# CURRICULAR REFORM AND ECONOMIC CONTEXT: THE CASE OF THE MICHIGAN MERIT CURRICULUM

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Educational Policy – Doctor of Philosophy

2014

# PUBLIC ABSTRACT

## CURRICULAR REFORM AND ECONOMIC CONTEXT: THE CASE OF THE MICHIGAN MERIT CURRICULUM

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Kaitlin Tiplady Obenauf

In 2006, the Michigan Merit Curriculum, a statewide curricular reform substantially changed the rigor of high school courses. New requirements included four years of English, three years of science, including chemistry or physics, and four years of mathematics, including Algebra II. Michigan high school principals, responding to new curricular demands, may have reorganized students' course schedules, hired more teachers, or redefined student success. Interviewing four Michigan principals from urban, rural, and suburban high schools, this work presents principals' thoughts and reflections on the state reform. Principals' reflections and decisions suggest an effort to balance high school student needs, reform requirements, and surrounding parental and community preferences; the ease of which varied by community and principal. Examples of changes included providing students with more online learning, opportunities to retake failed courses, and opportunities for elective courses. Additionally, principals report restructuring teachers, moving more teachers into core academic courses. Decisions take place in an uncertain political and economic environment, as school of choice policies and No Child Left Behind combine with the Great Recession of 2009 complicating school budgets and predictions of what lay ahead.

ABSTRACT

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The Michigan Merit Curriculum (MMC) a statewide curricular reform substantially changed high school rigor. Beginning for the class of 2011, the MMC mandated four years of English, mathematics, and three years of science; requiring all students to take Algebra II and physics or chemistry. Michigan high school principals, responding to new curricular requirements, may have changed course sequencing, teacher hiring, or definitions of student success in response. Presenting descriptive analysis of high school characteristics and administrator interviews, this study frames four Michigan high schools and the principals who lead them. Results situate within a theory of action with principals' behaviors and decision-making relative to economic constraints, constituent preferences, and state requirements. School context and principal sense-making interweave into observed behaviors, complicating or easing reform enactment depending on community and student predispositions. Endeavoring to meet stakeholder demands, interviewed principals report additional elective opportunities, reorganized course schedules, increased virtual learning and credit recovery opportunities, and reallocated teachers course assignments. Yet, additional reform policies, such as No Child Left Behind and School of Choice, combine with two exogenous economic recessions—state and nationwide—complicating budgets and the educational landscape.

This text is dedicated to Chad, Christian, and Ginger, you are my best. To my parents, thank you for all of your support and love.

And, to those whom I deeply admire, Uncle Dick and Aunt Barbara, on the farm.

# ACKNOWLEDGEMENTS

I would like to acknowledge and thank my dissertation committee, Dr. Ken Frank, Dr. Barbara Schneider, Dr. Suzanne Wilson, and Dr. Peter Youngs, for their support and guidance throughout this process. Specifically, I would like to thank my dissertation advisor, Dr. Frank, for his thoughtful comments and consultation.

The work reported here was supported in part by a Pre-Doctoral Training Grant from the Institute of Education Sciences, U.S. Department of Education (Award # R305B090011) to Michigan State University. The opinions expressed here are those of the authors and do not represent the views of the Institute or the U.S. Department of Education.

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KEY TO SYMBOLS AND ABBREVIATIONS

| | |
|---|---|
| 21st | Twenty-first |
| K-12 | Kindergarten through twelfth grade |
| MMC | Michigan Merit Curriculum |
| IEP | Individualized Education Plan |
| MCER | Michigan Consortium for Education Research |
| ACT | The American College Test |
| MDE | Michigan Department of Education |
| NCLB | No Child Left Behind |
| SAT | The Scholastic Aptitude Test |
| MME | Michigan Merit Examination |
| AYP | Adequate Yearly Progress |
| PLA | Persistently Lowest Achieving |
| USDOE | United States Department of Education |
| CTE | Career and Technical Education |
| E 20/20 | Education 20/20 |
| PHS | Petronila High School |
| AHS | Ashmore High School |
| CHS | Clayton High School |
| PRHS | Pine Ridge High School |
| AP | Advanced Placement |
| HSLS | High School Longitudinal Study |

| | |
|---|---|
| CCD | Common Core Census Data |
| CEPI | Center for Educational Performance and Information |
| NSC | National Student Clearinghouse |

# CHAPTER 1—INTRODUCTION

*Every solution of a problem raises new unsolved problems; the more so the deeper the original problem and the bolder its solution (Popper, 1962, p. 28).*

In 2004, Michigan Lieutenant Governor John Cherry released an executive report identifying a systemic problem in public schooling; students were preparing for a future that no longer exists.

> The days when you could earn a good living in Michigan with only a high school diploma are long gone. We need to fundamentally change our thinking to match the realities of today's economy, and that means post-secondary education for all. (Cherry as cited by Hansen, 2004, p. 1).

Cherry's call for more rigorous and applicable educational preparation joined nationwide education reformer voices seeking better schooling outcomes. For Cherry, student success hinged upon opportunities after schooling. In fact, connections between employment demands and educational goals are interwoven into our nation's history. Beginning with the common schooling movement in the early 1800's, education reformers have relied upon market demands to shape academic priorities. For Horace Mann, priorities included teaching a common body of knowledge, for Booker T. Washington, concrete work skills, and for immigration assimilationists, a shared American virtue and investment in our nation. For over 100 years, schooling generally prioritized unified citizenry and a broad preparation for life. During the Cold War, in efforts to compete globally, Sputnik launched math and science curriculums to the forefront of national priorities. Then, after progressive educational reforms of the 1970's, *A Nation At Risk* (1983) called for more rigorous and focused curriculum. National demands—based on employment markets and societal values—directed public academic agendas.

## Changing Economics with Stable Educational Preparation: The Problem

Entering a new millennium, Michigan and the nation confronted a changing economic landscape. Manufacturing employment progressively moved overseas, technology created increased globalization and economic competition, and financial gains of the wealthy added to a widening income disparity. Middle class employment increasingly demanded post-secondary certification, yet less than 25% of Americans attained a bachelor's degree or greater. In a society that often rewards education with increased economic and social capital; changing conditions benefited a minority of citizens.

### Educational Attainment in Michigan

By 2010, Michigan policymakers faced problems on several fronts. National and statewide recession forced spending cuts across government budgets; unemployment rates, at 12.5%, were high (Bureau of Labor & Statistics, 2010; Bureau of Labor & Statistics, 2011a; Bureau of Labor & Statistics, 2011b). Furthermore, technology advances and globalization left large structural unemployment rates for those displaced manufacturing workers (Bureau of Labor and Statistics, 2009).

College completion rates did not satisfy more rigorous intellectual work demands. In 2010, 32.6% of Michiganders had some college, a post-secondary technical degree or an associate's degree (Department of Technology, Management & Budget, 2012). Furthermore, approximately 25% of Michiganders held a bachelor's degree or higher, slightly below the national average (US Census, 2012a). Thus, the 21st century brought with it an increasingly pressing problem; employers demanded more technical skills from a generally underprepared populace. Policymakers, anticipating difficulties, took decisive action to embrace an economic future of knowledge-based employment.

## Finding Solutions in Education Policy

In 2004, a commission chaired by Michigan's Lieutenant Governor John Cherry, released a report describing Michigan's educational landscape—detailing successes and failures. In particular, the report noted that while nearly 90% of Michigan ninth grade students aspire to pursue college; few attained a bachelor's degree (Cherry Report, 2004). Though students reportedly valued postsecondary opportunities, a minority successfully completed four-year degrees.

### The Financial Returns to Postsecondary Education

Research supports postsecondary training. Julian and Kominski (2011) find individuals with a four-year degree face 11.8% less unemployment. Unemployment rates are considerably higher for those with less education; 17.8% of those with a high school degree are unemployed, while 27.4% of dropouts, on average, are unemployed with 30% living in poverty (Department of Technology, Management & Budget, 2012).

More education often relates to greater earnings. According to Newburger and Cheeseman-Day (2002), educational investments increased earnings across racial subgroups. For white workers, a bachelor's degree increased earnings $22, 593 (Newburger & Cheeseman-Day, 2002). For black and Hispanic minorities, earnings increases were smaller, at approximately $15, 000 (Newburger & Cheeseman-Day, 2002). They conclude, "regardless of race or ethnicity, higher educational attainment equates to higher earnings" (Newburger & Cheeseman-Day, 2002, p. 9).

Attending college generally increases lifetime earnings. Examining earning potential among whites, the nation's highest earning racial group, Julian and Kominski (2011) find significant pay-offs to a four-year degree. For full-time white workers, those with a bachelor's

degree make $1, 157, 668 more in median lifetime earnings than whites with only a high school degree (Julian & Kominski, 2011).

Progressively, national and state awareness of the economic returns to schooling grew. According to Schneider (2007) students' transitions from high school to college became increasingly recognized as a priority for K-12 educational systems. In Michigan, a changing economic landscape and accountability for students' academic outcomes provided additional rationale for more rigorously preparing students for postsecondary success.

**The Michigan Merit Curriculum**

Enter the Michigan Merit Curriculum (MMC), a bold response to an established disparity between college aspirations and college-going, work force demand and educational preparation. In 2006, Michigan passed legislation to enact the MMC, a curricular policy to promote rigorous academic learning and college preparation. The curricular mandate was implemented statewide across all districts and for all students. The MMC uses supply side economics to answer pressing problems in structural unemployment, income inequality, and educational opportunity gaps for underrepresented populations. While increasing educational centralization, it championed equitable preparation for postsecondary education, students' passport to future success (Schwartz, Ferguson & Symonds, 2011).

The MMC substantially changed high school course requirements beginning with Michigan's graduating class of 2011. The number of mathematics, science, social studies, and foreign language courses increased for all Michigan students, except those with an individualized education plan (IEP). These changes entailed requiring all students to take:

- Three credits in science including biology, physics or chemistry

- Four credits in mathematics including algebra I and II, geometry, one additional mathematics course, and enrollment in mathematics during students' senior year
- Three credits in social studies including United States history and geography, world history and geography, a half credit of civics, and a half credit of economics
- Two credits in world language (beginning for Michigan's graduating class of 2016)

Within curricular reform requirements, legislators allow some coursework variation. Students seeking MMC requirement modification may request a personal curriculum through their parent or legal guardian (MDE, 2010a).

**Modifying expectations.** Personal curriculums allow students to modify certain high school curricular requirements (MDE, 2010). The MMC limits modifications to "protect the futures of students by ensuring that the personal curriculum option is not used as a convenient escape door for schools to shy away from providing access to the MMC for students who are more difficult to reach and teach" (MDE, 2010a, p. 8). To promote progress toward rigorous curricular expectations, personal curriculums must, 1) enable growth toward students' career or postsecondary goals, 2) maintain curricular relevance, 3) provide access to MMC content knowledge and state assessments, and 4) preserve diploma integrity (MDE, 2010a). Thus, although personal curriculums modify high school requirements, they do so to a practicable extent—seeking to maximize subject area content mastery during high school instruction (MDE, 2010a).

Students may also utilize personal curriculums to enrich academic coursework. Students may request waivers for health, physical education, the arts, or one social studies credit (MDE, 2010a). Waivers allow students to take additional coursework in English, math, science, or world language (MDE, 2010a). This flexibility individualizes the rigor and relevance of the

educational experience. Local discretion determines the number and scope of personal curriculums.

**Reform implementation.** The MMC was broadly implemented across all schools. Although it targeted high school curriculum, changes may have ensued in middle school grades to adjust and prepare students for the new high school requirements. The 2010-2011 academic year was the final rollout for the core curriculum changes; additional foreign language requirements will be fully phased in with the graduating class of 2016.

Districts and schools, in response to MMC mandates, have changed the courses students take and their sequencing. Schools response to curricular reform and the degree of changes necessary, has varied and been dependent on context. In math, prior to the MMC enactment, students were able to meet graduation requirements with any two math credits—regardless of rigor or level. After MMC implementation, students needed four credits including Algebra I, II, Geometry, and one other math course. For some schools, in which college preparatory coursework was the norm, MMC mandates may have posed little changes to established curriculum. For others, curriculum expansion may have required substantial changes to high school course offerings and student schedules.

## Examining Complex Systems and Actors in Schools

The sense-making of individual agents, be they teachers, administrators, or school districts, mediate educational policy implementation (Spillane, 2004). Districts' acknowledgement or dismissal of policy reform is often dependent upon reforms' alignment with district objectives (Spillane, 2004). When schools do address reform policies, educators' sense-making may influence policy implementation (Spillane, 2004). Spillane (2004) finds this sense-making is largely dependent upon the context within educators work.

In the sense-making process, educators not only make sense of policies, they create policies (Spillane, 2004). Consequences range; well-intentioned educators may misinterpret state reform policies, and misalign enactment practices. Instead, educators may understand state policy and engage in enactment as policymakers intend, while also levying additional policies that fundamentally change reform consequences. Conversely, educators may deviate from reform objectives, loosely coupling policy implementation with mandated requirements (Meyer & Rowan, 1977). In all possibilities, educators are simultaneously making choices and enacting policy, impacting the institutions of which they are a part.

**Decision-Making within Constraining Structures**

This work focuses analysis on educators' sense-making, decisions, and actions. Yet, these three strands of behavior do not occur independently or in isolation. Abbott (1998) suggests "social life is a process that continuously embodies itself in constraining structures" (p. 175). I propose economic budget constraints are a relevant constraining structure to school leaders and further explore applications in chapters two and five. However, broad economic theories rely upon several assumptions—often including perfect market information—imploring a more thorough investigation of decision-making behavior.

Descriptions of independent actors' sense-making behavior easily situates within larger social theories (Meyer & Rowan, 1977, Granovetter, 1985). Abbott (1998) discusses interactional fields as places in which behaviors are happening across time, social spaces, and social relationships; all with unclear directionality or causality. Within these spaces, motivators of individuals' behavior do not follow "the rules of the game" (Abbott, 1998, p. 176). However, by observing internal consistency (Abbott, 1998) of phenomena within theoretical frameworks, one may move closer toward an understanding of social structures and the individuals within.

Understanding mechanisms within and underlying educational reform involves gaining perspective from invested actors. "Stakeholder perceptions take precedence in model design over any conceptual frameworks or system representations developed by independent (e.g. academic) observers" (Moss, 2002, p. 7274). This work seeks to describe and explain four Michigan high schools response to the MMC.

**A Case Study of Four Michigan High Schools**

This study evolved from a larger project through the Michigan Consortium for Education Research (MCER) investigating the fidelity and consequences of the MMC (Primary Investigators, Brian Jacob, Sue Dynarski, Barbara Schneider, and Ken Frank). Examining a case study of four Michigan high schools, across urbanicity, it attempts to understand the general attitudes, opinions, and perceptions of administrators. Administrator interviews will provide context and depth to MCER quantitative analysis. Further, I hope this study will allow education stakeholders to gain a broader understanding of how the MMC affects Michigan high schools and teachers.

Combining Michigan descriptive data with administrator interviews, this study frames principal decision-making within an economic context. Decisions are theorized to relate to political requirements, constituent preferences, and financial constraints. Specifically this study asks:

1. What curricular and organizational responses do schools make to accommodate the MMC?
2. What accounts for these responses and changes?
3. What are the implications for equity?

I find high schools respond to MMC curricular reform in various ways, adapting students' course scheduling to meet additional academic rigor. I assert high school principals consider financial constraints during course scheduling reorganization, with school funding mediating potential choices available. While enacting MMC curricular reform, I find principals also respond to both constituent demands and other education policy; attempting to satisfy students, community, and stakeholders. Principal reported student outcomes under MMC enactment ranged; some took fewer electives, had larger classes, or found themselves remediating more courses. Others, exceeded educator expectations; performing well in courses they may not have taken prior to MMC enactment. Overall, students increased their preparation for college.

The following chapters provide an in-depth examination of the MMC. Chapter two builds an economic framework for administrator decision-making and describes existing literature on educational reform and curricular changes. Chapter three outlines study methods and provides a descriptive context for sampled Michigan high schools. Chapter four describes principal perceptions of the MMC and result analysis. Finally, chapter five summarizes study findings and presents potential implications of curricular reform. Overall, I assert education policy experts should consider schools' economic context in school leadership or school reform examinations.

# CHAPTER 2—BACKGROUND

In 2004, Michigan Governor Jennifer Granholm and Lieutenant Governor John Cherry reconceptualized education curricular reform within the context of a social fact; 21st century jobs require a college degree. Policymakers rallied to the call, creating a new sequence of courses and situating Michigan students at the national forefront for academic preparation.

Students' preparation was not only prescribed it was assessed. Policymakers pushed to create an exit exam that both measured students' learning and included a college entrance assessment, the ACT. These efforts aligned to encourage students' postsecondary enrollment.

In 2005, the college preparatory sequence was named the Michigan Merit Curriculum. Policymakers enlisted the Michigan Department of Education (MDE), whose purview extends from K-12th grade, to dictate curriculum across high schools statewide. This was done through a rationalized procedure for reform—the mandate—displacing long standing local traditions determining curriculum and learning. "Bureaucratic control is especially useful for expanding political centers, and standardization is often demanded by both centers... [which] displace traditional activities throughout societies (Meyer & Rowan, 1977, p. 4). The state imposed MMC expanded MDE authority, sought to increase academic rigor, and decrease variation in high school course taking. Schools, enacting curricular reform while simultaneously complying with existing education reform, such as No Child Left Behind (NCLB) and school of choice, may vary in implementation or associated behaviors.

## Systemic Responses to Policy Reform

Implemented policy, influenced by various local pressures, may closely resemble policymaker aims or significantly deviate from original intentions (Meyer, 2008). "A more moderate realism sees a 'sticky equilibrium' as involved—institutions are created by mixtures of

actor power and interest, but may take on something of a life of their own afterwards" (Meyer, 2008, p. 801). Similar to interactional fields (Abbott, 1998), Meyer (2008) describes new institutionalism as a scenario in which multiple organizations are driven by external, environmental forces. Though political stakeholders are removed from daily interactions with students and community, they may share common perceptions of educational success with local educational leadership.

## Establishing a Theory of Action

Identifying ideologies underlying curricular reform enables a theory of action as to why or how behaviors manifest among groups. "This [theory of change] strategy examines the assumptions that the architects of the initiative made regarding why or how the reform would achieve improved outcomes" (Kahne, Sporte, Torre & Easton, 2008). Optimally, understanding the implicit assumptions behind the MMC will allow a better examination of results and potential variation (Kahne et al., 2008).

The Cherry Report (2004) asserts Michigan students must prepare for twenty-first century employment through college preparatory curriculum. Societal and economic returns to college-going may have substantiated curricular reform efforts among political leadership, diffusing to local educators.

### The Return to a College Degree: An Economic Fact

Labor force statistics support the economic returns to a college degree. In 2007, the United States labor force consisted of 154 million workers; a minority (41%) were individuals with a high school degree or less (Schwartz, Ferguson & Symonds, 2011). Over the past 30 years, all net job growth required individuals with some degree of postsecondary education (Schwartz, Ferguson & Symonds, 2011). As employers increasingly place significant emphasis

on postsecondary attendance, the labor market options for high school graduates may continue to dwindle.

Though faced with decreasing labor market options, the Great Recession (Russell Sage Foundation [RSF], n.d.) has some questioning the saliency of financial investments in schooling. College, once affordable for students who worked summer jobs or part time during school, now costs an average of $23,066 annually (United States Department of Education, 2012). In 2008, just under two-thirds of students took on financial aid to attend college, with a reported average debt load of $24,700 (Woo & Soldner, 2013). Compared to the average entry-level salary for four year graduates ($34,400) and a rising college graduate unemployment rate (11.9% in 2008)[1], hefty investments in postsecondary schooling may seem ill placed for some (Woo & Soldner, 2013; Spreen, 2013). However, for policymakers, economic demand shifts and downsized manufacturing signaled a need for postsecondary education in future employment (Cherry Report, 2004).

**A Disparate Return to College Preparation**

Perhaps unsurprisingly in a results-oriented world, policymakers modeled MMC preparation on average university requirements for accepted students. Mapping backward, high school curriculum sequencing was developed to align with current entry-level postsecondary requirements. The implication: that if one satisfies current requirements; one may be guaranteed entry to college, and ultimately an opportunity for academic and economic success. Yet, research shows college preparation does not innately imply a college-ready skill set (Attewell & Domina, 2008; Alexander & Pallas, 1984).

**Declining returns to curricular rigor.** Over time, researchers have found as more students take rigorous coursework, academic gains per course decrease. Examining large-scale

data sets of course content, Dougherty et al. (2006) find students learn less, on average. "As a curriculum is upgraded, 'the level of content mastery by the median student receiving credit for a course with a given title declines over time' (p. 4 as cited in Attewell & Domina, 2008, p. 56). Dougherty et al. (2006) attribute results to systematic variations in course content.

Similarly, Attewell and Domina (2008) find evidence of inconsistent performance mastery requirements within rigorous high school courses. In an examination of curricular intensity on achievement scores and college entry, they find students' achievement within courses was, in many cases, not demonstrated on achievement tests (Attewell & Domina, 2008). This disconnect was even greater for low income and minority students (Attewell & Domina, 2008).

Two decades earlier, Alexander and Pallas (1984) report the same; as courses became more common, returns to course completion decreased. Examining the New Basics, a curricular reform spurred by *A Nation at Risk (*which increased academic requirements), students' SAT performance did not significantly improve (Alexander & Pallas, 1984). As the general mass enrolled in elite courses and increased the rigor of their work insignificant changes manifested in demonstrated learning (Alexander & Pallas, 1984).

Studies suggest students' skill set may not intuitively relate to coursework preparation. Furthermore, particular groups may be less likely to experience returns to curricular rigor. Both Dougherty et al. (2006) and Attewell and Domina (2008) find significant differences for minority and low-income students.

**College-prep credentialism.** Together, findings support a credentialist framework[4] in which, "upgrading high school students' curricula will lead to course credit inflation rather than real skill improvement" (Attewell & Domina, 2008). Coursework efforts stand not as an attempt

to become a better employee, citizen, or scholar but rather an entré to a better position in work and society (Brown, 2001). Thus, students' engagement in coursework is an exercise in the required motions for degree completion, social, and economic capital.

Research finds rigorous college preparatory curriculum may not translate to academic readiness, particularly for those low income and minority students (Alexander & Pallas, 1984; Attewell & Domina, 2008; Dougherty et al., 2006). Rather than an inverse relationship in which academic rigor and achievement disparity are reconciled, results suggest a complex formation of achievement in which students' expectation and academic boundaries are expanded and yet, hierarchies of achievement and opportunity gaps remain. In a zero-sum scenario, in which academic prowess is judged both by mastery and novelty, leveling the curricular playing field resulted in little change in academic success.

Yet principals, working within a post-accountability era, may place academic success for all students at the forefront of educational agendas. Through high stakes Michigan Merit Examination (MME) testing and regulative adequate yearly progress (AYP) policies, curricular reform requires successful execution. Schools, as institutions, are subject to many of the same politics as other publically funded organizations, often with complex financial systems. The MMC, a policy school leaders must confront daily, suggests an economic theory of action in which administrators and, therefore, high schools, may respond in systematic ways. As acting school leaders, principals must navigate public and private interest groups, comply with state and federal mandates, and produce increased academic achievement in any given year. Perhaps operating within a new institutionalism (Meyer, 2008), they must confront and assess outside pressures from school violence, to natural disaster preparation, to economic recession; all while maintaining academic success.

**Enacting MMC Requirements in Varied Local Contexts**

School context contributes to administrator sense-making, priorities, and decision-making (Spillane, 2004). MMC policymakers passed legislation mandating high school curriculum aligned with its requirements, envisioning consistency across districts and schools. Michigan high schools would offer MMC courses, similar in content covered and skills required for mastery (MDE, 2008). Administrators' common understandings and high schools' common requirements imperatively hinge upon common implementation.

