester counting as an elective-like credit in some cases.

As one principal stated, "All of our math classes (Algebra I, Geometry, Algebra II) and English are all three trimester courses; our kids just need the extra time." This principal also related the connection to testing, stating that at first the school didn't have honors students in three trimester courses but, "we added that because, honestly, those are the kids that we need to depend to get proficient and distinguished on the test."

Section 4: To what extent is the trimester schedule impacting students credit opportunities?

“So many (upper level kids) are taking AP courses that run all year long. So you cut down on their opportunities to participate in band and choir and electives.”
(teacher)

Because core courses are being designed as three-trimester pieces, some informants perceived that the room for some elective credits is being crowded out for some students. One counselor reported that flexibility in student scheduling, “was one of the big selling points for me—the amount of choice it gave kids. But, as a school (and District) we keep adding more and more all-year classes, which takes away the whole idea of what the trimester was established for.” An assistant principal reported that, “When you lock into those all year classes, it kind of creates difficulties in scheduling.” A counselor at another school explained that, “for students needing extra help, the trimester becomes more like a five-period class day for them because they are taking English all three trimesters, math all three trimesters, and so it doesn’t give them as much flexibility as just the average student.”

Trimester and the AP conundrum This “three tri” dilemma is very much a nuanced part of the trimester schedule: should more challenging courses be blocked for three trimesters to allow students more days to grasp content and prepare for end-of-year high-stakes assessments, or will this crowd out student electives? This dilemma is particularly alive in the world of Advanced Placement (AP) classes.

According to some teacher groups, the trimester has impacted schools’ AP courses in different ways. First, because the trimester schedule allows for only 5 courses per trimester and core courses often occupy all three trimesters, teachers reported that the ability to start new AP course offerings is sometimes limited by lack of space in the day for another course, particularly if the AP course demands three trimesters.

A teacher at another school reported a challenge with trimester AP students, as one explained: “So many (upper level kids) are taking AP courses that run all year long. So you cut down on their opportunities to participate in band and choir and electives.” Another teacher expressed that, “the advanced programs really suffered under this.”

But because of the scheduling-jam that it creates for each additional course that is scheduled for three trimesters, schools are reluctant to allow new three-trimester courses. One teacher reported that his school will not create 3-trimester AP courses: “There isn’t enough room to make AP Social Studies or Science classes here...if

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you're going to do it justice, an AP class must be 36 weeks; we can't do that with a trimester system, since the kids only go to five classes per day and have room for so many credits a year." Another teacher at a different school stated that, "I don't understand how they're cramming in all the AP stuff in two trimesters; it's just not humanly possible." An AP math student in a 2-semester AP math reported that, "In my Calculus class, we'll learn polynomials one day and the next day, we're learning how to divide them...I'm like, 'slow down!'"

However, teachers of AP courses added further insight. They remarked that having three-trimester long AP courses positively impacts student achievement in these college-level courses. One teacher stated that, "Since I see (my AP students) more often and for longer periods of time, I think I'm able to give them a better review for the AP exam. We had more kids pass the AP exam last year than we ever had when the AP course was in two trimesters." Another AP teacher explained her frustration when her AP course was a two-trimester course: "When my AP seniors left me in February and didn't take the test until May, that was a scary kind of thing." Related to instruction, an AP teacher reported that, "My (AP and advanced) students definitely do benefit from the 70-minute period because I have time to do a bell ringer, an opener, something students can be engaged in individually, and then modeling, guiding, Socratic circles...it is enriching for AP kids and advanced kids."

The counselors' Rubik's cube Another challenge in the implementation of trimester involves the human labor involved in making the schedule work. Across all case study sites, informants clearly illuminated the role of the high school counselors in the trimester schedule's success. Counselors are charged with the challenge of designing students' schedules, which then, in turn, impact teachers' teaching schedules. On the former A/B block and 6-7 period schedules, counselors designed schedules most intensely prior to the Fall semester and then worked intensively with schedule amendments in the transition between the Fall and Spring semesters. However, the trimester schedule's intention to have an adaptive scheduling mechanism that allows schools to identify student achievement and make course adjustments for a student's second trimester and, again, for the third trimester poses a great challenge for counselors' scheduling work.

"My (AP and advanced) students definitely do benefit from the 70-minute period because I have time to do a bell ringer, an opener, something students can be engaged in individually, and then modeling, guiding, Socratic circles...it is enriching for AP kids and advanced kids."

(teacher)

Section 4: To what extent is the trimester schedule impacting students credit opportunities?

“(the trimester) can be a scheduling nightmare; it’s very tough on our counselors. They have to contend with, instead of two semesters, two official grading periods, you have three now; three master schedules, so it’s very, very taxing on our counselors.”
(principal)

As one counselor reported, “(The trimester) is definitely more work for a counselor...you have three master schedules; you’re changing schedules three times a year; you’re recording credits three times a year.” A principal reported that, “(the trimester) can be a scheduling nightmare; it’s very tough on our counselors. They have to contend with, instead of two semesters, two official grading periods, you have three now; three master schedules, so it’s very, very taxing on our counselors.” Another counselor at a different school classified the challenging scheduling work in a trimester schedule as being very “Rubik’s cubic.”

One of the key challenges seems to be the lack of time between the shift to the second and third trimesters. Unlike in the semester schedule, there is usually not a school break in between the cycles. As one teacher put it, “Counselors are unable to schedule everyone... just because there’s a lack of time between trimesters.” Another reported that, “I spend probably 50 percent more time in front of my computer...we need a registrar in here just to do scheduling.”

Summary of findings related to credit opportunities

Our findings uncovered multiple insights into the degree to which the trimester pilot is meeting its original intention to offer a greater diversity of courses to students and improve their chances at graduating on time. Our analysis of graduation data indicated that the shift to trimester schedule is associated with an improvement in a senior’s odds of successfully graduating on time. This increase was noticed after the second year of trimester implementation. Related to this, students, teachers, and principals frequently commented that the trimester schedule has increased their students’ ability and motivation to regain needed credits to graduate if they failed a portion of a course and, in some cases, to persist in challenging courses. However, the trimester’s impact on course offerings is more multi-dimensional. Informants reported that the trimester has allowed for creative new electives but also poses unique scheduling dilemmas for some courses and students. Informants also perceive that the trimester schedule has made counselors’ scheduling work more complex and time-consuming.



Section 5
Project Question 2



Section 5

Project Question 2

To what extent is the trimester schedule impacting depth of instruction?

A key uncovering that emerged in the literature is the interrelationship between the degree of a school's academic press and its structure of learning time (Cawelti, 1994; Zepeda & Mayers, 2006; Carroll, 1990; Canady and Rettig, 1995; Adams & Salvaterra, 1997; Geismar and Pullease, 1996). In the field, school leaders often consider the structure of the daily schedule as an integral component in a school's academic program and its students' related academic achievement. Likewise, one of the central propositions driving JCPS leaders' decision to adopt the trimester was the hope that the trimester schedule would help deepen learning and instruction in its high schools. Thus, our second project question explores the relationship between the adoption of the trimester schedule and the depth of instruction in the JCPS high schools that adopted the trimester schedule.

Specifically, we analyzed this project question by focusing on the hypotheses articulated by JCPS under this goal—that instruction would be deepened through more inquiry-based instruction and through a more adaptive ability to accelerate students excelling in a subject and remediate those students needing additional attention in a subject. Accordingly, we designed specific clusters of questions in our interview protocols to collect data related to these constructs across our case study school sites and informant groups. Additionally, we gathered and analyzed student-level data for insights into achievement trends associated with the trimester.

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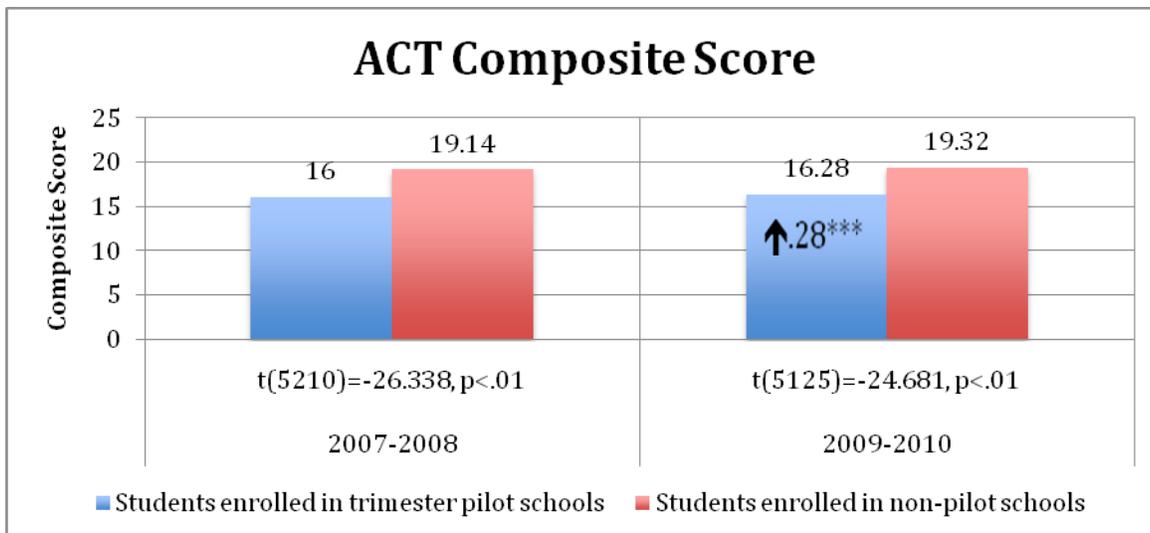


Impact on Instruction

ACT performance The ACT test measures a student's general level of educational development and provides a baseline for comparison both before and after the trimester pilot was implemented. It could provide a meaningful glimpse into whether students' general level of educational development was changing over the course of the schedule shift. Our testing detected an associated improvement in student performance on the ACT assessment of educational achievement and the shift to trimester schedule in the pilot JCPS high schools. Though students in trimester high schools scored significantly lower on ACT and ACT PLAN tests than their non-trimester peers both before and after the arrival of the trimester schedule, our analysis detected an improvement in ACT performance among juniors in pilot schools after the shift to trimester.

Our testing detected an associated improvement in student performance on the ACT and the shift to trimester schedule in pilot JCPS high schools.

Specifically, in 2007-2008, the mean ACT score for juniors enrolled in schools that would shift to the trimester schedule was 16. However by 2009-2010, the mean ACT score for juniors enrolled in schools that shifted to trimester had increased to 16.28, a net increase of +.28 composite points. This represented a statistically significant increase in ACT performance associated with the shift to trimester in the pilot schools. Of note, however, was an associated increase, though smaller in size (+.10), in non-pilot schools across the same interval of time, too.



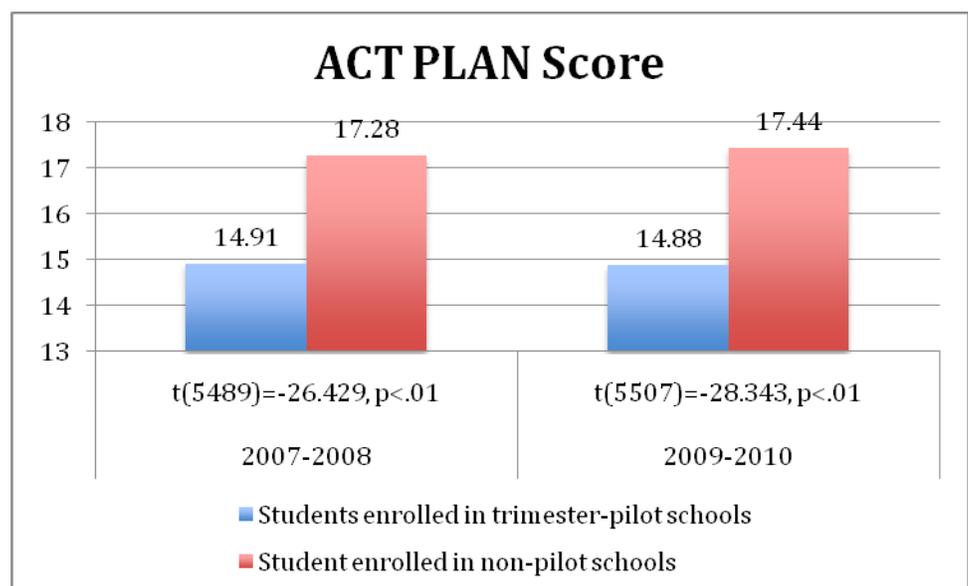
*** $t(5395) = 2.68, p < .01$

Section 5: To what extent is the trimester schedule impacting depth of instruction?

Historically, students in the pilot schools have scored significantly lower on the ACT than their non-pilot peers, but the shift to trimester is associated with a slight narrowing of this gap. In 2007-2008, the mean ACT composite score for juniors in pilot schools was significantly below (-3.14 points) the mean ACT composite score of the students enrolled in schools that would not shift to the trimester schedule. As the trimester reached its second year of implementation in most of the pilot schools, the mean ACT composite score of juniors in trimester schools remained significantly below (-3.04 points) the mean of their non-trimester peers, but demonstrated a net decrease in the mean difference by 0.10 in ACT composite scores of juniors in trimesters and non-trimester schools.

A related pattern was not found in sophomore PLAN test data.

A related pattern was not found in sophomore PLAN test data. In 2007-2008, the mean ACT PLAN score for sophomores enrolled in schools that would shift to the trimester schedule was significantly below (-2.37 points) the composite score for sophomores enrolled in schools that would not shift to the trimester schedule. As the trimester reached its second year of implementation in most of the pilot schools, the mean ACT PLAN score for sophomores in trimester schools remained significantly below (-2.56 points) their non-trimester peers, indicating a 0.19 net increase in the mean difference ACT PLAN composite scores of sophomores in trimesters and the score of their peers in non-trimester schools.



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Further regression analysis uncovered change over time in the impact enrollment in a school with trimester had on a student's predicted ACT composite score. Our analysis revealed that in 2008, before the trimester pilot was initiated, enrollment in one of the schools that would become a trimester decreased a junior's predicted ACT composite score by -1.96 points.¹ As the trimester reached its second year of implementation in most of the pilot schools in 2010, enrollment in a trimester school decreased a junior's predicted ACT composite score by -1.77 points,² indicating that the shift to trimester was associated with a 0.19 point net decrease in the negative impact enrollment in a trimester school had on a junior's predicted ACT score. For a detailed analysis of ACT regression results, please see **Results Appendix, Table 3: Summary of Simple Regression Analysis for Variables Predicting JCPS High School Juniors ACT Composite Scores.**

A different pattern emerged in patterns of sophomore performance on the ACT PLAN assessment before and after the trimester pilot. We were unable to find an increase in the impact enrollment in a trimester school had on predicted ACT PLAN performance. Regression modeling revealed that in 2008, before the trimester pilot was initiated, enrollment in one of the schools that would become a trimester decreased a sophomore's predicted ACT PLAN composite score by -1.47 points.³ As the trimester reached its second year of implementation in most of the pilot schools in 2010, enrollment in a trimester school decreased a sophomore's predicted ACT PLAN composite score by -1.50 points,⁴ indicating that the shift to trimester was associated with a 0.03 point net increase in the negative impact enrollment in a trimester school had on a sophomore's predicted ACT PLAN score. For a detailed analysis of ACT PLAN regression results, please see **Results Appendix, Table 4: Summary of Simple Regression Analysis for Variables Predicting JCPS High School Sophomores ACT PLAN Composite Scores.**

New lesson designs associated with trimester In addition to improved ACT data, interviews with informants indicated that change in instruction is associated with the shift to the trimester schedule.

¹ $t(5211)=-20.069, p<.000, AR^2=.457, F(13, 5211)=338, p<.000$

² $t(5126)=-17.352, p<.000, AR^2=.441, F(13, 5126)=312, p<.000$

³ $t(5490)=-19.372, p<.000, AR^2=.434, F(13, 5490)=325, p<.000$

⁴ $t(5508)=-19.476, p<.000, AR^2=.452, F(13, 5508)=350, p<.000$

Section 5: To what extent is the trimester schedule impacting depth of instruction?

In interviews with students, teachers, and principals in trimester schools, informants commonly shared that the 70-minute class period in the trimester has impacted teaching frames, causing “more teaching and learning,” as one principal at a trimester school framed it.

“(The trimester) has allowed us to give independent reading time to students in the beginning of class; deeper discussions, Socratic circles, brainstorming sessions, getting feedback...I can teach, model, analyze writing samples; have students apply (the construct) to their own writing, and have a conclusion at the end of the class.”
(teacher)

Related insights emerged across informant groups. A teacher commented that, “(The trimester) has allowed us to give independent reading time to students in the beginning of class; deeper discussions, Socratic circles, brainstorming sessions, getting feedback... I can teach, model, analyze writing samples; have students apply (the construct) to their own writing, and have a conclusion at the end of the class.” Likewise, a guidance counselor reported that, “With the 70-minute period, (teachers) can ask questions and have the student engage. We do a lot more group type of activities, particularly in Math and Science.” Another principal at a trimester school that transitioned off of the 6-or-7-period day explained that,

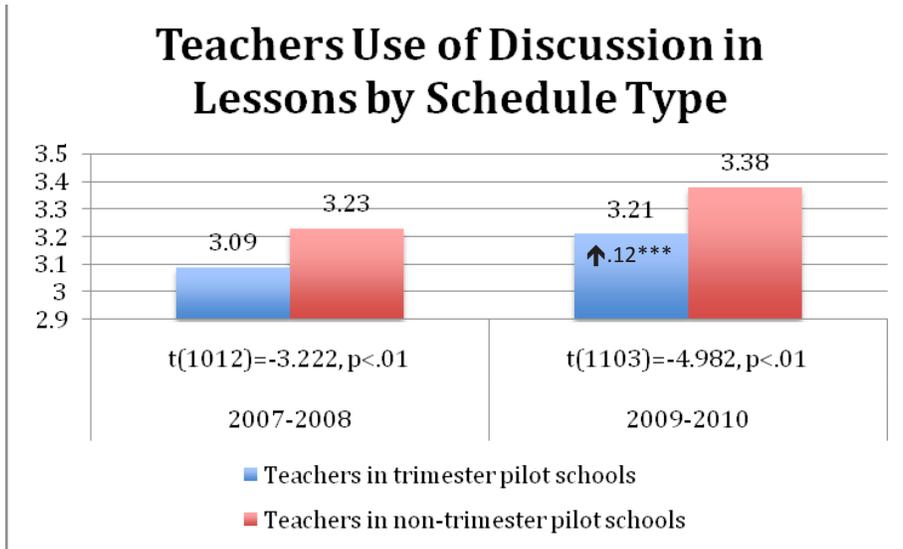
“I think teachers are able to do more in-depth experiments in Science classes. And in English, (students) have been able to come in and present something students, and they’ve even been able to do some review....physical education classes have been able to actually get through a whole volleyball game, whereas before you’re lucky if you had 30-minutes of sustained play.”

Moreover, a student at a different school observed that that, “(On trimesters) teachers teach you in different ways so you can get used to your own way.”

Teachers use discussion more throughout JCPS To analyze informants’ perceptions that the trimester has allowed for greater inquiry and discussion-oriented instructional activity, we again turned to CSS data. According to our analysis of CSS certified employees’ responses in schools that shifted to trimester, teachers reported significantly more formal discussion in their courses in 2010, after the shift to trimester. However, there was a similar increase among teachers in non-pilot schools on this CSS item, and teachers in trimester rated the amount of discussion in their classrooms on the survey significantly lower both before and after the shift to trimester.⁵

⁵2007-2008: $t(1012)=-3.222$, $p<.001$; 2009-2010: $t(1103)=-4.982$, $p<.000$

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***t(1275)=3.4795, p<.01

Specifically, teachers in trimester-pilot schools rated their use of discussion-oriented lessons +0.12 points higher (on a 4-point Likert-scale) in Spring, 2010, than they did in Spring, 2008, prior to the shift to trimester schedule (3.09 in '07-'08 to 3.21 in '09-'10). Of note, however, teachers in non-pilot schools, indicated an even greater jump in their use of discussion over the interval from 2007-2010 (3.23 in '07-'08 to 3.38 in '09-'10). Again, we cannot claim any sense of causation between this change in use of discussion in lessons and the trimester schedule, since multiple confounding initiatives and changes occurred in this interval, including the emphasis on an instructional framework that emphasized inquiry-guided learning. However, informants' insights do associate the change in the number of minutes in class to more progressive instructional frames. It is also worth noting that the mean is approaching the maximum on the 4-point Likert-scale.

Teachers reported significantly more formal discussion in their courses in 2010, after the shift to trimester.

70-minutes is "perfect" Related to changes in lesson design, many teachers, students, and principals noted that the 70-minute length of a class period was an ideal amount of time for a class meeting. Teachers and students in schools that shifted from the 90-minute class in A/B block enthusiastically preferred the 70-minute trimester class meeting structure. As one teacher at a trimester school

Section 5: To what extent is the trimester schedule impacting depth of instruction?

that shifted off the A/B block put it, "I hate the horror of 90-minute class periods because they're too long." Another teacher recounted that, "70-minutes is the sweet spot for teaching because it's just enough time to get into something deep, review what you've done before, and then have the student be informally assessed." Another teacher at a different school stated that, "I think the time in the class is optimal; it's not too long; it's not too short."

"70-minutes is the sweet spot for teaching because it's just enough time to get into something deep, review what you've done before, and then have the student be informally assessed."
(teacher)

Teachers, guidance counselors, students, and principals in formerly A/B block high schools also noted that the trimester has helped teachers make better use of time for learning. One principal noted that, "90-minutes isn't effectively used; 70-minutes is more focused and intense with less wasted time, because there is a greater sense of urgency." Another principal explained that, "There's a lot less wasted time. Under the 90-minute block, even as much PD (professional development) as you're provided, we still found a component at the end of class, 'okay folks, let's work on your homework,' which is wasted instruction...this forced teachers to really dial into strong instruction, bell to bell."

Student comments related to this. One student said that, "Teachers used to drag things out; now they get to the point and move on." Another student at a different school said that, "You used to get time in class to work on homework, but in trimesters, they teach the whole period." A guidance counselor also commented that, "I don't see a lot of wasted time like we had on the block." And this may have impacted the nature of homework assigned, as one teacher explained, "I mean there are some teachers who never assigned homework, and because of the quickening of the pace, they've had to start assigning homework."