**Local response to state policy.** Often, policymakers—in an effort to meet stakeholder interests or perhaps to placate the public—allow latitude in local policy implementation (Spillane, Reiser, and Reimer, 2002). Varied responses to a common policy may fragment implementation and confuse any measurements of compliance (Spillane, Reiser, and Reimer, 2002). Assumptions of relatively homogenous reform implementation are often imperfect.

> The divided character of education governance…[has] encouraged considerable diversity in local responses to higher level policy…particularly worth stressing because most commentators seem to assume that the more state and federal policy there is, the more uniform local schools will be. (Cohen, 1982, p. 494).

In fact, Obenauf and Judy (2011) find differences in changes to scheduling (such as, semester, trimester or double doses of curriculum[3]) and curricular rigor. A Michigan science teacher discussed her curriculum and assessments:

> It has been an interesting progression…we have…had to pepper the way with weights that everybody can get…we've gotta have notebooks, and notebook checks, and that sort of thing. Because there are some kids that are required to take this class…We have a handful of kids—I don't think very many—who are not capable of doing chemistry. So,

> we have got to pepper the way with something that they can do, so they can grab it and pass. (Obenauf & Judy, 2011, p. 3).

Changes in courses, scheduling, and remediation plans may depend on community and student demands.

**Maintaining Academic Success: Accommodating Student Needs**

Principals may change organizational aspects of the school to accommodate a larger population of learners within specific courses. Incorporating MMC requirements, additional academic demands surfaced during implementation efforts including,

1. Increased opportunity for credit recovery
2. Differentiating rigorous courses to reach all students

Pitner (1988) finds evidence of principal leadership impacts on both school organization and student achievement. Practically, Michigan principals may react in a variety of ways to enact MMC coursework. They may choose to implement a trimester system of course taking to provide multiple opportunities for course remediation. Additionally, they may track students within courses to accommodate multiple academic levels of preparation. Figure 1 illustrates two possible demands arising from the MMC and potential responses.

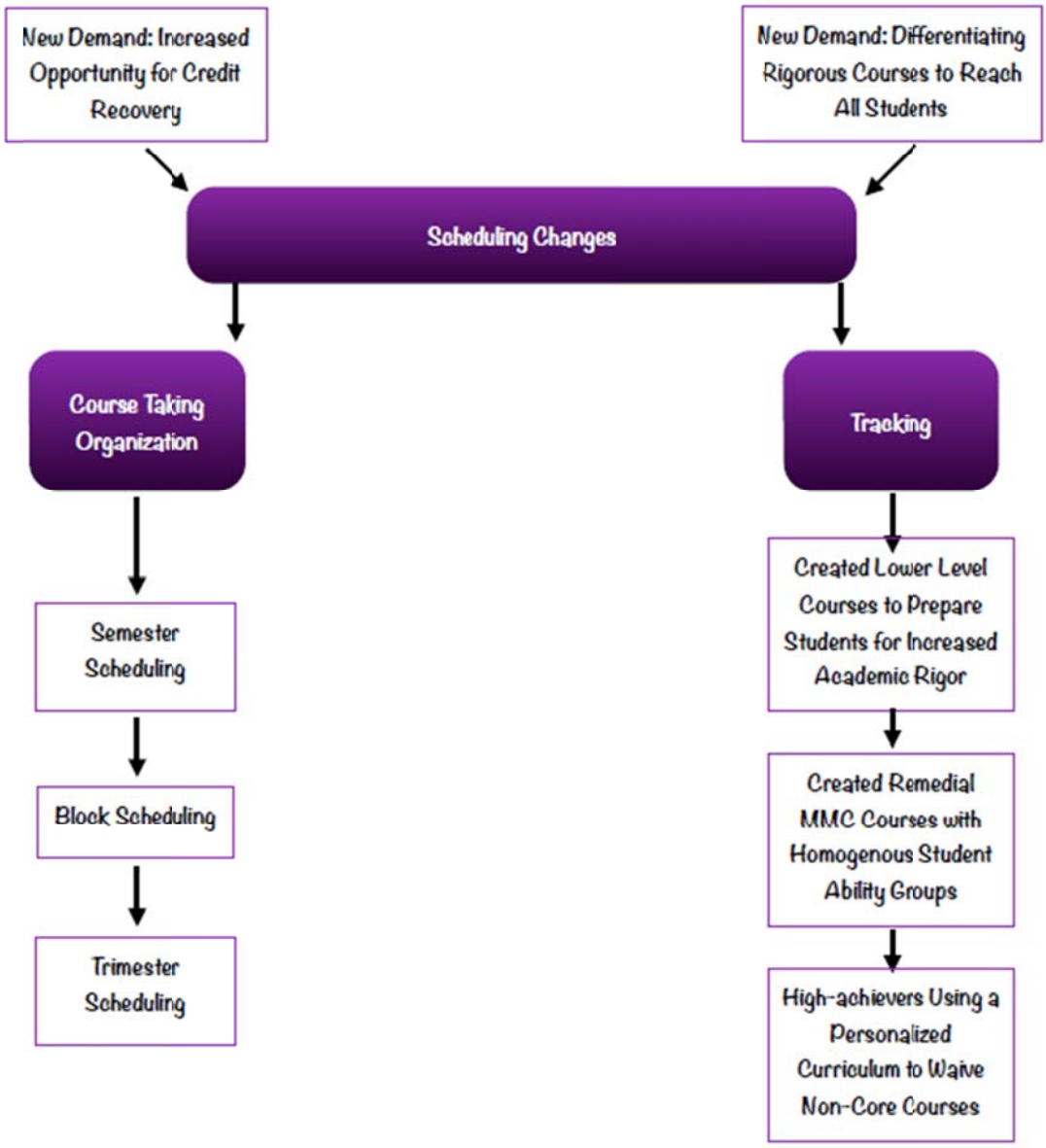


*Figure 1.* Observed structural responses to the MMC. This figure illustrates potential scheduling changes in response to new MMC demands.

Varied implementation and student supports suggest students' educational needs may differ. Though the MMC requires all students to take and pass rigorous coursework, students' basic academic skills and preparation has become problematic for many schools. As a rural Michigan mathematics teacher described:

> [Pre-algebra]…was for any [entering] low achieving [student] who came into high school… we put them in that class to build their skills, so they would be more successful. But we couldn't count it towards…their four years of math…They have to get it in 8th grade now, and if they're low achieving when they come into high school, now we have to do summer school, or a lot of tutoring, or other things. (Mathematics teacher, personal communication, November 30, 2010).

Yet, constrained by MMC sequence requirements, this rural Michigan school discontinued differentiating courses for entering freshman students.

Grounded in a strong literature that students' intelligence is malleable, developmental, and dependent upon expectations (Oakes, Wells, & Jones, 1997), the MMC sets a high academic bar. "By setting high curricular standards we are messaging to students that 'we respect you and believe that you can learn'" (Ravitch, 1992, p. 26). However, relying on high standards alone neglects the potential (and well researched) challenges faced by disadvantaged students (Oakes, Wells & Jones, 1997). Principals, acknowledging students' varied educational needs, may seek to differentiate academic demands through varied course scheduling options.

**Block scheduling: High praise with high costs.** Block scheduling, a touted organizational reform in schools, provides students with longer blocks of instructional time (Lare, Jablonski, & Salvaterra, 2002). A typical block schedule segments students' learning into four 90-minute classes per day, rather than seven traditional 50-minute class periods (Queen, 2000). This 4X4 block schedule may be modified, rotating 90 minute courses every other day, or interspersing longer block courses with shorter 45 minute class periods (Queen, 2000). Overall, block scheduling entails longer periods of instructional time with a similar number of

students per course, allowing for greater teacher student interaction and optimally, "[students'] far greater immersion in each subject" (Queen, 2000, p. 216).

Beginning in the late 1980's, research motivated reform suggesting longer instructional time blocks would enable "in-depth teaching, learning, and critical thinking" (Lare, Jablonski, Salvaterra, 2002). Longer time blocks coincided with longer teacher planning periods. According to Mike Rettig, a School Scheduling Associate, teachers teach less and plan more in a block schedule (as compared to a seven period schedule), with a gain in planning time of eleven percentage points (Yount, 2010).

Research on block schedule efficacy is mixed with some finding significant positive effects on student achievement (Deuel, 1999; Voelkl, 1995; Staunton, 1997) while others find negative impacts (Lawrence & McPherson, 2000). Others have questioned its direct impact on student achievement at all (Queen, 2000). Regardless, many schools continue to implement block schedules, often at a higher cost.

Block scheduling increases costs for a variety of reasons. Given that teachers teach less and plan more, schools are often required to hire more teachers (Lare, Jablonski, & Salvaterra, 2002). Furthermore, schools may choose to offer more courses with block schedules, providing students with more course choice (Lare, Jablonski, & Salvaterra, 2002). In three Kansas school districts, the Great Recession prompted districts to question the cost-benefit of block scheduling. The state of Kansas audited Derby, a Kansas school district, and found it could both eliminate ten teaching jobs and save an estimated $619, 000 by using a semester system. Derby could have increased cost savings by an additional $209, 000 by cutting student course choices and four more teaching positions (Yount, 2010). However, Derby educators named flexibility and concerns to meet students' and family demands as reasons to maintain block scheduling. Kansas

Association of School Board Lobbyist, Mark Tallman, said, "Our concern is we may spend less and get less" (Yount, 2010). Though in a tide of financial uncertainty, maintaining educational achievement and outcomes weighed heavily on schooling decisions.

**Trimesters and the magic of course scheduling.** For some, changing to a trimester system may both maintain elective offerings and incorporate increased course load. Trimester high schools could increase time spent within each class period (i.e. lengthening each period from 55 to 68 minutes) allowing students to take a year-long course in two, rather than three, trimesters. Essentially, students could have the potential to complete annual requirements in two-thirds of a school year. This flexibility allows students to take electives or any necessary course remediation during their third trimester.

Trimester "magic" depends upon Michigan seat time requirements. Traditionally, in a semester system, courses have about 9, 900 minutes of instructional time. Whereas, trimester systems—in which one course is covered in two trimesters—decrease instructional time to roughly 8, 600 minutes. In a 55 minute class period, this might mean students are losing anywhere between 20 to 23 days of instruction. However, trimester benefits include schedules that originally allowed for twelve open courses, to accommodate fifteen. Table 1 and 2 consider an example schedule of a student in their junior year on semesters versus trimesters.

Table 1

*Semester Schedule*

| Hour | Semester 1 | Semester 2 |
|---|---|---|
| First | Band | Band |
| Second | Algebra II | Algebra II |
| Third | English 11 | English 11 |
| Fourth | Chemistry | Chemistry |
| Fifth | World History | World History |
| Sixth | Spanish 1A | Spanish 1B |

Table 2

*Trimester Schedule*

| Hour | Trimester 1 | Trimester 2 | Trimester 3 |
|---|---|---|---|
| First | Band | Band | Band |
| Second | Art | Algebra II (Pt. A) | Algebra II (Pt. B) |
| Third | English 11 (Pt. A) | English 11 (Pt. B) | Spanish 1B |
| Fourth | Chemistry (Pt. A) | Chemistry (Pt. B) | Drama |
| Fifth | World History (Pt. A) | Spanish 1A | World History (Pt. B) |

While course offerings may be fewer, depending on the time allotted for each period, these two examples illustrate the additional courses possible in a trimester schedule.

**Educational Considerations within Financial Constraints**

Educational decisions may undertake cost-benefit exercises in which both financial costs and academic gains are assessed. This study asserts a theory of action in which principals' decisions—such as what course schedule to implement—are subject to concerns for both cost and educational impact. Figure 2 depicts a theoretical school, with a given budget constraint, considering one of three scheduling options, block, trimester, or semester scheduling. These figures represent an optimal theoretical environment in which decision makers consider all possible alternatives. In reality, principals cannot possibly have perfect information on educational costs or predicted revenue. However, figures provide a framework to illustrate principals' decision making given various economic or political pressures.

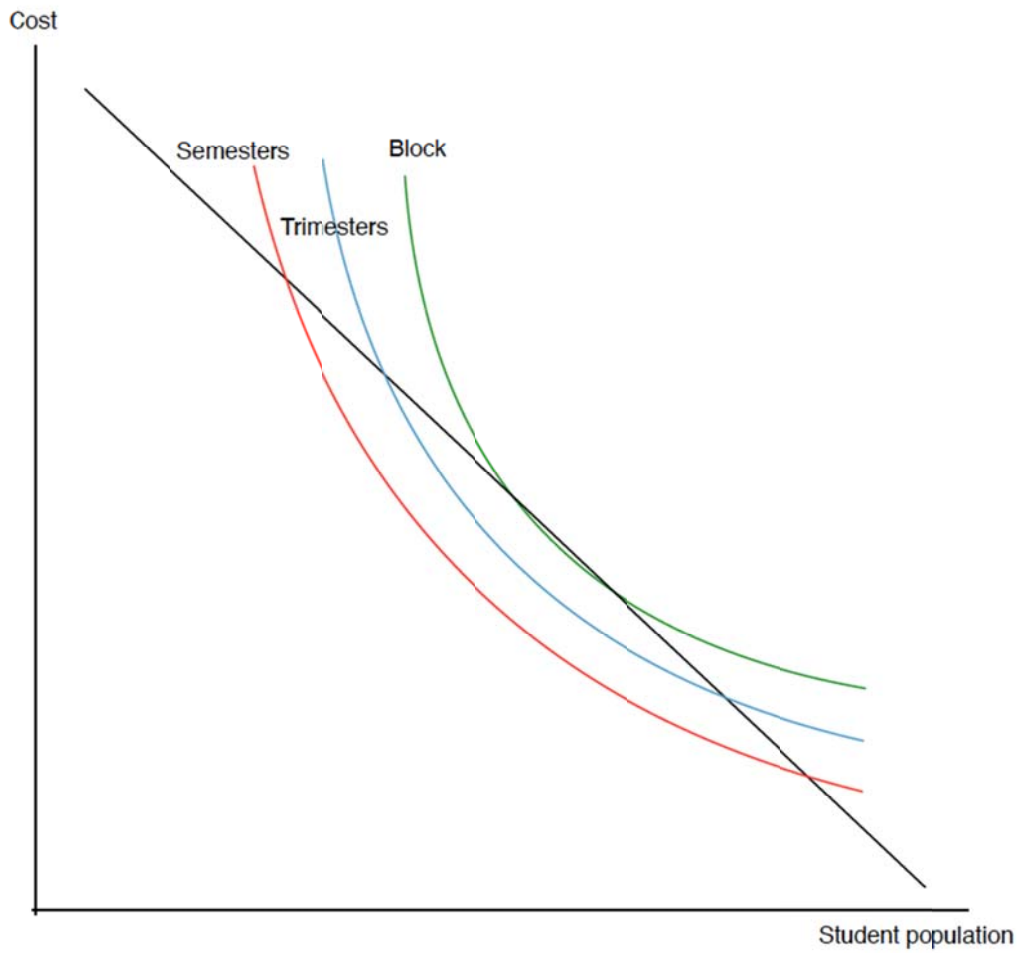


*Figure 2.* High school scheduling alternatives and cost: Examining school budget constraints. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint.

In Figure 2, I examine the interaction between cost on the vertical y-axis and school population on the horizontal x-axis. The principal in school A has a given budget constraint, depicted as a solid black line. As one moves down the constraint, for any given point, student population grows and educational cost per unit declines. Three scheduling preferences are imposed upon the budget constraint: semester, trimester, and block. These preference curves intersect school A's constraint at varying points and indicate the given cost for each scheduling option. For example, block scheduling is the most costly of all scheduling options and therefore

requires the most student population within school A. Student population fluctuation is important for school A, because like all Michigan high schools, it receives educational funding on a per pupil foundation base; a varying amount—depending on school district—provided for each Michigan student. Therefore, Figure 2 indicates block scheduling is most costly, semester scheduling is least costly, and depending on student population, school A's principal may or may not be able to afford all scheduling preference curves.

**Educators as street level bureaucrats.** School context shapes reform while its educators shape enactment (Lipsky, 1980). Principals sense-make and interpret reforms within their own unique gestalt; creating an understanding based both on policy and preconceived notions of life, work, and society. "Individuals must use their prior knowledge and experience to notice, make sense of, interpret, and react to incoming stimuli—all the while actively constructing meaning from their interactions with the environment, of which policy is a part" (Spillane, Reiser, and Reimer, 2002). Policy implementation and reaction is an iterative process in which principals enact, react, and revise policy regularly—within existing educational organizational boundaries.

Existing education research examines the relationship between financial context and educational leadership decision making (Hallinan, 1996). In South Bend, Indiana, school board members and the superintendent respond to a large budget deficit by passing contentious cuts across school curriculum, personnel, and operations (Hallinan, 1996). Hallinan (1996) suggests, "Since budgetary limitations constrain most educational decisions, it is important for researchers to relate the findings and recommendations of studies to school finances" (p. 132). According to Hallinan (1996), educational leadership must reconcile policy demands with existing financial and social constraints, therefore while educational leaders may not be institutionally driven,

resources relate to systematic behaviors and decision making.

**Balancing state requirements and community demands.** Identifying both educational and financial boundaries, principals may use course schedule organization to meet varied student learner and community demands. Diverging from a high school tradition that caters to students' interests and desires (Powell, Farrar, & Cohen, 1985), the MMC conceptualizes high school curriculum as a vehicle to transform students' ability. Increasingly prescriptive curricular requirements may decrease high school elective opportunities, potentially alienating students and families. However, in a school of choice state, where students and parents can and do vote with their feet (Hirschman, 1970)—leaving one district or school for another—administrators may attempt to balance student demands with necessary requirements.

**Elasticity Constraints with Tightening Curricular Policy**

Figure 3 illustrates prescriptive curricular policy impacts on school finance and potential course-taking offerings. After MMC implementation, school budget constraints become more rigid due to decreased flexibility in student course-taking, schools' course offerings, and teacher employment. Figure 3 illustrates increased inelasticity and the resulting preference loss.

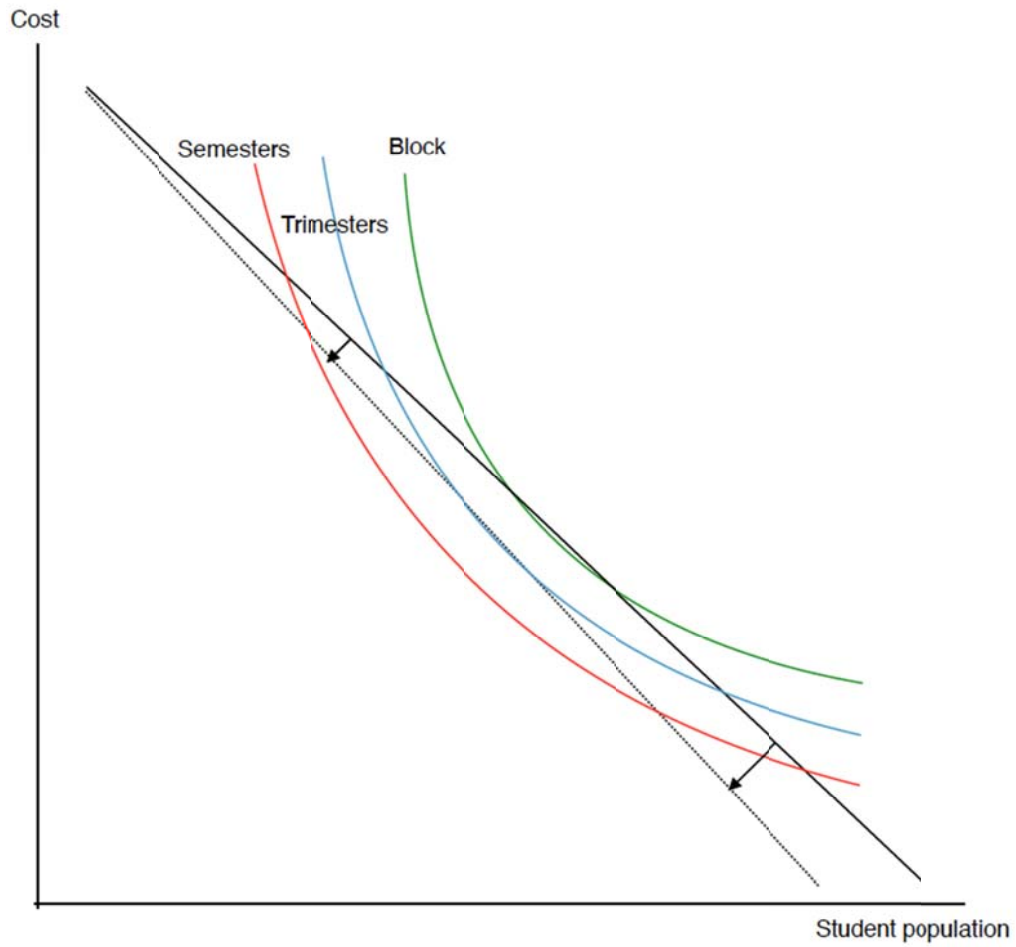


*Figure 3.* High school scheduling alternatives and cost: Examining school budget constraints. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation.

In Figure 3, a steeper dashed line illustrates a more inelastic budget constraint for school A. Whereas prior to 2006, school A's principal could afford any three scheduling alternatives, after MMC implementation and increased course taking rigidity, block scheduling no longer intersects the budget constraint. Therefore, regardless of student population increases, school A's principal cannot afford block scheduling. This theoretical theory of action suggests

Michigan principals in varying school and economic contexts, facing a similar scenario, may uniquely react to reform.

**Observing educational reform.** Reform enactment may not be obvious within a given school (Weick, 1976; Meyer & Rowan, 1978). This may be an overt attempt to thwart reform or an inability to respond appropriately. "Sense-making is not a simple decoding of the policy message; in general, the process of comprehension is an active process of interpretation that draws on the individual's rich knowledge base of understandings, beliefs, and attitudes" (Spillane, Reiser, and Reimer, 2002, p. 391). Principals and teachers, as sense-makers, may diverge from original policy aims unintentionally and without understanding they have done so.

Alternatively, principals and teachers may purposely ignore or subvert policy. Literature examining individual agency find individuals implement policies aligning with their own beliefs and interests more often (Spillane, Reiser, and Reimer, 2002). In interviews conducted by Obenauf and Judy (2011), Michigan teachers report little to no curricular interference from administrators, provided student test scores met expectations. Rather, administrators loosely coupled policy and enactment, mandating MMC coursework while neglecting to enforce content coverage. One Michigan chemistry teacher remarked, "So I try to make it so everybody can pass…is it the same kind of chemistry? I don't know, but it's a way to deal with the mixed classroom like that, where you have high and low ability levels" (Obenauf & Judy, 2011). However, Obenauf and Judy (2011) find that when mitigated by an accountability-based reform—No Child Left Behind—motivations to meet adequate yearly progress trumped symbolic enactment tendencies, leading to increased involvement in covered course content.

**Setting a Floor on Achievement: No Child Left Behind**

Principals balance educational costs and preferences to maximize student achievement. In 2001, the federal government passed NCLB, imposing a minimum student achievement within a school each year, or AYP. The NCLB policy simultaneously created a floor on schooling costs, increasing teacher certification regulation, student learning, and leveraging potential sanctions for those schools that did not meet AYP expectations. Depending on school context—number of student subgroups within AYP purview, incoming students' academic achievement, schools' previous academic performance, and previous academic performance of other schools statewide—the minimum cost of NCLB policy varies. Figure 4 depicts NCLB constraints on educational cost.

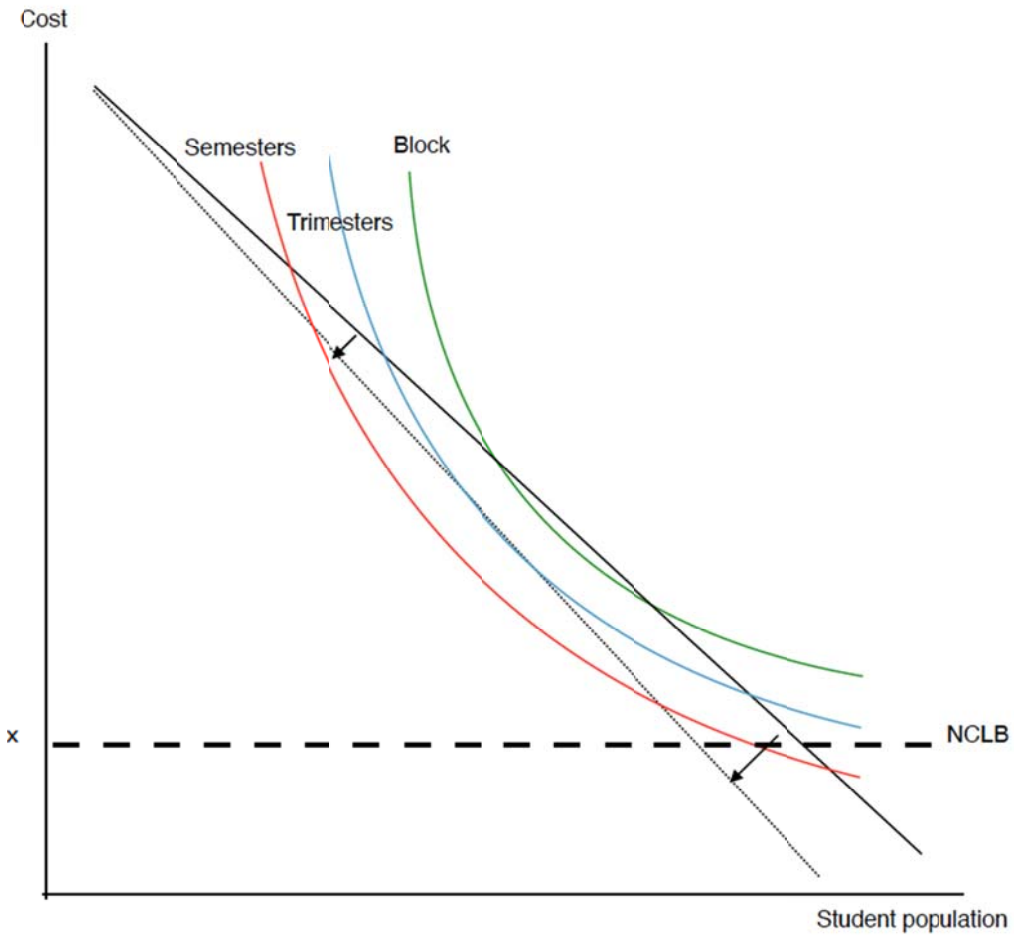


*Figure 4*. High school scheduling alternatives and cost: Examining school budget constraints and school of choice. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint. The small dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

In Figure 4, NCLB imposes a floor on educational cost, as denoted by the transverse dashed line. The principal in school A can no longer choose any given point along their budget constraint below the NCLB price floor. For he/she, this means additional increases in student population are somewhat less relevant given that educational cost can go no lower than a fixed amount, *x*. Thus, student population's diminishing return to cost savings falls to 0 at the point in

which school A's budget constraint intersects with the NCLB price floor. Depending on accountability costs, school finances, and educational preferences, educators may be more or less responsive to reform. These responses may manifest through the organization, its structure and composition, or individually through curriculum and instruction.

**Defining success.** NCLB stands as an example of a nationwide policy directed at local schools. In 2001, policymakers acted to ensure students were learning while attending school. While acknowledging existing disparities in academic preparation and achievement, policymakers passed a mandate that all students would increase achievement each year they spent in school. Every child mattered; their learning of national interest.

## Accepting Centralized Decisions on Knowledge Worth Knowing

In a similar effort, Michigan policymakers writing the MMC sought to influence student outcomes through redefining student learning in the form of a united sequence of courses. Using long-standing definitions of academic core materials, a state elected majority of legislators identified courses all students should complete before graduating high school. Courses identified were important, all others were periphery. However, definitions of success and educational relevance may not garner communal support.

**Reform opposition: The argument to keep it local.** In one northern Michigan community, the idea of a centralized state curriculum dictating children's pursuit of knowledge raises concern. "They regard [the state] as an 'outside' agency, one that they see at odds with life's demands (Cusick, 2009, p. 18). The MMC, and its vision of postsecondary attendance for all students, compromises—through the threat of dissolving close-knit family networks—some individuals' ability to pass on their cultural capital (Cusick, 2009). Similar to the industrial revolution, where "traditional life was not only in decline, but even when it remained stable, it

was no longer deemed sufficient to initiate the young into a complex and technological world" (Kliebard, 1986), the new millennium elevated expectations for college-going, brought forth real concerns for economic stability, and ushered in an awareness of global players and their impact on stateside business and labor opportunities. While the majority of Michiganders may accept centralized reforms, majority judgment on worthwhile knowledge impacts peripheral groups.

**Expanding authority, defining coursework.** In 2010, a close-knit group of academics, researchers, and policymakers took on another curricular reform, the Common Core. Motivated by disappointing international comparisons of academic performance, and inconsistent educational standards across districts and states, policymakers sought to create a logical sequence of knowledge and standards for all students in kindergarten through twelfth grade (Common Core State Standards, 2014). Using standards that built upon one another, the group attempted to create a linear understanding of English language arts and mathematics. Theoretically, students could discontinue coursework in one school and resume in another without significant gaps in learning or content and regardless of state or district. This fluidity, they believed, would bring both better consistency within mobile students' educational experience, and greater coherence in academic knowledge within United States' citizens.

Concerns over majority interest misrepresenting invested groups or stakeholders has captured recent media and political attention regarding Common Core State Standards. Louisiana Governor, Bobby Jindal voiced concerns for individualism and privacy. "What we do not support is federal, one-size-fits all testing that potentially breaches student privacy" (Sentell, 2014). Jindal also questioned the national standards saliency for his state. "We need Louisiana standards, not Washington, D.C. standards" (Sentell, 2013). Jindal is not the only policymaker questioning nation-directed education attempts; several states pulled Common Core State

Standards in 2014. Thus, efforts to centralize a historically and deliberately fragmented educational system may be muddied by educational traditions and ideologies.

**The Movement Toward Alternative Schooling: Virtual High School**

Principals, implicitly seeing a need to meet varying student and community needs while increasing coursework obligations may look toward more affordable and customizable options. Virtual high schools provide a vast array of course taking options at a low cost. Figure 5 illustrates school preferences for online course taking. Although school A's principal must continue to provide MMC courses for all students, it may save money by moving to online course taking.

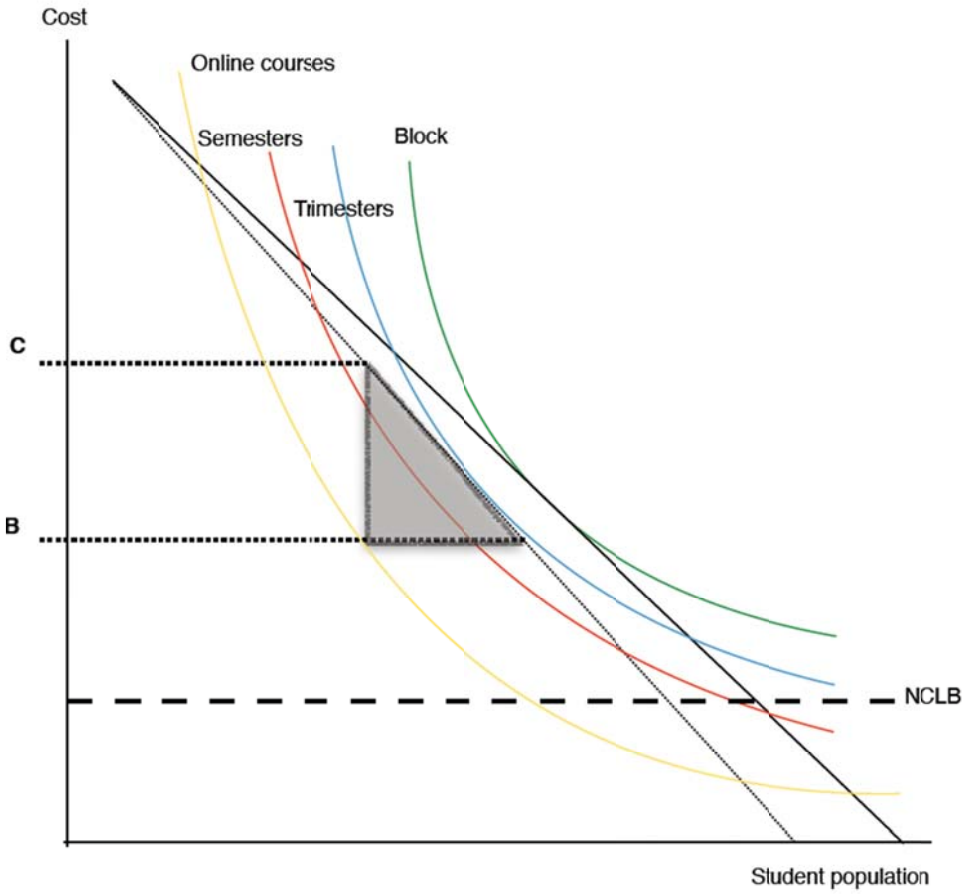


*Figure 5.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints and school of choice. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 5 imposes an additional preference line, online course taking. Theoretically, school A's principal could offer online course taking at cost *B*, or semester course taking at cost *C*. Along the y-axis, cost *C* is greater than cost *B*, or semester scheduling is more costly than online course taking. A shaded triangle represents cost savings associated with online courses. However, practically the MDE requires Michigan high schools to offer face-to-face courses; only

25 percent of a district's students (in grades 6-12) may take 100 percent of their courses online (MDE, 2014a). Therefore, the principal may supplement with online courses, while providing another course taking option. This means school A's actualized cost savings will materialize into a portion of the illustrated shaded triangle.

**Per Pupil Expenditures and Economies of Scale**

Michigan principals, ultimately serving their students in attendance, are both tethered to state requirements and per pupil funding. Educational policies, interacting with existing state requirements are implemented within existing school budget constraints. In 1994, the Michigan school of choice policy enabled school districts to take students (and their per pupil grant) residing outside district boundaries. This opportunity created a potential for increased volatility within student population growth and educational funding.

**School of choice and the MMC: The impact of funding on curricular policy.** Michigan's school of choice policy allows students to enter and exit school districts more easily, with little to no individual financial cost (Arsen, Plank, & Sykes, 1999). However, loss of students may cause significant costs to home districts (Arsen, Plank, & Sykes, 1999). Costs relate to both pecuniary and non-pecuniary losses. Students transferring to another district move with their per pupil foundation grant. Furthermore, Bryk & Schneider (2003) find school stability relates to collaborations between parents and educators and the ability to sustain effective school reform. Together, I suggest a theory of action in which school of choice and the MMC combine to create greater variability in principals' ability to enact curricular policy. Shifts in cost, along a less elastic budget constraint, are further exacerbated. As students leave, school A loses its ability to offer trimester scheduling. And, while the principal may choose to provide virtual course opportunities, online courses must fall above NCLB accountability

minimums. However, for principals in schools gaining students, increased educational budgets allow more choice in course structure. In Figure 6 and 7, I examine consequences of both increases and decreases in student population.

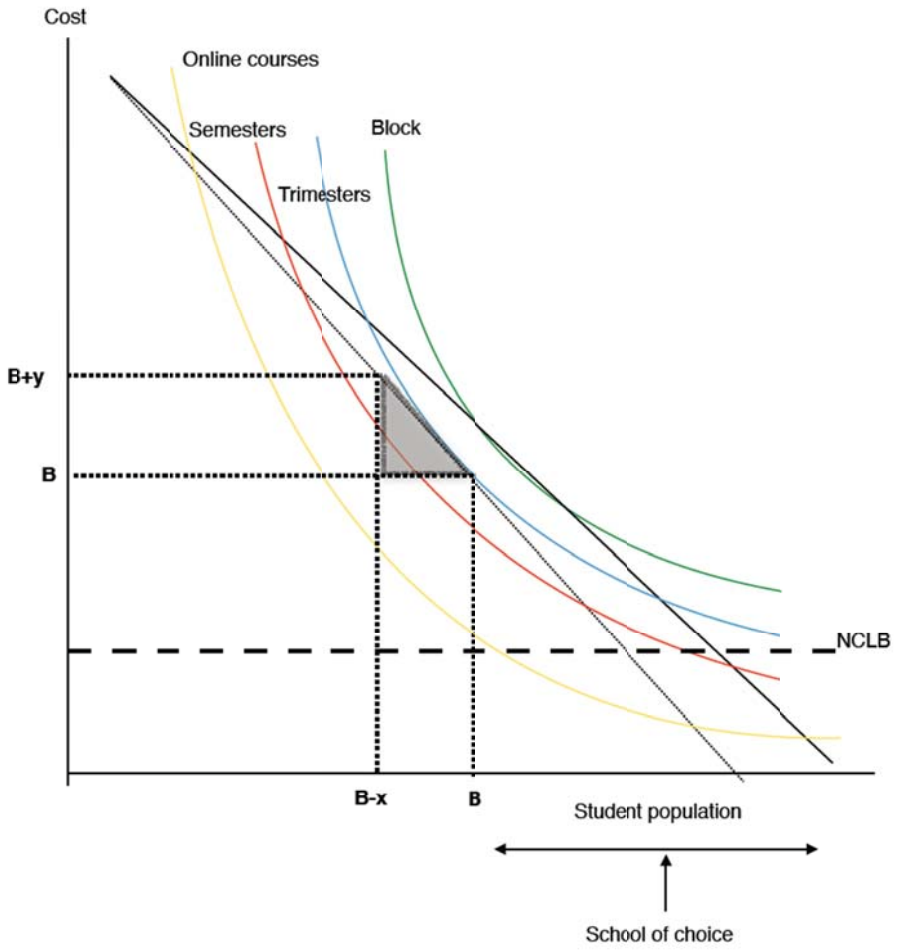


*Figure 6.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints and school of choice induced population decreases. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

In Figure 6, school of choice enters into and contributes to changes in school A's student population as illustrated beneath the x-axis. School A's principal, with a student population of *B*, may choose trimester scheduling at a cost of *B*. Imposing school of choice effects, figure 6 depicts theoretical consequences for students leaving for other school districts. With a student population decrease of *x*, school A's principal must pay more to provide semester scheduling, at a price of $B+y$. The shaded triangle represents both student loss and cost increases. As school A's student population decreases, one must pay significantly more to provide educational services.

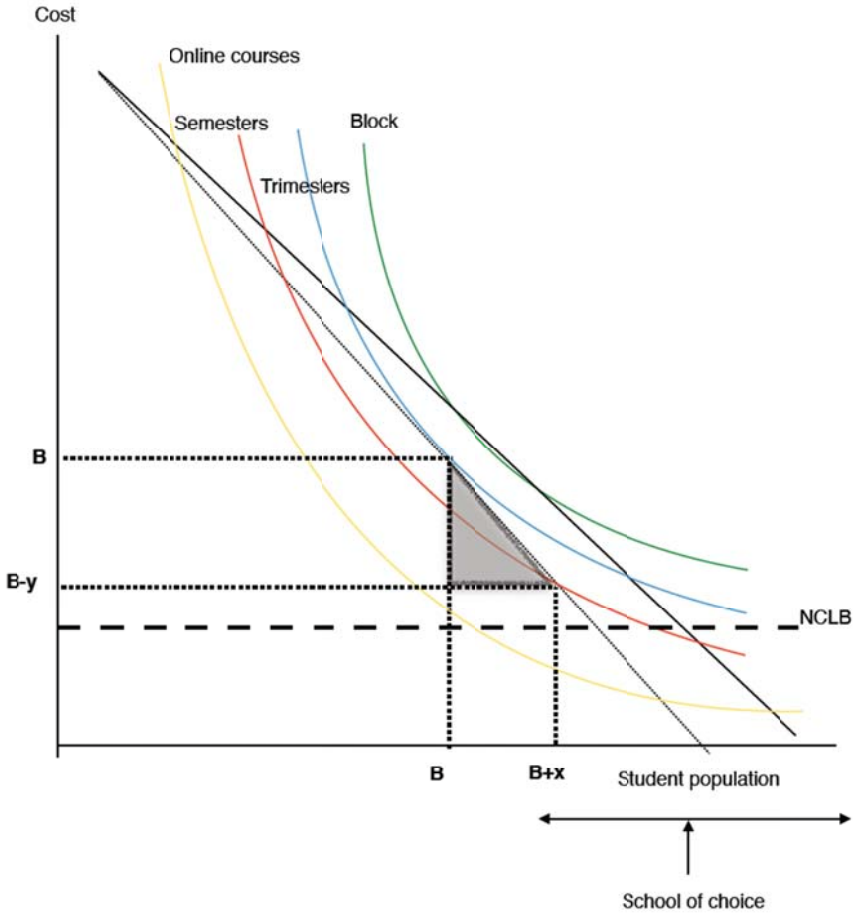


*Figure 7.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints and school of choice induced population increases. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 7 again shows school of choice exerting influence on student population for school A, as represented underneath the horizontal axis. Where before school A experienced a decrease in student population, in this scenario school A experiences an increase, denoted by *B+x*. School A's principal or district may have changed their policy regarding the number of

school of choice students they allow or they may have been able to attract more neighboring district students. In either case, the influx of students allows this principal to choose semester scheduling at a cost of *B-y*, or continue to provide trimester scheduling at a cost of *B.* The actualized savings is represented by the shaded gray triangle between school A's both prior and updated student population and educational costs.

**Financial Uncertainty: Educational Policy Within a Recession**

Interdependencies in school funding and educational services may heavily influence educational policy enactment. In Michigan, a state in which per-capita income began declining in 2003, concerns over per-pupil funding were salient. Research has identified financial impacts on schooling outcomes. Baker and Green (2008) find an inverse relationship between educational costs and school size; as schools become smaller, costs grow.

School context shapes educational costs incurred. Duncombe and Yinger (2008) find quality schooling relies on "(1) differences in the compensation needed to attract schools personnel, (2) differences in enrollment size, and (3) differences in the concentration of disadvantaged students or those with special education needs" (p. 250). Principal or district responses to additional costs may include privatizing non-academic services or sharing resources, such as elective opportunities, with neighboring districts. However, responses must fall within accountability and curricular policy priorities.

Michigan's early financial decline meant further struggle with the onset of the Great Recession (RSF, n.d.) in 2009. With another decline in per-capita income, state revenues fell (Covay-Minor, Saw, Frank, Schneider, Obenauf, 2014). From 2008 to 2013, the elementary and secondary education fund decreased 2.30 percentage points amounting to a 7.8 percent decline in general fund appropriations (Sigritz, Cummings, Husch, & Mazer, 2009). External and major,

Michigan's economic transition may have had significant repercussions on localized institutions and their ability to robustly respond to additional education policy. Contentions between curricular reform, accountability mandates, school of choice options, and economic fragility are illustrated in Figure 8.

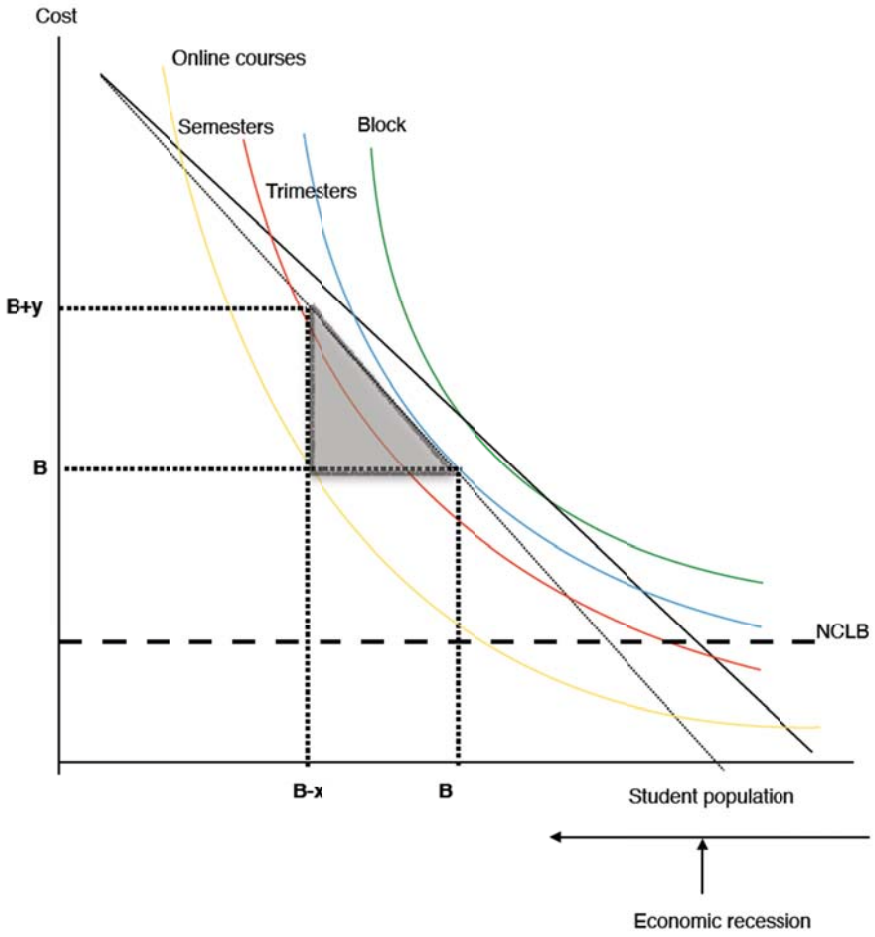


*Figure 8.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints and school of choice. This figure depicts a school budget constraint and potential scheduling options available. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Under the x-axis in Figure 8, retreating arrows indicate both the statewide and nationwide recessions decreasing student population. While in Figure 7, school of choice effects allowed population movement in either direction, exogenous recession impacts decrease student population in schools statewide. School A's principal, who could previously afford trimester scheduling at population *B* for cost *B*, experiences a decline in student enrollment, denoted by *x*. New enrollment figures, move principal decision-making up the budget constraint to a point where he/she may no longer provide trimester scheduling, and must pay a higher cost per unit, *B+y*, for semester courses. The shaded gray triangle represents the cost per unit increases school A incurs post-recession. School A's principal may engage in competitive marketing to recruit additional school of choice students, and therefore per pupil funds. Hence, there may be variability across schools in districts in the amount of expense schools absorb due to recessionary impacts.

**Equitable funding with inequitable advantage: School of choice impacts on curricular reform.** As shown in Figure 6 and 7, principals in schools with increasing or steady student populations had greater access to scheduling preferences. Course organization and principals' ability to respond to credit recovery and instructional differentiation may matter to both students and educators. Theoretical implications suggest schools with less educational funding have less flexibility to organizationally respond to curricular reform. Pressures to increase student population may prompt competing incentives to attract students, such as additional elective opportunities. In fact, Arsen, Plank, and Sykes (1999) find schools competitively marketed educational services to students and parents. Examples of marketing included, beginning a community college based career technical education program, middle school honors programs, and aligning district curriculum to state standards (Arsen, Plank, &

Sykes, 1999). Thus, school context both shapes educators' enactment of reform and prioritization of reform as it competes and interacts with existing educational frameworks.

**Intersecting reform, accountability, choice, and finance: A perfect storm.** Together, theoretical complexities suggest a more detailed analysis of principals' decision-making and leadership. In Figure 8, the interaction between policy and economic externalities suggest recession-driven budget cuts impact all schools. The degree of impact and principals' ability to respond depend upon aforementioned variables including curricular reform impacts, accountability demands, school of choice consequences, and school context. Therefore, both in a perceived and fiscal way, context shapes the reality of principals and the schools in which they lead. As rational decision makers, principals' actions may be based upon a myriad of factors and dependent on their budget constraint.