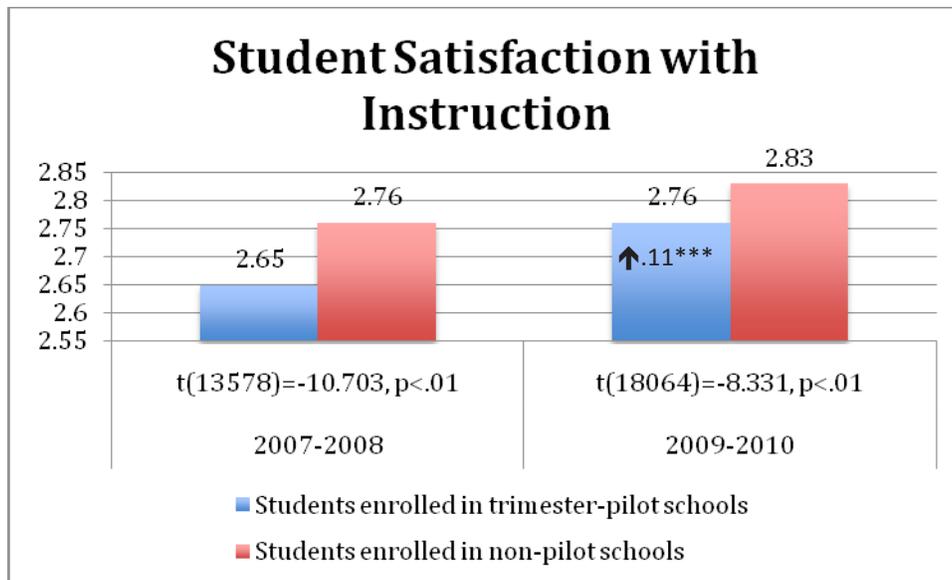
Related to the tighter window of days associated with a course in a trimester (unless it is given three trimesters), teachers reported feeling the increased importance of each daily class meeting and that students seemed to internalize this. One teacher reported that, "I never feel like I have a day where we can sit and do nothing. They couldn't sit and have what they call a 'free day;' they felt like they still needed to keep going." Other teachers recounted the challenges this poses when a student is absent, due to illness or field trips, etc.

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Increase in student satisfaction with instruction Given the themes that emerged in interviews with informants at case study sites, we chose to analyze CSS student-level data for a sense of the impact any instructional changes may have had on student perceptions of teaching. In sum, our analysis found that student satisfaction with their teachers' instruction improved after the trimester schedule arrived, though students in pilot schools were significantly less satisfied with instruction in their schools than their non-pilot peers both before and after the shift to trimester.⁶ Further, our analysis revealed that both students in pilot schools and those in non-pilot schools became more satisfied with instruction in the interval from 2007-2010, before and after the trimester arrived, but student satisfaction with instruction increased more in pilot schools than in non-pilot schools.

Student satisfaction with their teachers' instruction improved after the trimester schedule arrived.



$***t(16,193) = 12.1274, p < .01$

Specifically, students in pilot schools rated their satisfaction with their teacher's instruction +0.11 points higher in Spring, 2010, than they did in Spring, 2008, prior to the shift to trimester schedule (2.65 in '07-'08 to 2.76 in '09-'10). This represents a statistically significant increase in students' CSS mean rating of satisfaction with their teachers' instruction.⁷ Though students in non-pilot schools were significantly more satisfied both before and after the trimester

⁶2007-2008: $t(13578) = -10.703, p < .000$; 2009-2010: $t(18064) = -8.331, p < .000$

⁷ $t(16193) = 12.1279, p < .00$

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pilot arrived to JCPS, students in non-pilot schools' satisfaction with instruction only grew by 0.07 points (2.76 in '07-'08 to 2.83 in '09-'10). Again, though, we cannot claim any sense of causation between this change in student satisfaction and the trimester schedule, since multiple confounding initiatives and changes occurred in this interval, including the emphasis on an instructional framework that emphasized inquiry-guided learning. However, informants' insights do associate the trimester-induced change in the number of minutes in class with changes in instructional designs.

Impact on remediation and acceleration

“It really just opened up one more window for actual remediation; whereas they used to have to retake a semester long course, now they can get back on track and on grade level faster.”

(teacher)

Not just recovery, but remediation As aforementioned, one of the most frequent reports across all sample groups was that the trimester schedule allows for students to regain failed credits within the year if they do not successfully pass a part of a course. Many informants indicated that the trimester schedule allows greater opportunity for students to “retake” parts of courses they miss. As one teacher stated about the trimester, “It really just opened up one more window for actual remediation; whereas they used to have to retake a semester long course, now they can get back on track and on grade level faster.”

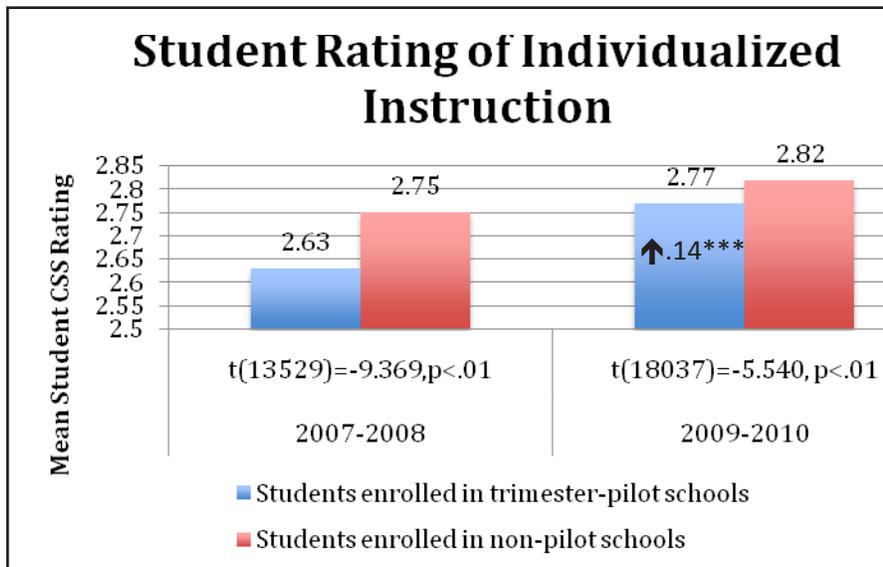
But in addition to credit recovery, most students indicated that the 70-minute trimester schedule allows their teachers to also remediate during the class period itself. One student in a school that shifted from 6-period day said, “Because the 70-minute classes are so long, some teachers actually have like 10 to 15 minutes at the end of each class to go around individually to all students and help them out. They will make sure that everyone is on their game.” Another student commented that, “If you don’t understand something, the teacher has more time in the class to talk to us, separate students, and actually help us.”

In order to find further insight into the degree to which the trimester schedule impacted the amount of individual instruction attention teachers could pay individual students, we turned to CSS student and teacher-level climate data. In our analysis of data from before and after the shift, students enrolled in schools that shifted to trimester schedules perceived significantly higher levels of indi-

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vidual instructional attention from their teachers in 2010, after the trimester adoption, than they did prior to when the pilot began in 2008 (2.63 in '07-'08 to 2.77 in '09-'10).

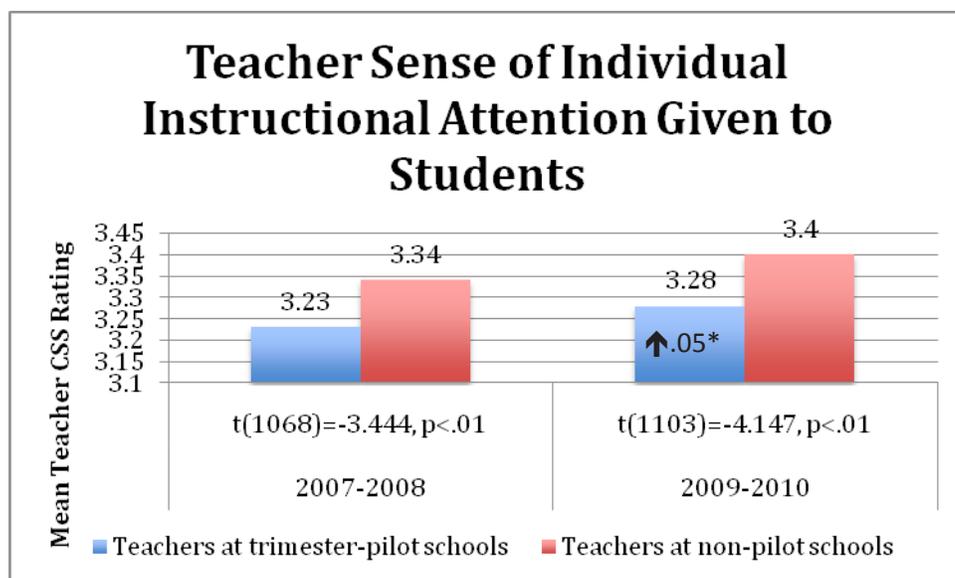


Students enrolled in schools that shifted to trimester schedules perceived significantly higher levels of individual instructional attention from their teachers in 2010, after the trimester adoption, than they did prior to when the pilot began in 2008.

*** $t(16143) = 12.4133, p < .01$

However, ratings of individual instructional attention by students in schools that adopted trimester and those in schools that did not adopt both increased in this interval, but the change in student rating of individual instructional attention was greater among students in trimester schools than their peers in non-trimester schools. (2.75 in '07-'08 to 2.82 in '09-'10, among non-trimester peers). Of note, the mean rating of individual instructional attention was significantly higher among students in non-pilot schools both before and after the trimester pilot began than the mean rating among their peers in schools that would shift to trimester.

Section 5: To what extent is the trimester schedule impacting depth of instruction?



* $t(1315) = 1.835, p < .10$

Our analysis also detected a significant change in pilot teachers' ratings of the individual instructional attention they give to students.

Our analysis also detected a significant change in pilot teachers' ratings of the individual instructional attention they give to students. Among teachers in schools that would adopt trimester, their rating moved by 0.05 points (3.23 in '07-'08 to 3.28 in '09-'10), whereas teachers in non-trimester schools moved by .06 points (3.34 in '07-'08 to 3.40 in '09-'10). Of note, teachers in non-trimester schools consistently indicated significantly higher ratings on this construct than their peers in schools that would shift to trimester, both before and after the trimester pilot. Moreover, teacher ratings both before and after the pilot are approaching the Likert-scale's 4-point maximum.

Adjusting to pace and remediating is a challenge, but improves

For teachers adjusting their courses to trimesters, adaptation to the new timeframe may take time. Teachers indicated challenges adjusting to the changed pace. One teacher reported that, the trimester leaves no room for re-teaching; that it pushes him to, "get this done and then move on...it leaves the kids behind; that's in bold print." Another teacher at a different school stated that with trimester he feels that, "I've gotta get this done, and you missed it you missed it; you've missed it. We don't have a chance to go back and go over it."

However, even as intense as the transition might be for teachers, multiple student informants reported the sense that teachers

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grew and adapted over time to the new pace. One student reported, “When we first switched, it was hard because the teachers didn’t adapt their teaching to the trimesters yet, so they were like rushing everything. They were trying to cram everything.” Another student at a different school commented that, “at first, when they first switched, the teachers weren’t ready, the students weren’t ready, and it was kind of crazy at first.” These student perceptions are seemingly corroborated by teachers’ comments that the pacing was a major adjustment for them. One teacher reported that he felt he was racing his students through material at first and that adjusting his pacing to avoid losing his students was the “biggest” challenge he faced.

Adaptive remediation is key On the topic of how the trimester impacts pacing, we analyzed how the shift also impacts teachers’ ability to remediate students when they are below proficiency. This is a hallmark in the potential of the trimester: its ability to allow below-proficient students to take a remedial course, often in the second trimester, before moving onto more challenging material. For example, if John failed the first part of Algebra I in the first trimester, he should be placed in a remedial Algebra I part I section in the second trimester before, hopefully, moving onto Algebra I part II in the third trimester—all accomplished in the same school year.

Accordingly, the trimester’s potential for adaptive remediation is a key JCPS goal, but it has not been uniformly achieved, according to informants. In some of the pilot schools, students were monitored and moved into repeater classes effectively if they needed remediation, prior to promotion to the second component of the course. At others, though, students moved onto the second part of the course in the second trimester, even if they had failed part one.

One teacher explained that the school shouldn’t “let kids go to part two if they haven’t passed part one...if you don’t do that next step, then you have a missing link.” Another teacher recounted the goal of trimester was, “If a student failed part one of Algebra, they’d need to be looped back at the beginning of Algebra. That’s not happening here yet, and we’re doing a disservice to kids by not looping them back.” Another teacher said such adaptive remediation was often not occurring in foreign languages, stating that the idea of remediation is key but, “for those students that don’t get placed into the class immediately after they don’t pass it, no, (remediation doesn’t work).”

“When we first switched, it was hard because the teachers didn’t adapt their teaching to the trimesters yet, so they were like rushing everything. They were trying to cram everything.”
(student)

Section 5: To what extent is the trimester schedule impacting depth of instruction?

“We were a lot more intentional this year with our schedule in trying to work in those remediation pieces; kids who didn’t do well the first trimester could hop right into a second trimester course.”

(counselor)

Perhaps this more complex, adaptive remedial scheduling practice takes time to develop and strengthen. A counselor at a school in its second year of implementation stated that, “We were a lot more intentional this year with our schedule in trying to work in those remediation pieces; kids who didn’t do well the first trimester could hop right into a second trimester course.” This maturation pattern may be related to the earlier-discussed “leapfrog” pattern in the graduation probability, which significantly improved for trimester students after the pilot’s second year of implementation.

Acceleration needs accelerating While many case study schools are achieving greater success with utilizing the trimester to remediate underperformance, the majority of case study schools are struggling more with trying to maximize the trimester’s potential to accelerate learning. By design, the trimester schedule is intended to move students who are performing at high levels into more challenging coursework at faster rates. For example, if Joan excelled in Algebra I part I and II in trimesters one and two, she could proceed on to Geometry in the third trimester—all in the course of one school year.

On this analytical point, while some teacher informants noted that the trimester allows them more easily to bump students into honors or advanced levels, teachers, students, counselors, and principals often communicated that the acceleratory potential of the trimester was more often not yet being realized.

One principal explained that, in the three years of implementation, they have just started to improve acceleration. Another principal explained that, “We have not done acceleration yet.” A teacher stated that, “There was talk about (acceleration), like if they could take Trigonometry A or Calculus, but that doesn’t happen.” Another teacher at a different school commented that her school also had not accelerated yet but that she thought that students accelerating to part one of a new course in the third trimester could be problematic with such a long summer break: “I can’t even imagine part one of a math class and then coming back in the fall and taking part two.”

But where acceleration is occurring, it is usually linked with math acceleration. One guidance counselor said that, “I would say it’s working at its best for accelerating the math group. We took a group of our freshmen and accelerated the group into Algebra part

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A, Algebra part B, and then Geometry in a year.” A principal reported the ability to push more students to do college-prep work: “We can go pre-Calc, stat, A/B Calc, B/C so we can push more students to do more college-level work to get them ready for college.” Another teacher at a different school explained that it “takes awhile before you can start acceleration because you have to have part As (of accelerated courses) in third trimester.” One principal did note that some students were able to accelerate into taking two languages in the same year, something the principal thought would not have been possible but for the trimester.

Summary of findings related to depth of instruction

Our findings provide multiple insights into the degree to which JCPS has met its original goal to optimize their belief in the trimester schedule’s potential to deepen instruction. Our statistical testing detected a statistically significant change in student ACT performance associated with the shift to the trimester schedule, as measured by student performance on the ACT, but little change in ACT PLAN performance. As far as the impact the trimester schedule has on instruction, teachers, principals, guidance counselors, and students reported positive changes in classroom learning, focus, individualized instruction, and teaching associated with the new schedule. Analysis of district-wide student and teacher Comprehensive School Survey (CSS) data supports interview informants’ perceptions.

Further, while teachers, students, guidance counselors, and principals positively perceive the trimester’s 70-minute class period, teachers and students reported that trimester’s smaller number of days built into a course posed an initial paradigm shift around pacing. Informants also stressed the importance of and challenges related to adaptive scheduling to remediate students who fall behind in their coursework or fail a particular part of a course. It appears that while schools have achieved more success with using the trimester schedule to remediate for underperforming students, schools have not yet optimized the trimester’s intended ability to accelerate students’ learning.

“I would say it’s working at its best for accelerating the math group. We took a group of our freshmen and accelerated the group into Algebra part A, Algebra part B, and then Geometry in a year.”

(counselor)



Section 6
Project Question 3



Section 6

Project Question 3

To what extent is the trimester schedule impacting the personalization of school for students?

The degree to which school becomes personalized for students is recognized as a central component in building supportive school communities that help students succeed academically and interpersonally (Bryk & Driscoll, 1988; Lee & Burkam, 2003; Lee & Cromnger, 2001; Lee & Smith, 1999; Murphy, et al, 2001). As such, school leaders often consider ways the structure of time can facilitate building a sense of community and personalization into school climate. From infusing programs such as student advisory sessions to the amount of time teachers have to build relationships with students and make contact with parents, a school's schedule can play a role in impacting the degree of personalization felt by students in multiple ways.

Improving personalization for students was one of the elemental goals that guided JCPs leaders in their decision to pilot the trimester. In their estimation, the trimester would allow teachers to teach fewer numbers of students each cycle, thereby allowing them to focus more on student relationships and home communications. Thus, our project set out to explore the hypothesized interrelationship between the trimester schedule and personalization for students. We specifically investigated through probing interview questions and student-level school climate data if the trimester schedule is associated with any impacts on aspects of personalization, from student-teacher relationships to teacher-parent communications. Further, since improved personalization for students

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targets improving student conduct in school, we probed our sample groups for their thoughts and perceptions of the trimester schedule's impact on student discipline and we analyzed student-level discipline data for any associated patterns. Finally, since personalization can impact student motivation to attend school, we analyzed student-level attendance data for any associated changes in student absences and the trimester schedule.

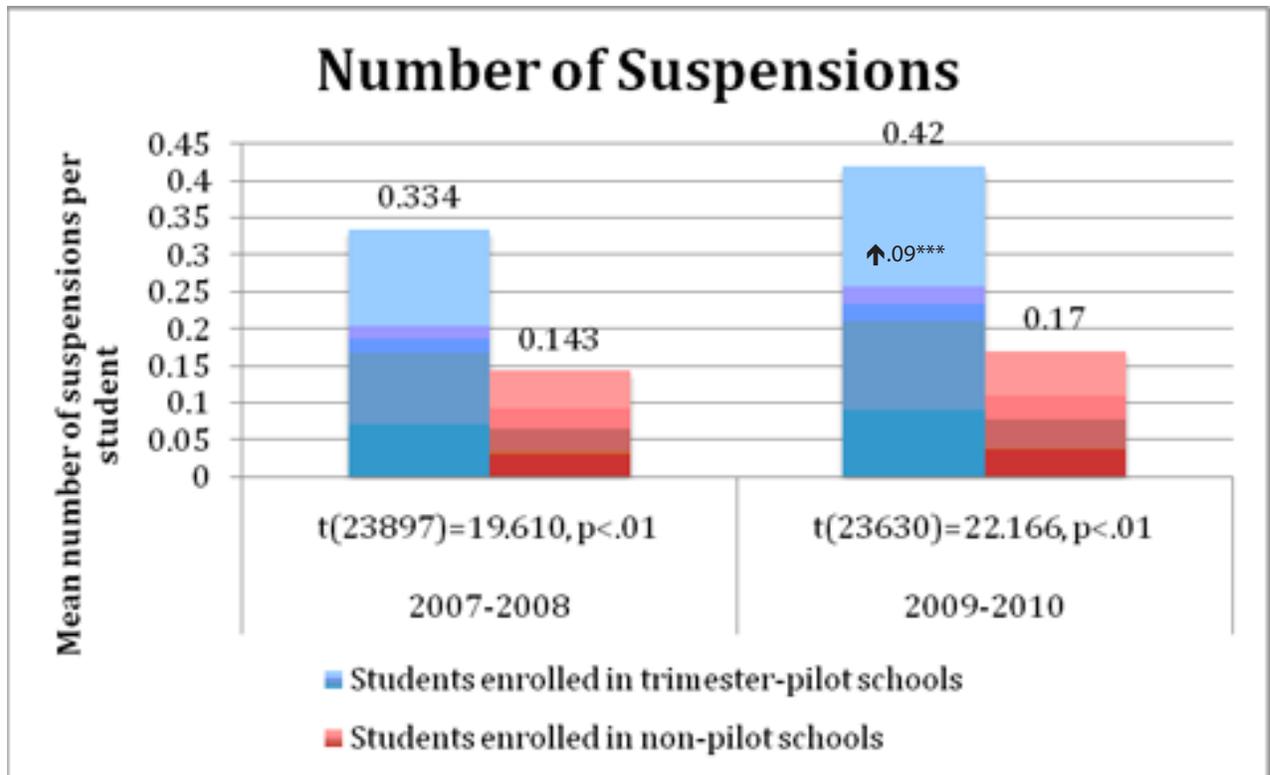
Impact on Student Discipline and Absences

Student suspensions In order to analyze student conduct data for any associated patterns related to the shift to trimester, we examined student disciplinary suspensions. Our analysis of student-level disciplinary data found an increase in disciplinary suspensions associated with the shift to trimester.

Specifically, in 2007-2008, the year prior to the trimester pilot, the mean number of disciplinary suspensions for students in pilot high schools that would later shift to trimester was significantly higher (+0.19) than for students enrolled in high schools that would not shift to trimester.¹ In 2009-2010, a similar pattern was found: the mean number of disciplinary suspensions for students in trimester high schools increased and was still significantly higher (+0.25) than for their peers enrolled in non-pilot schools.² In fact, the mean suspensions for students in trimester schools increased from 0.33 in 2007 to 0.42 in 2010, which represented a statistically significant rise in mean number of disciplinary suspensions in pilot schools.

Our analysis of student-level disciplinary data found an increase in disciplinary suspensions associated with the shift to trimester.

Section 6: To what extent is the trimester schedule impacting the personalization of school for students?



*** $t(24985)=6.9698, p<.00$

“Having fewer passing times has affected discipline because that’s when things tend to flare up.”
(principal)

Fewer chances for disruptions seems to improve conduct

Though we found little substantive change in suspension data associated with the shift to trimester, teachers and principals often noted that since the trimester schedule has only 5 class meetings per day, students transition in the hallways less than in 6 and 7-period schedules. Principals interviewed mentioned something similar to this principal’s comment: “Having fewer passing times has affected discipline because that’s when things tend to flare up.” Another commented that there were positive implications related to the trimester’s ability to increase the number of lunch periods, thereby reducing the number of students assigned to a lunch period: “Students get to the lunch line quicker, sit down, and then they’re managed that way.” And yet another assistant principal commented that the reduced number of days in a trimester improves student conduct because they don’t hit the mid-semester “doldrums” like in semester.