***Principal sense-making.*** Contentions between majority versus minority, nation versus state, and state versus community, principals grapple with the democratic structures that frame our educational system. The school context—its community, students, and teachers—shape questions brought forth. In a place where individual beliefs and behaviors deterministically align with the existing social norms and mores within a school (Meyer, 2008), context defines policy realities. Research shows principals tailor instructional leadership toward the school community they belong (Hallinger, Bickman, Davis, 1995). Moreover, principal influence on schools' response to reform largely shapes teachers' and students' work environment. "Leaders can support or deflect common academic priorities" (Cohen, Raudenbush, & Loewenberg-Ball, 2003, p. 128). Mediated through principals' interpretation and implementation of reform, teachers' enactment and curricular understanding vary from school to school (Coburn & Russell, 2008).

***Individual agency.*** Teachers' likelihood to change educational practices depends both on school reform enactment and collegial reform understanding and implementation (Penuel, Riel, Krause, & Frank, 2009). "Teachers who perceived decision making as being top-down tended to resist school-wide reform efforts" (AIR, 2003 as cited in Ravitch, 2010, p. 57). One Michigan art teacher interviewed regarding the MMC said, "I've been teaching the same way, you get to a certain point, and you just say mmm…no" (Obenauf & Judy, personal communication, February 2011). In fact, Frank et al. (forthcoming) find individual agency to have significant impacts on reform implementation. Building upon long-standing ideas of schooling and teaching—its purpose and reach—educators' motivations and intentions may disconnect from policy aims. Given additional costs imposed by external curricular and accountability policies, principals may seek alternative solutions to new educational demands.

**Overview**

This study's theory of action attempts to trace a statewide change in education policy and potential implications for resource stricken schools in a recession-laden economy. Figures suggest as coursework is more clearly defined, as in the case of the MMC, budget inelasticity increases; in turn decreasing access to course schedule preferences. Principals may attempt to maintain course-taking flexibility by providing online courses. However, achievement focused accountability policies impose additional costs surrounding teaching and learning, effectually creating a price floor on per pupil expenditures. Schooling expenditures can be discounted with economies of scale and inter-district sharing, however, for remotely located schools—in which sharing is not practical or possible—this can be an additional disadvantage; under-resourced and outmaneuvered, adequate yearly progress rankings may seem forgone.

Thus, urbanicity shapes financial and educational opportunities. These opportunities are

further affected by school of choice, providing some districts with additional students and funding, while others are left with fewer students, less money, and less available choices along their budget constraint. Yet regardless of context, educators experienced the Great Recession of 2009 throughout schools statewide, forcing collateral of tough choices given already tightened budgets.

Education research finds educational leaders contemplate multiple factors when implementing education reform; these factors emerging from one's school and financial context (Hallinan, 1996). Outside financial considerations, making sense of educational reforms is paramount to reform enactment within the school (Coburn, 2004; Spillane et al., 2002; Spillane, 2004). For communities, understandings of reform rationale sway assent (Coburn, 2004; Ravitch, 2010). For all stakeholders, policy objectives must be clear and attainable. "The consequence of mandating an unattainable goal… is to undermine states that have been doing a reasonably good job of improving their schools and to produce 'a compliance-driven regimen that recreates the very pathologies it was intended to solve'" (Hess & Finn, 2007 as cited in Ravitch, 2010, p. 103). Therefore, educational leaders likely consider education finance, make sense of education reforms, and identify community investment in reform enactment. Decision making behaviors may be driven by one or all of these considerations, and may change given the educational topic or issue. In Michigan, educators and communities attempting to recalibrate to smaller budgets and greater curricular demands, may have found reform requirements difficult to implement with fidelity.

## Framing Reform: Policy, Leadership, and Economics

This study seeks to describe and contribute to understanding the interchange between policy, context, and economic realities played out in schools. A curricular reform, the MMC

allows majority interests to more clearly define schooling and desired student outcomes. Policymakers—calling for higher rigor and standards—message to educators, students, and families that twenty-first century jobs demand greater skill and preparation.

While the MMC requires district compliance, it is unclear how compliance is measured or enforced. Officially, the MMC's focus on course-taking enables the state department of education to function in an evaluative capacity while schools work to enact the reform (Meyer & Rowan, 1977). State regulation of course completion rather than course content may allow schools to loosely couple the MMC with actual curricular changes.

Contemporaneously, state and nationwide economics undermine government budgets and many schools' financial security. Interviews with school leaders will further explore reform implementation, MMC processes, and economic interplays. Regardless of district variation, broad changes in educational entity's (i.e. the state, districts, schools and teachers) jurisdictional authority and financial circumstances may have implications for principals' implementation of curricular reform.

# CHAPTER 3—METHODS

This study, as part of a larger investigation examining the MMC, designed interview questions with an aim to better understand MMC implementation, identify key themes, and examine school leaders' perceived reality of statewide curricular reform. Interview responses may provide a depth of understanding and support quantitative work. Quantitative studies may evaluate the incidence of a particular occurrence, the number of individuals within particular groups, or relationships between specific characteristics (Weiss, 1994). Conversely, qualitative studies prioritize story telling over tabulating or causality (Abbott, 1998). They often involve "interviews that sacrifice uniformity of questioning to achieve fuller development of information" (Weiss, 1994, p. 3). As such, qualitative work may account for social phenomenon (Abbott, 1998).

## Part I: Approach

Qualitative research is situated within a larger quantitative study of the MMC, its impacts on students' high school graduation, college attendance, and course-taking patterns. Two of the school principals interviewed led schools within the Michigan Consortium for Education Research larger sample of 150 Michigan high schools. However, not all principals approached consented to participate in this research. The following sections will outline sampling methods and the process of gaining participation within high schools.

### Sampling

Previous research in education policy finds top-down policies have varying effects, depending upon implementation and context (Coburn, 2004; Frank, Penuel, Sun, Kim, & Singleton, forthcoming; Honig & Hatch, 2004). School context and leadership largely influences access to professional development and external support (Newmann, King, & Youngs, 2000).

Seeking to observe MMC policy implementation within various urbanicities, I use a theoretical sampling framework (Charmaz, 2004) and conveniently sample schools in rural, urban, and suburban settings. These four schools, with varying socioeconomic status, should represent an array of high schools experiencing the Michigan Merit Curriculum. Identifying four Michigan high schools—two within the larger MCER sampling frame—I interview Michigan high school educators, teachers, guidance counselors, and principals. Emergent themes include teacher reorganization across courses and schools, changes in students' credit recovery opportunities, and course schedule reorganization to meet increasing academic demands. Principals, educational leaders and decision makers, often preside over large scale decisions including altering course offerings and teachers' course assignments. Therefore, this work examines school leadership and organizational changes. Analysis focuses on high school principals from two rural, one suburban, and one urban high school.

**Gaining participation.** Eliciting participation in sampled schools began through introductory emails to each school principal (see Appendix A for the initial contact letter). Depending on research study protocol within districts, the approach to study participation varied. This study's orientation within a larger evaluation of the MMC evolved over time, changing schools sampled and the scale of the research request. Initially piloting MCER requests for student transcripts, schools' decisions to participate connected both to this study and the larger MCER study. Through this process, MCER contracted an independent research agency to coordinate student transcript requests. At that time, this study somewhat separated from the larger evaluation and sought to sample Michigan high schools outside the 150 high schools identified by MCER. Experiences requesting participation are detailed below. Pseudonyms

were chosen at random using an online name generator. They are used to protect high school and principal identities.

***Clayton High School.*** Dr. Grant Fletcher, of Clayton High School, agreed to participate after an initial email describing the research scope. The first school at which interviews were conducted, Dr. Fletcher was ending his second year as a principal in Clayton.

Our conversation began with introductions, an explanation of the Michigan Consortium for Education Research, and a short summary of the work examining the MMC and its effects on high school student outcomes. The MMC reform immediately interested Dr. Fletcher, who indicated the MMC was a daily concern for his students and himself (personal communication). I requested to meet with all of the department chairs, the math teachers, and the science teachers to interview them on their experiences with the MMC. Dr. Fletcher was willing to help and suggested I compensate the teachers for their effort and time. I sent thank you cards with $10 gift cards to Amazon.com for teachers who participated in the study at Clayton High School.

Table 3

*Clayton High School Interviews: Requests and Participation Rate*

| School Personnel | Interviews Requested | Interviews Completed | % |
|---|---|---|---|
| Teacher Department Chairs | 11 | 8 | 73% |
| Guidance Counselor | 2 | 2 | 100% |
| Administrator | 1 | 1 | 100% |
| Total (N=14) | 14 | 11 | 79% |

In Clayton High School, there were 11 department chairs, 2 counselors, and the principal. Of the 11 chairs, I interviewed 8. Declining department chairs represented elective classes including the art chair, the business and technology chair, and one of the co-chairs for world language. In addition to department chairs, I interviewed guidance counselors, and Dr. Fletcher. This amounted to a school wide interview participation rate of approximately 79%.

***Petronila High School.*** Given the initial goal to create a sample that included schools representing multiple areas of urbanicity, I identified Petronila, a rural Michigan high school. Contact began with an introductory letter to the principal, Mr. Michael Daniels. Four days later, with no response from Mr. Daniels, I sent a fax. Cobanoglu, Warde, and Moreo (2001) find people respond more quickly to fax than mail or email. Mr. Daniels did not respond to the fax and after thirteen days, I visited the school office. He was not available however I left my card and a message with the administrative assistant. Again with no response, five days later I called and left a voicemail introducing myself and requesting a meeting. Mr. Daniels responded and we met the following week.

A month after first contact I drove to Petronila High School, met Mr. Daniels, described MCER, and my own smaller study of the MMC. Mr. Daniels indicated interest, sought superintendent approval, and then agreed to study participation. He indicated that as an involved member of the Michigan Secondary Principals Association, he understood the political motivations involved with the MMC, and was interested in research that examined its implementation.

Table 4

*Petronila High School Interviews: Requests and Participation Rate*

| School Personnel | Interviews Requested | Interviews Completed | % |
|---|---|---|---|
| Teacher Department Chairs | 13 | 8 | 62% |
| Guidance Counselor | 3 | 2 | 67% |
| Administrator | 1 | 1 | 100% |
| Total (N=16) | 16 | 11 | 69% |

At Petronila High School I interviewed 8 out of 13 department chairs; one teacher was not technically a department chair but was heavily involved in MMC and Common Core planning. Department chairs that did not participate included foreign language chairs, the music

chair, the physical education chair, and the vocational education chair. Reasons for decline included being too busy, uninterested, or no response. Finally, I interviewed 2 of 3 counselors, and the high school principal, Mr. Daniels.

*Sampling considerations.* Throughout this process, MCER continued work examining MMC effects within schools. To clearly demarcate this smaller study from the larger consortium, the next two schools chosen were outside the larger MCER sample of 150 schools. Given school context's potential influence on curriculum implementation, I purposely sampled high schools—one in an urban community, the other from a rural setting.

***Pine Ridge High School.*** Pine Ridge High School, while rural, is somewhat smaller than Petronila. I sent Mr. Kerry Carlson an email request, introducing the study on the MMC and its impacts on Michigan high schools. Several days later, I received a school agreement to participate and began contacting educators.

Initial analysis of preceding interviews in Clayton and Petronila suggested significant changes in math and science curricular requirements impacted Michigan high schools. In order to learn more, I expanded my net of interviews to include both high school department chairs and math and science teachers.

Table 5

*Pine Ridge High School Interviews: Requests and Participation Rate*

| School Personnel | Interviews Requested | Interviews Completed | % |
|---|---|---|---|
| Teachers | 11 | 9 | 82% |
| Guidance Counselor | 1 | 1 | 100% |
| Administrator | 1 | 1 | 100% |
| Total (N=13) | 13 | 11 | 85% |

I requested interviews with 11 teachers at Pine Ridge High School. Of these teachers, 6 were department chairs, and 5 were math or science teachers. Additionally, I interviewed the

guidance counselor and the Mr. Carlson, the high school principal. Two teachers declined participation. One was out of the building on maternity leave. The other was working on her master's degree and indicated she did not have time to meet.

***Ashmore High School.*** I approached Ashmore High School, in an urban Michigan community, last. The largest of the schools within my sample, there was an established research protocol. I filled out a research request and submitted it for district approval before contacting the local high school. After study acceptance, I was introduced to the Ashmore High School principal, Mrs. Margaret Hudson, through a personal connection. She responded to my request and agreed to participate.

Table 6

*Ashmore High School Interviews: Requests and Participation Rate*

| School Personnel | Interviews Requested | Interviews Completed | % |
|---|---|---|---|
| Teachers | 16 | 10 | 63% |
| Guidance Counselor | 1 | 1 | 100% |
| Administrator | 1 | 1 | 100% |
| Total (N=13) | 18 | 12 | 67% |

Ashmore is a magnet high school specializing in math, science, and engineering. Given this focus, I purposely included engineering teachers within the swath of survey participants. Out of the 10 teachers I spoke to 3 were department chairs and the other 7 were science, math, or engineering teachers.

Table 7

*Aggregated Interview Statistics: Requests and Participation Rate*

| School Personnel | Interviews Requested | Interviews Completed | % |
|---|---|---|---|
| Teachers | 51 | 35 | 69% |
| Guidance Counselor | 7 | 6 | 86% |
| Administrator | 4 | 4 | 100% |
| Total (N=61) | 61 | 44 | 72% |

I interviewed 35 teachers, 7 guidance counselors, and 4 principals throughout the 4 high schools visited. Of the 61 interviews I requested, 44 agreed to participate, or 72% of the sample. Individual reasons for participation decline included constraints on time and disinterest in the study topic. Two schools approached for participation also declined, these cases are presented below.

***Declining participation: Orr and Neva School District.*** While working in Clayton, I approached Orr High School and Neva High School to conduct interviews. A professional acquaintance connected me to the principal at Orr High School. After being introduced to the principal through email, I scheduled a meeting in person. Luke Woods, the high school principal, indicated interest in participation. He noted the MMC was something that affected Orr High School annually, when examining graduation rates. However, uncertain regarding student transcript release, he deferred decisions to the curriculum director. A month later, Mike Chambers, the Orr School District Curriculum Director, Mr. Woods, and myself met to discuss the MCER study. MCER agreed to offer a small financial incentive for participation; however, Orr School District declined participation (see Appendix B for principal email).

Establishing contact with Donald Fields in Neva High School proved more difficult. I received no response to emails, faxes, or messages left with the main office. Once Mr. Fields did return my voicemail, he stressed his concern to place any additional strain on teachers' time; he declined to participate.

Table 8

*Soliciting High Schools: Requests and Participation Rate*

| High School | Rural | Urban | Suburban | Participation |
|---|---|---|---|---|
| Clayton | | | X | Yes |
| Petronila | X | | | Yes |
| Pine Ridge | X | | | Yes |
| Ashmore | | X | | Yes |
| Orr | X | | | No |
| Neva | | | X | No |
| Participation Rate | 66% | 100% | 50% | 67% |

***Overall participation.*** Overall, I requested access to study the MMC at six Michigan high schools. Two declined to participate. I conducted interviews with Michigan educators in four high schools representing various areas of urbanicity including suburban, rural, and urban.

**Lessons learned.** Experiences suggest there are benefits and costs to conducting research within larger reform evaluation efforts. I enjoyed the immediate cache affiliation the consortium provided, however, it also left some district leaders wary of study fatigue. Educators' time is often highly demanded and research with long-term goals may seem negligible. For all schools, minimizing educators' burden in contributing to study participation and demonstrating the study's practical significance to schools' daily demands, may aid in participation consent.

## Data Collection

Research required school agreement for participation and entrée. Agreement was documented in a letter of participation consent signed by each high school principal (see Appendix C). In one case, Ashmore High School, research protocol required submitting a research request to district officials. I followed district guidelines to gain district permission. In all other high schools, I emailed principals, and followed up by fax or phone.

**Interviews.** Interviews were conducted face to face in a private setting, to provide additional confidentiality. All participants were given consent forms, outlining the study, risks, and benefits, which they signed before interviewing began (see Appendix D). Consents are kept in a locked file cabinet in the locked MCER office in Erickson Hall. Interviews lasted an average of 30 minutes and occurred at a time and place most convenient for each respective participant. With consent, interviews were audio recorded and transcribed by a third party.

During interviews and schools visits I provided refreshments such as bagels with cream cheese, doughnuts, or cookies. After interviews, educators were sent a handwritten thank you card and in some cases (e.g. Clayton High School) a $10 amazon gift card for their participation.

**Data transcription.** All principals within this study consented to be audio recorded during interviews. Recordings were sent to a transcriptioner and shared only within the research team. Pseudonyms replaced school and individual names to protect anonymity.

**Narrowing focus.** Utilizing a grounded theory framework, data analysis informed larger themes. "A fundamental premise of grounded theory is to let the key issues emerge rather than force them into preconceived categories" (Charmaz, 2004, p. 516). I find emerging themes suggest a strong narrative for principal leadership and reform's organizational implications within schools. Therefore, this study restricts analysis to principal interviews, examining administrative sense-making and response to curricular reform. Analysis seeks to describe Michigan principals, their experiences, and their choices; it does not make causal claims. Results do not attribute causality or attempt to prove sample representativeness, rather work concentrates on administrators and what one may understand and gain from their experiences. Acknowledging in certain disciplines descriptive work is skeptically received, I ask the reader suspend judgment, as philosopher and economist Karl Popper wrote, "…such pure and untainted

sources do not exist, and…questions of origin or of purity should not be confounded with questions of validity, or of truth" (Popper, 1962, p. 25). This study examines changes in education policy and its intersection with the economic crisis and constraints on resources. In this effort, I hope to bring forth worthwhile considerations when building and implementing educational policy.

Generating questions directed toward principal leadership, choices, and reform enactment, research informed an interview protocol based on a preceding pilot study of two Michigan high schools.

**Informing the Interview Protocol**

In 2010, Obenauf and Judy conducted preliminary pilot studies in four Michigan high schools (Obenauf & Judy, 2012). They interviewed 18 teachers and several guidance counselors about MMC impacts on teacher course assignments and decision-making (Obenauf & Judy, 2012). Qualitative interviews informed survey development. Obenauf and Judy (2012) surveyed English and math teachers in two urban schools within their sample to better understand teachers' responses to the MMC.

Teacher surveys included a majority of items from previously validated surveys. We used survey items from the 1999-2000 SASS teacher questionnaire, Frank and Youngs (2009) Early Career Teacher Survey, and Bidwell, Frank, and Quiroz (1997) teacher type questions (Obenauf & Judy, 2012). Additionally, Obenauf and Judy (2012) develop five survey items and one scale of items based on emerging themes from qualitative interviews. These themes also guided data analysis including an exploratory factor analysis of teacher perception constructs (Obenauf & Judy, 2012). Data analysis included chi-square testing and descriptive analysis to observe differences across and within schools on MMC responses.

Study results suggest schools responded to MMC requirements organizationally, changing both how course content was covered and they organized course schedules. Obenauf and Judy (2012) find both urban high schools tracked students within courses after MMC implementation in 2006. One high school math teacher explained,

> The algebra II curriculum didn't change, the fact that it became a requirement changed; so the students changed. And that made us change how we teach it to a certain group of students. It's the same content I was teaching ten years ago, but now it's required, so we had to slow it down, spread it out, and just make changes to how we teach it, because now the clientele is different. (Obenauf & Judy, 2012, p. 14).

In this Michigan mathematics class, changes in MMC content changed instructional delivery.

Teachers' understanding of the MMC significantly differed across high schools (Obenauf & Judy, 2012). Comparing aggregated teacher responses across schools, Obenauf and Judy (2012) find significant differences in MMC understanding. Additional differences presented in teachers' perception of control over content, topics; perceptions of administrative influence, and support (Obenauf & Judy, 2012). Interestingly, teachers at Mandan High School, with significantly greater reported MMC understanding, also reported significantly more administrative influence and support (Obenauf & Judy, 2012). Obenauf and Judy (2012) conclude school context and leadership differences may alter MMC consequences.

## Grounded Theory Framework

Grounded theorists generally begin with a study category, research individual cases, analyze observed behavior or phenomenon, develop conceptual categories through analysis, and relate concepts to larger social, political, or economic considerations (Charmaz, 2004). This work began with an idea that the MMC, a curricular reform requiring more math and science,

would impact teacher course assignments and employment. Using a grounded theory framework (Glaser & Strauss, 1967), it evolved over time, through interview analysis, continually refining key themes. Research questions expanded in an attempt to more holistically understand MMC enactment within Michigan high schools (Weiss, 1994). This often happens as, "many qualitative methodologists refine their questions and follow leads" (Charmaz, 2004, p. 503).

Generating study questions relies on determining problems or questions central to educators and on evaluating issue importance. Glaser and Strauss (1967) argue study questions supported by phenomenological research and observation better frame theoretical assumptions. Weber (1949) asserts perception dictates reality and truth. "It is not the 'actual interconnections of 'things' but the *conceptual* interconnections of *problems* which define the scope of the various sciences…problems are pursued…and truths are thereby discovered which open up significant new points of view" (Weber, 1949, p. 68). Thus, principal viewpoints informed theory, questions of interest, and understandings of policy enactment.

**Bias**

Qualitative research innately requires the researcher to insert oneself into the environment in which one is studying (Weber, 1949). Qualitative researchers must balance research aims, personal experiences, and surfacing themes. "We cannot discover, however, what is meaningful to us by means of a 'presuppositionless' investigation of empirical data. Rather perception of its meaningfulness to us is the presupposition of its becoming an *object* of investigation" (Weber, 1949, p. 76). Questions asked are necessarily interwoven in researcher understandings and *a priori* hypotheses regarding reform policy. This makes sense within a grounded theory process in which, "theorists attempt to use their background assumptions, proclivities, and interests to sensitize them to look for certain issues and processes in their data"

(Charmaz, 2004, p. 501). Through analysis, principals' behaviors emerged as rational decisions made within an economic context.

Anticipating potential conflicts between participant responses and pointed questions pertaining to the MMC, interviews became more encompassing of day-to-day schooling efforts and changes. As such, interviews moved away from "static analyses" (Charmaz, 2004, p. 503), and toward a more authentic description of principals' perceptions regarding high school priorities and important changes. Data analysis compared observational evidence and formed theory (Glaser & Strauss, 1967) through repeated instances in which principals related schooling changes to external changes in school context. By examining a sequence of phenomena, interview questions attempt to trace events or changes—both concrete and conceptual—in Michigan high schools since MMC implementation.

## Interview Protocol Content

Grounded theory guided categories of interest centering on school change and its diffusion through educators. Figure 9 illustrates a theoretical model for interviewer topics.

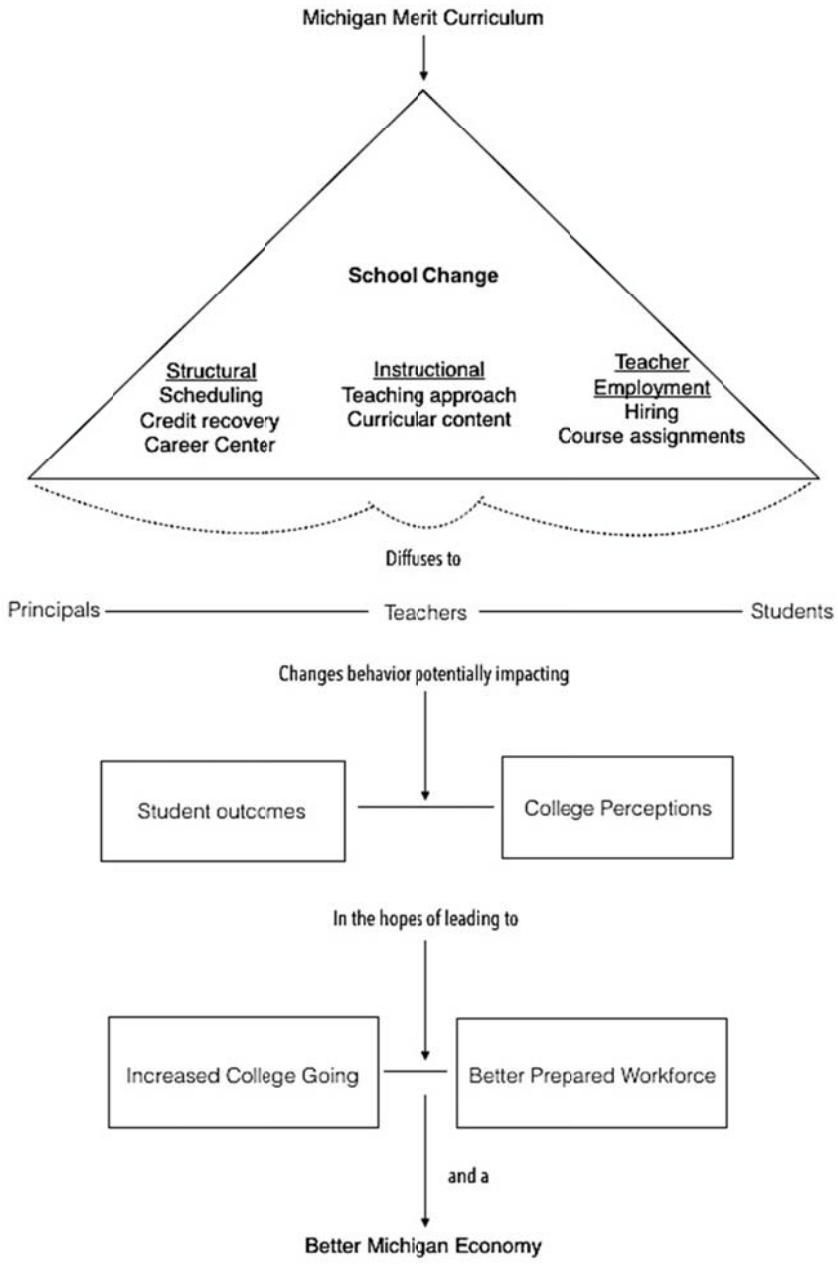


*Figure 9.* Conceptualizing interview themes. This figure depicts relationships between interview themes emerging from grounded theory analysis.

Figure 9 illustrates MMC potential impacts on schools structurally, instructionally, and within teacher employment. These changes diffuse to educators and students, potentially altering student outcomes and college perceptions. The MMC aims to increase college-going and

produce a better-prepared workforce. Ultimately, this may help Michigan sustain an improved economy—one of the motivations for the curricular reform.

Within each change domain, specific examples are given. Principal interview questions probe school structural changes and adaptations in teacher course assignments. Additionally, principals are asked to reflect on student outcomes, equity, principal leadership, and student course-taking.

**Administrative Experience**

Interviews opened with a short review of the study confirming participant consent. All principals were asked how many years they have been an administrator both in their career and specifically at their current school.

**School Change**

Interviews also included questions on school change. These questions could be categorized by sections dedicated to organizational, instructional, or teacher mobility changes coinciding or occurring after MMC implementation in 2006. General questioning included:

- What has been the biggest change your school has made since 2006?
- What have been the top three most significant changes your high school has made in the past six or seven years that you're aware of? Or if you're not sure about the changes since before you came, then can you speak to those since you've come here?
    - How have those changes that you listed affected your school?

According to Seidman (2006), "the key to asking questions during in-depth interviewing is to let them follow, as much as possible, from what the participant is saying" (p. 81). Follow up

questions emerged throughout all interviews. Within the framework of school changes, questions included:

- When you say that the biggest change was fully implementing the Michigan Merit Curriculum, what did that mean to actually fully implement it at your school?
- I know you spoke about how the students' requirements changed, but how did the school have to respond to that?
- To follow that up, what changes has the district made in order to address that [enrollment decline]?

**Structural changes.**

- How has the Michigan Merit Curriculum affected high school scheduling?

Follow up questions included:

***Credit recovery.***

- How about for your credit recovery options that students have, what's the effects been on the ability to recover credits that they've failed?
- How has the Michigan Merit Curriculum affected the students' credit recovery options?
- Do you have any indication as to why there's been such a significant increase [in credit recovery] this year?

***Career center.***

- Do you have a partnership with the Career Center here? And what would you say is constraining the flexibility now to get students involved in those kinds of opportunities?

***Trimesters.***

- How would you say that people within the school responded to those significant changes, both going to the trimester system and then going back to now semesters?

**Instructional changes.**

- Could you give me like an example of one adjustment a teacher's made to how they teach Algebra II? You said that there needed to be a change in how they teach, because they didn't have only the top-notch students. So could you give me one example of a change that was made?

For specific topics that required follow up, questions included:

***Special education.***

- Why are there no more enclosed special education math courses at your school?

***The Common Core.***

- I've spoken to some of the teachers in your school, and I've heard a little bit about the Common Core. And so I'm wondering how you see the Common Core and the Michigan Merit Curriculum I guess interacting together, complementing or replacing each other?

**Teacher employment changes.** Within structural school changes, interviews attempt to detect movement of teachers within courses, departments, across schools, or out of the field.

- Have your teacher course assignments, meaning the courses that teachers teach, have they changed in the past since you've been here?
- Who's involved in the decision-making processes on who is teaching more required courses?

Follow up questions included:

***Course assignment changes.***

- You talked about the ninth grade changes. Were there any other changes that occurred? And if so, why?
- How many of your teachers have had to pick up additional courses or had teacher assignment shifts?
- To discuss what you were saying about the teachers in the elective departments, some of whom got laid off... Could you just talk a little bit, both generally and then about those specific cases, how your teacher course assignments have changed in your school since 2006 in the last years?
- What was the decision-making process, as far as you said that was more your purview deciding what teachers teach what courses? Was there anyone else involved in the process?

***New hires.***

- Have many of those teachers been new hires since you started here?
- Has that core [core influx of teachers last year] of teachers changed the construction of the departments in the school when they meet, as far as the department meetings or professional development offerings?

**College Perceptions**

The MMC was largely motivated by a goal to significantly increasing college-going among Michigan students. Therefore, interviews all asked principals' perceptions on students' college-going and student outcomes. Responses reflect principals' perceived college-going value and

relevance. They do not explicitly relate to decision making behaviors, rather may be considered as part of one's sense-making. Questions on college-going included the following:

- Has the Michigan Merit Curriculum changed your college matriculation rate (the number of students who enroll in college) for students? How?
- What are your views or expectations of students' college-going? Have your views have changed in the past six or seven years on this topic?
- What are the views or expectations of the teachers in your school on students going to college? Have their views on that topic changed in the past six or seven years?
- What are views or expectations are of the school community here on students' college-going? Have their views on that topic changed in the past six or seven years?
- How have any of these views or expectations—from the community, teachers, or yourself—impacted your work as an administrator here?

All principals were asked about their students' college matriculation patterns since MMC implementation in 2006. Principals also discussed college-going within responses on student outcomes. Considering interviews systematically after completion, results suggested revising the interview protocol—beginning by asking principals' perceptions on students' college-going—and then probing further into these perceptions dependent upon teacher or community subgroups. Therefore, subsequent principal interviews included questions one through four.

**Student Outcomes**

To gain a broader understanding of implications for equity, an important motivation of the MMC, interview questions probed participants about student outcomes before and after MMC implementation.

- How has the Michigan Merit Curriculum impacted your students?
- Overall, how would you say the Michigan Merit Curriculum has impacted your students here?
- What is the greatest obstacle students encounter in your school in taking the Michigan Merit Curriculum?

Follow up questions included:

- When was it that you had 80% of your students taking the ACT?
- How has the Michigan Merit Curriculum changed your graduation rates in this school?

**MMC Understanding**

- What is your understanding of the Michigan Merit Curriculum, or what does it mean to you?

**Economic Concerns**

I probe principals' mentions of economic concern as an opportunity to attempt to gain a better understanding of Michigan's economic changes and its relationship to MMC implementation. Given national and statewide recession coincide with MMC reform, understanding principals' perceptions of economic constraints, opportunities, and potential connections between economics and reform mandates, may clarify principal sense-making and decisions.

Interviews ended by asking principals to respond to a hypothetical question that poses the challenge of responding to a mandated reform within a constrained budget.

- A leader in your district contacts you to tell you that state policymakers have mandated

the Michigan Merit Curriculum a significant increase in academic rigor and requirements be taken and completed by all high school students. He tells you the district is struggling to maintain AYP status and cannot afford to see graduations decrease. Your school has few additional resources. How would you implement the Michigan merit curriculum, keeping in mind your district's specific needs?

**Overview**

Principal interviews all touched on the above topics but depending on interviewer/participant relationship and responses, questions varied. According to Seidman (2006), exploring phenomenological meaning requires tailoring interview questions to individual respondents, focusing "on the experience of the participants" (p. 92). Administrators provided both retrospective and current information on school procedures, structure, course-taking processes, changes in curricular autonomy and influence, and student equity challenges.

**Result Analysis**

This study analyzes a convenient sample of four public Michigan high schools. Relying on Glaser and Strauss (1967), coding follows the four stages of qualitative analysis including, 1) comparing phenomenon to established categories and themes, 2) combining categories properties, 3) refining generated theory, and 4) writing theory and analysis (p. 105). Interviews were coded in multiple ways, beginning through grounded theory analysis. Reading through each line of principal interview, I identified their meanings or behaviors. For example, one principal said, "I think the community as a whole believes we do a good job preparing kids to go on to college," which I coded "on community expectations." Through analysis I find emerging topics within the interview protocol, for example, recurring principal accounts of course schedule reorganization within structural changes among high schools. Examining individual choices and

actions within a continuum of actions and reactions, I attempt to find patterns in principal experiences.

After coding individual principal transcriptions, I cross-examined data to identify similar emerging categories. Utilizing a focused coding approach (Charmaz, 2004), I created a new document listing each category and their accompanying responses. "Focused coding is less open-ended and more directed" (Charmaz, 2004, p. 508). I analyzed categories probing for larger themes. Each principal received a unique text color for their interview transcription, in this way I could easily see patterns within larger categories. Data analysis confirms and generates additional theory on structural and behavioral experiences, and though I do not make causal claims, I find patterned incidences of phenomenon, across schools and communities. These patterns may suggest explanations for discrete principal choices within unique social contexts (Lazarsfeld & Rosenberg, 1955 as cited in Abbott, 1998).

In quantitative data, researchers often use sensitivity analyses as another way to test research findings. Taking a positivistic approach in which "studies rely substantially more on the observer's concerns and interpretations of the research participants' behavior" (Charmaz, 2004, p. 500), I recoded qualitative interview data identifying those responses which align with themes and categories established by the pilot study. I find responses generally align to student outcomes and schedule change. Informally, I engaged in reiterative data triangulation, comparing principal responses to that of teachers and guidance counselors both within and across schools.

Data analysis and interviews follow a constant comparative method, "generating a theory that is integrated, consistent, plausible, close to the data—and at the same time is in a form clear enough to be readily, if only partially, operationalized for testing in quantitative research"

(Glaser & Strauss, 1967, p. 103). Though most grounded theory research regards individual experiences and behavior, it may also be used to form theoretical understandings of phenomena (Charmaz, 2004). As such, I integrate interview data within existing economic theories to generate a principal narrative illustrating rationality and choice within the school organization.

Analysis is restricted to principals' reflections on education curricular reform and student outcomes. I limit concepts and high school experiences to three larger categories including teacher mobility, organizational changes, and student outcomes. Finally, I write theoretical assertions based on qualitative analysis and refined notions of school change and principal experiences, relying on larger economic frameworks that establish human and organizational behavior.

## Part II: Descriptive Context

The economy in Michigan and the nation has dramatically changed over the last twenty years. Americans nationwide enjoyed a rising tide of prosperity during both the 1990's technology boom and the housing bubble of the 2000's. Michiganders, like everyone else, partook in economic success. In 2000, Michigan's median family income was $53,457 as compared to the nationwide median income of $50,046 (U.S. Census, 2000). Michigan's unemployment rate was 3.7%, at par with the nationwide average (U.S. Census, 2000). Michigan had slightly under the national proportion of married families with children—at 70.61% and 71.80% respectively—and slightly more single mother households—22.94% versus 21.86% (U.S. Census, 2000). A state with a long manufacturing history, Michiganders' educational attainment lagged slightly behind nationwide averages, with 21.8% of Michiganders attaining a bachelor's degree or higher compare to the national average of 24.4% (U.S. Census, 2000). All this is to say, Michigan was average or slightly above average compared to its sister

states at the turn of the century.

## The Great Recession

Statewide and nationwide recessions changed economic realities for Americans throughout the country. By 2010, nationwide unemployment increased nearly 6 percentage points (U.S. Census 2000; U.S. Census, 2013). By 2011, the median family income had increased $13,528, totaling $5,701 less than a 3% cost of living adjustment per year would have estimated (U.S. Census, 2013). Proportions of minorities continued to rise. Furthermore, that nation saw an increase in the percentage of Americans holding a bachelor's degree or higher. Of those with children under 18, the percentage of married households declined, while single mother households rose (U.S. Census, 2000; U.S. Census, 2013).

In Michigan, the Great Recession exacerbated already apparent economic fragility. Median family income, at $60,749, lagged $11,093 behind expected values given a 3% cost of living adjustment per year (Current Population Survey, 2013). Unemployment ballooned 8.9 percentage points (Bureau of Labor & Statistics, 2010; Bureau of Labor & Statistics, 2011), the proportion of married households with children fell and the proportion of single mother households increased (U.S. Census, 2010). Compared to nationwide numbers, Michiganders struggled more to maintain employment, standard of living, and dual parent households. Similar to nationwide averages, the proportion of Michiganders with a bachelor's degree or higher increased about 4 percentage points. Thus, while Michigan's job market suffered, an increasing amount of Michigan students entered and completed four years of college. For additional information on sources of data and calculated percentages, please see Appendix G.

Table 9

*United States Census Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $50,046 | 3.7% | 24.9% | 71.80% | 21.86% | 24.4% |
| 2010 | $63,574[5] | 9.63% | 27.59% | 67.84% | 24.10% | 28.5%[6] |

Table 10

*Michigan Census Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $53,457 | 3.7% | 18.2% | 70.61% | 22.94% | 21.8% |
| 2010 | $60,749 | 12.6% | 21.05% | 66.04% | 25.71% | 25.5% |

## Community and School District Profiles

Economic turmoil in both national and statewide affairs may or may not have impacted individual Michigan communities. In an effort to better understand the sampled schools and their context, I profile communities and schools. Within the community, I focus on the economic well-being, educational attainment, and family level attributes of the schools' surrounding community. Within sampled high schools I note school size, variation in teacher labor force, student racial composition, and socioeconomic background.

### Clayton

Clayton, a suburban largely white community, is on the fringe of larger cities (U.S. Census, 2000). With approximately 250 business establishments, it is a small town that primarily serves professional, scientific and technical, and construction fields (U.S. Census Bureau, 2012b). In 2000, the median family income reported was $51,014, about $2,500 under statewide reports (U.S. Census, 2000). Unemployment was low, at 2.1% and educational

attainment was higher than average, with a reported 30.7% of adults holding a bachelor's degree or higher (U.S. Census, 2000). While a majority of households with children came from married families, proportions of single mother households were over statewide averages, at 25.36% (U.S. Census, 2000).

Nearly a decade later, Clayton has both changed and remained the same. Nearly matching statewide increases, racial diversity rose 2.17 percentage points (U.S. Census, 2010). Yet drastically diverging from national and state stories, unemployment slightly decreased 0.4 percentage points and median family income rose to $76,979 (U.S. Census, 2010). This exceeded estimated cost of living adjustments by $8,420. Married households with young children continued to maintain majority status while the proportion of single mother households fell 2.83 percentage points and was over 12% below the statewide average (U.S. Census, 2010). Over the past decade in Clayton, educational attainment averages rose substantially, 8 percentage points (U.S. Census, 2010). The proportion of adults with a bachelor's degree or higher was one and a half times the state average at 38.7% (U.S. Census, 2010). Changes may be due to an increasing movement of educated upper-middle class families moving into the district. Overall, despite national and statewide recession, Clayton community members were doing better than their peers economically and academically.

Table 11

*Clayton Community Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $51,014 | 2.1% | 3.38% | 67.90% | 25.36% | 30.7% |
| 2010 | $76,979 | 1.7% | 5.55% | 68.68% | 22.53% | 38.7% |

**Ashmore**

Situated in a larger urban city, the economically diverse Ashmore neighborhood—once thriving—now quietly exists on the periphery of town. Home to 75 business establishments, including healthcare and social assistance, retail, and accommodation/food services (County Business Patterns, 2012), Ashmore's once successful manufacturing sector has closed down and moved out. In 2000, Ashmore's median family income was reported as $41,283, over $12,000 below the reported state median (U.S. Census, 2000). Additionally, Ashmore unemployment was higher than statewide averages, at 4.4% (U.S. Census, 2000). Within the family, the proportion of married households with children was 25% lower than statewide averages, while the rate of single mothers with children was relatively similar (U.S. Census, 2000). Academically, Ashmore mirrored statewide educational attainment with 21.2% of adults earning a bachelor's degree or more (U.S. Census, 2000).

Ten years later, Ashmore continues to struggle to keep up with statewide economic conditions. Since 2000, unemployment in Ashmore has more than tripled, at 14.1%, 1.5 percentage points above the statewide average (U.S. Census, 2010). Proportions of married households with children declined; now over 27% lower than state averages (U.S. Census, 2010). Meanwhile, the proportion of single mothers with children increased, from 37.72% to 41.89%. Finally, educational attainment in Ashmore continues to closely track statewide averages, with 24.5% of adults reporting a bachelor's degree or higher in 2010 (U.S. Census, 2010). Though Ashmore falls below economic state averages, educational attainment has increased.

Table 12

*Ashmore Community Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $41,283 | 4.4% | 31.00% | 53.68% | 37.72% | 21.2% |
| 2010 | $44,485 | 14.1% | 38.77% | 47.63% | 41.89% | 24.5% |

**Pine Ridge**

A small town, Pine Ridge began the new millennium with low unemployment and slightly below Michigan's median family, at $48,162 (U.S. Census, 2000). Somewhat isolated from larger metropolitan cities, 75 Pine Ridge business establishments were reported in 2012, with the most frequent being retail, construction, and accommodation and food services (U.S. Census, 2012b). Two parent family structures represented a majority of cases at 70.55%, close to statewide averages, while 21.92% of children lived in single mother households (U.S. Census, 2000). Strikingly, Pine Ridge had a low rate of educational attainment, only 9.4% of adults reported a bachelor's degree or higher in 2000, 12.4 percentage points, or less than half, of the average Michigander (U.S. Census, 2000).

In 2010, Pine Ridge remained behind Michigan averages both economically and academically. Over ten years, Pine Ridge saw median family income rise $744 (U.S. Census, 2010), well below estimated cost of living adjustments, at $64,726. Coinciding with lagging income, Pine Ridge unemployment increased to 11.3% in 2010 (U.S. Census, 2010). Demographically, the community remains predominately white, at 96.54%. Married households continue to hold the majority of all households with children, and while single mother households have increased, they continue to closely track with statewide averages (U.S. Census, 2010). Educational attainment in Pine Ridge has also increased over the past ten years, with 12.4% of all adults holding a bachelor's degree or higher. However, proportions of bachelor's

degree recipients are still less than half of statewide averages. Thus, Pine Ridge began the new millennium economically and academically behind other Michigan communities, and continues to remain there.

Table 13

*Pine Ridge Community Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $48,162 | 3.4% | 2.4% | 70.55% | 21.92% | 9.4% |
| 2010 | $48,906 | 11.3% | 3.46% | 63.83% | 24.26% | 12.4% |

**Petronila**

Though a rural community, Petronila boasts 350 business establishments with the top three industries reported as retail, health care and social assistance, and accommodations and food services (U.S. Census, 2012b). In 2000, the median family income was $52,391, slightly below the state median (U.S. Census, 2000). Petronila had lower unemployment, 1.4 percentage points below the state average (U.S. Census, 2000). A homogenous population, 3.2% of citizens identified as non-white or multi-racial in 2000 (U.S. Census, 2000). Petronila families with children primarily resided in two parent households, the proportion of single mothers in 2000 reported as 24.44% (U.S. Census, 2000). Finally, Petronila had under-average educational attainment, with 19.9% of adults receiving a bachelor's degree or higher.

Community demographics ten years later show declining economic conditions. The median family income in Petronila decreased $891, while unemployment rose 6.9 percentage points (U.S. Census, 2012a). Though significantly higher, Petronila unemployment represented only three fourths of average Michigan unemployment in 2010 (U.S. Census, 2010). Married households with children continued to hold a majority of family households, however, single

mother households increased to 30.18%, 4.47 percentage points above the statewide average (U.S. Census, 2012a). Educational attainment in Petronila increased marginally, with 20.4% of adults attaining a bachelor's degree or higher in 2010, 20% below Michigan averages. For Petronila, economic and educational growth stymied over the past ten years.

Table 14

*Petronila Community Profile*

| Year | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| 2000 | $52,391 | 2.3% | 3.2% | 70.13% | 24.44% | 19.9% |
| 2010 | $51,500 | 9.2% | 6.06% | 59.63% | 30.18% | 20.4% |

**Comparing Communities**

Ten years into the new millennium, Michigan community context varied. For the four communities sampled, median family income ranged from $44,485 to $76,979, with the urban Ashmore being least affluent and suburban Clayton having the greatest median family income. Unemployment rates rose from 2000 averages in three out of four communities; suburban Clayton experienced a decrease in unemployment. Across all communities, proportions of minorities increased. Within the home, the proportion of married households with children decreased while single mother homes increased statewide, in sampled rural and urban communities. Again, suburban Clayton stands apart, with an increase in the proportion of married households with children and a corresponding decrease in single mother households. Finally, educational attainment across communities ranged, from 12.4 to 38.7% of adults attaining a bachelor's degree or greater. Situated within and serving community families, schools experienced largely differing communities, economically, educationally, racially, and within family structure.

Table 15

*2000 Community Comparisons*

| Community | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| Clayton | $51,014 | 2.1% | 3.38% | 67.90% | 25.36% | 30.7% |
| Ashmore | $41,283 | 4.4% | 31.00% | 53.68% | 37.72% | 21.2% |
| Pine Ridge | $48,162 | 3.4% | 2.4% | 70.55% | 21.92% | 9.4% |
| Petronila | $52,391 | 2.3% | 3.2% | 70.13% | 24.44% | 19.9% |

Table 16

*2010 Community Comparisons*

| Community | Median Family Income | Unemployed | Minority: Non-white or multi-racial | Married households with children | Single mom households with children | BA or higher |
|---|---|---|---|---|---|---|
| Clayton | $76,979 | 1.7% | 5.55% | 68.68% | 22.53% | 38.7% |
| Ashmore | $44,485 | 14.1% | 38.77% | 47.63% | 41.89% | 24.5% |
| Pine Ridge | $48,906 | 11.3% | 3.46% | 63.83% | 24.26% | 12.4% |
| Petronila | $51,500 | 9.2% | 6.06% | 59.63% | 30.18% | 20.4% |

**Examining Schools**

Descriptive profiles extend to characterize sampled high schools. Figure 10 illustrates descriptive components of interest.