¹ $t(23897)=19.610, p<.000$

² $t(23630)=22.166, p<.000$

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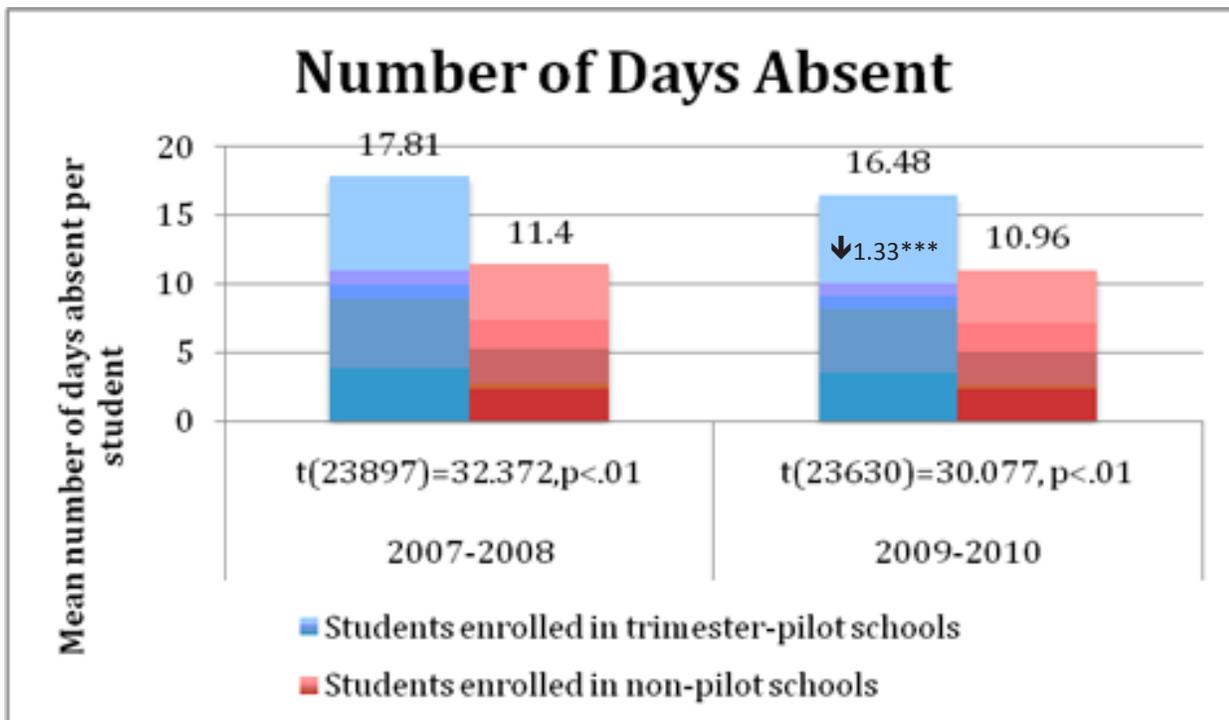


Reducing the “absence gap” Students who are more engaged in school attend school more often (Murphy, Beck, Crawford, Hodges, & McGaughy, 2001). In order to investigate for any potential change in student attendance data associated with the trimester, we turned to analyzing the number of student absences in years before and after trimester implementation. Our analysis of student-level attendance data found a significant change in the pattern of absences associated with the shift to trimester schedule. Though students in schools that moved to the trimester have historically had more absences than students in schools that did not shift to trimester, our testing found a reduction in the “absence gap.”

“Our analysis of student-level attendance data found a significant change in the pattern of absences associated with the shift to trimester schedule.”

(student)

Specifically, in 2007-2008, the year prior to the trimester pilot, the mean number of absences for students enrolled in pilot schools that would later shift to trimester was significantly higher (+6.41 days) than the mean number of absences for their peers in non-pilot schools that would later *not* shift to trimester.³ By 2009-2010, the mean number of absences for students enrolled in trimester high schools was still higher than the mean absences for their non-trimester peers, but the difference decreased to 5.52 days higher for trimester students.⁴



***t(24985)=6.56, p<.00

Section 6: To what extent is the trimester schedule impacting the personalization of school for students?

“You have lots of electives to choose from. I think kids are coming to school more because they can take classes that they actually like.”
(student)

Further regression analysis confirmed this trend. Our testing revealed that prior to the switch, enrollment in a 2007-2008 school that would later shift to trimester increased a student’s predicted number of absences by 3.90 days.⁵ By 2009-2010, enrollment in a school that had shifted to trimester only increased a student’s predicted number of absences by 2.72 days, a decrease of over 1 day.⁶ *For a detailed review of OLS regression results related to student absences, see the Results Appendix, Table 5: Summary of Simple Regression Analyses for Variables Predicting JCPS High School Student Absences. These results must be interpreted in light of a high degree of variation in student absence data, however.*

Thus, while students in the pilot schools that shifted to trimester have historically been more absent than their peers in non-trimester schools, it appears that the shift to trimester schedule is associated with a decrease in absences for students in trimester schools. This finding may relate to earlier findings on student engagement and diversity of electives, as illuminated by one assistant principal’s comment that the trimester, “cuts down on kids missing school and cutting class because kids are engaged and connected to class now...I guess the biggest change is attendance.” Students mirrored this perception, as one stated: “You have lots of electives to choose from. I think kids are coming to school more because they can take classes that they actually like.”

Impact on Student Satisfaction and Belongingness

Student rating of satisfaction with school static

In addition to probing for changes in student discipline and attendance, we also investigated student perceptions of belongingness and satisfaction with school across the timeline of implementation. Our testing of Comprehensive School Survey (CSS) data indicated that students in the group of schools that shifted to trimester have

³ $t(23897)=32.372, p<.000$

⁴ $t(23630)=30.077, p<.000$

⁵ $t(22898)=20.398, p<.000; AR^2=.19, F(12,23898)=457, p<.000$

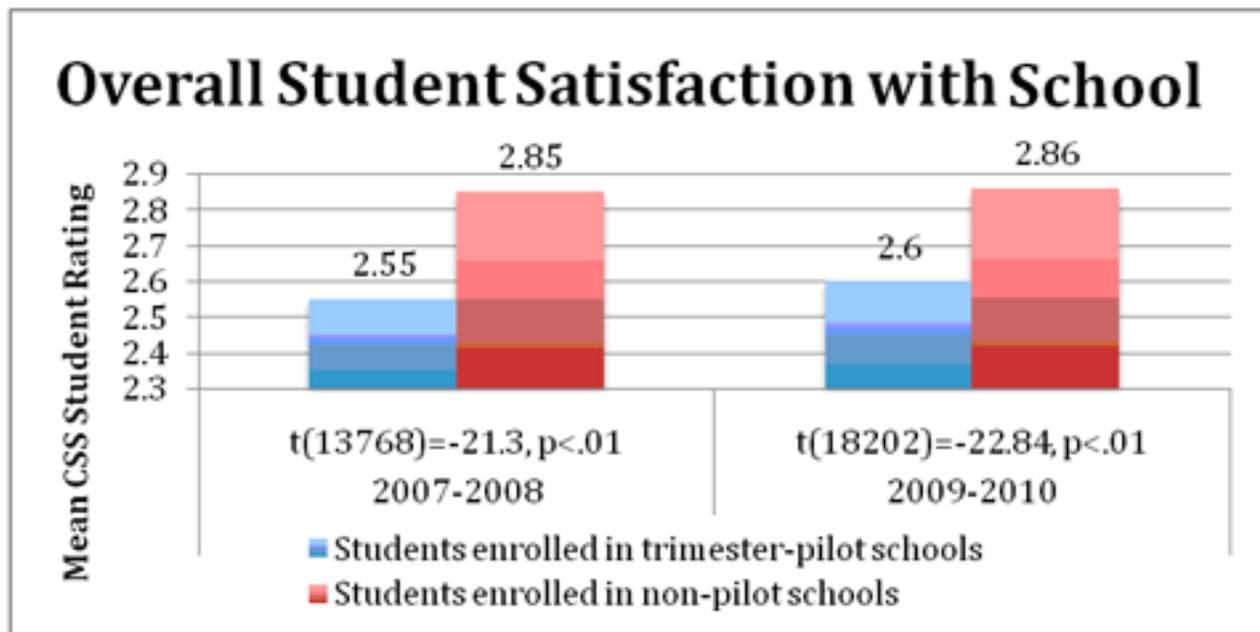
⁶ $t(23631)=15.82, p<.000; AR^2=.20, F(12,23631)=570, p<.000$

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historically been less satisfied with their schools than their peers in schools that did not shift to trimester. On the CSS, a 4 is the highest rating, “strongly agree;” a 3 indicates “agree;” a 2, “disagree;” and a 1, “strongly disagree.”

For the 2007-2008 academic year, the mean overall school satisfaction rating by students in schools that would later shift to trimester was 2.55 on a 4-point scale, whereas students in schools that would not shift to trimester was 2.85, noticeably above the district’s overall mean satisfaction score for that year, 2.7 (SD=0.85). However, by 2010, students in schools that had shifted to trimester rated a 2.60 mean overall satisfaction rate, whereas their peers in non-trimester schools rated a 2.86 mean overall satisfaction rate, still noticeably above the district mean of 2.73 (SD=0.80). Thus, from 2008-2010, the mean school satisfaction rating for students in trimester schools, increased by 0.04 points on the 4-point Likert-scale, though their satisfaction rating remained below the district’s overall mean. We do not find these changes to be substantive. Moreover, students in trimester schools remained significantly less satisfied with school both before and after the trimester pilot than their peers in non-trimester schools.⁷



⁷ 2007-2008: t(13768)=-21.3, p<.000; 2009-2010: t(18202)=-22.84, p<.000

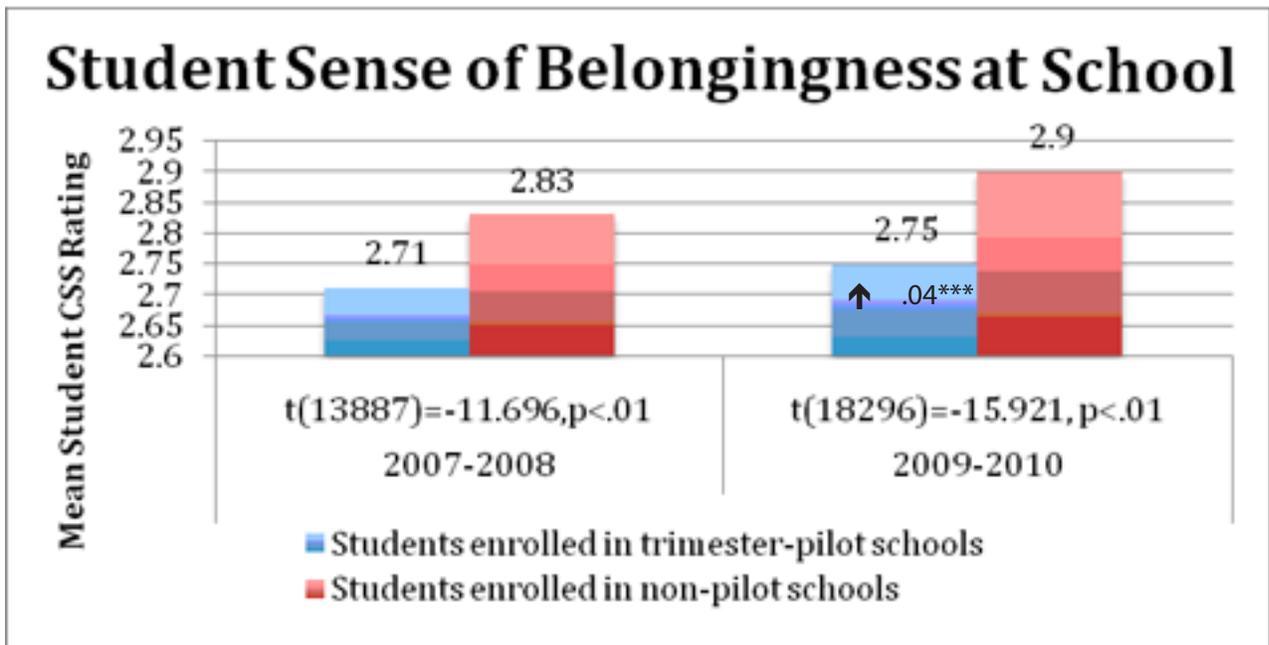
Section 6: To what extent is the trimester schedule impacting the personalization of school for students?

Our analysis of Comprehensive School Survey data revealed that student rating of their sense of belongingness in school increased significantly across the pilot implementation.

Student overall sense of belonging rating improves Another key goal involved in the restructuring of time was to improve students' sense of belongingness. Our analysis of Comprehensive School Survey data revealed that student rating of their sense of belongingness in school increased significantly across the pilot implementation. Moreover, students in schools that would shift to trimester rated their sense of belonging significantly lower than their peers in schools that did not shift to the trimester, both before and after the implementation.

In fact, in 2007-2008, the academic year prior to the trimester implementation, students in schools that would later shift to trimester rated their sense of belongingness as a 2.71 on a 4-point Likert scale, below the overall district mean of 2.77 for that year (SD=0.63) and significantly lower than their non-trimester peers' 2.83 rating.⁸ By 2010, students in schools that had shifted to trimester had a mean rating of school belongingness in their schools of 2.75 on a 4-point scale, 0.15 points significantly below their non-trimester peers and below the overall district mean belongingness rating for that year (M=2.83, SD=0.62) but 0.04 points higher than their mean belongingness rating prior to the shift to trimester. This represented a statistically significant improvement in pilot students' sense of belongingness at school.

***t(16499)=4.022, p<.01



⁷ 2007-2008: $t(13768) = -21.3, p < .000$; 2009-2010: $t(18202) = -22.84, p < .000$

⁸ $t(13887) = -11.696, p < .000$

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Impact on Relationships

Fewer students, better connections Though CSS data indicate district-wide perceptions, our interviews provided deeper insight into the impact the shift to trimester on student-teacher relationships. Across the case study sites, teachers and principals noted the positive impacts that reduced student loads are having on teachers' ability to interact with students during their courses. As one teacher said, "On the 6-period day, I was closer to 150 students...since trimesters have come along, I don't flirt with that number even close anymore, and that's a benefit for all parties involved." A guidance counselor reported that the trimester allows teachers to "interact more with kids because of their (student) count; (teachers) were able to keep track of kids easier and help them along the way." A principal reported that the trimester's smaller number of students in a teacher's load allows teachers to look at students as "individuals, rather than huge groups."

According to teachers, too, this lower student count in the grading cycle translates into being able to contact parents more frequently. As one teacher explained, "I mean you have less students, definitely, which lends itself to being able to contact student parents more frequently."

Students in schools that shifted from six and seven period days reported positive impacts on their relationships with teachers. One student told us that, "I definitely feel connected to my teachers. Having more time in class does matter; you get more work done, so you have more time to talk to them on a personal level as far as how life's going or whatever." Another student at a different school noticed that, "now that we have more time throughout that class they can take time out not just to get to know us but to throw games in there to get to learn better besides just doing worksheet after worksheet, and test after test."

This perception of improved relationships due to lower teacher-student ratios may be related to our finding that there is a reduction in student absences associated with the shift to trimester, since students who feel a sense of belonging tend to want to participate in high school (Bryk & Driscoll, 1988; Fredericks, Blumenfeld, & Paris,

"I mean you have less students, definitely, which lends itself to being able to contact student parents more frequently."

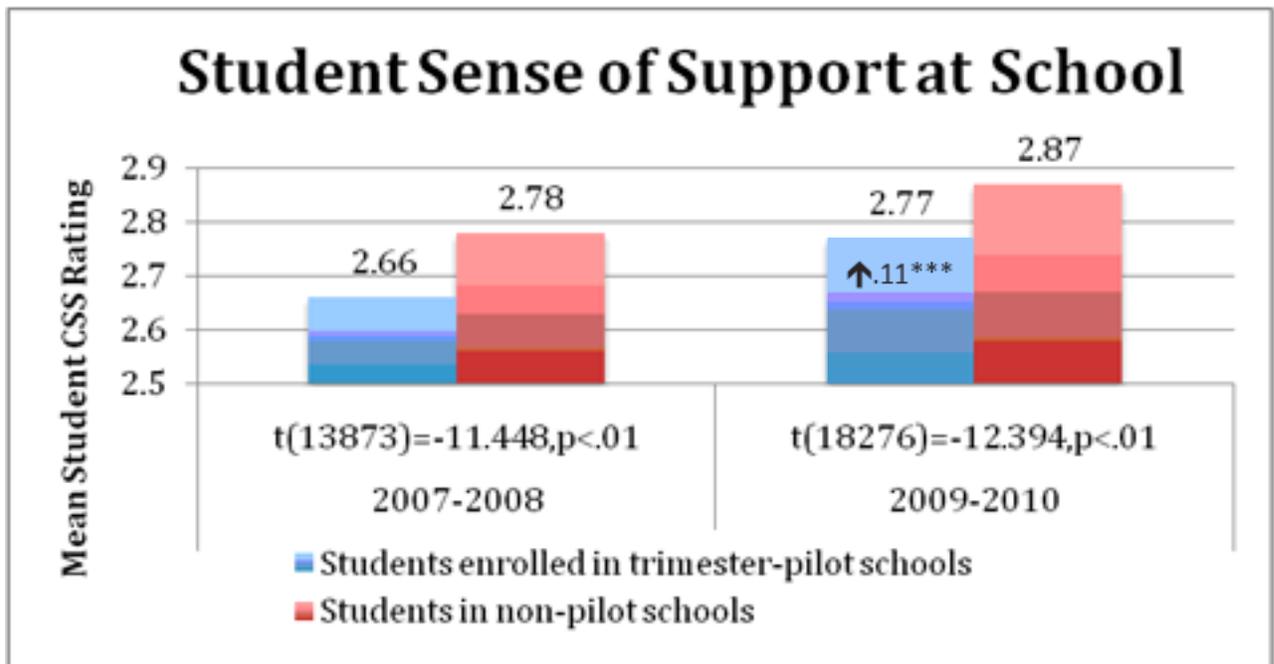
(teacher)

Section 6: To what extent is the trimester schedule impacting the personalization of school for students?

2004; Lee & Burkam, 2003; Lee & Cromnger, 2001; Lee & Smith, 1999; Murphy et. al, 2001) As one teacher shared, “We have such a high rate of absenteeism in transient students that on the block schedule if they didn’t come in on Monday/Wednesday, we’d lose huge chunks of material. At one point, I had 225-240 students on the semester block, and with the trimester, I’m down to 120 or 150. I can devote more TLC with fewer students.”

Our analysis detected an increase in students’ perception of school-based support associated with the shift to trimester schedule.

Students feel more supported throughout JCPS On a related construct, we probed for any pattern-changes in students’ perception of the level of support they receive at school. Our analysis detected an increase in students’ perception of school-based support associated with the shift to trimester schedule. CSS student-level-data reveals that students in schools that would shift to trimester have historically rated the level of school-based support lower than their peers in schools that would not become part of the pilot. However, in schools that shifted to trimester, student rating of the amount of support they find at school significantly increased by 0.11 points on the 4-point Likert-scale (2.66 in ’07-’08 to 2.77 in ’09-’10). Importantly, the rating for school-based support also improved over this time period for students in non-trimester schools (2.78 in ’07-’08 to 2.87 in ’09-’10).

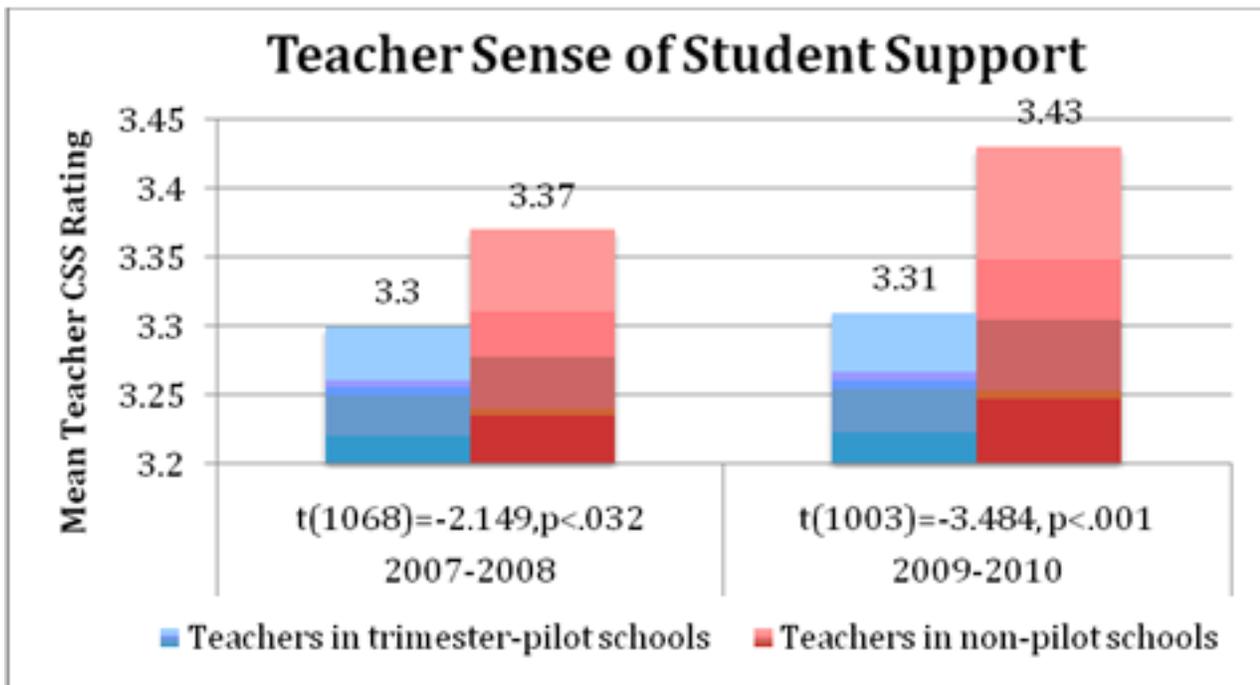


*** $t(16483) = 10.8165, p < .01$

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Interestingly, the change in teachers' perception of school support for students over the interval of analysis as measured on the CSS did not approach the change noted in students' perceptions measured on the survey. When asked on the CSS to rate students' level of school-based support, the mean of teachers' responses in schools that shifted to trimester changed only by 0.01 across the pilot (3.30 in '07-'08 to 3.31 in '09-'10). Among teachers in schools that did not shift to trimester, their mean rating by 0.06 across the pilot (3.37 in '07-'08 to 3.43 in '09-'10). However, it is worth noting that the mean scores for these teacher groups in these years were already approaching the 4-point maximum and were noticeably higher than student perceptions of support at school.



Daily dosage also improves relationships Likewise, students, teachers, and principals that shifted off of A/B block to trimester also noted improvements in their connections with teachers. One cited the daily contact as the “biggest advantage” to the trimester over the A/B block. Another teacher praised the trimester’s daily dosage of student contact and characterized the lack of daily contact in the A/B schedule as a “major problem, especially for students with high

Section 6: To what extent is the trimester schedule impacting the personalization of school for students?

*“All students felt trimester made teacher relations better.”
(student)*

attendance problems. Because if we didn't see them except every other day, and then the student was absent, it may have been a week before they actually had contact with us.” This teacher's perception may relate to the change in absence patterns noted above. Another noted that discipline is improved by the daily connection, when he stated that, “If you had a week where you only saw (your student) on a Tuesday or Thursday, you really only saw that that kid once a week. We know that discipline in this school is all about relationships, and you know the kids you have relationships with will do anything.” A student may have offered some insight into this teacher's theory on discipline when the student commented that on the trimester (as opposed to block), “You want to have a good relationship with your teachers because you see them everyday. It didn't matter as much when you didn't see them everyday. All students felt trimester made teacher relations better.”

Teacher shuffling is “biggest drawback” While the trimester's daily dose of student-teacher connection is integral, there is a nuanced but meaningful challenge posed to some. In many interviews teachers, principals, guidance counselors and students reported that problems in student-teacher bonding and instructional progress can develop when students are shuffled to new teachers at the change of a trimester. A guidance counselor communicated this challenge, when she explained, “teachers don't like the trimester because it's harder to form relationships. They're having to form relationships three times a year instead of just one time a year.”

Statements from teachers at different schools echoed this challenge, as one teacher noted, “I think that's the biggest drawback (to trimester). You finally get to where you're bonding with them, you know they're actually working for you because now you've built relationship and rapport with them and then they switch. We (as teachers) have to start over just like they have to start over.” Another teacher at a different school commented that, “Sure, you get to know more students, but you might not know in depth about them.” Yet another teacher noted that, “There's not a lot of opportunity to create community in your classroom because you have 12 weeks and then everyone is shuffled...You really need a good block of time to understand that child and what that child needs. I would say it takes a good 12 weeks to figure that out. Just when you're figuring it out, the kid moves to another teacher.”

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Likewise, students also corroborated these perceptions about teacher shuffling, as one stated, “It can be hard to get to know your teachers when you don’t get the same teacher each trimester.” Another told us, “You’re just getting used to a teacher and you have to move onto someone else the next trimester.” “You really don’t have enough time to get to know your teachers.” Another student stated, “You usually don’t have the same teacher for both trimesters of a course.”

“It can be hard to get to know your teachers when you don’t get the same teacher each trimester.”

(student)

Perhaps significantly, this connection may be more fragile for some students. As one teacher explained, “A lot of our kids don’t even have parents at home. We’re the next thing they have to that, and if we break it off after 12 weeks and send them packing to somebody else that they don’t know or trust, they’ve got another 12-week uphill battle.”

Yet while principals, teachers, and counselors reported the challenge of teacher shuffling across trimesters, many also reported improvements on this front after schools climbed the master scheduling “learning curve.” Recognizing the critical connection, one principal noted how hard his school has worked to reduce teacher changes when he explained, “But it’s just so important to (teachers) and the kids to stay with the same person; we work very, very hard to try to make that happen. And it’s difficult.” A teacher at a different school indicated similar improvements, stating that, “This year, the counselors did a really good job trying to keep the same kids with the same teacher, so I think that will help develop those relationships and those trust issues.”

“But it’s just so important to (teachers) and the kids to stay with the same person; we work very, very hard to try to make that happen. And it’s difficult.”

(principal)

Section 6: To what extent is the trimester schedule impacting the personalization of school for students?

Summary of findings related to personalization

Though our statistical testing of student-level data did not detect an improvement in disciplinary suspensions or overall school satisfaction associated with the shift to trimester-schedule, our analysis found that the shift to trimester schedule was associated with a reduction in student absences and improved sense of belongingness among students in pilot schools. Moreover, our interviews revealed that JCPS students, teachers, and principals in perceive the trimester schedule to have had different impacts on aspects of personalization and discipline. Informants in all case study schools reported positive impacts on personalization and their ability to improve communication with students' parents because of reduced student-loads and daily contact with students. They also noted how the improved personalization associated with the trimester schedule may be of particular importance to their at-risk students. However, teachers, principals, guidance counselors, and students resoundingly indicated that the trimester's reduced number of days in a course challenged their ability to develop and maintain positive relationships when students were shuffled to different teachers across the trimesters, rather than remaining with their same teachers.



Section 7
Project Question 4



Section 7

Project Question 4

To what extent is the trimester schedule impacting collaboration among teachers?

The depth and frequency of faculty collaboration is an essential element in increasing academic press and building community in a school (Bryk & Driscoll, 1988; Lee & Burkam, 2003; Lee & Cromnger, 2001; Lee & Smith, 1999; Murphy, et al, 2001). Further, the nature of the schedule can be an instrumental tool in facilitating formal time in the day for teacher teaming and for engendering professional collaboration around instruction and student achievement (Bower, 2000).

As such, one of the core JCPS goals for the trimester schedule was for it to improve teacher collaboration. To this end, our project sought a greater understanding of the relationship between the deployment of the trimester and teacher collaboration in schools. We explored this proposition through qualitative interviews specifically probing teachers and principals about this construct and by reviewing internal JCPS documents for any insights into this aspect of academic press and community.

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Impact on Teacher-Teacher Collaboration

Trimester “forces” teacher-to-teacher alignment, organization and collaboration

At all case study schools, teachers and principals reported that the trimester has “forced” teacher collaboration. Because the trimester schedule breaks courses into two parts and often involves students having different teachers for parts A and B of a course, teachers must carefully collaborate to ensure that their pacing is aligned with colleagues teaching the same course. Many informants characterized this sense of collaboration as an increase in “teacher accountability” with the trimester.

Comments from principals explained this. One principal reported that, “(Teachers) have to collaborate more, and there’s a sense of urgency to that because if I’m teaching the first half of the course and you’re teaching the second half of the course, I sure don’t want the kids to come to you without having the same things that Ms. Smith has taught in the first half. There’s an integrity, ‘I’ve got to be together and ready.’” And other principal noted that, “It has forced better collaboration amongst teachers because of pacing because they know that at the first week of November the first trimester ends, and we all need to be at a stopping point because at some point that student might not have the course again until February and they might have a different teacher.”

Teachers across different schools reported this change and how the trimester has facilitated greater curricular collaboration and alignment. One teacher explained that because students often have teachers for different parts of the same course, “You have to develop your curriculum to have a beginning and an end for each trimester because if you have a kid first trimester with teacher A, he may be third trimester with teacher B. It’s caused our curriculum to become very organized.”

A history teacher gave an example of this same effect when he explained that, “Some people have certain preferences historically; you might spend a little more time on the Civil War and then ‘giddy up’ through the Progressive Era. But you can’t do that anymore (on the trimester). You’ve got to be there, so it’s really holding people’s feet to the fire as far as making sure they’re on pace.”

“(Teachers) have to collaborate more, and there’s a sense of urgency to that because if I’m teaching the first half of the course and you’re teaching the second half of the course, I sure don’t want the kids to come to you without having the same things that Ms. Smith has taught in the first half.”

(principal)

Section 7: To what extent is the trimester schedule impacting collaboration among teachers?

Moreover, several informants also indicated how this increased pressure to align curriculum and pacing has positively impacted more “mediocre” teachers. As one teacher stated, “I think for teachers who were maybe leaning more on the marginal side, it has kind of upped the ante or kicked it up a notch.”

“You have to prepare yourself to cover more, not in a shorter amount of time in the classroom but a shorter amount of time literally. I find myself definitely using my pacing guide as more of a resource.”
(teacher)

Our interviews also revealed that this “forced” collaboration also involves teacher discussions informed by JCPS pacing guides. Teachers, principals, and guidance counselors in all case study schools also reported their closer reliance on district curriculum pacing guides to help them adjust their pace to the trimester’s new instructional timeline. As one teacher explained, this involved pacing guides and a paradigm shift: “You have to prepare yourself to cover more, not in a shorter amount of time in the classroom but a shorter amount of time literally. I find myself definitely using my pacing guide as more of a resource.” Another teacher commented that, “We also have to rely on pacing guides, because not only do you have 20 minutes extra within the period, but you have them if it’s a two trimester class for 24 weeks, instead of 36. So it’s a matter of trying to get the same units into not the same amount of time...it was a mind change.”

“We had to sit down together as a department and whittle down, asking, ‘we have 24 weeks now, not 36; what is absolutely essential?’”
(teacher)

Related to the compressed number of days attributed to a course and curricular alignment “forced” by the trimester, teachers reported that they found themselves having more discussions with colleagues about elements of their course curricula that could be discarded in the interest of time. Though the standards were realigned by the district, teachers found themselves working to see how these changes would play out in their classrooms. One math teacher explained how he looked at his course and found what was “really, really important and what they would need for Calculus. (The trimester) made me do it.” Another teacher explained that, “We had to sit down together as a department and whittle down, asking, ‘we have 24 weeks now, not 36; what is absolutely essential?’” Another teacher responded, “That was deemed cutting the fat.”

Some teachers reported positive results of these collaborations, whereas others resent the lost time in the curriculum. At a different school, teachers spoke of a similar cutting process that resulted in “dropping some of the literature, which is kind of a shame.” Another foreign language teacher noted that her department had to cut out components of cultural studies and “the fun stuff” for students. A

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social studies teacher at a different school remarked that it is particularly challenging for history teachers to “get everything in” because of the chronological nature of historical curricula. Another said that she “didn’t consider some of the material cut to be fat.”

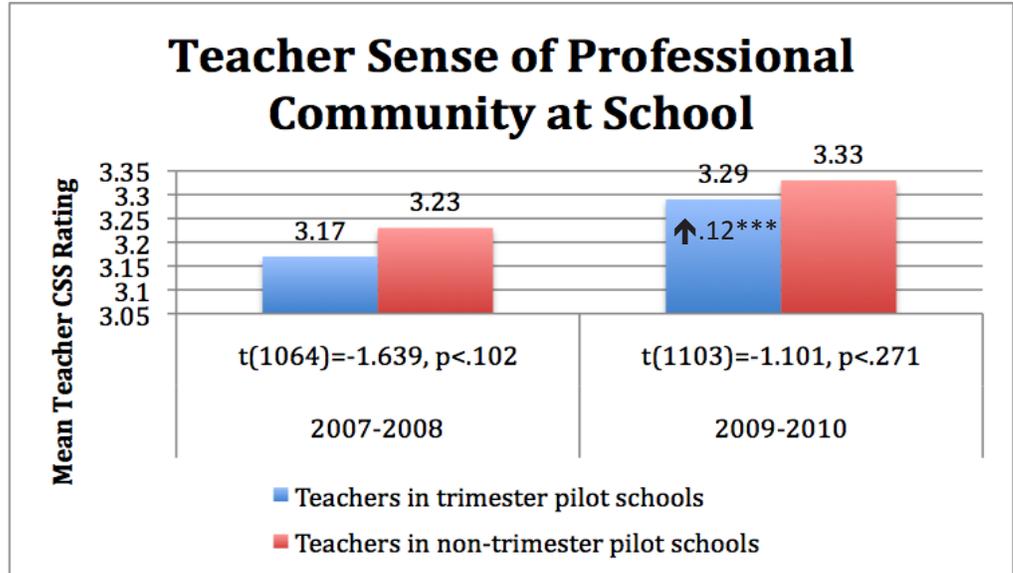
While informants reported that the trimester schedule engenders increased collaboration in the hallways and after school around pacing, curriculum, and student achievement, they also reported the importance of common planning to facilitate this alignment and improve community. One guidance counselor reported that, “We were able to schedule all of our Algebra II teachers with a common plan this year, so they could collaborate daily. We’ve never done that before, but I don’t know if we would’ve been able to do it on a 6-period day.” A guidance counselor related the common planning to a sense of teacher community, stating that, “The freshman academy, the trimester, the advocacy; I just feel like our teachers really have a good sense of community because they’re in contact with one another so often.”

The teacher community Since professional collaboration is inherent in building professional communities in schools, we analyzed patterns in teachers’ perceptions of their belonging to a community in their schools, as indicated in data from the annual Comprehensive School Survey (CSS). Our analysis of CSS teacher-level climate data found an associated increase in teacher rating of their sense of belonging to a school community among teachers in trimester schools.

In fact, teachers across JCPS rated their sense of community higher in general in 2010 than they did in 2008, prior to the trimester. But among teachers in trimester schools, their mean rating of belonging to a school community increased by 0.12 Likert-scale points by 2010 from its starting point prior to the trimester in 2008 (3.17 in ‘07-’08 to 3.29 in ‘09-10).¹ Note that the difference between trimester and non-trimester teachers was not significant either before or after the shift to trimester in the pilot schools. Though we cannot attribute this reduction in the “teacher rating of community gap” to the trimester schedule, there is an associated increase in the rating of belongingness to school community given by teachers in trimester schools, a change that may be elucidated by informant insights. Moreover, the mean teacher rating is approaching the 4-point maximum on the Likert-scale.

¹2007-2008: M=3.19, SD=0.599; 2009-2010: M=3.31, SD=0.549

Section 7: To what extent is the trimester schedule impacting collaboration among teachers?



*** $t(1312) = 3.883, p < .01$

More collaborative discussions about student learning In addition to improved collaboration around pacing, a corollary sense of collaboration around student learning has emerged with the shift to trimester, according to informants at different sites. While teachers often noted challenges in building relationships with students when students were shuffled to new teachers at the end of a trimester, teachers also noted the increased necessity to collaborate with their colleagues around student achievement because of this shift. As one teacher explained, because students are often shuffled to new teachers at the shift in trimesters, she feels compelled to collaborate with her colleagues: “We’ll just have to meet and say, ‘okay this student got it, didn’t get it’ and go through our rosters.”

And this sense of collaboration around students may translate into stronger “community press” by teachers (Murphy, Beck, Crawford, Hodges, & McGaughy, 2001). A guidance counselor explained her perception that she sees teachers “advocating for kids a lot more; teachers are calling me saying ‘he is having way too easy of a time in this class; he needs to be in a more challenging math.’ Or ‘this kid is struggling in Honors and would work better in comprehensive.’” She went on to report that teachers just can’t let “little Johnny sleep in the back of the room anymore because the teacher knows they are accountable.”

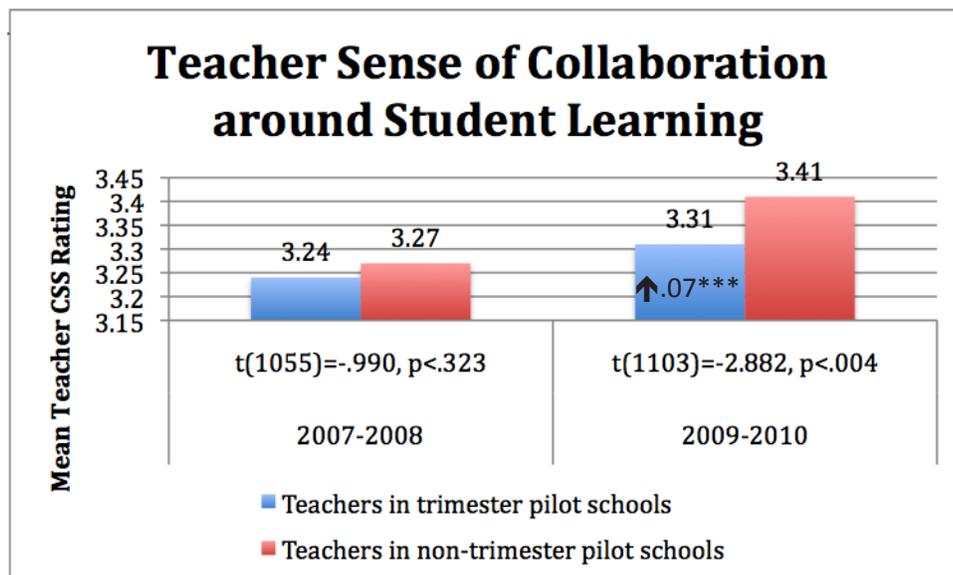
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A teacher at a different school linked this pattern of higher teacher collaboration and advocacy for students to student equity, explaining that teachers and schools no longer just “pass a student along” because teachers and schools now know that students can recover their credits and it won’t take an entire school year. She explained that, “With the trimester, they’d know that there’s a chance for them to actually learn the content better, so they can hold them back.”

Teacher ratings of collaboration around student learning also increased on the CSS.

Teacher ratings of collaboration around student learning also increased on the CSS. An analysis of survey results from 2007-2010 indicate that teachers’ mean rating of the amount of collaboration around student learning increased among teachers in schools that shifted to trimester schedules (3.24 in ‘07-’08 and 3.31 in ‘09-’10). However, this rating also increased (and increased by a higher difference) among teachers in non-trimester schools (3.27 in ‘07-’08 and 3.41 in ‘09-’10).² It is also of note that non-trimester teachers had significantly higher ratings on this item than their trimester peers only after the trimester pilot³. Importantly, though, teacher ratings in both groups were approaching the 4-point maximum on the Likert scale.



***t(1315)=3.954, p<.01

² 2007-2008: M=3.25, SD=0.584; 2009-2010: M=2.74, SD=0.787

³ t(1103)=-2.882, p<.004

Section 7: To what extent is the trimester schedule impacting collaboration among teachers?

Summary of findings related to collaboration among teachers

The results of our analysis indicate the perception among informant groups that the trimester schedule has forced a form of meaningful teacher-to-teacher accountability and alignment, and, as such, tighter collaboration particularly around course pacing. Related to this, informants explained how the trimester engendered teacher collaboration around tightening their course curricula in order to adjust to the trimester's new instructional timeframe. According to informants, this increased collaboration around pacing and planning has translated into positive results for students, since teachers collaborate more around individual student achievement. Informants also noted their perception that this collaboration is furthered in the trimester schedule because of the improved flexibility in scheduling that allows for common planning periods for teachers sharing courses and students. Our analysis of CSS data confirms that teachers, both in trimester schools and across the district, noted an increased sense of community and collaboration from 2007-2010. Interestingly, though there was a significant gap in 2008 between teachers in schools that would shift to trimester and those that would not on rating of belonging to a school community, that gap disappeared by 2010.



Section 8
Discussion



Section 8

Discussion

Introduction

The discussion section serves to review key findings of the project and discuss the importance of each finding against the backdrop of the extant literature. Here we apply what is already known about the *effect of the structure of time on teaching and learning* in high schools to frame and to interpret the data derived from our capstone study of JCS.

Academic press occurs when schools and teachers “direct student effort to appropriate academic outcomes – through high-quality curriculum, effective pedagogy, and an instructional climate that rewards rigorous academic work by all students” (Newmann, 1997). A sense of community is characterized by “highly collegial environments...where teachers report a high level of innovativeness, high levels of energy and enthusiasm, and support for personal growth and learning. Teachers who belong to communities of this sort also report a high level of commitment to teaching and to all of the students with whom they work” (Little & McLaughlin, 1993 p. 94 in Murphy et. al, 2001, p. 178). In this section, we return to explore the impact of the trimester as it relates to academic press and community.

Background

Any time pervasive changes are enacted, the district as a hub must consider the many perspectives from which the change is perceived as well as their role in shepherding the change. There is a

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great dearth of longitudinal research on high school scheduling, and in that absence, districts look at the problems in schools as they become evident and make the most of the options available. JCPS administration invested heavily in initiating the scheduling conversion by contacting numerous districts that had implemented the trimester and conducting extensive research into the various scheduling structures. Once leadership was convinced to pilot the trimester, they committed to further educate principals and teachers by conducting state-wide trimester symposiums with presenters from inside and outside the district. After three years on the trimester, the district recognized a need to analyze its efficacy. The request for this project indicates the district's desire to get past a perception of the trimester as a flawless innovative strategy and address both the selling points and drawbacks in an authentic effort to continuously improve.

In this section, we return to explore the impact of the trimester as it relates to academic press and community.

JCPS adopted the trimester knowing that the effect of a change in schedule is only as significant as what happens during the newly allotted time slot. The research on the effects of various schedules has revealed little about how instructional practices change as a result of the amount of time students spend in class, and the studies suggest even less about professional development that may have been offered in preparation for the change. The JCPS trimester pilot has provided new material that can contribute significantly to the existing research base.

Purpose of the Study

The purpose of this project is to examine the implementation of the trimester schedule in six JCPS high schools that converted from a traditional 6 or 7 period day or A/B block schedule. Specifically, using a mixed-methods approach, we investigate whether the schedule improves credit opportunities, depth of instruction, personalization, and teacher collaboration. We use the backdrop of current literature on two major constructs known as essential components of successful schools, academic press and sense of community, to ground the project questions. In the discussion that follows, we will review key findings as they relate to each major project question, and furthermore, how findings relate to extant research.

Reviewing the Story

The organizational structure moved from a tight, inflexible model to a more adaptive model.

The shift to trimester in JCPS reveals a resolution of existing tensions. The traditional schedule was too constraining for teachers because of the short length of the daily period; students needed more availability to earn credits and take a broader array of electives; and teachers needed more built-in collaborative time. The organizational structure moved from a tight, inflexible model to a more adaptive model. In the new schedule there is perhaps less flexibility within the curriculum, but more flexibility in the larger scheme. Students can take more classes and have more chances for credit recovery than they could under the traditional schedule. Teachers did not have built-in time to collaborate under the old regime, whereas under the trimester there is enough flexibility to make common planning time more available. Teachers felt more pressure under a traditional schedule due to the larger number of students they were responsible for each day and the short amount of instructional time available each class period. The trimester seems to have helped decrease the teacher's daily student load and provide more time per day for instructional practices that require more time such as lab work, whole class discussions, and collaborative projects.

Impact on Credits

Ellet & Logan (1990) note, "An organizationally effective school appears to be one characterized by a very high degree of goal consensus and agreement and communication of the vision of what the school ought to be and needs to accomplish (in Murphy et. al p. 141.) With the transition to trimester came a clearly articulated district objective to improve the odds for each student to graduate on time. Understanding that the trimester schedule might facilitate the realization of this important goal aids in the legitimacy of its incorporation. As noted in previous sections, teachers interviewed in this project expressed an acceptance of and appreciation for the trimester's ability to improve credit opportunities.

Research demonstrates that effective schools are able to increase the time that students spend learning. Furthermore, the academic organization of the school, which includes the schedule and the process of assigning students to teachers and courses, is de-

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signed to promote learning and is said to be the major artery pumping life into the school and determining the average level of student achievement (Lee et al, 1993 p. 229 in Murphy et al., 2001 p. 147). One of the most attractive features of the trimester schedule is its potential to positively impact the graduation rate. Due to the manner in which the time is divided, the trimester enables a student up to 30 credit opportunities. The trimester also potentially encourages persistence because there is less of a lag between courses, more frequent opportunity to start over again, and continued momentum through each section. Characteristic of high academic press, with the trimester model there is an intrinsic push towards sustained academic engagement such that a student is less likely to give up.

One of the most attractive features of the trimester schedule is its potential to positively impact the graduation rate.

While it is known that the schools that converted to trimester have traditionally maintained a lower graduation rate than other JCPSS schools, the data shows that by the second year on the trimester, there was an associated improvement in a student's graduation odds in those schools. An improvement in the associated graduation pattern since the incorporation of the trimester could be attributed to a number of things, but nevertheless, progress has taken place under the trimester framework. To determine how directly the trimester can be associated with improved graduation odds, we looked at all elements influencing the graduation rate. In terms of credit opportunities, academic press was operationalized in this study in terms of credit recovery, course load, attention to the individual needs of students, and elective opportunities.

The trimester improved the delivery of credit recovery in the six project schools. Due to the schedule, especially in their senior year, students have room to make up classes. As one counselor put it, "Seniors are making up classes all year long, and there's lots more room for that. Otherwise, they wouldn't graduate." Academic press in the trimester is also demonstrated by a "smarter" student course load. A principal previously using the A/B block schedule explained the change. "For students, instead of having over two days up to eight classes of homework, (students) only have to focus on five," he said.

The trimester improved the delivery of credit recovery in the six project schools.

Second, academic press is characterized by a careful focus on at-risk students. At the core of anchoring schools on a clearly defined learning imperative is "a renewed concern for the education of all students, especially those who have been ineffectively served in

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the past – the so-called at-risk students” (Murphy, 1991, p. 60 in Murphy et al, 2001, p. 154.) The compressed timeline that the trimester provides has been said to motivate at-risk students. “I think students get a better image of themselves when they have these opportunities and can get back on track,” a counselor explained, “rather than just being tossed aside because ‘oh, you didn’t make it this year.’”

The compressed timeline that the trimester provides has been said to motivate at-risk students.