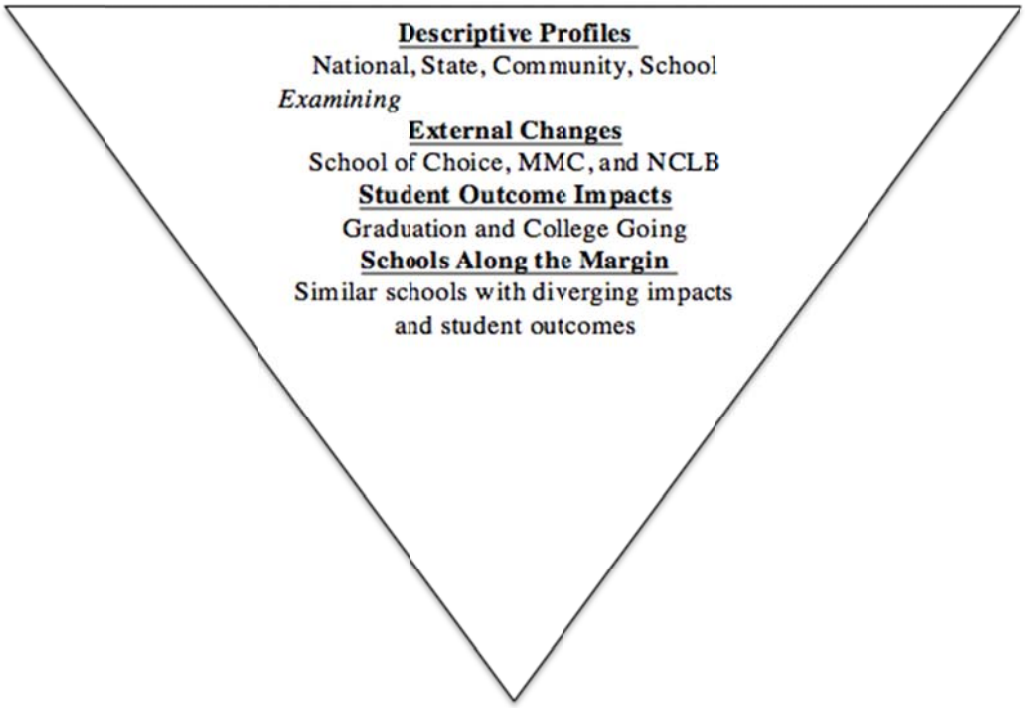


*Figure 10.* Descriptive examination of schools. This figure depicts descriptive profiles of sampled high schools along multiple indicates.

Identifying national, state, community characteristics, and changes over time, I also report other relevant policy and outcome data characteristics. High school structures largely mirrored community demographics, with less affluent districts reporting higher rates of free and reduced priced lunch eligibility (NCES, 2012). High school proportions of racial diversity were above corresponding community averages in all sampled high schools, suggesting a more racially diverse generation (NCES, 2012). Student enrollment and student teacher ratios range, with Ashmore High School reporting the highest student teacher ratio at approximately 23

students per teacher, and rural Pine Ridge reporting the lowest student teacher ratio, about 19 students per teacher.

In both Ashmore and Pine Ridge High School, students' free and reduced priced lunch eligibility, 56.49% and 35.76% respectively, reflect larger community economic strains (NCES, 2012). Ashmore, enrolling 793 high school students in 2011-2012, identified a majority, about 81%, as non-white or multi-racial (NCES, 2012). While Pine Ridge, served the least diverse population, with less than 5% of non-white students.

Petronila High School is the largest sampled school, enrolling 1,082 students and employing 55.67 FTE teachers in 2011-2012. Echoing suburban Clayton, Petronila's student teacher ratio is 19.44 in 2011-2012. However, differing from their suburban counterpart 22.55% of Petronila students were eligible for free and reduced priced lunch, over 25% more than Clayton High School rates.

Overall, high school and community profiles differ. Urban Ashmore High School constitutes the most racially diverse student group, a majority of which come from lower-socioeconomic backgrounds, compared to sampled peers. Pine Ridge, although behind state educational attainment averages, hired the most teachers per student. Similar to community income averages, suburban Clayton had the lowest proportion of students eligible for free and reduced priced lunch. And, though rural, Petronila High School enrolled the greatest number of high school students and hired the most teachers in 2011-2012.

Table 17

*School Profiles: 2011-2012*

| School | Enrollment | Free/Reduced Priced Lunch eligibility | Teachers | Minority: Non-white or multi-racial | Student-teacher ratio |
|---|---|---|---|---|---|
| Clayton | 628 | 16.72% | 31.93 FTE | 7.00% | 19.67 |
| Ashmore | 793 | 56.49% | 35.00 FTE | 81.08% | 22.66 |
| Pine Ridge | 467 | 35.76% | 25.24 FTE | 4.28% | 18.50 |
| Petronila | 1,082 | 22.55% | 55.67 FTE | 8.96% | 19.44 |

## External Education Policy

Nationally and statewide, economic changes presented new challenges for Michigan communities. Economic challenges interwove with long-standing educational finance considerations. Within this framework stood teacher labor market impacts, school of choice, the Michigan Merit Examination, and school rankings within Michigan's Persistently Lowest Achieving (PLA) list. Schools balanced corresponding financial uncertainties, attempting to maintain educational budgets and students.

### Changes in Michigan Teacher Mobility

External education policy reform and economic recession may potentially alter teacher labor force characteristics, an important component of teacher quality (Hanushek, 2011). Covay-Minor et al. (2014) focus on MMC reform and teacher mobility in Michigan public high schools from academic year 2003-2004 to 2011-2012. Examining a sample range of 17,918 to 23,555 high school teachers across 649 to 706 Michigan high schools, Covay-Minor et al. (2014) attempt to isolate contributing characteristics related to teacher mobility. Using two time points of teacher movement, fall and spring, researchers examine exit behavior and mobility between schools and districts (Covay-Minor et al., 2014). They find the MMC education reform relates to teacher mobility behavior—across districts and urbanicities—with an increase of mobility

patterns coinciding with MMC announcement (Covay-Minor et al., 2014). Furthermore, Covay-Minor et al. (2014) find economic burdens impact schools across Michigan, including cities, towns, and rural communities. They conclude school context relates to educational reform and economic recession consequences; those least advantaged schools had highest teacher turnover rates and mobility coinciding with recession and education reform impacts.

**School of Choice**

Enacted in 1994, Michigan's school of choice policy allows Michigan students to vote with their feet (Hirschman, 1970), attending a school district of their choice, rather than the district within their property boundaries. Policymakers, seeking to create a more equitable funding structure, in which districts' educational funding was aggregated and combined with a portion of the sales tax, comprehensively reformed Michigan education finance. Where before district property tax funded those corresponding district schools, now educational funding combines into a general education fund and is allocated across Michigan districts. Depending on students' home district, that is the district in which their property boundaries fell, they are given an educational foundation or pupil grant. Students may utilize choice, entering and exiting participating Michigan school districts, with their per pupil grant. In essence, school of choice shifted portions of Michigan school districts educational budgets into the hands of individual families, creating more choice, and also potentially more financial variability in schools' enrollment year to year.

**Clayton School District.** In Clayton, proportions of entering school of choice students have steadily risen since academic year 2009-2010, from 8.60% to 14.02% respectively (MI School Data, 2014a). The number of Clayton students choosing other school districts has stayed relatively steady, with an increase of less than 1 percentage point over the past four years (MI

School Data, 2014a). Thus, increasing amounts of school of choice students and relatively steady numbers of school of choice leavers suggests Clayton School District gained per pupil revenue due to school of choice over the past four years.

Table 18

*Clayton School District School of Choice*

| Year | District Enrollment | % School of Choice Students **In** District | % School of Choice Students **Leaving** District | Difference |
|---|---|---|---|---|
| 2009-2010 | 1,884 | 8.60% | 5.41% | 3.19% |
| 2010-2011 | 1,840 | 9.95% | 6.25% | 3.17% |
| 2011-2012 | 1,881 | 12.07% | 6.00% | 6.07% |
| 2012-2013 | 1,854 | 14.02% | 6.36% | 7.66% |

**Ashmore School District.** Since academic year 2009-2010, school of choice leavers have steadily reduced Ashmore School District enrollment. While proportions of students opting into Ashmore have slightly decreased, the percentage of students leaving Ashmore for other school districts has largely increased, from 16.50% in 2009-2010 to 21.92% in 2012-2013. Differences between school of choice students entering and leaving Ashmore are negative, meaning more students are leaving than entering each year. Furthermore, this difference is growing, with each year more students leaving than the last.

Table 19

*Ashmore School District School of Choice*

| Year | District Enrollment | % School of Choice Students **In** District | % School of Choice Students **Leaving** District | Difference |
|---|---|---|---|---|
| 2009-2010 | 14,028 | 2.64% | 16.50% | -13.86% |
| 2010-2011 | 13,399 | 2.33% | 18.70% | -16.37% |
| 2011-2012 | 13,183 | 2.16% | 19.52% | -17.36% |
| 2012-2013 | 12,463 | 1.81% | 21.92% | -20.11% |

**Pine Ridge School District.** Conversely, in Pine Ridge School District, school of choice policy enactment has continuously brought positive enrollment differentials since academic year 2009-2010. Large proportions of students enter into Pine Ridge School District each year, most recently 17.34% in 2012-2013. Over four years, district school of choice differentials ranged from 7.52% to 9.00%, indicating positive growth in school of choice enrollment. With persistent, positive differentials, one might infer Pine Ridge School District financially benefits from school of choice policy enactment.

Table 20

*Pine Ridge School District School of Choice*

| Year | District Enrollment | % School of Choice Students **In** District | % School of Choice Students **Leaving** District | Difference |
|---|---|---|---|---|
| 2009-2010 | 1,392 | 16.95% | 8.55% | 8.4% |
| 2010-2011 | 1,411 | 16.02% | 8.50% | 7.52% |
| 2011-2012 | 1,388 | 17.72% | 8.72% | 9.00% |
| 2012-2013 | 1,384 | 17.34% | 9.18% | 8.16% |

**Petronila School District.** School of choice patterns in Petronila have been erratic. From academic years 2009-2010 to 2010-2011, Petronila showed little net gain or loss due to school of choice. However, in 2011-2012, Petronila School Districts accepted relatively the same number of school of choice students, but saw nearly triple the previous number of students leave for other school of choice districts, at 10.80%. Similarly, the following year, a similar scenario took place; Petronila accepted 5.33% of their students from other schools and found 12.98% of home district students leaving for neighboring districts. Thus, while school of choice did not seem to impact Petronila School District in initial years of data collection, sharp differential enrollment declines suggest school of choice leavers may have impacted educational finances.

Table 21

*Petronila School District School of Choice*

| Year | District Enrollment | % School of Choice Students **In** District | % School of Choice Students **Leaving** District | Difference |
|---|---|---|---|---|
| 2009-2010 | 3,229 | 4.09% | 3.75% | 0.34% |
| 2010-2011 | 3,209 | 4.24% | 3.65% | 0.59% |
| 2011-2012 | 3,204 | 4.40% | 10.80% | -6.4% |
| 2012-2013 | 3,135 | 5.33% | 12.98% | -7.65% |

**Differential financial gain.** Revenue gains are not obvious. School of choice students enter school with differing per pupil foundations, corresponding to their home districts. Additionally, students also have unique educational needs that may or may not require additional funding (i.e. special education services, remediation, gifted and talented). Therefore, a school of choice student from Clayton may not be financially equal to a school of choice student from Ashmore; and while differences in students entering and leaving are somewhat informative of schools' financial revenue stream, it is not an exact estimate of cost differential. Figure 11 plots the difference between school of choice gains and losses.

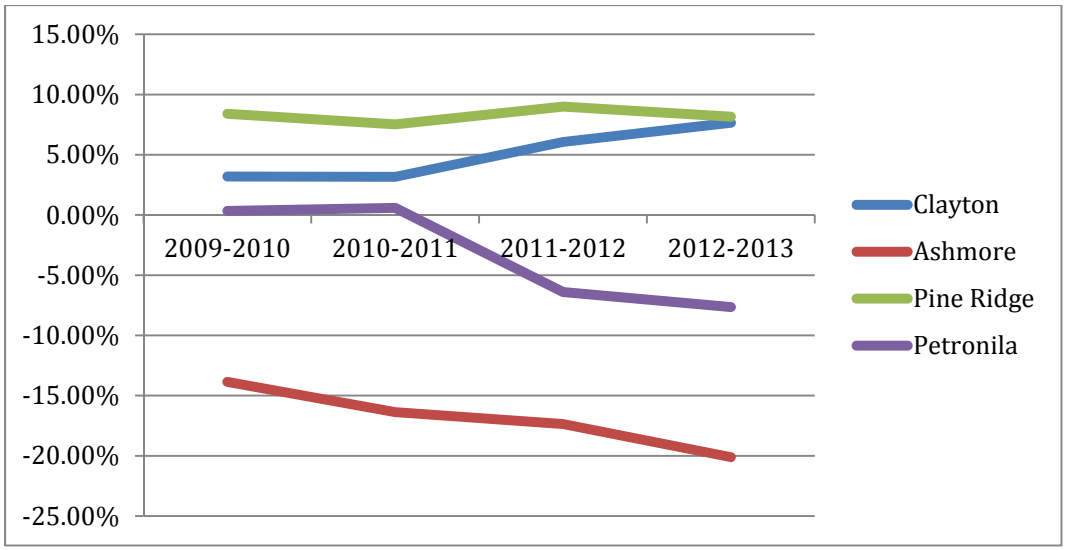


*Figure 11*. School of choice gains and losses across communities. This figure illustrates the differential between school of choice students entering and those leaving, by district, by year from academic year 2009-2010 to 2012-2013. Each school district is represented by a line, with Clayton as blue, Ashmore as red, Pine Ridge as green, and Petronila as purple.

In Figure 11 I find differences across school districts in the number of schools of choice students entering and leaving. Rural Pine Ridge School District has the greatest school of choice differential at 8.4% during academic year 2009-2010, while suburban Clayton follows behind at 3.19% (MI School Data, 2014a). Conversely, urban Ashmore School District reports a differential loss, in 2009-2010, of 13.86% of students to school of choice (MI School Data, 2014a). Whereas, Petronila School District experiences a near net loss-gain of 0.34% (MI School Data, 2014a).

School district trajectories vary widely. Across years, Clayton School District continues to positively increase school of choice differentials and Pine Ridge School District maintains relatively similar school of choice differential rates. These positive impacts contrast with Ashmore and Petronila School District. In Ashmore, continual increases in school of choice leavers leads to large enrollment and per pupil grant losses. For Petronila, though able to keep

school of choice differential at a zero gain or loss at the onset of the Great Recession in 2009, unknown variables relate to a nearly 6.5 percentage point drop in school of choice differential; declining even further the following year.

**High School Enrollment**

Schools of choice statistics represent district wide proportions of student mobility. However, Michigan high school enrollment varies across school districts. Figure 12 presents high school enrollment over time.

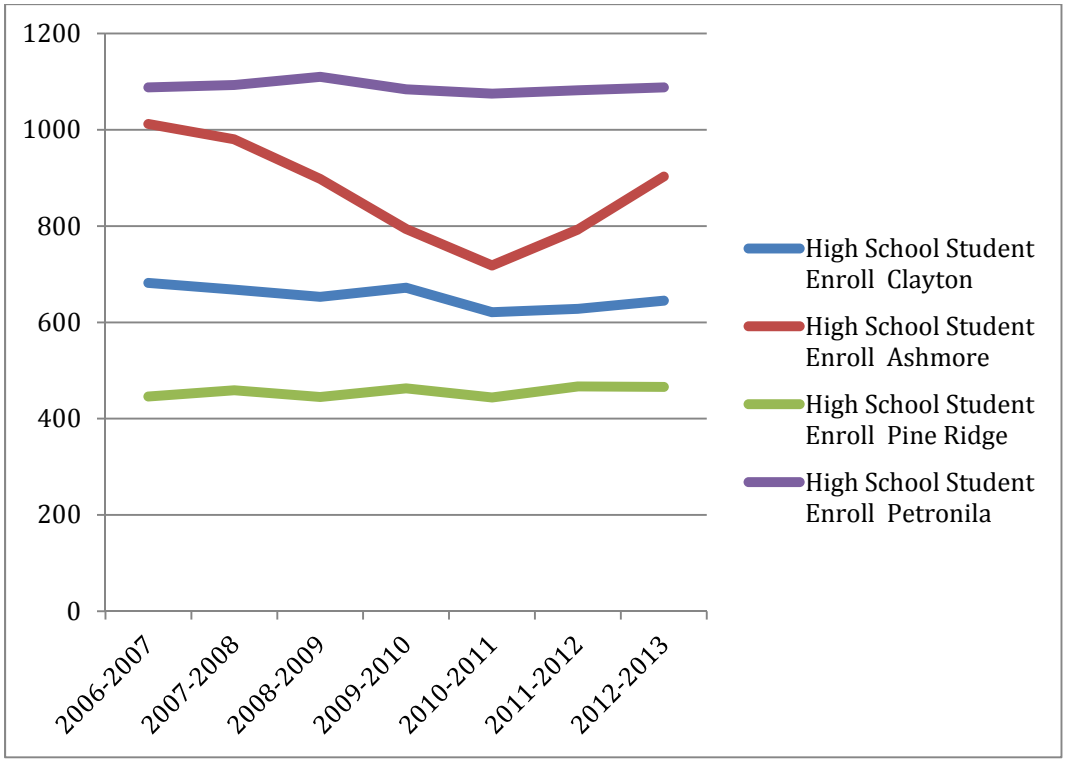


*Figure 12.* High school enrollment over time. This figure depicts high school enrollment over time, from academic year 2006-2007 to 2012-2013, by sampled school districts. Each line represents high school enrollment figures, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

In Figure 12 enrollment differences become apparent; Petronila and Pine Ridge High School experience relatively small fluctuations in student enrollment, with Pine Ridge High

School moderately increasing student population (MI School Data, 2014b). Clayton High School sees a small decrease in student enrollment from 682 in 2006-2007 to 645 in 2012-2013 (MI School Data, 2014b). Finally, Ashmore High School substantially drops in student enrollment, from 1,012 students in academic year 2006-2007 to 718 students in academic year 2010-2011. By the end of academic year 2012-2013, they had regained students, totaling 903 high school students enrolled. However, this number is still 100 students short of their 2006-2007 enrollment figures.

**The Michigan Merit Examination and Performance Rankings**

The MME assesses Michigan high school students' mastery of the MMC. It also incorporates the ACT, a college entrance exam, into MME test items. Therefore, all Michigan high school students have the opportunity to take the ACT for free within a public high school. While the MMC and MME are related, assessment mastery is not required for high school graduation. Michigan students may complete MMC requirements and confer high school graduation regardless of MME performance (MDE, 2010).

Although Michigan did not require MMC completion before the graduating class of 2011, MME assessments were given beginning in spring of 2007. The MDE publishes MME proficiency from 2010 to 2013. It is important to note that proficiency cut scores, the benchmark score indicating student proficiency, changed in 2011-2012 to reflect more rigorous mastery standards. Therefore, one might expect a drop in percentages across state and community averages from 2011 to 2012. However, the MDE recalculated past results to reflect new cut score proficiency ratings. Thus, MME scores may be compared across years and schools. Table 22 provides statewide proficiency over time.

Statewide proficiency ranged, with students' overall strength in reading and weakness in writing from 2010 to 2011 (MI School, 2010b; MDE 2011a; MDE, 2012; MDE, 2013a). In 2012 and 2013, students performed worst in science (MDE, 2010b; MDE 2011a; MDE, 2012; MDE, 2013a). In math, Michigan student proficiency began at 50% of students meeting or exceeding state standards (MDE, 2010b). Proficiency mastery dropped nearly in half in 2012 and remained the same the following year (MDE, 2011a; MDE, 2012). Similarly, in science proficiency ratings, previously 61% in 2011, fell over 40% in 2012 (MDE, 2011a; MDE, 2012). Social studies proficiency also declined over time; while in 2011, 78% of students rated proficient, in 2012, this number fell to 41%. Conversely in reading and writing little movement occurred. In reading, over half of students continued to meet or exceed statewide standards, while in writing, student proficiency actually increased (MDE, 2010b; MDE 2011a; MDE, 2012; MDE, 2013a).

Over time, student achievement trends seem to group into 2010 to 2011 and 2012 to 2013 averages. From 2011 to 2012, Michigan students raised proficiency in math, science, and writing. In reading, scores fell two percentage points, while in social studies proficiency varied by one point. From 2012-2013, Michigan students maintained proficiency in math, science, and writing, while they decreased proficiency mastery in reading and social studies, by two percentage points.

Table 22

*Percentage of Michigan High School Students Scoring Proficient or Advanced on the MME*

| Year | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| 2010 | 50% | 65% | 58% | 79% | 44% |
| 2011 | 52% | 63% | 61% | 78% | 47% |
| 2012 | 29% | 56% | 26% | 41% | 49% |
| 2013 | 29% | 54% | 26% | 39% | 49% |

**Clayton High School.** MME achievement in Clayton High School over time has stayed somewhat constant. In math, students moved from 46% proficiency in 2010 to 47% proficiency in 2013, with small fluctuations across years (MI School Data, 2014c). Similarly, in social studies, proficiency rankings held, with 59% of students scoring proficient or advanced in 2010 compared to 57% of students in 2013 (MI School Data, 2014c). Clayton students' proficiency advanced in writing over the past four years, with 75% of students scoring proficient or above in 2013, compared to 66% in 2010 (MI School Data, 2014c).

In reading and science, achievement patterns were not as positive. Over time, students' reading and science scores fell; 8 and 9 percentage points respectively (MI School Data, 2014c). However, despite reading and science set-backs, Clayton High School did not fall within Michigan's PLA list over the previous four years (MDE, 2010c; MDE, 2011b; MDE, 2013b; MDE, 2013c).

Table 23

*Percentage of Clayton High School Students Scoring Proficient or Advanced on the MME*

| Year | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| 2010 | 46% | 77% | 44% | 59% | 66% |
| 2011 | 40% | 65% | 36% | 56% | 67% |
| 2012 | 43% | 71% | 37% | 55% | 64% |
| 2013 | 47% | 69% | 35% | 57% | 75% |

**Ashmore High School.** Academic improvement has been difficult over the past four years at Ashmore High School. Across subjects and years a minority of Ashmore students score at or above proficiency (MI School Data, 2014c). While reading and writing appear as areas of strength in Ashmore, most recently a majority of students scored below proficient, at 32% and 23% respectively (MI School Data, 2014c). In math and science, even fewer students perform well with only 10% of students reaching math proficiency in 2013 and 4% reaching science

proficiency (MI School Data, 2014c). Scores appear even more counterintuitive when placed within school context. Ashmore—an engineering magnet school—seemed to do poorest on subjects most imperative to the engineering field.

While MME results are not used to grant high school graduation, they are considered when determining schools' progress toward AYP. The MDE identified Ashmore's poor student performance and placed them within their PLA Priority School list (MDE, 2013c). This list represents the bottom 5% of Michigan schools Top to Bottom ranking (MDE, 2014b). Identified schools must then complete one of four, USDOE, outlined strategies to improve student performance. Strategies include, 1) School Turnaround Model, 2) School Transformation Model, 3) School Restart Model, or 4) School Closure (MDE, 2014b). Ashmore chose to implement a School Turnaround Plan. Priority School improvement lies outside the purview of this study; however, it is fair to say all strategies involve a fair amount of financial investment. Therefore, low student performance suggests Ashmore may both require additional remediation coursework and educational investment to satisfy AYP benchmarks.

Table 24

*Percentage of Ashmore High School Students Scoring Proficient or Advanced on the MME*

| Year | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| 2010 | 10% | 34% | 8% | 17% | 21% |
| 2011 | 9% | 38% | 10% | 19% | 20% |
| 2012 | 2% | 20% | 2% | 5% | 12% |
| 2013 | 10% | 32% | 4% | 16% | 23% |

**Pine Ridge High School.** In rural Pine Ridge, MME scores have varied across years. Most recently in 2013, students performed best in reading at 62% proficient or advanced, and performed worst in science, 26% meeting or exceeding standards. Four years earlier, test scores showed a similar story, students performed best in reading and worst in science. Relative

strengths and weaknesses in Pine Ridge map to statewide trends. In 2013, more Michigan students met proficiency standards in reading, while less than half of that proportion, 26%, achieved science proficiency.