Third, all schools voiced a greater variety of electives being offered, which may improve persistence in school. A principal explained, “This is giving students a chance to earn more credits in the classes they are passionate about...they are dialed into what they like and can explore for just a 12-week snapshot.” This resonates with consistent findings that successful high schools make sense to their students because they see the curriculum as relevant and can find practical meaning for the learning in their current and future life (Goodlad, 1984 and Christman & Macpherson, 1996, p. 90 in Murphy et al., 2001, p. 165).

Fourth, while students are able to increase their credit opportunities, the course load has diminished for teachers. This change in student load has been explained as going from four classes of 20-25 on the six period day to five classes of 30 or more. Another teacher thought of it in sheer practical, efficient, and economic terms. She said, “I think we taught way more students before. . . I feel like I was making 130-140 copies before and now I’m making 90.” Decreased class loads allow teachers to focus more on the individual needs of the student. The increased opportunity for teachers to directly interact with students on a personal level is significant because when students are pushed to high standards by caring adults, they are motivated to achieve the set expectations (Chenoweth p. 31).

Finally, instead of dodging responsibility or dropping out, students in schools with high expectations for learning respond with increased achievement and praise for their teachers for making them work hard (Newmann & Wehlage, 1994). Extra built-in credit opportunities send the message that students are expected to graduate on time and the elective offerings also make a statement that the school is committed to giving students choice within their course of study. Due to the “smarter” course load, greater potential to offer electives, more opportunity for credit recovery or acceleration, and the fact that the timeline tends to cultivate persistence, the trimes-

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ter has triggered significant progress towards improving academic press in the six project schools.

While the trimester is associated with an increase in overall credit opportunities, there are some areas that remain a challenge. Sometimes massive changes such as schedule overhaul can create so much traffic in the organization that certain outcomes or issues can get cluttered in the mix. An example of this that may have occurred in JCPS was with regard to the acceleration of coursework. In some situations, counselors and teachers were able to individualize a student's course of study after each trimester such that he or she could move into an honors course if appropriate or get a head start in the next math course. However, more of the time, this was overlooked due to the numerous other issues overshadowing this new option, such as the larger number of students needing to be placed in remedial courses the next term. In other cases, the opportunity to accelerate didn't exist due to the clogging of the schedule by courses that run three trimesters. This is a beneficial option that exists as part of the trimester schedule and has not been fully developed or utilized to the degree that JCPS leadership had intended.

Decreased class loads allow teachers to focus more on the individual needs of the student.

Depth of Instruction

In order to be emotionally engaged in school, students must believe that what they are learning is either interesting, valuable – or, hopefully, both. Goodlad (1994) notes that “successful high schools make sense to their students... [because] students see the curriculum as relevant and they identify what they do in school as necessary and meaningful for their present and future.” So while increasing the number of possible credits for students to earn is a key objective of the trimester schedule, what occurs within those classes is of equal importance. It is expected that an improvement in depth of instruction would translate to better performance on standardized tests. Project data later corroborated with this prediction. Our analysis indicates an improvement in juniors' ACT scores throughout JCPS after two years on the trimester schedule (from 2007 to 2009), but the pilot schools that shifted to trimester improved by a composite net of .28 (moving from 16 to 16.28), while non-pilot schools had a smaller associated increase (-.10). This pattern was not found in PLAN scores for sophomores, but 10th graders have also had less time of

“Successful high schools make sense to their students... [because] students see the curriculum as relevant and they identify what they do in school as necessary and meaningful for their present and future.”

(Goodlad, 1994)

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trimester effect, since they've only had one year (9th grade) on the schedule prior to testing. In addition to test results, qualitative data revealed a greater presence of academic press due to the adoption of the trimester schedule.

Teachers voiced that the course of study developed for the trimester schedule encouraged a more encompassing approach of fewer topics.

Aside from changing the amount of daily teaching time, teachers also had to accommodate a change in the pacing of curriculum. Some of the objectives were removed from the course of study so as to encourage depth over breadth and exclude items not designated as part of accountability measures. Highly structured pacing guides were developed to assist teachers in the planning for daily instruction under a new timetable. This would be particularly important for the same subject teacher that might inherit the students the next trimester for the 2nd or 3rd part of the course. Several comments were made about this new pacing structure serving as a guiding force that helped lift up the mediocre teacher. "You will see more conscious instruction in order to meet the deadline," one teacher described.

The trimester is associated with contributing to a greater sense of community

Due to the tightly aligned schedule, pacing guides developed by central office staff allow teachers to concentrate on the "need to knows" and filter out the "nice to knows." Teachers voiced that the course of study developed for the trimester schedule encouraged a more encompassing approach of fewer topics. Furthermore, the seventy-minute class period gave teachers enough time to engage students in meaningful discussions, yet not so much time that they could afford to waste a minute. Students who find themselves falling behind don't spend as much time waiting to fail the class; instead of being in the class for 18 weeks, with a 12-week trimester schedule, they are afforded a chance to move six weeks faster into the next course in order to recover the credit. This quick opportunity to recover increases the chances of success the second time around.

Hand in hand with academic press, in terms of depth of instruction, the trimester is associated with contributing to a greater sense of community. When a climate of trust is developed between students and adults, students are "far more likely to take intellectual risks in classrooms, to feel free to engage in activities throughout the school and to seek adult assistance when confronted with a school or life problem" (Ogden and Germinario, 1995, p. 78 in Murphy et. al, 2001, p. 185). Trusting relationships are more likely to develop if stu-

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dents spend time in meaningful two-way conversations. Extension of the student-teacher relationship beyond the typical meeting in a large group for fifty minutes a day generates a greater sense of community among the students themselves and between the students and teachers (Newmann, 1981, p. 553 in Murphy et. al, 2001, p. 189).

In the trimester, due to the tightly aligned curriculum, teachers are forced to communicate and collaborate around curriculum and students. They feel an increased push to be on the same page as each trimester ends in order to have students in the right academic place when they move to the next teacher. Moreover, a teacher's instructional deficiencies are more readily identifiable as one's progress can be compared to that of other teachers, trimester after trimester.

In effective high schools, students feel they are an integral part of the school and creating an environment of comfort and connectedness is a priority at those schools (Ogden and Germinario, 1995). The way the school is structured "can play a vital role in the way school climate develops, whether it is inclusive or isolating, which directly affects school effectiveness" (Gaziel, 1997). The seventy-minute period allows teachers to connect with students through discussion-based instructional models. Students tend to pay attention when they can contribute and draw personal meaning from conversations, as opposed to a lecture-and-learn type of atmosphere typical of traditional schedules. Through discussion, students have more responsibility for their learning process. Research shows that academic performance is positively related to individual's belief that they are responsible for their own success or failure (Harnisch, 1987 in Murphy et al, 2001). This phenomenon is exemplified by the fact that students as a whole expressed greater satisfaction with their teachers' instruction after being on the trimester for two years.

Prior to implementing trimesters, the district invested heavily in providing training for teachers converting to the new schedule. Most teachers interviewed mentioned attending a number of workshops to prepare them for best instructional practices on a seventy-minute period. They came away with formulas and strategies for engaging students on a deeper level as was voiced in the district's vision that undergirded the change in schedule. Several teachers spoke of the training process. "We learned how to use a Curricular Instructional Framework (CIF), which has an introductory piece, an

The seventy-minute period allows teachers to connect with students through discussion-based instructional models.

Students as a whole expressed greater satisfaction with their teachers' instruction after being on the trimester for two years.

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interactive component, a practice, and a closing,” one teacher explained. Another added that the CIF ensures that all students are actively engaged. A counselor mentioned additional training that occurred for them. She said, “There were lots of professional development opportunities such as Infinite Campus, which is the new student information system and the do’s and don’ts with that and the trimester.”

Results show that increasing daily class time to approximately seventy minutes has improved opportunity for classroom engagement. The trimmed course of study allows time for teachers to utilize instructional methodologies beyond the lecture-and-learn model. The daily time in class is enough to accommodate group work and class discussion, both of which encourage academic engagement and create opportunities to build relationships. As depth of instruction improves through the structure of the trimester, there is potential for moving schools culturally towards more meaningful teaching and learning.

Personalization

The trimester, however, may be a tool for improving personalization.

Evidence abounds supporting student-teacher relationships as the key to effective learning. When asked what matters to them about school, what makes a difference, an overwhelming number of high school students responded that having teachers who care about them is the most important thing to them (NASSP, 1996). Despite these facts, scheduling constraints in large high schools can make individual learning environments impractical (Murphy et. al, 2001, p. 190). The trimester, however, may be a tool for improving personalization. This is due to the daily allotment of time (70 minutes) which allows for more student-teacher interaction, and the trimester’s demand for increased teacher collaboration due to tight pacing guides and more frequent movement of students to new classes.

In the trimester schools, the most noteworthy association of increased personalization occurred with an increase in the student attendance rate. While students two years into the trimester didn’t indicate an increased sense of school satisfaction, they did express a better overall sense of belongingness. They also expressed an improvement in the amount of individual attention given to them in class and as well as a feeling of greater overall school support. Be-

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cause there is more room in the schedule, more thought can go into what best fits each student. Both teachers and students can have greater input into the individual's course of study simply because there are more choices and more room.

An element that makes the schedule more personal to students is the fact that more electives are being offered. When students have a voice in their education, they are more likely to be engaged in school and to participate actively in academics and activities (Murphy et. al, 2001, p. 169). The incongruity between the school's academic program and the skills and interests of the students was noted by experts as the number one reason students drop out of school (Natriello et al., 1990 in Murphy et. al, 2001). Offering a variety of courses based on the individual needs of students underpins the new paradigm for school reform. The thinking is based on the assumptions that students are not standardized and teaching is not routine (Darling-Hammond, 1997a, p. 46-7).

However, the elective offerings in the trimester schools have been stifled to a degree by the greater number of courses that are running the entire year, resulting in a scheduling stymie. Nevertheless, students are able to tailor their educational plan to a greater degree than they did on previous schedules. As one teacher explained, "This kid may not be Honors across the board, but is there any way we can get him into Honors math class? He is very talented in math. . . . Because there is more flexibility, you see teachers advocating more for kids, saying they need this comprehensive level class or that more challenging class." Another teacher added, "We've done a lot of collaborating around individual student needs." While the preference for longer classes over a shorter period of days was not an anonymous vote, the majority voiced sentiments similar to the teacher who said, "Kids see a lot more teachers and that gives them more resources to draw from. It gets them ready for different learning styles or teaching styles like you would see in college. . . . Teachers definitely have more relationship building time with students – and they are building more relationships." And on the other side, a counselor pointed out, "You only have to have Mr. Griffin for four more weeks and you'll never get him again."

In the trimester schools, the most noteworthy association of increased personalization occurred with an increase in the student attendance rate.

Nevertheless, students are able to tailor their educational plan to a greater degree than they did on previous schedules.

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(teacher)

Regarding whether class time on the trimester resulted in a greater sense of personalization, teachers had mixed feelings. Some teachers felt an improved sense of depth in their relationships with students because of the increased daily time with them. They also felt that extra time in class each day helped engage students on a more meaningful level. Other teachers felt a lessened sense of connection to their students because they said as soon as they started to get to know the students it would be time to move to the next trimester with a new group. The students, however, were unanimous in their positive feelings about having better relationships with teachers and they appreciated a change to a new teacher more often. They also appreciated the chance to take more electives, thus giving them more ownership over their education. They felt the depth of instruction was enhanced by the trimester and their personal relationships with teachers were improved as compared to previous schedules.

Exemplary high schools find paths to personalize education and individualize instruction for their students in ways that enhance academic performance (Foley & McConaughy, 1982 in Murphy et. al, 2001, p. 171). When looking at how to carve time in order to promote personalization, research supports the need to supply ample time for students to engage in meaningful learning activities. Cutting that time short each day and adding more days does not accomplish the same objective. With 70 minutes each day, added electives, and more thoughtful attention towards each student’s educational path, the trimester appears to be providing an improved sense of personalization.

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Teacher Collaboration

An established sense of community is all too often missing from comprehensive high schools (Sizer, 1984) and teachers can feel isolated and alone if there are no established norms for collaborative practices. Research identifies lack of collegiality as having a negative effect on achievement (Anderson, 1985 in Murphy et. al, 2001 p. 178). Furthermore, “positive collegial relationships are particularly important when schools are involved in change activities such as implementing innovations (Larson, 1992 in Murphy et. al, 2001, p. 178). According to Wilson and Corcoran (1998), successful high schools are more likely to promote collective responsibility for students and increased commitment to the school organization (in Murphy et. al, 2001, p. 177). Because the trimester courses require that students move from teacher to teacher more often, more teachers are teaching students in common. Having students in common, especially in the same subject, gives teachers more of a reason to communicate. A new course of study and instructional practices for the trimester motivate teachers to work and plan together.

An intrinsic effect, working in teams became a mandate with the new schedule as noted earlier regarding the new pacing guides. In one of the counselor’s words, “The curriculum alignment aids in the whole collaborative, because if they’re all teaching the same thing, they are talking about it.” One assessment program that was mentioned frequently as facilitating this collaborative is Project Proficiency. A math teacher explained, “It’s a district initiative where they’re trying to get us to reach certain standards. There’s a 3-week diagnostic that the kids take and they decide if they know the material or not . . . and it tells them if they can take the proficiency test at the end of the 12 weeks. They have to get an 80% on knowing the material to be able to take the test.”

Common assessments and benchmark tests serve as good indicators of performance and noteworthy comparisons across courses. Teachers can share ideas and strategies for instructional improvement with one another when meeting to analyze the scores. Furthermore the “Cascade” data system that is used by core teachers for common assessments has been “facilitated by trimesters” according to one teacher, “because [teachers] have common plans and can stay

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right on track with one another." And because more teachers teach students in common, conversations about students and what's best for them come up more often.

Another side effect of the trimester schedule includes a decreased teacher load. "Despite research disagreement over how class size and student learning are related, there is very little disagreement that personal attention is directly related to how many students a teacher is responsible for" (Powell, 1990, p. 125 in Murphy et. al, 2001, p. 181). Having fewer students not only allows for greater time to individualize instruction and facilitate better relationships, but also helps establish classroom success in terms of less stress on the teacher with paperwork and classroom management.

Academic press and community center around teachers who are "like a family" and are bolstered by the idea that they are engaged in important work (Chenoweth, p. 4). Recognizing the importance of these constructs, effective schools have schedules that are built around opportunities for teachers to work together (Chenoweth, p. 52). Trimester schedules have more slots on the master schedule, thus enabling schools to create more common planning times for teachers needing to work together. With the trimester, teachers are also embarking on a common venture that is new to all. The trimester could be viewed as a structure that can increase capacity for teacher success and growth.

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Guardians of Time

One could possibly argue that time management is one of the most vital skills in our adult world today. School districts that are looking into innovative ways to manage one of our most important yet unexploited resources – time – are doing right by their students. Research supports efforts to tailor learning environments to the individual needs of students. Historically, schools have required the same amount of time for most subjects, varying a few by length of term rather than by length of meeting period. There have been some attempts to move students through the curriculum at a pace conducive to their success, but more energy has been spent on figuring out various ways to break the day up into equal pieces in different ways.

Research supports efforts to tailor learning environments to the individual needs of students.

Literature recommends that teachers, as the guardians of time for students, should understand the motivation behind a chosen schedule and also be provided with preparation for change. There must be a framework under which high schools service students. The key is in providing flexibility within this structure that accomplishes the professed goals –creating strong academic press and meaningful school community – while not being tied to a configuration that counteracts the benefits. In JCPS, the trimester demonstrates potential in accomplishing those aims.



Section 9 Recommendations



Section 9

Recommendations

After researching the implementation of the trimester schedule in JCPS high schools, a set of program and policy recommendations emerged for the district. These recommendations are based on lessons learned in the field as well as corroboration from data collected from the district. The intention is that these recommendations will help shape the path of the trimester schedule in JCPS schools.

Our recommendations are linked to the four principles that led to the introduction of trimesters in JCPS:

- (1) Increase student credit opportunities and chances at graduation
- (2) Increase the depth of instruction at all levels
- (3) Increase the level of personalization of school for students by offering enrichment programs and chances for credit recovery and acceleration
- (4) Increase faculty collaboration among teachers

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Findings: Credit Opportunities

Trimesters Service the Right Schools

With a transient population in its urban high schools, the problem of student transition was very difficult due to the number of different schedules in use in the district. The following table illustrates the number of schedules in use prior to changes.

2007-2008 School Year Schedules

Type of Schedule	Number of Schools
A/B Block	9
6 Period	6
7 Period	6

Source: 2007 PowerPoint by Joe Burke, Assistant to Superintendent, High Schools to Jefferson County Board of Trustees

JCPS transitions 300 students per day (JCPS conference call 7-6-2010). Graduation opportunities are threatened for students if administrators are unable to transition their grades and courses effectively. The district believed a common schedule could go a long way towards helping students overcome the challenges of transitioning from school to school. District comparisons of transiency rates for project and non-project schools are included in the following chart. The chart clearly illustrates the transient nature of the schools that chose to adopt trimesters schools compared to their counterparts.

Mobility and Stability Rates in Project Schools

School	2009 Mobility Rate	2009 Stability Rate
Doss	12.34	84.4
Fairdale	9.62	89.0
Iroquois	14.09	82.8
Seneca	9.02	87.8
Southern	11.08	88.7
Waggener	11.70	81.0

Graduation opportunities are threatened for students if administrators are unable to transition their grades and courses effectively. The district believed a common schedule could go a long way towards helping students overcome the challenges of transitioning from school to school.

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Mobility and Stability Rates in Non-project Pilot Schools

School	2009 Mobility Rate	2009 Stability Rate
Fern Creek	9.97	85.9
Moore	10.65	83.7
Pleasure Ridge	5.56	92.2
Shawnee	15.36	80.8
Valley	14.68	87.8
Western	15.94	86.6

Data shows that in the second year of implementation, seniors in trimester schools had a significantly higher chance of graduating than before the introduction of trimesters.

Mobility and Stability Rates in Non-pilot Schools

School	2009 Mobility Rate	2009 Stability Rate
Atherton	5.94	90.2
Ballard	6.15	90.3
Brown	.79	97.0
Butler	1.32	95.9
Central	1.92	95.1
Eastern	4.62	90.1
Jeffersontown	10.76	84.6
Jefferson County	NA	NA
Male	.39	93.8

JCPS Definitions:

Mobility Index: A comparison of re-entries to total enrollment (expressed as annual percentage).

Stability Rate: Number of students who finished a school year and enrolled at the same school the following year compared to the total finishing school.

Source: Jefferson County Public Schools 2010-2011 School Profiles

Graduation Rate Increase

Data shows that in the second year of implementation, seniors in trimester schools had a significantly higher chance of graduating than before the introduction of trimesters. This finding only became evident after two years of implementation, after students had been

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able to take advantage of multiple new credit opportunities from the trimester schedule. Trimesters makes a difference for at-risk students in JCPS. This difference may be attributable to the second-chance opportunities for credit recovery.

Pressures on Guidance Counselors

Teachers, students, principals, and guidance counselors themselves indicated an increased demand on the guidance department in trimester schools. The paradigm shift from semesters to trimesters greatly increases the challenge of scheduling. Guidance departments can no longer make one master schedule that will hold true for students throughout the school year. The trimester schedule must have an adaptive nature to meet the goal of remediating failed credit opportunities. While this form of scheduling places more stress on guidance departments, it allows for more flexible and reactive scheduling that meets students' needs.

Interviews with all constituents demonstrated the success of the trimester schedule in improving seniors' access to elective classes.

Elective Success

Interviews with all constituents demonstrated the success of the trimester schedule in improving seniors' access to elective classes. With an increase in credit opportunities each year and more chances to fulfill graduation requirements during the first three years of high school, seniors have a wide variety of electives from which to choose. One JCPS guidance counselor noted, "This (trimesters) is giving students a chance to earn more credits in the classes they are passionate about."

Seniors who have failed courses during their first three years have opportunities to remediate credits and stay on course towards graduation. Seniors in all project schools were well acquainted with the number of credits required to graduate from JCPS. The array of electives offered in the project schools was extensive and many of the courses were focused in the career academy of each school.

The Rise of Three Trimester Courses

The trimester schedule was chosen by schools in order to create new scheduling opportunities for students. However, as implementation continues, it is in danger of losing this benefit as administrators stretch some English and math courses from two trimesters to

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As language arts and mathematics courses become three trimesters, students will again be limited in the course offerings available to them.

three in an attempt to improve high-stakes, standardized test scores. As schedules are created for high schools of 1000 or more students, it is impossible to load every schedule with mathematics and language arts during the second and third semesters in order to leave students prepared for their end of course state exams given in the spring.

As language arts and mathematics courses become three trimesters, students will again be limited in the course offerings available to them. If both these courses transition to three trimesters each year, then students would have a total of four less elective credits to take over the course of their high school careers. This, of course, runs contrary to the stated goal of increased elective offerings for students. Balancing the need for three-trimester classes in crucial areas must be carefully considered because of the impact it has on students' credit opportunities in high school, especially their access to elective courses.

Advanced Placement

Administrators face a challenge in appropriately managing Advanced Placement courses. While students in these courses could be well served by three trimesters to complete course content and prepare for the AP test, all three trimester courses take away from other credit opportunities for students. The scheduling of these courses is also challenging given the spring AP testing window. Some teachers indicated reluctance to take on these courses given the two trimester format because they felt the condensed time left students unprepared for the final assessments.

Recommendations: Credit Opportunities

Counselor's Rubik's Cube

With data suggesting that students in trimester schools have a better chance of graduating, it is vitally important that counselors are able to work with students on building their future pathways. JCPS must reexamine its allotment of counselors to determine whether additional personnel can be engaged to help individualize the scheduling process. Allowing counselors to work on the scheduling needs of fewer students will result in schedules that are more accurate and match students' evolving needs. This type of close

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attention to the schedule is needed in order to gain the maximum benefit from the trimester configuration.

Further investigation is also needed at the district level to determine whether counselors are still able to meet the ongoing guidance needs of their students, given the additional time necessary to create multiple master schedules with changing variables each trimester. The small learning community approach of freshman academies and advisories may be meeting some of this need, but there will always exist the need for one-on-one guidance available for students.

While counselors acknowledged the increased demands for their time in preparing schedules, they expressed frustration with a lack of training to prepare them for this change. In-service opportunities were offered extensively at the district and school level for teachers and curricular leaders. Guidance counselors felt that they were overlooked in their need for training to successfully implement the remediation and acceleration system components, which were meant to be hallmarks of the trimester system.

Beware of the “Three Tri” Course

While the goal of raising test scores by offering a course for three trimesters is understandable, it is at odds with the stated goals of the trimester schedule. With each additional three-trimester course, students lose the ability to take electives later in their high school years. Each additional three-trimester course added to students’ schedules is another trimester elective they will be unable to take as they move towards graduation. With so many students passionate about their elective courses, it is important for the success of the trimester pilot program that students have access to these courses.

The AP Conundrum

Surprisingly, high achieving students seem to be lost in the trimester scheduling transition. Many teachers voiced frustration with the limitations on offering AP courses because some schools have decided that these courses cannot occupy three trimesters. Courses which end with high stakes state testing have been approved for three trimesters, but students who are challenging themselves with high level courses are not given the luxury of a three-trimester

Each additional three-trimester course added to students’ schedules is another trimester elective they will be unable to take as they move towards graduation.

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course. This puts AP teachers in a difficult position. They might be asked to teach a class in the first two trimesters, leaving students with a whole trimester away before taking the AP exam, putting them at a significant disadvantage.