Table 25

*Percentage of Pine Ridge High School Students Scoring Proficient or Advanced on the MME*

| Year | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| 2010 | 27% | 52% | 19% | 31% | 47% |
| 2011 | 27% | 53% | 26% | 36% | 39% |
| 2012 | 23% | 50% | 14% | 30% | 38% |
| 2013 | 32% | 62% | 26% | 36% | 55% |

**Petronila High School.** For Petronila, student performance has decreased over time in four out of five subjects (MI School Data, 2014c). In writing, student scores have ranged, beginning at 47% in 2010 and increasing to 55% in 2013. One might expect to see a drop in MME scores for Petronila High School the year preceding a large number of school of choice school district leavers (2010-2011), in fact, there is no such drop. This might relate to the fact that school of choice leavers represent school district totals and are not restricted to the high school, or it may relate to the fact that school of choicers base decisions on multiple variables, and test scores are but one piece of a larger narrative dictating moving choices. However, when I examine 2012 scores—the year following a decrease in school of choice attendance—I find in all subjects MME scores decrease. This may suggest "creaming," in which the best and brightest students exercise choice, leaving schools with less academically able students (Arsen, Plank, Sykes, 1999).

Table 26

*Percentage of Petronila High School Students Scoring Proficient or Advanced on the MME*

| Year | Math | Reading | Science | Social Studies | Writing |
|---|---|---|---|---|---|
| 2010 | 26% | 64% | 29% | 39% | 44% |
| 2011 | 32% | 63% | 32% | 44% | 54% |
| 2012 | 26% | 62% | 30% | 44% | 55% |
| 2013 | 20% | 56% | 22% | 31% | 51% |

**Math achievement across high schools.** Across all four high schools, MME math proficiency varied. Figure 13 illustrates math proficiency averages by school over the past four years.

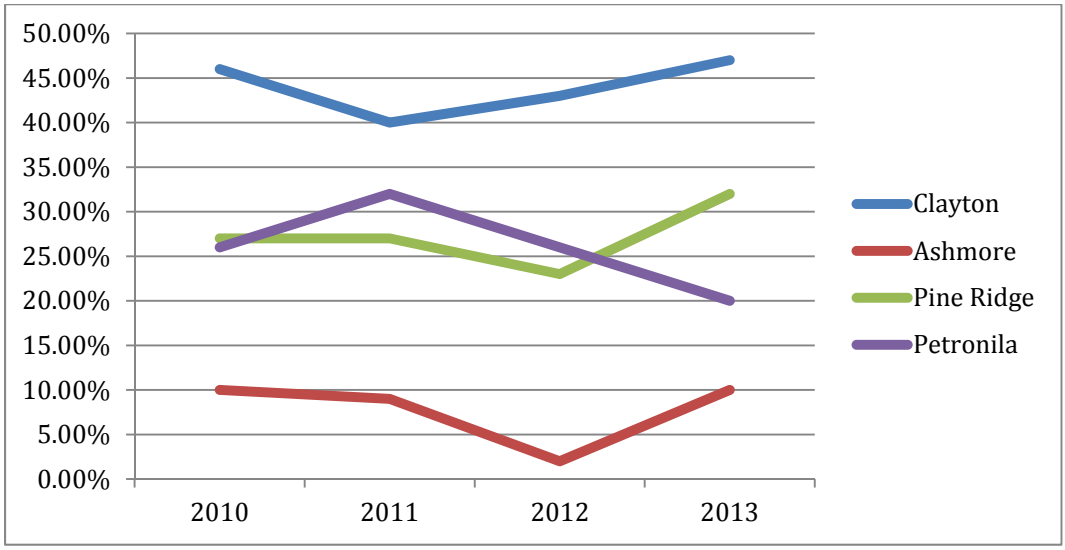


*Figure 13.* MME math proficiency over time. This figure depicts the proportion of students scoring proficient or advanced on the MME math test portion from 2010 to 2013, by sampled school districts. Each line represents high school proficiency, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Clayton had the greatest proportion of students scoring proficient or advanced in math, at 46% in 2010, while Ashmore was the lowest at 10% (MI School Data, 2014c). Though Petronila

and Pine Ridge nearly matched each other in 2010 math proficiency, variations over years left Petronila lagging behind Pine Ridge proficiency averages with 20% versus 32% respectively.

**Reading achievement across high schools.** Academic mastery in reading fared better both statewide and within sampled communities. Figure 14 presents high school reading averages on the MME over time.

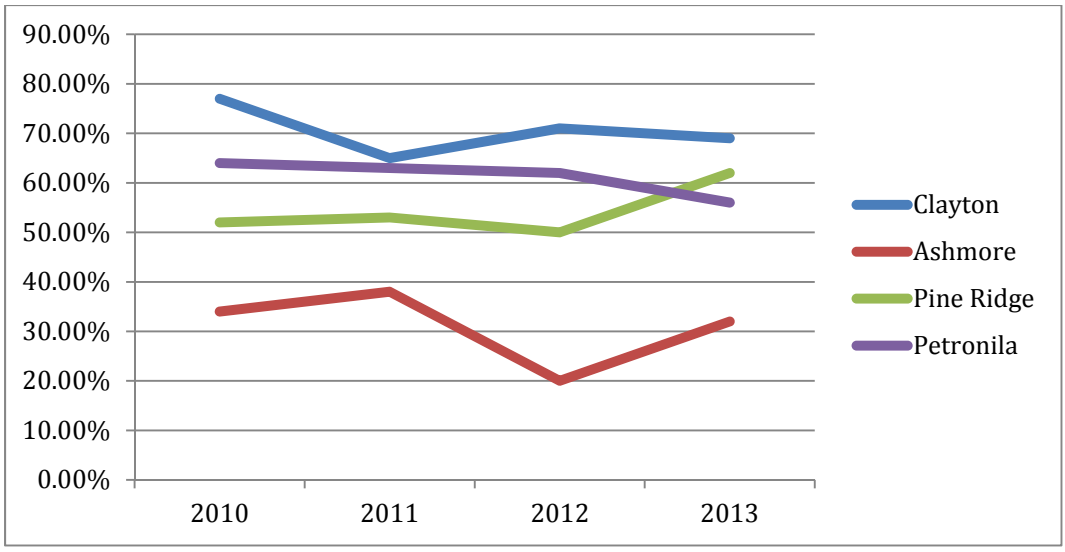


*Figure 14.* MME reading proficiency over time. This figure depicts the proportion of students scoring proficient or advanced on the MME reading test section from 2010 to 2013, by sampled school districts. Each line represents high school proficiency, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Figure 14 again illustrates the largest proportion of students achieving proficiency residing in Clayton High School; this time in reading and maintaining over time. Similarly, I find Pine Ridge and Petronila trading places in reading proficiency averages, with a greater percentage of Petronila students' showing mastery in 2010 compared to Pine Ridge students, only to fall behind Pine Ridge four years later. Finally, Ashmore High School continues to lag behind sampled peers, with a reading proficiency average disparity of 43 percentage points in 2010, when compared to Clayton High School. When compared to rural counterparts,

achievement disparities remain at 24 percentage points for Petronila High School and 30 percentage points for Pine Ridge High School. Overall, while there seems to be some movement between rural high school rankings in proportions of proficiency mastery, suburban Clayton and urban Ashmore consistently come in first and last within sampled schools.

**Overview**

Over 20 years, external education policies have uniquely molded Michigan's local school districts and students. With each reform, school districts lost potential for autonomy and saw decision-making authority shifting to student families and state officials. Beginning with Michigan's comprehensive education finance reform in 1994, students and families were given more choice over where their child attended school. For suburban Clayton and rural Pine Ridge School Districts, choice brought increases in student enrollment—and valuable per pupil grant monies. While, for urban Ashmore and rural Petronila High School, choice coincided with declining student enrollment and increased budget pressures.

Accountability mandates and MME achievement illustrate variation in student performance over time and across high schools. Interestingly, for Ashmore High School, where district school of choice differential decline was greatest, MME scores lagged substantially behind other sampled schools. In fact, persistently low achievement resulted in Ashmore's labeling as a Priority School, within the bottom 5% of achievement over two consecutive years. Achievement proficiency over time is relatively consistent, across years and rankings within four sampled schools; suburban Clayton fared best and urban Ashmore fared worst.

## Variable Student Outcomes

The MMC was written to both increase academic rigor and students' success. Curricular requirements come at a time in students' life before they make changing life trajectory decisions

about their next steps after high school. As such, student outcomes including both high school graduation and college attendance are related to and important when examining MMC implementation within high schools. Below I observe high school student patterns in graduation and college enrollment across sampled schools. This study does not attribute trends or patterns to MMC enactment; rather, it seeks to better understand contextual factors principals faced after reform enactment.

**High School Graduation**

Academic outcomes and adequate yearly progress standards consider both MME proficiency and high school graduation rates. The MMC, increasing coursework requirements and rigor, may have altered high school completion rates statewide. In Figure 15, I examine four-year high school graduation rates in sampled high schools. For precise numbers, please see high school graduation tables in Appendix I.

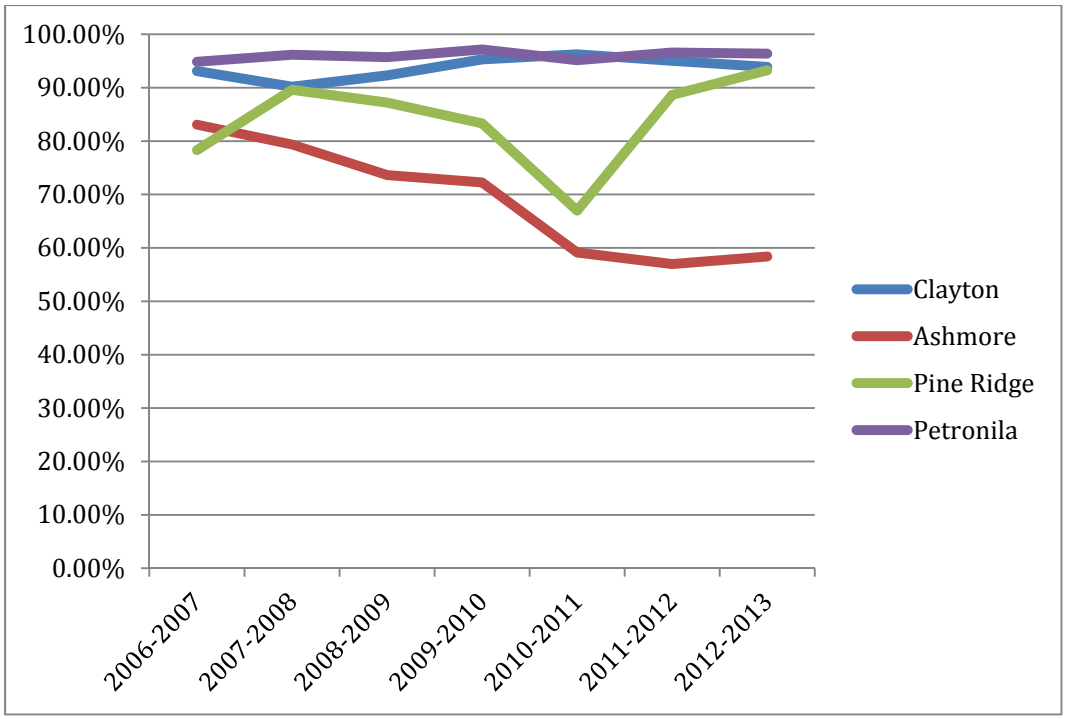


*Figure 15.* High school four-year graduation rates. This figure depicts the percentage of students within ninth grade cohorts graduating high school in four years, from the graduating class of 2007 to 2013. Each line represents high school graduation rates, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Statewide graduation rates declined for those students under MMC requirements, with significant effects regardless of prior academic performance (Dynarski et al., 2014). Figure 15 illustrates a growing divide in high school graduation rates between sampled communities. In academic year 2006-2007, graduation rates ranged from 78.30% in Pine Ridge High School to 94.87% in Petronila (MI School Data, 2014d). Over seven years, urban Ashmore High School graduation rates have continued to decline, 24.7 percentage points (MI School Data, 2014d). For the first graduating class required to complete MMC coursework, in spring of 2011, three out of four sampled high schools experienced a decreased graduation rate (MI School Data, 2014d). Suburban Clayton High School was the exception, slightly increasing graduation approximately

one percentage point (MI School Data, 2014d). Across time Pine Ridge High School graduation has fluctuated largely, jumping 21.64 percentage points in one year (MI School Data, 2014d). While, Clayton and Petronila High School have remained relatively steady, producing over 90% of high school graduates in any given year (MI School Data, 2014d).

High School drop-out rates show a complementary story; urban high school students have been increasingly dropping out. In Figure 16, I examine drop out trends over time in four sampled Michigan high schools.

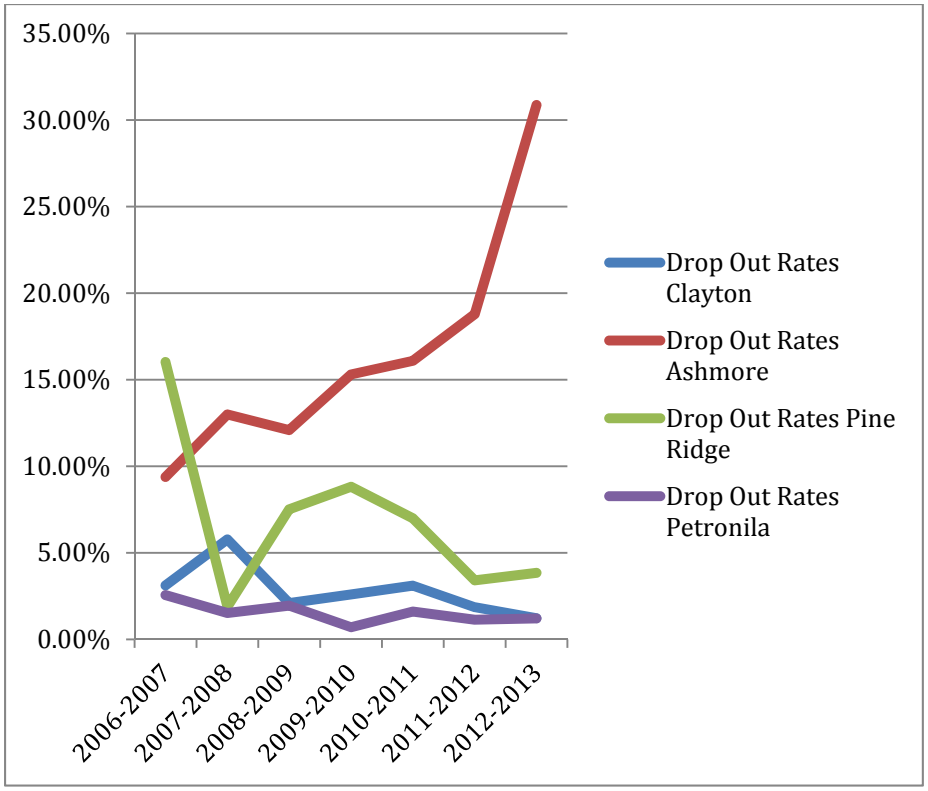


*Figure 16.* Four-year high school drop-out rates. This figure depicts the percentage of students within ninth grade cohorts dropping out of high school, from the graduating class of 2007 to 2013. Each line represents high school drop-out rates, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Ashmore High School shows a steady increase in high school drop-out rates moving from 9.38% in 2006-2007 to 30.87% in 2012-2013 (MI School Data, 2014d). While, Pine Ridge High School drop-out rates vary dramatically between years. Similar to graduation trends, Petronila drop-out rates remain relatively steady, while Clayton High School drop-out rates vary slightly more, with 5.78% of students dropping out in 2007-2008 compared to 1.21% in 2012-2013 (MI School Data, 2014d).

**Students' College-Going**

One of the primary motivations for MMC reform was increasing students' opportunity for and enrollment in postsecondary institutions. In 2010, Michigan educational attainment fell behind national rates, with 25.5% of Michiganders holding a bachelor's degree or greater (U.S. Census Bureau, 2010). Figure 17 shows Michigan students' college-going across five years, after MMC implementation. For descriptive tables on students' college-going over time, see Appendix J.

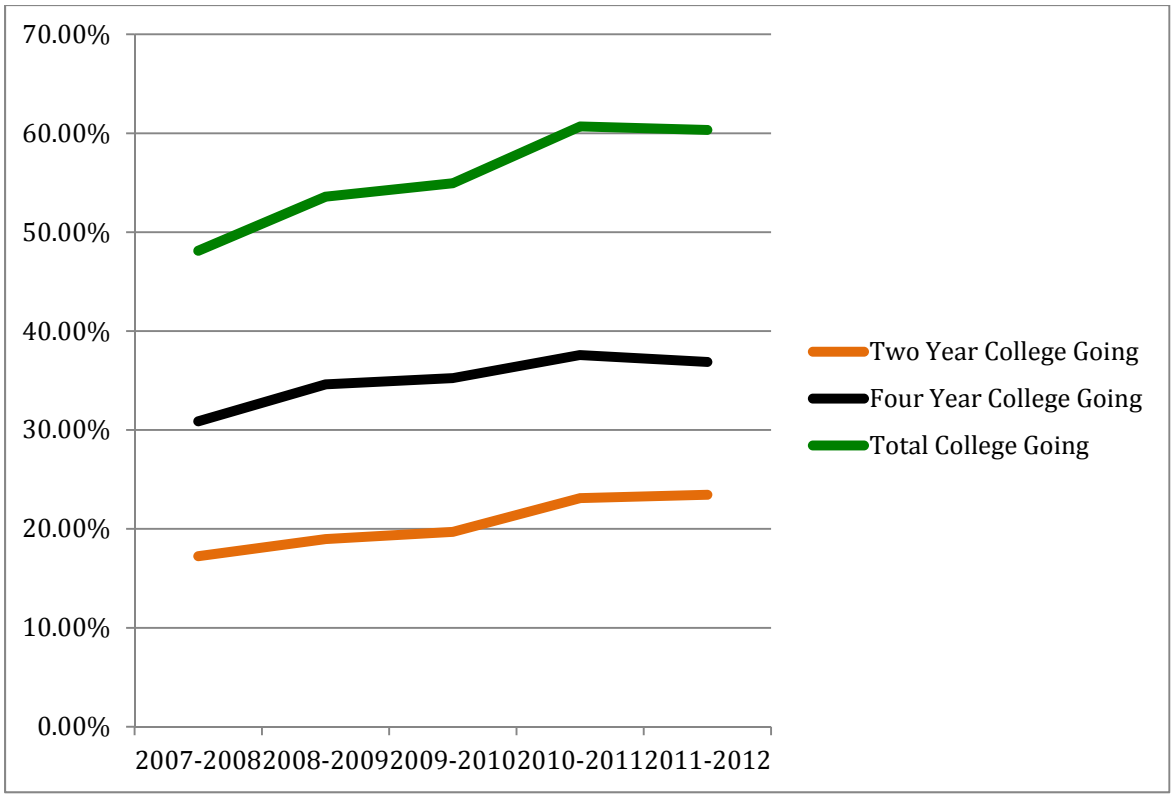


*Figure 17.* Michigan college-going rates over time. This figure illustrates the proportion of Michigan high school students entering college, within twelve months after graduation, from academic year 2007-2008 to 2011-2012. Each line represents college-going type with orange indicating two-year college-going, black referencing four-year college-going, and green corresponding to total college-going.

Statewide, total college-going among Michigan students increased from 2007-2008 to 2011-2012 (MI School Data, 2014e). Over five years, proportions of Michigan students enrolling in college within 12 months of graduation increased from 53.58% to 60.33% (MI School Data, 2014e). Both two and four year colleges experience higher student enrollments, increasing approximately six percentage points (MI School Data, 2014e). Below I examine college-going over time across sampled Michigan high schools.

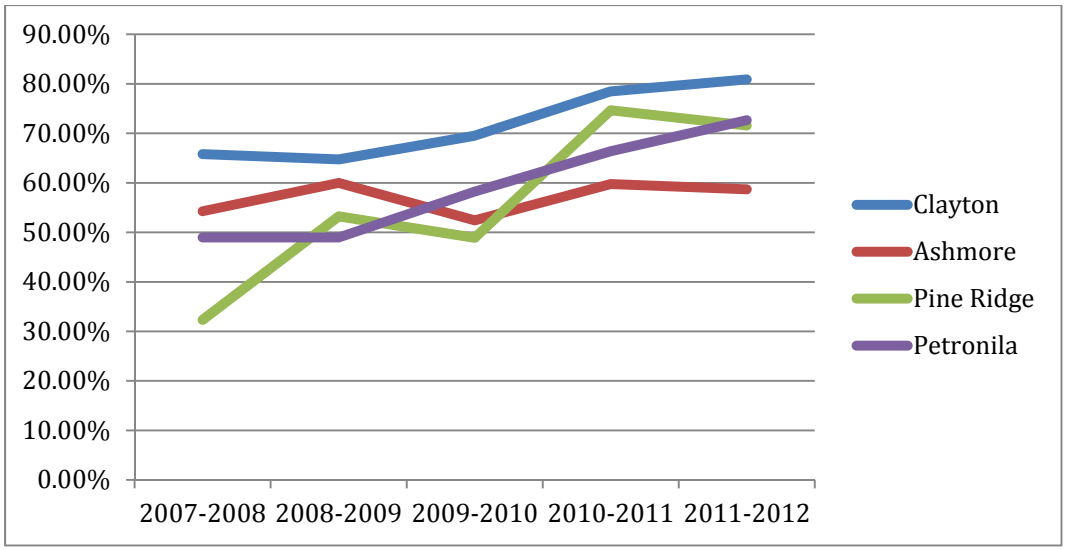


*Figure 18.* Total college-going rates over time. This figure depicts the proportion of students entering a two or four-year college within twelve months of graduation, by high school, from academic year 2007-2008 to 2011-2012. Each line represents four-year college-going, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Over a five-year period, total college-going increases across all high schools. Suburban Clayton students maintain the highest proportion of college enrollment in each examined year. Both rural high schools report relatively low college-going in 2007-2008 compared to other sample schools and statewide averages (MI School Data, 2014e). Specifically, in rural Pine Ridge High School only 32.32% of students enroll in two or four year colleges in 2007-2008 (MI School Data, 2014e). Five years later, this number increases to nearly 72%, over two times initial college-going rates (MI School Data, 2014e). Finally, urban Ashmore High School moderately increases students' college-going from 52.36% to 58.68% (MI School Data, 2014e).[8]

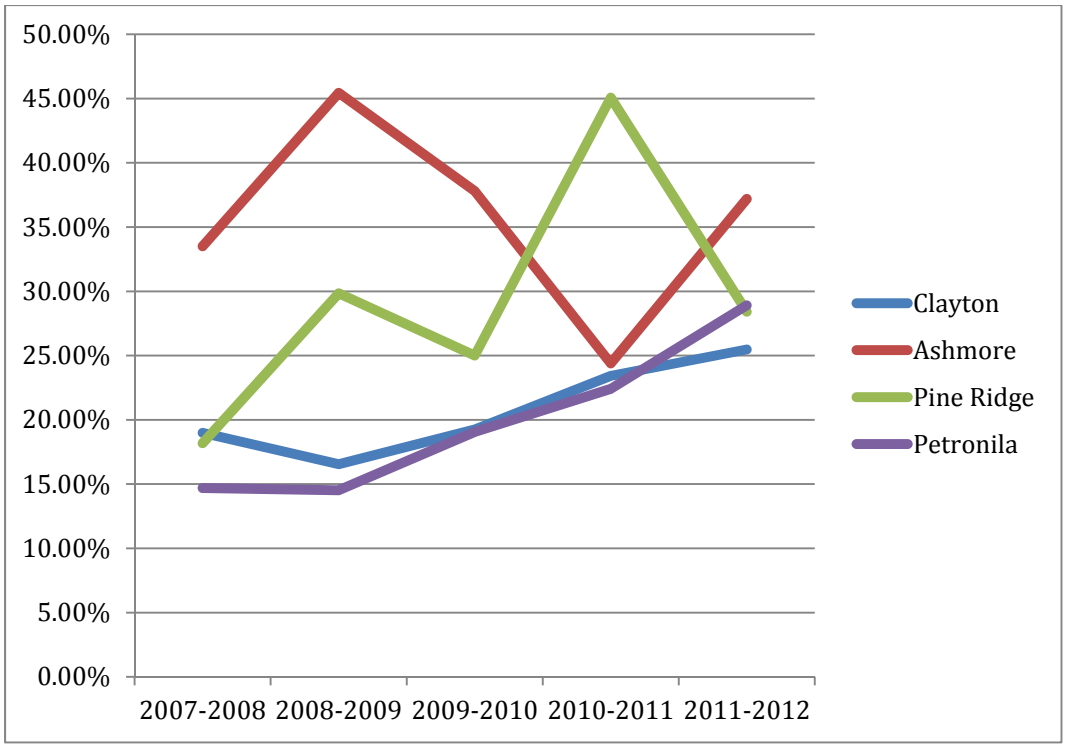


*Figure 19.* Two-year college-going rates over time. This figure depicts the proportion of students entering a two-year college within twelve months of graduation, by high school, from academic year 2007-2008 to 2011-2012. Each line represents two-year college-going, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

Examining students' college-going by institution type, two or four year schools, varying enrollment trends present. Ashmore's two-year college enrollment fluctuates erratically, falling over two years from 45.45% to 24.39%, only to increase over 10 percentage points the following year (MI School Data, 2014e). Pine Ridge High School also shows large variation in two-year college-going across years, however, where Pine Ridge seems to show a positive trend upward, Ashmore High School experiences greater decreases in two-year college-going. While Clayton and Petronila High School maintain a steady increase in two-year college-going rates (MI School Data, 2014e).