In order for trimester scheduling to fulfill its potential as benefiting both at-risk and accelerated students, AP courses need to be given special consideration and be taught over the course of three trimesters. This change would allow students in these courses to have more time to learn the material and be successful on the end of course exam. Hopefully, this change would also empower more teachers to propose new AP courses within their schools. With the growth of electives in the schedules of juniors and seniors, more students would be able to prepare themselves for the rigor of college by attempting an AP level course.

Findings: Depth of Instruction

Proper Implementation Takes Time

The trimester schedule never promised to be a magic bullet to cure all the ills of the district. However, after three years since the start of the pilot, evidence is emerging to suggest some of its benefits.

Proper implementation of trimester schedules takes a careful, managed approach in order to have the greatest impact to students. The structure of the trimester schedule requires teachers to be much more in harmony with the pace at which their course is taught, as well as the content presented (Bower, 2000). A complete change in how time is used and structured within the school year is a great change for a school culture. Different approaches to managing this change were apparent in visiting the six member schools.

The SBDM councils that have elected to implement advisories have, as of this writing, maintained the schedule. While this does not translate to the trimester schedule meeting with universal acceptance in these schools, it does indicate that there is some belief in the potential that trimesters hold. The trimester schedule never promised to be a magic bullet to cure all the ills of the district. However, after three years since the start of the pilot, evidence is emerging to suggest some of its benefits.

Students and teachers alike report a feeling that the transition to trimesters takes time to implement successfully. Even with adequate professional development, teachers still require time to adjust

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to the new 70-minute classes and compacted marking periods. Now that curricular committees have “trimmed the fat” from the curriculum, teachers can gain experience in teaching their material within this new framework. Teachers are also working at transitioning their students to other faculty members at the end of each trimester or having their students take a trimester off from their subject before taking part B of the course.

The Ongoing Role of Professional Development

While the world of education is high stakes and high pressure, it is important to be patient and to embrace the full potential of this new schedule in JCPS. Pulling the plug on the program before teachers have mastered teaching in this format would set these trimester schools back, especially given the improvement that has been demonstrated in the graduation rates at these schools. Ongoing professional development is still necessary to further shape the teaching methods and practices in these schools. With more practice on the part of teachers and students in teaching and learning given the trimester framework, additional benefits should begin to manifest.

Recommendations: Depth of Instruction

Additional Professional Development

Principals in trimester high schools must make ongoing developmental and grade level meetings a priority. These meetings cannot always take place during the school day must be creatively planned so that all stakeholders can attend. With the swapping of students from teacher to teacher and the time restraints of a twelve-week marking period, it is essential that teachers work together to plan their curriculum.

Peer Observations and Reflections

Two schools participating in the project provided strong professional learning communities within the school. These schools offered examples of the type of professional development that can take place at no cost within the school. In these schools, teachers met together weekly by department to discuss curriculum paths and pacing. Teachers also visited each other’s classrooms to provide

With the swapping of students from teacher to teacher and the time restraints of a twelve-week marking period, it is essential that teachers work together to plan their curriculum.

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feedback about best practices. Replicating these practices in other schools could lead to improved instructional practices and help teachers stay on the same page as they teach the same courses.

Classroom Instructional Framework

Although there has been a district-wide emphasis placed on the use of the classroom instructional framework (CIF), interviews with faculty and students reveal inconsistent use of it in practice. It became apparent that not all teachers are maximizing the full potential of the 70-minute period and that some are allowing students to complete homework during the class period. One teacher noted, "It (CIF) is really kind of regimented but it's good for staying on track...I think teachers who were maybe leaning more on the marginal side, it has kind of upped the ante or kick it up a notch." Proper use of the CIF engages students from bell to bell and focuses on making lessons relevant to learners. Administrators need to ensure that their teachers not only have access to CIF training, but that these practices are stressed in departmental professional development as well as teacher evaluations.

Students expressed frustration over switching teachers at the trimester and having different teachers for parts A and B of a course.

Findings: Personalization

Student/Teacher Relationships

In order for teachers and students to form successful working relationships in the classroom, time and trust are key factors. With each classroom a student enters, they must adapt to a new teaching style, method of instruction, class dynamics, and expectations. Although professional development work with teachers using the CIF has given teachers a similar vocabulary and framework for structuring their lessons, each teacher has unique characteristics in the classroom. With the increased credit opportunities and courses available to students on trimester schedules comes an increase in the number of instructors students work with throughout the high school years.

Students expressed frustration over switching teachers at the trimester and having different teachers for parts A and B of a course. Many felt that they had just established a relationship with their teachers and became comfortable in their classes as the trimester came to a close. Students were also frustrated by a trimester separat-

Many felt that they had just established a relationship with their teachers and became comfortable in their classes as the trimester came to a close.

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ing parts A and B of a course. Many students felt they forgot much of the information from the first part of the course before they entered part B, where they were expected to build off their previous skill set.

Impact of Advisory Programs

It is important to acknowledge and discuss the interacting effect of advisory programs, another JCPS initiative to improve personalization and school community. When present, advisory programs may positively interact with trimesters, according to informants. Strong advisory programs were reported by informants to be key elements of community. Principals, teachers, students, and counselors agreed, as one counselor stated, “[Trimester] has helped with relationships, especially with the Advisory Program added in. [We’re] really seeing more teacher/kid connections...there are better relations.”

A student related advisory programs and trimester scheduling when she said, “I feel that trimesters have made me more connected to teachers. You get to learn a lot more about how they teach and how they help. Advisory is where you center yourself for the week before you go to the next.” One teacher reported that the trimester “allowed” for his school to have advisory because of the greater flexibility within the schedule. What’s more, some teachers reported the ability of a strong advisory program in mitigating the challenges trimesters can present when students shift teachers more frequently. They reported that a strong advisory program may help students maintain a strong connection with an adult on staff, even when the students’ schedules might shuffle.

While advisory programs in JCPS are not necessarily synonymous with trimesters (only 2 of the 6 schools in our study had advisory programs, another planned to pilot a program in trimester 3), a sense of connection between the students and faculty in these schools cannot be ignored. One principal cited advisory as having the greatest positive impact of any of the recent initiatives of the district (namely, schools of study, trimester, and freshman academies).

As previously discussed, the shorter marking periods and the rotation from teacher to teacher takes a toll on the connection students feel to their teachers. Students felt that their advisors really took the time to talk with them and get to know them. Several stu-

Strong advisory programs were reported by informants to be key elements of community.

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dents reported that their advisor “had their back.” These relationships are important to students and create a student-teacher bond.

Community Awareness of Trimester

Since scheduling greatly affects a student’s chances to earn credits, the district should go out of its way to ensure that parents understand the four schedules currently in use at JCPS.

Respondents in all levels of the qualitative study reported a lack of understanding of trimesters by parents. Most students responded either that their parents didn’t know about the trimester schedule or didn’t have any problems with it. While this is better than the alternative of parents having a universally held negative view of trimesters, it is important that parents understand the schedule used in their children’s schools and how it influences them over the course of their high school careers.

Despite having a robust website, with links to various information regarding student performance data, demographics, school choice, district goals, and many other topics, there is not a readily available source of information for parents to learn about trimester scheduling. Since scheduling greatly affects a student’s chances to earn credits, the district should go out of its way to ensure that parents understand the four schedules currently in use at JCPS. Each has its own nuances and students may lean towards one particular school in their zone depending on the type of schedule in use. By their ninth grade year, students and their parents have some understanding of how the student learns best. This knowledge should lead to an informed decision on which class period/schedule would be the best fit for the student.

Several informants voiced a negative perception that exists in the community regarding trimester schools. Overall, pilot schools have different student demographics and lower student outcomes than non-pilot schools (See Appendix Part B). Pilot schools also tend to have a higher at-risk population than their non-pilot counterparts. One principal noted, “Unfortunately, they are looking at the audited schools and saying, ‘hey, those are all trimester schools.’” A student recounted a conversation he had with a teacher from another school, “she told me so many kids failed classes at (my high school) that we had to switch to trimester.”

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Recommendations: Personalization

Expand Advisory Programs to Other Trimester Schools

JCPS should encourage the expansion of advisory programs to other schools within the trimester network.. The SBDM councils in other schools need to hear the impact advisory is having on their peer schools. A model is already in place for how advisory can be implemented into the existing trimester schedule. Other schools would likely benefit from these deeper relationships which seem to be formed between students and their advisors.

Whenever possible in the formation of advisor/advisee matches, schools should attempt to match students with teachers who share similar interests or activities. Matching students with advisors in their school of study or attempting to have students advised by a teacher who is also their coach are examples of ways these bonds between students and teachers can be tightened.

A final potential benefit to an advisory program is the increased level of parent involvement that an advisory program can bring. Research by Flynn and Nolan (2008) suggests that active engagement of parents in the school leads to more active participation by students. Advisory systems give parents a single point of contact to answer questions about their child as they navigate high school. In at least one school in our study, parent teacher conferences took place between the parent and the advisor. Advisors report their own experiences of working with the child as well as what they have learned from other teachers about their advisees.

A final potential benefit to an advisory program is the increased level of parent involvement that an advisory program can bring.

Plot an Academic Path

As much as possible, students should receive an overview of their potential academic offerings from the beginning of their freshman year. This schedule would have all three-trimester courses and other required courses filled in ahead of time so that students can begin understanding just how much flexibility their schedule allows. By doing this, students can understand where elective courses can fall within their schedule as well as potential opportunities for credit recovery if they were to fail a class.

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70-minute period allows time for students to build stronger bonds with their instructors as noted by the statistically significant increase in students' feelings of belongingness from the Comprehensive School Survey.

Acceleration Needs Accelerating

JCPS prides itself on offering school choice and program choice to its students to best fit their needs. The move to trimesters itself was demonstration of this commitment to students. However, the focus on acceleration and creation of advanced placement courses has not kept pace with the attention given to credit recovery and graduation rates. It is important that trimester schools better address the needs of their high-achieving students, or the legacy of trimester will be tainted.

Guidance counselors are successfully working with students who failed a course to plan credit recovery. However, counselors are not always adequately working with high-achievers to ensure that these students are sufficiently challenged. The advisory system at two of the schools in the study has a mechanism for teachers to meet with students to discuss their academic paths at regular intervals. Students in other schools do not have access to this open communication with a faculty member to ensure that their needs are being met. Without open dialogue opportunities with advisors, students may not be aware of the potential to jump ahead into a more accelerated course or to try an advanced placement course.

Constancy of Instructor

Schedulers in trimester schools should make an effort to schedule students with the same teacher for parts A and B of a course. The 70-minute period allows time for students to build stronger bonds with their instructors as noted by the statistically significant increase in students' feelings of belongingness from the Comprehensive School Survey. A common teacher would prove to be even more important for three trimester courses, allowing for students and teachers to continue their relationship throughout the year. Class size limitations and the fluid nature of the trimester schedule will make this recommendation challenging, but the feedback of students and teachers clearly indicates they would benefit from consistency in course assignments.

Building Community Understanding of Trimesters

Besides making information more prominent on the district's website, efforts should be made to directly engage parents in dis-

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cussion about the trimester schedule. A panel of students, parents, teachers, counselors would be most useful in speaking with parent groups because they would provide multiple perspectives on the trimester picture and how it impacts student credit opportunities. Since the trimester is likely different than what parents and guardians themselves experienced in high school, it is important to help them understand how this schedule works and how it influences the high school experience.

Findings: Faculty Collaboration

Uneven Emphasis on Collaboration

It became apparent in speaking with faculty at the various schools that some were better equipped than others to deal with the challenges of the transition to trimesters. The need for common planning time among departments and grade level teams became apparent as staffs discussed their experiences with trimesters. While finding common planning time is difficult, some principals placed a premium on ongoing professional development devoted to the scheduling change while others did not. There was a wide range of expectations on display in how closely principals expected their teachers to plan and work collaboratively to make the trimester schedule work.

“Trimming the fat” occurred at varying levels in each department as courses were condensed to work within the twelve-week format.

Tightening of Curricula

Teachers acknowledged that the transitioning to trimesters forced their departments to make purposeful choices about the curriculum. “Trimming the fat” occurred at varying levels in each department as courses were condensed to work within the twelve-week format. While some teachers reported feeling rushed to get all their content covered in the allotted time, they did acknowledge that teachers who share courses tended to stay on the same page since the transition to trimesters.

Recommendations: Faculty Collaboration

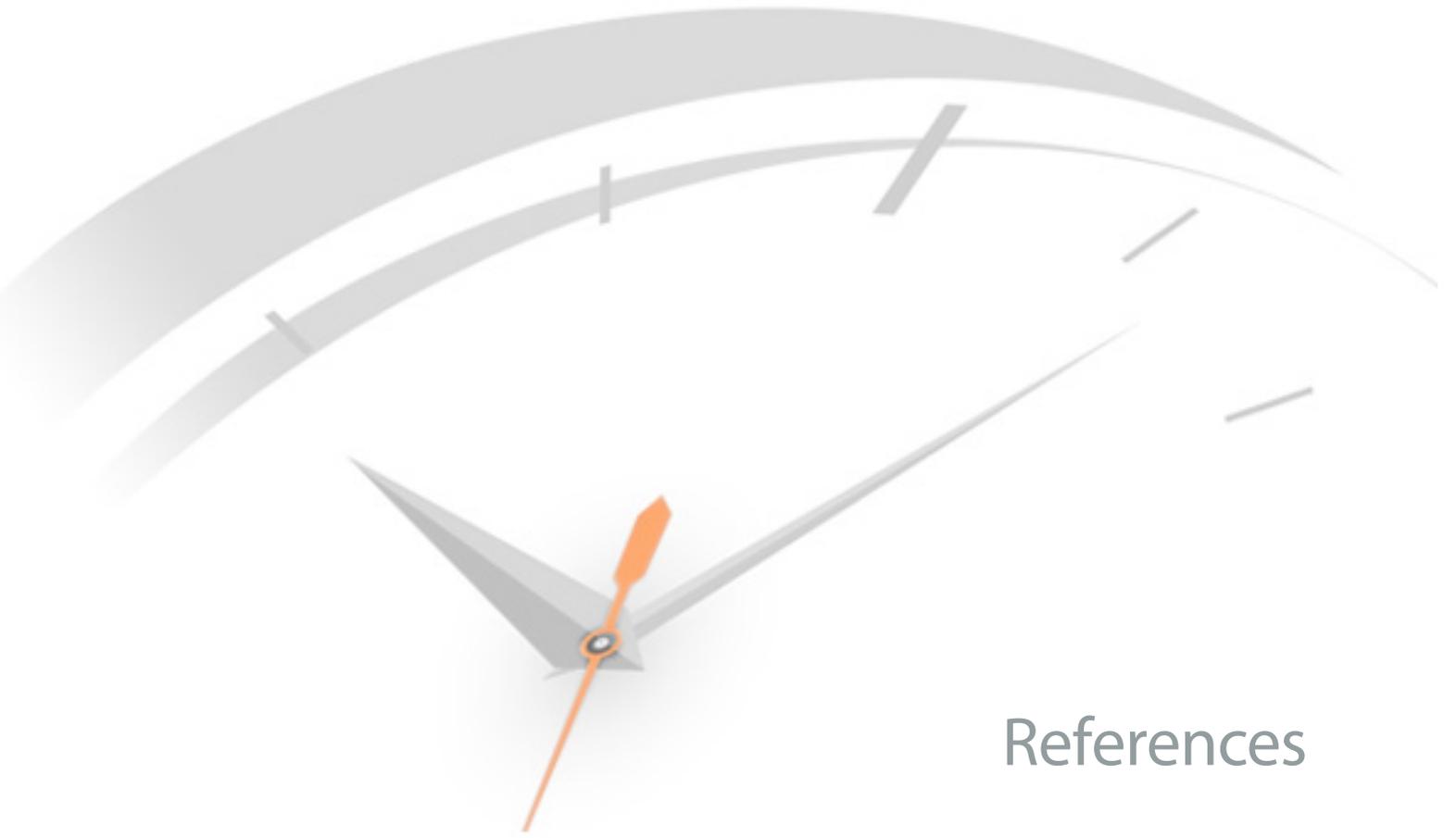
Although JCPS has distinguished itself early in its implementation of trimesters by leading a symposium on the topic, it must retain this leadership if it wishes to continue developing its practices.

Prioritize Common Planning

There existed in our project schools great discrepancy in the expectation for faculty collaboration. It became apparent that the administration sets the standard for the value placed on teacher teaming and collaboration. One teacher said, "There is not a school in Kentucky where teachers meet more than here." Teachers in other project schools reported meeting infrequently with peers and those meetings being unproductive. Teachers in all project schools understood and met the expectations placed upon them for common planning and teaming. The success of faculty collaboration in each school depends greatly upon strong leadership.

Continue to be a Leader of Trimesters

Although JCPS has distinguished itself early in its implementation of trimesters by leading a symposium on the topic, it must retain this leadership if it wishes to continue developing its practices. With so little literature currently available on trimesters, it will be necessary to periodically mine new research in the field, which can bring new insight on how to make the most of this innovative scheduling strategy. JCPS should also consider reaching out to other large, urban school districts to share findings that suggest that the trimester schedule increases the graduation rate for at-risk students. The issues tackled by JCPS are shared by many other large districts, particularly as they wrestle with how to keep up with more stringent standards brought about by the Common Core Standards and Race to the Top.



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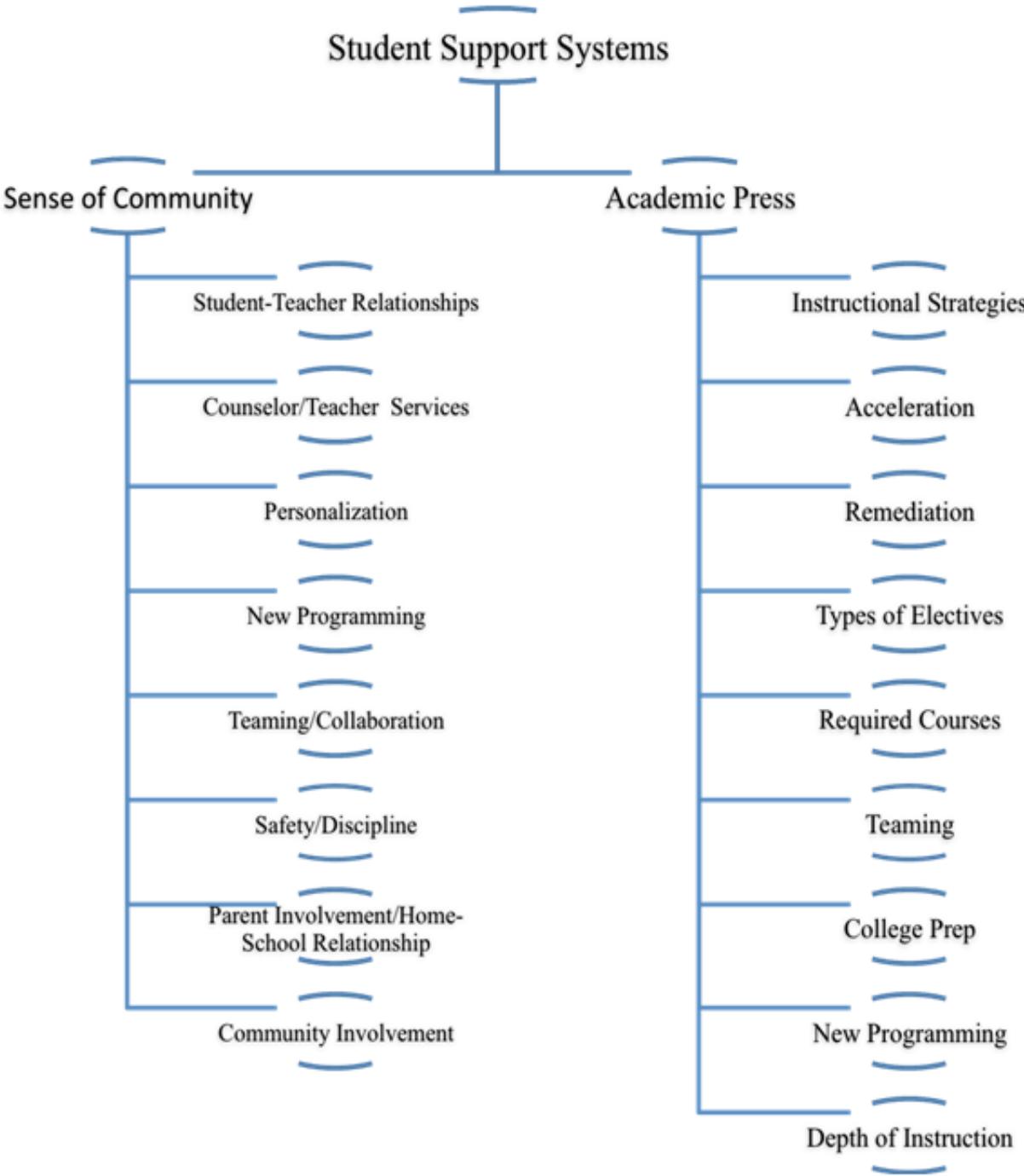
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Appendix Section A

Appendix A





Appendix Section B



Appendix Section B

Overview of Jefferson County Public Schools

Jefferson County Public School District is among the 30 largest districts in the United States, with an enrollment of over 99,000 students in 155 schools. JCPS, which covers much of the Louisville metro area, is by far the largest district in Kentucky, with an enrollment three times larger than the next largest district in the state. The district's size and influence makes it a leader in K-12 education in the state. A number of new initiatives such as freshmen academies, schools of study, and competitive magnet programs are under way to help Jefferson County schools achieve their Board of Education's goal of preparing students who are critical thinkers and lifelong learners who are academically prepared to be successful in the postsecondary education or career (JCPS Fast Facts 2009). JCPS is a national leader in its capacity to track student outcomes and performances.

As a large district encompassing urban and suburban populations, JCPS includes a large and diverse student population. Over 13,000 JCPS students qualified for some form of special needs support (JCPS Fast Facts 2009). District wide, nearly 62 percent of students qualified for free or reduced lunches for the 2010-2011 school year. Forty-three percent of JCPS students are students of color, with African American students making up the largest minority group at 36.6 percent of the total student population. Hispanic students of JCPS account for 4.7 percent of the district's population. In 2009-2010, JCPS enrolled 4,650 students who qualified for English as a Second Language programs. All told, those students spoke a total of 90 different languages.

JCPS includes a workforce of nearly 14,000 personnel. Support staff makes up just over half of this total. Five percent of district employees are school and district administrators. Forty-four percent of the district's workforce are classroom teachers. Eighty-four percent of JCPS teachers hold a master's degree or higher. These teachers average 11.5 years experience in the classroom and enjoy an average salary in excess of \$53,000 (JCPS Fast Facts 2009).

JCPS has compared well to other large, urban districts in recent, direct comparisons of student performance. In 2009, JCPS was selected along 17 other large urban districts from across the county to participate in the National Assessment of Educational Progress/Trial Urban Assessment Project (JCPS Annual Report 2010).

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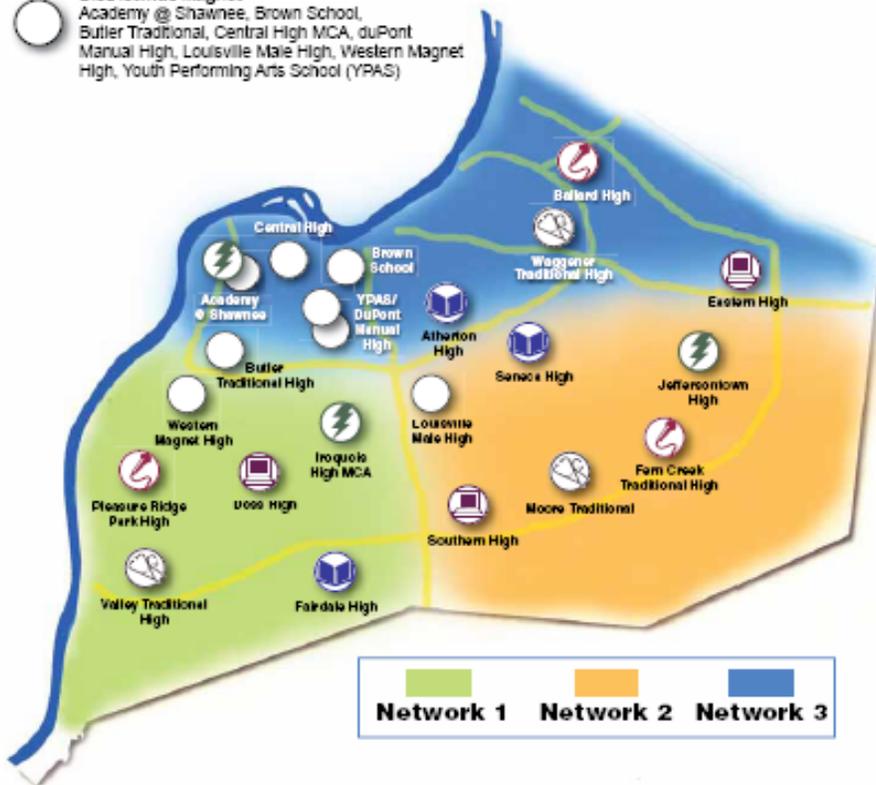


This test assessed fourth and eighth grade students in reading and mathematics. JCPS students fared very well when compared to its peer districts. Only one district scored better on fourth grade reading and no district outperformed JCPS in 8th grade mathematics. However, JCPS students scored below the national NAEP average when including all school types. This is important to consider when comparing JCPS to other districts in Kentucky as it is by far the state's largest urban center.

Appendix: Section B - Map of JCPS High Schools

High School Professional Career Themes

-  **Creating Our Global Community: Human Services, Education, and International Studies**
Network 1: Fairdale, Network 2: Seneca, Network 3: Alherton
-  **Designing and Building the Future: Engineering (Aeronautics/Architecture/Manufacturing and Construction)**
Network 1: Iroquois, Network 2: Jeffersonstown, Network 3: Shawnee
-  **Engaging and Enlightening Our Community: Communication, Media, and Arts**
Network 1: Pleasure Ridge Park, Network 2: Fern Creek, Network 3: Ballard
-  **Sustaining Ourselves and the Planet: Medical Arts and Sciences, Health, and the Environment**
Network 1: Valley, Network 2: Moore, Network 3: Waggener
-  **Cultivating Leadership and Innovation: Business and Information Technology**
Network 1: Doss, Network 2: Southern, Network 3: Eastern
-  **Districtwide Magnet**
Academy @ Shawnee, Brown School, Butler Traditional, Central High MCA, duPont Manual High, Louisville Male High, Western Magnet High, Youth Performing Arts School (YPAS)





Appendix Section C



Appendix C

Methodological Design

Key Quantitative Measures

Independent Variables

To prepare these sets of data for our analyses of standardized test scores, absences, disciplinary suspensions, and graduation success, we began by cleaning and transforming the annual data sets into forms that would allow for our inferential testing. Data for each student's race and gender were transformed from string into numeric indicator variables (AFRICAN AMERICAN, HISPANIC, NATIVE AMERICAN, ASIAN, OTHERRACE, FEMALE). We considered a student's lunch classification a proxy for estimating a student's economic status, since economically-disadvantaged students who document this with their school qualify for free or reduced-price lunch. To capture this, we created an indicator variable, FARL, set to 1 when the student qualified to receive school lunch at either a reduced or free rate. We created an indicator variable, EXCEPTIONAL, set to 1 if a student received any exceptional education services.

We created an indicator variable, LIMITEDENG, set to 1 if a student was classified as limited English proficient. We created an indicator variable, ADVANCED, set to 1 if a student was in the advanced program for students identified as academically gifted. Other indicators for a student's grade level were created (TENTH, ELEVENTH, and SENIOR). We transformed each student's location code, which captured the student's high school of enrollment for that academic year, into a binary variable, TRIMESTER, set to 1 if the student was enrolled in a trimester school. For the 2007-2008 academic year prior to the trimester pilot initiated, we created a binary variable, FUTURETRI, set to 1 if the student was enrolled in one of the high schools that would shift to trimester either in 2008-2009 or in 2009-2010 academic years. Also, in order to analyze the accuracy of the data sets we constructed, our team undertook a comparative analysis of our data and published, school-level Jcps data books in order to test for comparability among our data sets for each year and other sources accounting for similar constructs.

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Dependent Variables

Academic press

Depth of learning Given that one of the key constructs in our theoretical map was impact of a schedule configuration on academic press in a school, we set out to capture a measure of academic press that had a high degree of validity, reliability, and public resonance across our scope of analysis, ranging from the year prior to trimester implementation, 2007-2008, to the most recent year of implementation, 2009-2010. Moreover, increasing the depth of learning in classrooms was one of the key propositions for adopting the trimester schedule cited by JCPS leaders in both interviews and documents.

Thus, in order to analyze the hypothesis that enrollment in a trimester school is associated with higher academic press, we operationalized the theoretical anchor of academic press in the form of student-level ACT test results across high school students in JCPS across three school years ('07-'08, '08-'09, '10-'11). Through collaboration with JCPS data miners, we obtained student-level reported ACT scores for juniors in JCPS high schools and reported ACT PLAN (a form of the ACT administered to sophomores) in JCPS high schools. Students who did not have a recorded score were excluded from the analysis of ACT and ACT PLAN data.

We chose the ACT as a benchmark to measure student learning in this way for the multiple reasons: (1) The test serves as a comparative norm across high schools in the system. JCPS has administered the ACT to sophomores (PLAN) and juniors across this project's scope of studies, from 2007-2010. (2) The ACT is a nationally-available metric that will allow our project to analyze JCPS students using a framework designed to assess math, reading, English, and science. (3) The ACT is a widely accepted, reliable and valid measure of a student's general educational development. (4) Because the test has remained in its current configuration across our project's scope of analysis and has been administered to sophomores and juniors, student-level composite data could lend insight into the general educational development patterns across the high school student population in JCPS schools. (5) Analyzing data from 2007-2008 would provide a baseline before the shift towards trimester configuration that occurred in the district from 2008-2009. (6) ACT data provides normally distributed and continuous data.

Related to instruction, we also used climate data from the CSS to gather student perceptions of the instruction they were receiving. JCPS leaders specifically noted that one of the goals embedded in the shift to trimester was to improve students' instructional experience by providing more in-depth instruction.

Thus, in order to operationalize and analyze elements of this construct, we used CSS data to probe for patterns in the degree to which students were satisfied with the instruction they were receiving at school. Specifically, we created two index variables, INSTRUCTION, to probe for students' overall satisfaction with the instruction they were receiving, and INDIVIDUALINSTRUCTION, to probe

for students' perception of the amount of individualized instructional attention they were receiving. An index is a single score that summarizes responses to two or more variables, a composite indicator (Sweet & Grace-Martin, 2008).

To create the index representing students' composite satisfaction with the overall instruction, INSTRUCTION, we analyzed six items on the CSS instrument that measured aspects of a student's satisfaction with their school. Upon finding that the six items had a high degree of internal consistency ($\alpha=0.88$ in 07-08; $\alpha=0.87$ in 09-10), we used this variable to test the hypothesis that enrollment in a trimester school is associated with a higher Likert rating of overall satisfaction with instruction received in school. The items we included in this scale were:

- (1) My teachers provide academically challenging content.
- (2) Teachers at my school assign meaningful homework on a regular basis.
- (3) Teachers at my school provide effective instruction.
- (4) I feel my teachers really enjoy teaching me.
- (5) I receive individual attention from my teachers to help me learn better.
- (6) I have opportunities to talk about my school progress with my teachers.
- (7) My teachers provide regular communication to my parents/guardians on my progress.

JCPS also aimed to use the trimester to improve the depth of inquiry-guided instruction. Accordingly, we also measured the degree to which teachers perceived that their courses require students to participate in formal discussion (gather, present, and discuss information on a specific topic). To do this, we analyzed one item on the CSS at the teacher-level:

- (1) Courses I teach require students to participate in formal discussions (ie, students gather, present, and discuss information on a specific topic).

Credit attainment Another key theme in the family of academic press that emerged from both our literature-based and site-based interactions with the trimester construct coalesced around the hypothesis that the trimester configuration is associated with a student's increased ability to earn necessary credits to graduate on time. To do this, we obtained information for each JCPS high school senior on whether he/she graduated on time at the end of his/her senior year. With this information, we created a binary, dichotomous variable assigning a 1 to seniors who graduated on time and a 0 to those who did not.

Importantly, our project design respected the premise that though graduation patterns in schools reflect an angle of academic press, they are less meaningful when interpreted in isolation. Rather, we sought to increase the power of our analysis by using a comparative interpretation of

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graduation patterns as they related to patterns in ACT achievement. More directly, one of the hopes JCPs leaders had in implementing the trimester was that the trimester schedule would not only increase a student's chances at successfully graduating on time but that it would also allow for deeper levels of learning, a hypothesis we analyzed in testing for higher probability of graduating and higher ACT achievement among JCPs high school students.

Sense of community

Student satisfaction with school Both our analysis of literature and interview interactions highlighted the community-related aspect of schedule configurations (Murphy, Beck, Crawford, Hodges, & McGaughy, 2001; Bryk & Driscoll, 1988; (Fredericks, Blumenfield, & Paris, 2004; Lee & Burkam, 2003; Lee & Cromnger, 2001; Lee & Smith, 1999). An emerging point of analysis coalesced around whether the trimester configuration engendered improved perceptions of community and personalization among students. Moreover, one of the key propositions articulated by JCPs for implementing the trimester was that it would improve students' sense of personalization in schools.

In order to operationalize and analyze this construct, we used CSS data to probe for patterns in the degree to which students were satisfied with their school experience, felt a sense of belongingness, and felt supported in school. Specifically, we created three index variables, SATISFACTION, BELONGINGNESS, and SUPPORT. Any item in any of our 3-item composite scales that was left blank by a student was considered "missing" and omitted from the analysis. The number of missing responses was not large enough to be a concern.

To create the satisfaction index, we analyzed two items on the CSS instrument that measured aspects of a student's satisfaction with their school. Upon finding that the two items had a high degree of internal consistency ($\alpha=0.77$ in 07-08; $\alpha=0.76$ in 09-10), we constructed the index variable SATISFACTION that captured the mean score of the two items for each student respondent. We used this variable to test the hypothesis that enrollment in a trimester school is associated with a higher Likert rating of overall satisfaction with school. The items we included in this scale were:

- (1) I am very satisfied with my school.
- (2) I would rather go to this school than any other school.

Similarly, we analyzed the reliability of three items on the CSS related to a student's rating of his/her sense of belongingness, BELONGINGNESS. Upon detecting a high degree of internal consistency ($\alpha=0.72$ in 07-08; $\alpha=0.77$ in 09-10), we constructed another index variable that captured the mean score of the three items related to a student's sense of belongingness at school. We used this variable to test the hypothesis that enrollment in a trimester school is associated with a higher Likert rating of sense of belongingness at school. The items we included in this scale were:

- (1) I feel strong ties with other students in my school.
- (2) My peer group is well thought of by members of other peer groups.
- (3) I feel like I am part of my school community.

Along these lines, we analyzed the reliability of three items on the CSS related to a student's rating of his/her sense of support at school, SUPPORT. Upon detecting a high degree of internal consistency ($\alpha=0.77$ in 07-08; $\alpha=0.75$ in 09-10), we used this index variable to test the hypothesis that enrollment in a trimester school is associated with a higher Likert rating of sense of belongingness at school. The items we included in this scale were:

- (1) I feel my teachers really care about me.
- (2) I believe I can talk with my counselor or dean.
- (3) My school provides a caring and supportive environment for students.

We also analyzed students' perceptions of individual instructional attention. To create the index representing students' composite perception of the degree of individualized instruction, INDIVIDUALINSTRUCTION, we sub-analyzed two items on the CSS instrument that measured aspects of a student's sense of personalized instruction. Upon finding that the two items had a high degree of internal consistency ($\alpha=0.75$ in 07-08; $\alpha=0.76$ in 09-10), we used this variable to test the hypothesis that enrollment in a trimester school is associated with a higher Likert rating of perception of individualized instruction. The items we included in this scale were:

- (1) I receive individual attention from my teachers to help me learn better.
- (2) I have opportunities to talk about my school progress with my teacher.

Further, we used CSS data at the teacher-level to probe for the degree to which *teachers* perceived students were part of a caring, personalized environment. Specifically, we created an index variable, STUDENTSUPPORTED, that had a high degree of internal consistency ($\alpha=0.79$ in 07-08; $\alpha=0.79$ in 09-10), to test the hypothesis that teachers in trimester schools perceive students to have a higher degree of student support. The items we included in this scale were:

- (1) I feel the teachers at my school really care about their students.
- (2) I believe the students at my school can talk with their counselor or dean.
- (3) My school provides a caring and supportive environment for students.

To analyze teachers' perceptions around more personalized instruction, we also used CSS data. We created an index variable, TEACHER_INDIV_INSTRUC ($\alpha=0.79$ in 07-08; $\alpha=0.83$ in 09-10),

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to measure the degree to which teachers felt that students in their school were receiving individualized instruction and test the hypothesis that teachers in trimester schools rate perceptions of individualized instruction higher. This scale included the following items:

- (1) My school provides individual attention from the teachers to help students learn better.
- (2) I have the opportunity to talk to my students about their school progress.
- (3) Teachers at my school provide regular communication to parents/guardians on student progress.

Student attendance Related to our analysis of sense of community, we sought to uncover insights into patterns of student school attendance. A related hypothesis emerged that if enrollment in a trimester school is associated with an improved sense of community, then students enrolled in trimester would see better attendance rates (Bryk & Driscoll, 1988; Murphy et al, 2001; Lee & Smith, 1999). In order to analyze this aspect of the trimester, we obtained student-level data accounting for each student's number of recorded absences, including excused and unexcused absences. While the original data set treated students with 0 absences as "missing," we recoded this interpretation into the "0" absences so that this sub-set of students would not be discounted in our analysis of student attendance patterns.

Student conduct Our final measure of sense of community probed for patterns in student conduct. From our interaction with site-based inquiry and analysis of literature revealed the potential relationship between school schedules and student conduct. Likewise, one of the hopes for trimester, as expressed by key informants, was that shifting to the trimester would be related to improvement in student conduct. For example, some interviews revealed a perception that the fewer number of transitions per day allowed students fewer opportunities to misbehave in the hallways and commit code of conduct infractions. In order to analyze this aspect of the trimester, we obtained student-level data accounting for each student's number of disciplinary suspensions. As was the case with the data on absence, the original data set treated students with 0 suspensions as "missing," so we recoded this so that our analysis would include these students as having 0 suspensions, rather than as missing.

Teacher collaboration As one of the central goals of the trimester was to measure the degree to which faculty collaboration among teachers was being impacted by trimester, we used CSS climate data at the teacher-level to analyze for any associated patterns across the implementation of the trimester. In order to operationalize and analyze this construct, we analyzed a combination of index and single-question items on the CSS. First, our interviews with teachers uncovered a clear theme of improved teacher-to-teacher collaboration that was not necessarily structured by the school but was prompted by the trimester configuration. To that end, while we analyzed the construction of the CSS to search for questions that could be agglomerated in an index of teacher-to-teacher collaboration, we felt that the questions moved among scales from teacher-to-teacher to school-teacher

too much in order to capture an analysis of the degree to which teacher-to-teacher collaboration had changed. Thus, we delimited our analysis of teacher-to-teacher collaboration around student learning to one, isolated variable. Specifically, we analyzed one item on the CSS to probe the hypothesis that teachers in trimester schools perceived a higher sense that they collaborate around student learning:

(1) My colleagues and I work together to advance student learning.

However, we were able to create an index capturing teachers' sense of community at their school, TEACHERCOMMUNITY. Once we analyzed three items for a high degree of internal consistency, ($\alpha=0.87$ in 07-08; $\alpha=0.85$ in 09-10), we proceeded to test the hypothesis that teachers in schools with trimesters feel a greater sense of community using the following three items in a scale:

(1) I feel strong ties with other faculty and staff in my school.

(2) My group of colleagues at school is well thought of by other faculty and staff.

(3) I feel like I am part of the school community.

Key Quantitative Analytic Methods

T-testing On measures of academic press, we use progressive analytic tests to probe for insights related to project hypotheses. We started by using independent samples t-tests to analyze for statistically significant differences in the means on our key measures for two groups of students---those enrolled in trimester schools (or future trimester schools in 2007-2008) and those enrolled in non-trimester schools. We ran such t-tests in each of three years of data for each of the following key measures of academic press and sense of community: ACT scores (juniors), ACT PLAN scores (sophomores), number of absences, and number of disciplinary suspensions. We purposefully tested first for mean differences on these measures in 2007-2008 to establish a sense of the baseline from which the group of high schools that would adopt trimester would move in 2008-2009 and in 2009-2010. If the two groups demonstrated any shifts in the patterns of means on these measures over the years of our analysis, this prompted us to analyze for any impact enrollment in the trimester configuration may have had on the variation in these key measures.

OLS regression If t-testing illuminated a shift in the pattern of statistically significant mean differences on key measures of academic press and/or sense of community between the group of students enrolled in trimester schools (or future trimester schools) and those enrolled in non-trimester schools, we then turned to using our JCPS data sets and ordinary least squares (OLS) regressions to estimate the association between the independent variable of enrollment in a school

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with trimester configuration and dependent measures of academic press and sense of community: ACT score (juniors), ACT PLAN score (sophomores), number of absences, and number of disciplinary suspensions. The basic equation for each of these analyses is as follows:

$$\begin{aligned} \text{Predicted Outcome}_1 = & \beta_0 + \beta_1 \text{TRIMESTER} + \\ & \beta_2 \text{RACEINDICATORS} + \beta_3 \text{GENDERINDICATORS} + b_4 \text{LIMITEDENG} + b_5 \text{FARL} + \\ & b_6 \text{EXCEPTIONAL} + b_7 \text{ADVANCED} + \text{error} \end{aligned}$$

β_1 represents the coefficient of primary interest, the impact enrollment in a school with trimester (or a future trimester school in 2007-2008) has on predicted outcome measure (ACT score, ACT PLAN score, number of absences, or number of disciplinary suspensions). We use the 2007-2008 model to analyze for any pre-existing patterns on these measures before the trimester was deployed to some schools in 2008-2009. Therefore, once we can establish a baseline regression model capturing as much as possible of the variation in the 2007-2008 dependent variable and the degree of impact (if any) enrollment in a school *that would adopt* the trimester configuration (β_1) has on the dependent variable, then we can move to compare subsequent years' β_1 values and significance levels during the implementation of trimester to this baseline and note any changes.

Logistic regression In order to analyze the hypothesis that a JCPS high school student's enrollment in schools with trimester configuration is associated with a higher probability of graduation, we use the JCPS data set to build a multivariate logistic regression model. Logistic regression is best used when the dependent variable of interest (in this case, probability of graduation) is a binary, dichotomous measure. Since our data set included a variable, GRADUATION, set to 1 for every senior in JCPS that successfully graduated in the year of analysis and 0 for every senior who did not graduate successfully, logistic regression would allow us to analyze for any estimated impact enrollment in a school with trimester had on a senior's predicted probability of graduating on time. Thus, using the JCPS student-level data and the same control variables as in earlier OLS regression modeling, we built the following multivariate logistic regression model, where F is a function of the logistic function:

$$\begin{aligned} \text{LOGISTIC (GRADUATION=1)} = & \beta_0 + \beta_1 \text{TRIMESTER} + \\ & \beta_2 \text{RACEINDICATORS} + \beta_3 \text{GENDERINDICATOR} + b_4 \text{LIMITEDENG} + b_5 \text{FARL} + \\ & b_6 \text{EXCEPTIONAL} + b_7 \text{ADVANCED} + \text{error} \end{aligned}$$

β_1 represents the coefficient of primary interest because it is the estimated impact on a JCPS senior's probability of graduation if he/she is enrolled in a school with trimester configuration (or FUTURETRI in a 2007-2008 school that would shift to trimester). We first analyze for any impact in the probability of a senior's graduating in 2007-2008 if he/she was enrolled in a school that would shift to trimester. We then subsequently test for any impact on the probability of a senior's graduating in 2008-2009 and 2009-2010 if he/she was enrolled in a school with trimester configuration and take note of any changes in the pattern.

Interview Protocols

Student Protocol

Introduction:

Hello, my name is _____. I am a graduate student at Vanderbilt University. Two classmates and I are working on a project for JCPS to understand the impact the new 3 X 5 trimester schedule has had on your district. What we learn from you today is important in helping the district interpret the influence of this new schedule. All of your responses will be kept anonymous. Thank you for taking time out of your day to speak with me. Do you mind if I record our conversation?

Schedule

- SS1. What academic schedule was used prior to the trimester schedule?
- SS2. What did you like best about that schedule?
- SS3. What was worst?
- SS4. Why do you think the school changed to the new schedule?
- SS5. How were you informed of the change?
- SS6. What do your parents think of the trimester schedule?
- SS7. What has been the biggest adjustment to the 3 X 5 schedule? What are some of the things that made the 3x5 schedule a good one? What do you see as some downfalls to the 3X5?

Student/Teacher Relationships

- SSTR1. Do you feel connected to your teachers? Does the length of your class time have anything to do with this connection?
- SSTR2. Has the 3x5 schedule made your relationship with your teachers better, worse, or is it unrelated to your relationship with your teachers?

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- SSTR3. Describe how well the teachers know you and you know them. How do you think they have gotten to know you?
- SSTR4. Do you feel like the trimester schedule gives you opportunities to take elective courses along with your required courses? Do you remember if the previous schedule gave you more or less opportunity?
- SSTR5. Do students here have ways to receive remediation (extra help) if they need it? What about students who are doing really well in their classes and need more things to do to keep them interested - are there ways for them to get the desired enrichment (special extra work)?
- SSTR6. Do you feel your school is preparing you to go to college? Do you think the schedule has anything to do with that?
- SSTR7. Do you feel like the schedule you are on now gives you time to really get into what you are learning in class? Do you usually have time left over to begin homework, are you rushing to finish, or is it just right?
- SSTR8. Do you feel safe at your school? Are there any ways in which the schedule could affect your sense of safety?
- SSTR9. Do you feel that the school schedule affects discipline in any way?

Academic Load

- SAL1. Which courses are you currently taking?
- SAL2. Which electives are you taking this year?
- SAL3. Are you able to take all the courses you wanted? What courses did you want that you could not schedule?
- SAL4. How do you select your classes for the year?
- SAL5. Is there a faculty member that helps students select their courses for the year?
- SAL6. How many credits will you earn this year?
- SAL7. How many credits are required to graduate from JCPS?
- SAL8. Do you know anyone who has repeated a course after failing a trimester? Does this seem to be common?

SAL9. Do you feel the new schedule offers students a better chance to graduate? Why or why not?

Classroom Impact

- SCI1. How has the trimester schedule impacted you academically?
- SCI2. How much time do you spend on average each night on homework or studying?
- SCI3. Is that more or less time than under the old schedule?
- SCI4. Do you typically begin your assignments in class? If so, how much time is spent on homework?
- SCI5. Do you feel that the school is preparing you for life after high school?
- SCI6. Do you feel that the school has prepared you for college?
- SCI7. How are students asked to participate in classes?
- SCI8. Has your interest in class changed since the new schedule was incorporated? How?
- SCI9. Do you participate in class? Why or why not?

Thank you again for taking the time to speak with me today. I greatly appreciate your help and want to remind you that all your feedback today will remain anonymous.

Is there anything else you would like to tell me about your experiences with the trimester schedule that we have not discussed?

Teacher Protocol

Introduction:

Hello, my name is _____. I am a graduate student at Vanderbilt University. Two classmates and I are working on a project for JCPS to understand the impact the new 3 X 5 trimester schedule has had on your district. What we learn from you today is important in helping the district interpret the influence of this new schedule. All of your responses will be kept anonymous. Thank you for taking time out of your busy day to speak with me. Do you mind if I record our conversation?

Scheduling Preparation:

TSP1. From what you understand, why did JCPS propose the new schedule?

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- TSP2. Why do you think the new schedule was incorporated at your school?
- TSP3. Why have some schools decided not to adopt the trimester schedule?
- TSP4. Is there any discussion of moving away from the trimester schedule?
- TSP5. Can you describe how you were trained regarding teaching under the Trimester schedule?
- TSP6. What do you see that are drawbacks to the new schedule?
- TSP7. What do you see as the benefits?

Collaboration:

- TC1. What subject do you teach?
- TC2. How often do you meet as a department?
- TC3. What's the nature of your interaction with teachers who teach the same courses?
- TC4. How would you describe the opportunity for collaboration before your school moved to trimester? How has that changed?
- TC5. Does collaboration occur with teachers at other schools?
- TC6. Has the amount of collaboration with other teachers changed since the change in schedule? If so, tell me about this.

Classroom Instruction:

- TCI1. Has the change in schedule influenced the way you teach?
- TCI2. Can you give examples of how you have changed your teaching since the adoption of the trimester schedule?
- TCI3. Has the way you measure what students are learning in class been impacted by the schedule change?
- TCI4. How do you engage students in your lessons? Has this changed since adopting the new schedule?

- TCI5. How have you adapted to the change in instructional time from your previous schedule?
- TCI6. Has the vertical alignment and pacing of the course of study changed due to the implementation of the new schedule?
- TCI7. Has the new schedule affected the assignment of homework?
- TCI8. Do you feel that the new schedule allows for remediation and acceleration? How does this schedule affect the amount of time you can spend per student?
- TCI9. How would you describe the degree to which you can develop your subject matter on this schedule as compared to the other?
- TCI10. Do you feel safe at your school? Are there any ways in which the schedule could affect your sense of safety?
- TCI11. Do you feel that the school schedule affects discipline in any way?

Student/Teacher Relationships

- TSTR1. Approximately how many students do you teach each trimester?
- TSTR2. Approximately how many students did you teach each semester under the old schedule?
- TSTR3. Has the new schedule impacted your relationships with students? If so, how?
- TSTR4. What is the purpose of the advisory program at your school?
- TSTR5. Is this a new program that came with the trimester schedule? In not new - has the advisory program been impacted by the change in schedule?
- TSTR6. Has advisory changed the sense of community among teacher and students? How has it done this?

Thank you again for taking the time to speak with me today. I greatly appreciate your help and want to remind you that all your feedback today will remain anonymous. Is there anything else you would like to tell me about your experiences with the trimester schedule that we have not discussed?

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Principal Protocol

Introduction:

Hello, my name is _____. I am a graduate student at Vanderbilt University. Two classmates and I are working on a project for JCPS to understand the impact the new 3 X 5 trimester schedule has had on your district. What we learn from you today is important in helping the district interpret the influence of this new schedule. All of your responses will be kept anonymous. Thank you for taking time out of your busy day to speak with me. Do you mind if I record our conversation?

Academic Preparations

PAP1. What do you like best about the new schedule?

PAP2. What do you see as its greatest drawback?

PAP3. How has the new schedule affected the way teachers structure lessons?

PAP4. How were teachers trained to assist with instruction under the new schedule?

PAP5. What do parents think of the schedule?

PAP6. What do students think of trimester schedule?

PAP7. Why have some schools elected not to adopt the trimester schedule?

Student Teacher Relationships

PSTR1. Do teachers have more or less relationship-building time with students?

PSTR2. What avenues for personalization or a sense of belongingness does this schedule make available for students?

PSTR3. Does the new schedule affect discipline in the classroom? How so?

PSTR4 .Have you noted any difference in the number of discipline referrals since the implementation of the new schedule?

PSTR5. How has the trimester affected special education and ELL students?

Outcomes

- PO1. How has the graduation rate changed since the implementation of the trimester schedule?
- PO2. Are more students graduating on time with this schedule?
- PO3. Describe the differences in opportunity for teacher collaboration on the trimester.
- PO4. Has the new schedule led to restructuring of the curriculum?
- PO5. How many credits does the average student earn per year? Is that a change from the number earned using the old schedule?
- PO6. Have the number of elective courses taken increased since adopting trimesters?
- PO7. On the trimester, is there a difference in the number of students who benefit from the opportunities for credit recovery?
- PO8. Has the new schedule changed how teachers teach? Can you give examples?
- PO9. How does the new schedule provide for both remediation and acceleration as opposed to the previous schedule?
- PO10. Do students have greater opportunity to access required courses on this schedule?
- PO11. Do students have greater opportunity to access elective courses on this schedule?
- PO12. Is there any supplemental material that might serve as good insight into the change to trimester? (i.e. editorial, student or teacher)

Thank you again for taking the time to speak with me today. I greatly appreciate your help and want to remind you that all your feedback today will remain anonymous. Is there anything else you would like to tell me about your experiences with the trimester schedule that we have not discussed?

The Structure of Time



Guidance Counselor/AP Protocol

Introduction:

Hello, my name is _____. I am a graduate student at Vanderbilt University. Two classmates and I are working on a project for JCPS to understand the impact the new 3 X 5 trimester schedule has had on your district. What we learn from you today is important in helping the district interpret the influence of this new schedule. All of your responses will be kept anonymous. Thank you for taking time out of your busy day to speak with me. Do you mind if I record our conversation?

Scheduling Preparation:

GSP1. From what you understand, why did JCPS propose the new schedule?

GSP2. Why do you think the new schedule was incorporated at your school?

GSP3. Why have some schools decided not to adopt the trimester schedule?

GSP4. Is there any discussion of moving away from the trimester schedule?

GSP5. Can you describe how you were trained regarding scheduling under the trimester schedule?

GSP6. What do you see that are drawbacks to the new schedule?

GSP7. What do you see as the benefits?

Collaboration:

GC1. Do you collaborate with other teachers?

GC2. What's the nature of your interaction with teachers at your school?

GC3. How would you describe the opportunity for collaboration before your school moved to trimester? How has that changed?

GC4. Does collaboration occur with counselors at other schools?

GC5. Has the amount of collaboration with colleagues changed since the trimester was incorporated? If so, tell me about this.

Classroom Instruction:

- GCI1. Has the trimester schedule influenced the way teachers teach?
- GCI2. Can you give an example of new teaching approaches you've seen?
- GCI3. Has the way you measure what students are learning in class been impacted by the schedule change?
- GCI4. How has the level of student engagement changed since adopting the new schedule?
- GCI5. How have teachers adapted to the change in instructional time from the previous schedule?
- GCI6. Has the vertical alignment and pacing of the course of study changed due to the implementation of the new schedule?
- GCI7. Has the new schedule affected the assignment of homework?
- GCI8. Do you feel that the new schedule allows for remediation and acceleration? Please provide examples.
- GCI9. How would you describe the degree to which teachers can develop their subject matter on this schedule as compared to the other?
- GCI10. Do you feel safe at your school? Are there any ways in which the schedule could affect your sense of safety?
- GCI11. Do you feel that the school schedule affects discipline in any way?

The Structure of Time



Student/Teacher Relationships

GSTR1. Has the new schedule impacted the relationships of teachers and students? If so, how?

GSTR2. Has the new schedule impacted your relationship with students? If so, how?

GSTR3. What is the purpose of the advisory program at your school?

GSTR4. Is the advisory time a new program that came with the trimester schedule? In not new - has the advisory program been impacted by the change in schedule

GSTR5. How are your advisory lessons structured? What is your role in this program?

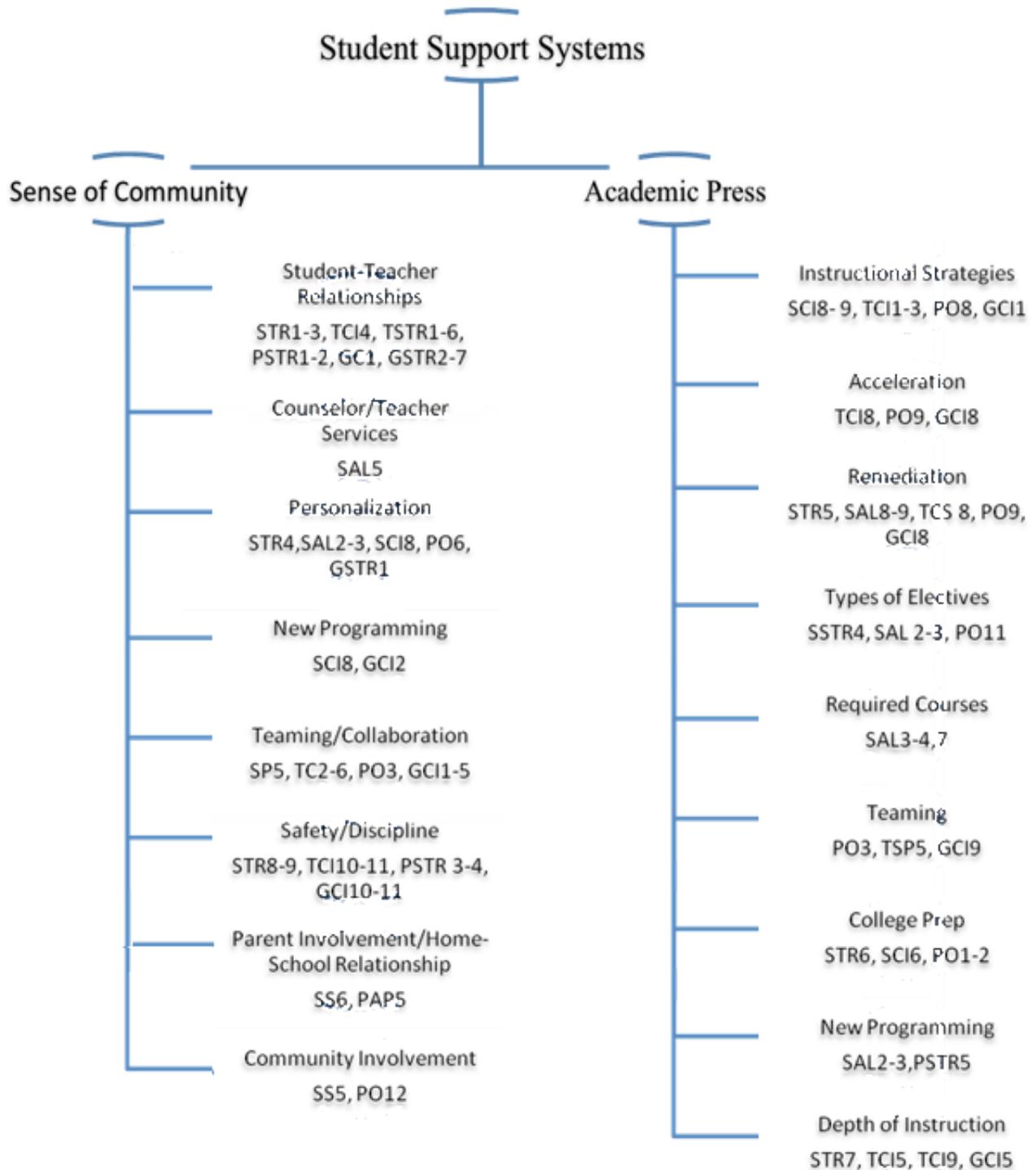
GSTR6. Who coordinates your advisory program?

GSTR7. Has advisory changed the sense of community among teacher and students? How has it done this?

Thank you again for taking the time to speak with me today. I greatly appreciate your help and want to remind you that all your feedback today will remain anonymous.

Is there anything else you would like to tell me about your experiences with the trimester schedule that we have not discussed?

Alignment of Interview Protocols with Conceptual Framework



The Structure of Time



ANALYTIC TECHNIQUE: CONCEPTUAL CLUSTERING, LEVEL 1—ACADEMIC PRESS

FINDINGS				
STUDENT 1	1	2	3	4
I. ACADEMIC PRESS				
a. Instructional Strategies				
b. Acceleration				
c. Remediation				
d. Electives				
e. Required Courses				
f. Teaming				
g. College Prep				
h. New Programming				
i. Depth of Instruction				
j. Structure/Pacing of Coursework				

Analytic technique: Sample level 2 matrix

Project question	Key project finding	Relevant level— individual, school, district
1. To what extent is the trimester schedule increasing students' credit opportunities?		
2. To what extent is the trimester schedule impacting depth of instruction?		
3. To what extent is the trimester schedule impacting personalization?		
4. To what extent is the trimester scheduling impacting faculty collaboration?		

The Structure of Time



Sample Analytic Matrices for Qualitative Analysis

List of schools as sorted in quantitative data sets

Non-trimester group (non-pilot):

Atherton
Ballard
Brown
Butler
Central
Eastern
Jeffersontown
Jefferson County
Louisville Male

Trimester group (pilot):

Doss
Fairdale
Fern Creek
Iroquois
Moore
Pleasure Ridge Park
Seneca
Shawnee
Southern
Valley
Waggener (delayed start)
Western

Schools omitted from analysis:

Ackerly/Bingham
Ahrens
Alfred Binet
Audubon
Bellwood
Boys' Haven
Brooklawn
Buechel
Churchill Park
ESL Newcomer Academy
Home Instruction
Home of the Innocence
Jefferson County Virtual
Liberty
Louisville Day Treatment
Louisville Metro Youth
Maryhurt
Peace Academy
South Park TAPP
St. Joseph Childrens' Home
Ten Broeck
U of L Pact
Westport TAPP
Dupont Manual



Appendix Section D

Appendix D: Relevant Quantitative Results

Table 1: Summary of Logistic Regression Analysis for Variables Predicting Graduation for JCPS Seniors, controlling for background variables (including Jefferson County High School)¹

Predictor	Likelihood to Graduate, 2007-2008			Likelihood to Graduate, 2009-2010		
	B	SE B	e ^B	B	SE B	e ^B
JCPS Senior						
Trimester (FUTURETRI in 07-08)	.244	.203	1.276	.691**	.163	1.996
African American	.305	.229	1.356	.176	.182	1.192
Hispanic	1.555*	.717	4.734	1.301*	.576	3.673
Native American	17.202	40192.97	2.956E7	-1.588	.858	.204
Asian	.652	.690	1.919	.025	.508	1.025
Other race	1.094	.850	2.986	.013	.547	1.013
FARL	.074	.226	1.077	.064	.179	1.066
Exceptional Education	-2.497***	.211	.082	-1.724***	.180	.178
Limited English	-2.536***	.453	.079	-1.635***	.363	.195
Advanced Program	17.203	1933.74	2.959E7	2.662**	1.008	14.331
Female	-.097	.198	.907	.005	.156	1.005
Absences	.012	.007	1.012	-.030***	.004	.971
Suspensionct	.834*	.419	2.303	-.178	.098	.837
Constant	3.944***	.219	51.624	3.777***	.170	43.690
N		5141			5243	
χ^2		173.115***			197.292***	
Df		13			13	
% graduated		97.7			96.4	

¹ (Note: e^B = exponentiated B. Graduation predictors (Trimester, all race indicators, FARL, Exceptional Education, Limited English, Advanced Program, Female) coded as 1 for yes and 0 for no. *p < .05. **p < .01. ***p < .001)

The Structure of Time



Table 2: Summary of Logistic Regression Analysis for Variables Predicting Graduation for JCPS Seniors, controlling for background variables (omitting Jefferson County High School)²

Predictor	Likelihood to Graduate, 2007-2008			Likelihood to Graduate, 2009-2010		
	B	SE B	e ^B	B	SE B	e ^B
JCPS Senior						
Trimester (FUTURETRI in 07-08)	-.718*	.282	.488	-.364	.216	.695
African American	.173	.271	1.188	.400	.230	1.492
Hispanic	1.989*	.879	7.31	1.413*	.696	4.126
Native American	15.305	40192.96	4.435	-2.81*	.976	.113
Asian	.816	.836	2.26	-.301	.557	.740
Other race	1.366	.945	3.919	.237	.755	1.268
FARL	-.066	.272	.936	-.348	.239	.706
Exceptional Education	-3.540***	.303	.029	-2.471***	.209	.084
Limited English	-3.587***	.529	.028	-2.199***	.406	.111
Advanced Program	15.865	1899.07	7.763	1.544	1.017	4.684
Female	-.229	.247	.795	.101	.201	1.106
Absences	.012	.009	1.012	-.021***	.005	.980
Suspensionct	.837	.472	2.309	-.311**	.107	.733
Constant	5.840***	.381	343.8	5.120***	.269	167.313
N		4857			5074	
χ^2		232.496***			210.232***	
Df		13			13	
% graduated		98.4			97.8	

² (Note: e^B = exponentiated B. Graduation predictors (Trimester, all race indicators, FARL, Exceptional Education, Limited English, Advanced Program, Female) coded as 1 for yes and 0 for no. *p < .05. **p < .01. ***p < .001)

Appendix D:

Relevant Quantitative Results

Table 3: Summary of Simple Regression Analyses for Variables Predicting JCPS High School Juniors' ACT Composite³

Variable	2007-2008 (prior to trimester)			2009-2010 (after trimester started)		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Trimester (FUTURETRI in 07-08)	-1.959	.098	-.214***	-1.772	.102	-1.90***
African American	-2.637	.111	-.275***	-2.351	.116	-2.41***
Hispanic	-1.309	.298	-.050***	-1.044	.267	-.045***
Native American	3.424	2.392	.015	1.297	2.464	.005
Asian	-.580	.338	-.018	-2.33	.361	-.007
Otherrace	-.722	.431	-.018	-1.147	.374	-.032**
FARL	-1.065	.108	-.116***	-1.324	.114	-.142
Exceptional Ed	-2.933	.180	-.170***	-2.328	.182	-.136***
Limited English	-2.588	.312	-.097***	-3.346	.306	-.129***
AdvancedProgram	4.795	.167	.303***	4.941	.171	.311***
Female	.028	.095	.003	.009	.097	.001
Suspension Count	.039	.094	.005	-.156	.083	-.021
Adjusted R ²		.457			.441	
N		5212			5127	
F		338.057***			312.313***	

³*p < .05. **p < .01., ***p<.000

The Structure of Time



Table 4: Summary of Simple Regression Analyses for Variables Predicting JCPS High School Sophomores' ACT PLAN Composite⁴

Variable	2007-2008 (prior to trimester)			2009-2010 (after trimester started)		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Trimester (FUTURETRI in 07-08)	-1.470	.076	-.209***	-1.502	.077	-.209***
African American	-1.699	.085	-.231***	-1.660	.085	-.221***
Hispanic	-.169	.085	-.231***	-.286	.198	-.016
Native American	1.711	.840	.021*	-.887	1.006	-.009
Asian	.119	.268	.005	-.071	.241	-.003
Otherrace	-.602	.294	-.021*	-.297	.254	-.012
FARL	-.806	.083	-.114***	-.901	.085	-.125***
Exceptional Ed	-2.032	.134	-.158***	-2.280	.129	-.178***
Limited English	-2.353	.228	-.120***	-2.858	.215	-.143***
AdvancedProgram	3.987	.129	.325***	3.577	.118	.315***
Female	-.057	.072	-.008	-.002	.072	.000
Suspension Count	-.096	.054	-.020	-.166	.049	-.038**
Adjusted R ²		.434			.452	
N		5491			5509	
F		325.397***			349.784***	

⁴p < .05. **p < .01., ***p<.000

Appendix D:

Relevant Quantitative Results

Table 5: Summary of Simple Regression Analyses for Variables Predicting JCPS High School Student Absences ($N \approx 26,000$ in 2007-2008 and 2009-2010)⁵

Variable	2007-2008 (prior to trimester)			2009-2010 (after trimester started)		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Trimester (FUTURETRI in 07-08)	3.876	.190	.124***	2.778	.176	.097***
African American	-2.225	.215	-.068***	-3.028	.196	-.101***
Hispanic	-.423	.560	-.005	-1.371	.453	-.019**
Native American	-5.931	3.150	-.011	10.356	2.424	.025***
Asian	-4.154	.716	-.035***	-4.523	.601	-.045***
Otherrace	.317	.750	.003	.440	.606	.004
FARL	4.219	.210	.135***	3.888	.194	.135***
Exceptional Ed	2.117	.304	.042***	.936	.283	.019**
Limited English	-.023	.588	.000	-.632	.506	-.008
AdvancedProgram	-4.490	.346	-.078***	-3.293	.291	-.068***
Female	1.864	.184	.060***	-.329	.167	-.011*
Suspension Count	6.874	.124	.333***	6.115	.098	.373***
Adjusted R ²		.19			.20	
N		23,899			23,632	
F		457.02***			510.40***	

⁵*p < .05. **p < .01., ***p<.000

The Structure of Time



Table of descriptive statistics, 2007-2008

Variable	Mean	Standard Deviation
Futuretri	.5322	.4990
African American	.3598	.4800
Hispanic	.0352	.1844
Native American	.0008	.0289
Asian	.0174	.1309
Otherrace	.0156	.1240
FARL	.4867	.4998
Exceptional Ed	.1049	.3065
Limited English	.0329	.1784
Advanced	.0798	.2709
Absences	14.8114	15.6038
Suspension Count	.2451	.7564
Female	.5019	.5000
Graduation (only 12 th)	.9774	.1485
N	23899	

Table of descriptive statistics, 2009-2010

Variable	Mean	Standard Deviation
Trimester	.5191	.4997
African American	.3614	.4804
Hispanic	.0424	.2016
Native American	.0012	.0344
Asian	.0209	.1432
Otherrace	.0198	.1393
FARL	.5424	.4982
Exceptional Ed	.0991	.2987
Limited English	.0338	.1806
Advanced	.0971	.2961
Absences	13.8247	14.3744
Suspension Count	.30	.876
Female	.4984	.5000
Graduation (only 12 th)	.9649	.18397
N	23632	