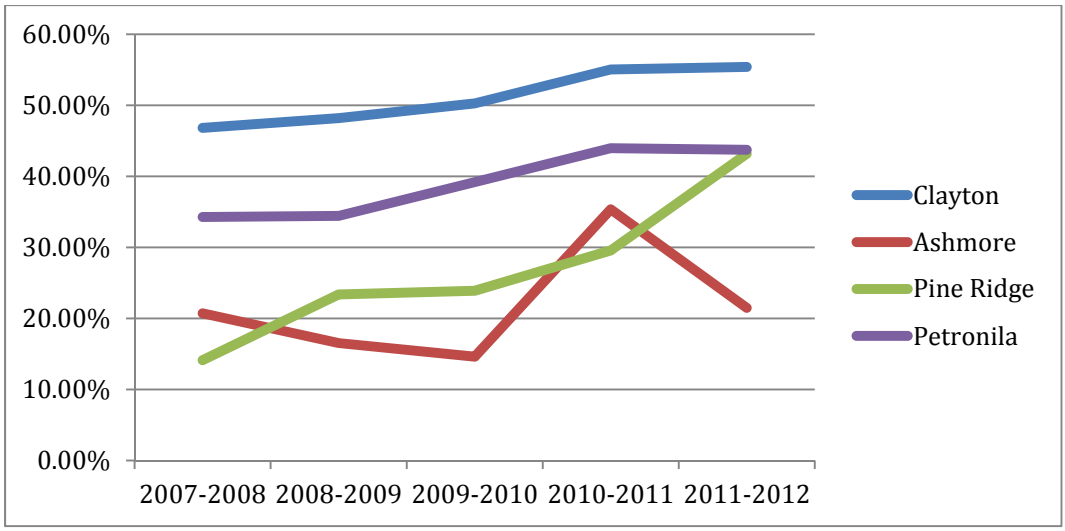


*Figure 20.* Four-year college-going rates over time. This figure depicts the proportion of students entering a four-year college within twelve months of graduation, by high school, from academic year 2007-2008 to 2011-2012. Each line represents four-year college-going, with blue representing Clayton, red representing Ashmore, green representing Pine Ridge, and purple representing Petronila.

In Figure 20, I examine four-year college-going rates across sample schools and time. Both Clayton and Petronila High School have steady positive rates of students' four-year college-going with 55.41% and 43.75% of students enrolling in a four-year college in 2011-2012 (MI School Data, 2014e). Pine Ridge also shows steady increases in four-year college enrollment, with the largest proportional increase over time at 29.04 percentage points (MI School Data, 2014e). Finally, while Ashmore High School college enrollment increases to 35.37% in 2010-2011, it falls the following year and comes in at approximately 34 percentage points below Clayton High School rates (MI School Data, 2014e).

**Overview**

Student outcomes within sampled schools vary across urbanicity and observed years. Examining graduation and college-going rates, urban Ashmore High School seems to be at the

greatest disadvantage; a smaller proportion of students graduate on time and attend four year colleges, while a larger proportion drop out. Suburban Clayton High School students achieved greater academic success, in general, than their sampled peers. In 2011-2012, a majority of Clayton students, 55.41%, went on to four-year colleges (MI School Data, 2014e). Finally, both rural schools—Pine Ridge and Petronila High School—varied in student outcome trends. Petronila High School seemed to more closely resemble suburban Clayton, with steady graduation and college-going trends, and small fluctuations in student patterns. Conversely, Pine Ridge had more fluctuations across years with large increases and decreases in graduation and college attendance.[9]

Examining descriptive patterns in school districts over time, particular patterns emerge; suburban Clayton is nearly always academically successful while urban Ashmore consistently struggles to keep up with statewide standards. Along the margin, rural Pine Ridge and Petronila High School varied in student outcome and academic performance patterns. It may be worthwhile to examine education reform within the purview of these most malleable districts.

**Schools Along the Margin**

Bubble schools, on the margins of academic proficiency and average college-going rates, provide an important opportunity for education policy research; examining these schools may provide insight into how policy and outcomes can be shaped by institutions or individuals. Rural districts, with smaller budgets, fewer schools, and less students, may constitute a unique subset of Michigan high schools responding to reform. Michigan has 3,530 rural schools comprising 29.7 percent of Michigan schools (Beeson & Strange, 2003). Pine Ridge and Petronila High School provide two differing examples of changes within rural communities coinciding with education policy reform.

Rural schools situate between upper and lower bound proficiency averages and school of choice differentials. While relatively similar populations and communities, high schools differed in MME and school of choice trajectories. While Pine Ridge School District enrolled proportionately more school of choice students than those students who left the district, Petronila School District observed declining school of choice differentials, with more students leaving than entering from neighboring districts (as seen in Figure 11). Obenauf and Judy (2012) find that resources matter in regards to schools' responses to the MMC. School of choice, with real consequences for districts' educational funds, may have impacted rural school funding disparately. School profiles in Table 17 do show descriptive differences across rural high schools, with Pine Ridge High School reporting the lowest student teacher ratio, 18.50, of all sampled schools.

Over time, rural Pine Ridge and Petronila High School differed in math and reading academic proficiency trends. Though both schools began 2010 with relatively similar mathematic performance, Pine Ridge student performance trended upward over time, while Petronila student performance declined (MI School Data, 2014c). In reading performance, Petronila High School began 2010 with a proportionately more students scoring proficient or advanced compared to rural Pine Ridge (MI School Data, 2014c). Yet, again, Pine Ridge scored higher four years later, with a six-percentage point lead in reading performance when compared to Petronila High School students (MI School Data, 2014c).

Graduation rates and college-going diverge from proficiency performance, with greater variation in Pine Ridge outcomes between years and over time. Petronila maintains more steady rates with less year-to-year fluctuations. However, average college-going among students converges in 2012, with both rural schools producing approximately 43% of students pursuing a

four-year degree and 28% of students pursuing a two-year degree (MI School Data, 2014e). Aforementioned variation in graduation and college-going across year may be due to Pine Ridge's smaller sample size or it may be due to institutional changes occurring across time.

Unobserved factors could account for variations in rural Pine Ridge and Petronila School Districts' school of choice experiences, student performance, and student outcomes. Existing along the margin, policy may impact schools differentially or schools may diversely react to reform. Within a marginal bubble, Pine Ridge and Petronila may be highly sensitive to external policies or exogenous shocks, which may change school characteristics or outcomes. Chapter four examines principals' perceptions and understandings of the MMC. Within this frame, it will examine both institutional changes and student outcome variation in relation to economic recession and MMC reform.

# CHAPTER 4—LIVING WITH CHANGE: PRINCIPALS' PERSPECTIVE ON THE MMC

As chief operating officers of the building, an administrator is a key component to any school. A significant body of literature exists on leadership, school leadership, and educational administration. This literature largely concludes successful schools most often have highly effective leaders and typically, this includes or refers primarily to, the administrator (Hallinger, Bickman, & Davis, 1996).

This generality is of equal import to education policy, when oftentimes administrators are the face or front lines of a top down policy or mandate. In these cases, it is the administrator who makes sense of and disseminates information to their staff (Spillane, Reiser, & Reimer, 2002). With this understanding, I requested interviews with the principal in each of the high schools I studied. Their responses and perceptions to college-going, student achievement, and the MMC are summarized below.

Overall, principals indicated students' stakes are higher with more potential for reward as well as failure. All agreed student course loads became more rigorous after MMC implementation. Finally, administrators acknowledged the struggle to prepare *all* students for college and discussed how their own school executed the curriculum. Several larger themes emerged when examining principal responses including:

1. Re-allocation of teacher resources, including layoffs, teacher sharing, or course assignment changes
2. School schedules, course offering, and course recovery adaptations
3. Perceptions of students' college-going importance

## Conceptualizing Recurring Responses

### Re-allocation of Teacher Resources

Implementing any policy or reform may cause reorganization of business as usual (Meyer & Rowan, 1977). This reorganization is not only relegated to administrative routines, but also may include shifts in personnel and employment duties. In schools, MMC implementation may have caused principals to reorganize teachers' course assignments in alignment with MMC demands. For example, a physical education teacher might be required to teach health—an MMC requirement. Additionally, teachers with specific certifications may have been hired more frequently after MMC implementation (MCER, 2012).

### Organizational Changes in Schools: Adapting to the MMC

Reallocating teacher resources may have coincided with larger organizational changes happening at the school level. Changes might include modifying the school schedule, altering students' course offerings, or providing more opportunities to recover course credits. Given significant increases in math requirements, from two to four years, students' stake in course taking and completion increased; high school graduation meant not only taking—also passing—rigorous coursework. High stakes may have factored into school pressure to adjust course offerings, allowing all students to *access* courses, and ensuring all students *complete* courses.

### Perceptions of College-Going

Finally, the emphasis on college-going and importance of college preparation may relate to a shift in perceptions on students' college-going. Principals, who previously did not value college-going for all students, may begin to feel that more students can achieve this goal. Conversely, principals who originally believed all students should go to college may realize through enacting a college preparatory curriculum for all, this is not as possible as originally

believed. These examples most likely represent opposite ends on a wide spectrum of principals' beliefs on college-going. Principals' responses and emerging themes will serve as guideposts to narrate collective viewpoints.

## Respondent Sample

Principals interviewed had a wide range of administrative experience. All principals had been administrators for at least fourteen years. One principal, Mr. Daniels, had been the head principal in his high school for thirteen years, while Ms. Hudson was in her first year at Ashmore High School. Dr. Grant, Mr. Daniels, and Mr. Carlson had all been principals in high schools prior to their current assignment. Ms. Hudson was an administrator in her district middle school before moving to a high school administrative position. Two principals worked in rural Michigan high schools, one worked in a suburban Michigan high school, and one principal worked in an urban Michigan high school.

Table 27

*Principal Descriptive Statistics*

| Principal Name | High School | Urbanicity | Yrs. of administrative experience | Yrs. of experience at this school | Gender |
|---|---|---|---|---|---|
| Dr. Grant Fletcher | Clayton | Suburban | 14 | 2 | Male |
| Mr. Michael Daniels | Petronila | Rural | 19 | 13 | Male |
| Mr. Kerry Carlson | Pine Ridge | Rural | 13 | 4 | Male |
| Ms. Margaret Hudson | Ashmore | Urban | 15 | 1 | Female |

Resulting themes emerged from the sample. Principals were questioned on a variety of topics including teachers' course assignments, student outcomes since MMC implementation, and organizational decisions made to accommodate the MMC. While these three major thematics are not unified across districts, all deal with how principals cope with an external institutional response. Results relate to interviewed principals experiences with the MMC

reform. These experiences may vary by individual or by school; they are not generalizable statewide.

## Short History of the MMC

External and from above, the MMC was created by policymakers, administered through the MDE, and enacted by local school districts. Resulting from a heightened awareness of public school conditions, and recognizing the advancement of knowledge and skills required for twenty-first century employment, the MDE enacted a new set of statewide requirements not only to more rigorously prepare students, but also to better prepare them for college or the workplace (MDE, 2006).

New graduation standards required all students to complete a significantly more difficult curriculum, particularly in math and science. Standards took effect beginning with Michigan's graduating class of 2011. The number of math, science, social studies, and foreign language courses increased for all Michigan students. As a substantial curricular shift, many districts, schools, and students had to meaningfully alter the structure of coursework to comply with new standards. Prior to the MMC, students could meet graduation requirements with any two-math credits. After MMC implementation, the class of 2011 became the first in Michigan obligated by state to complete four credits of math including, algebra I, algebra II, and geometry.

As a broad reaching policy, it is essential to understand how the MMC may impact principals, which prior research identifies are a key component in any school (Valentine & Prater, 2011). Educational reforms, increasingly common in efforts to raise student achievement, can be coarse in attempts to change outcomes, and are not always successful (Green, 1983). Similarly, grass root reforms, as they diffuse, may alter as they accommodate new interests and parties, innately changing reform consequences (Spillane, 2004). At any level, unintended

consequences may occur; results below detail principals' perceptions and response to reform realities.

## Part I: Unintended Consequences of the MMC

Although the MMC was implemented to increase college readiness for Michigan students—a common goal among all four principals—the enacted policy created turmoil. While three of the four principals interviewed felt the MMC was created with good intent, all four principals noted several unintended consequences that emerged after implementation. Conflicts ranged from scheduling discordance, to movement of teachers in courses, to differences in student outcomes. This study will examine several factors including (1) review changes in teacher mobility and course assignments (2) describe and explain principals' reported changes in course structure (3) identify perceived changes in student outcomes (4) analyze principal perceptions of students' college-going and impressions of the MMC policy.

Overall, all four principals related to the MMC as an external reform driven by state officials. Across schools, interviewed principals sensed the policy's reach and influence on daily decisions. For some principals, the MMC represented a negligible constraint on schooling, while for others policy enactment became incredibly problematic. Following the described theory of action, school and economic context complicated policy enactment and may have contributed to necessary change imposed by the MMC. Chapter five will provide an analysis of principals' behavior and sense-making within the conceptualized theory of action.

### Teacher Reallocations: Shifting Sands

Contemporaneous changes to teacher employment and course assignments occurred during MMC implementation. Changes in students' courses consequently changed demands for teachers. Principals based teacher reallocation on several factors including highly qualified

certifications, demands for additional subject specific teachers (i.e. math teachers, foreign language teachers, science teachers), and systemic reductions in elective opportunities.

Across urbanicity, all four sampled principals reported changing teacher course assignments after MMC implementation. All four high schools found core MMC classes comprised the majority of courses taught. Perhaps reacting to changes imposed while attempting to maintain student performance standards, principals may have shifted teachers across grades or courses, fitting teachers' skills to perceived student needs. Policy requirements, while not explicitly formed to overhaul the teacher labor force, may have uniquely changed Michigan teachers' work context.

Economic context interwove into employment reorganization. Principals reporting constraints in additional teacher hiring also indicated employment reorganization requiring some to teach unfamiliar content. High schools varied in their ability to absorb MMC requirements and consecutive changes; school schedules dictated course opportunities. For principals, understandings seemed to relate to perceived constraint, with those principals within semester scheduling reporting greater teacher movement following MMC requirements than Mr. Carlson, adhering to trimester organization. Finally, economic considerations related to dwindling student enrollment and therefore course demand dominated Ms. Hudson's sense-making in urban Ashmore High School. As suggested by this work's theory of action, principals engaged in employment reorganization to both maintain student success and meet state demands. Principal experiences within four high schools across several Michigan communities are detailed below.

**Highly qualified teachers.** Highly qualified takes on various meanings depending on one's position and vantage in education. President Bush coined the term in 2001 as part of the NCLB Act. Highly qualified teaching requires all teachers in core academic courses to obtain

"highly qualified licensure" (MDE, 2009). Teachers gain licensure through statewide tests within content and grade level areas (MDE, 2009).

After NCLB implementation, the United States Department of Education (USDOE) released highly qualified flexibility laws to accommodate specific subgroups in which certification was determined more difficult. The USDOE recognized rural schools—in which teachers might teach across grades and subject areas—may struggle to meet NCLB licensure deadlines (MDE, 2004). Potential problems persisted across schools within academic subgroups, where a high demand for science teachers coupled with schools' likelihood to assign courses across science fields to individual teachers, led the USDOE to provide extra flexibility for highly qualified requirements (MDE, 2004). Nationwide, NCLB certification pressures ranged, depending on context; one's school, grade level, academic field, and subject defined highly qualified stature.

***Qualifications, course assignments, and scheduling: Examining urban and suburban high school experiences.*** While all interviewed principals perceived highly qualified teaching to result in student success, many took licensure and its accompanying constraints around teacher course assignments as given. For Ms. Hudson at urban Ashmore High School, perspectives of teacher assignments and their changes over time immediately evoked thoughts on highly qualified requirements. "The high school…itself has about 700 kids, and so we have a limited faculty, and the highly qualified drives what they teach" (M. Hudson, personal communication). Ms. Hudson refers to state teacher licensure in regards to one's ability to teach a specific course. With a district that has continued to struggle with funding, school closures have caused many changes in staff and course assignments. Ms. Hudson explained teachers with the appropriate qualifications, certifications, and seniority are placed in given high schools; these decisions being

determined by the central district office. **"**We have a large number of staff that are new to this building…that has changed the complexion of the building, as far as faces and the names, and the offerings that we have" (M. Hudson, personal communication).

Ultimately course assignment decisions take place after staffing changes are made by central office and students' schedules are determined. For example, looking ahead to the next school year, Ms. Hudson remarked there will be little course assignment differences (M. Hudson, personal communication). Overall, Ms. Hudson felt that while she may make minor adjustments, course assignments are generally determined around class sizes (M. Hudson, personal communication).

Similarly, in suburban Clayton High School, teacher certification and student schedules also drive teacher course assignments. Scheduling and course offerings for the following year begin in November (G. Fletcher, personal communication). These offerings are based off student request and provide a general idea of necessary teachers (or Full Time Equivalencies). This list is presented to the district superintendent who may suggest slight modifications in courses or teachers. After superintendent approval, teacher department chairs are given course requirements and asked to collaboratively determine teacher course assignments within their department. These assignments are then returned to Dr. Fletcher for review before ultimately scheduling students.

Though both urban Ashmore and suburban Clayton High School organized teacher course assignments around highly qualified requirements and course offerings, schools' district involvement differed. In Ashmore, school district officials determined much in regards to teacher hiring with teacher licensure generally dictating course assignments. This was not the case in Clayton, where the superintendent provided Dr. Fletcher more latitude to hire and assign

teachers to courses. Latitude permitted Dr. Fletcher to create a fluid process that allowed teachers input on their course assignments and students voice in the courses offered and taught at their high school (G. Fletcher, personal communication).

***Defining highly qualified: Non-cognitive impacts on student learning.*** In Pine Ridge's small rural high school, authority to assign teachers to courses lies primarily within Kerry Carlson's office. Although, Mr. Carlson does take input from department chairs, counselors, and staff, he ultimately makes course assignment decisions. Mr. Carlson bases these decisions both on teachers' licensure and their non-cognitive skills, such as empathy or enthusiasm.

When Mr. Carlson came to Pine Ridge High School he immediately noticed the staggering freshman year failure rate; 33 to 35 percent of freshman students were failing at least one (often multiple) course(s) (K. Carlson, personal communication). Feeling that kids who do not engage in ninth grade have little hope for success, particularly with limited opportunity for credit recovery in student schedules, Mr. Carlson began reorganizing teacher course assignments. "[I try] to make sure that my most nurturing teachers are in ninth grade so that kids are going to get…a good start here at high school" (K. Carlson, personal communication). Mr. Carlson focused on mathematics instruction.

> If kids go into their Algebra class and they like their Algebra teacher, and the Algebra teacher cares about them and nurtures them to learn the material, there's a better chance that they're going to make it through geometry and Algebra II…and graduate on time. (K. Carlson, personal communication).

Mr. Carlson is visibly proud when discussing his ninth grade initiative and results. He relates a decrease in academic failure to finding the best academic fit for each teacher. "[I try] to look at who would be best for each grade level…And we've got good teachers that—I just did the hiring

and put them in place" (K. Carlson, personal communication). For Mr. Carlson, MMC constraints on students' opportunities to recover credits demanded creative reorganization of teachers to courses, considering both teachers' highly qualified licensure and character dispositions.

***Highly qualified MMC teachers.*** Highly qualified requirements dovetailed with MMC requirements for teacher licensure within a subject area. In Petronila High School, this meant special education students were no longer able to receive mathematics education with their special education teacher.

> [With the] Michigan Merit Curriculum, everyone has to have…a certified teacher, math teacher for example, in the math area teaching that [course]. And you also throw in the highly qualified part of it too. So, it's just more inclusion of our students that need accommodations or special needs students. (M. Daniels, personal communication).

Given tight budgets, hiring additional math or special education teachers is not always possible.

Additional students enrolling in given subjects (such as English), due to MMC requirements, coincided with the reorganization of course assignments at Petronila High School. The English department had to significantly reorganize their English language arts (ELA) course sequence after MMC implementation in 2006. Where before students chose ELA courses based on interests, MMC requirements scripted curricular content and sequencing (M. Daniels, personal communication). "We've basically taken every student and [said], 'This is your path through the English curriculum" (M. Daniels, personal communication).

According to Mr. Daniels, even within state definitions of highly qualified teaching, disciplinary course shifts left several teachers feeling disconnected with their subject. "We have a lot more teachers that are out of their areas of expertise, even though they're certified English

and they're highly qualified to teach English, but now we have this…curriculum, they have to get through this requirement" (M. Daniels, personal communication). In Petronila High School, MMC requirements related to changes in teaching assignments within special education, mathematics, and ELA. Teachers, established in curriculum and instructional delivery, adapted to new content, new students, or new roles.

**Teacher demand: The changing face of Michigan high schools.** Changes coinciding with the MMC extended beyond shuffling teachers within a building. For principals in Clayton, Ashmore, Petronila, and Pine Ridge, substantial increases in academic requirements also required additional teachers in specific disciplines.

***Part I: Increased demands for academic core teachers.*** Beginning in 2007, MMC students were required to take four years of math instruction contrasting significantly with Michigan's previous expectation for two years of mathematics. In addition, math requirements were specific and included Algebra, Geometry, and Algebra II. Although Dr. Fletcher was not in Clayton during the initial MMC implementation, he reflected on his institutional knowledge about changes that took place in response. He stated more required courses meant increases in core academic teachers (G. Fletcher, personal communication). In fact, descriptive analysis conducted by the Michigan Consortium for Education Research confirms Dr. Fletcher's impressions. From 2004-2011, the proportion of Michigan public school teachers teaching core MMC academic courses increased from 58% to 71% (MCER, 2012). Further, while the proportion of MMC core teachers increased, statewide employment of high school elective teachers declined (MCER, 2012).

*Declining demands for elective teachers.* Statewide trends in declining elective opportunities were experienced within Clayton High School (G. Fletcher, personal

communication). MMC coursework predominated teachers' course assignments. "Teachers that maybe had some elective and some core now are teaching completely the core required courses" (G. Fletcher, personal communication). In math, science, and English departments, teachers who were previously teaching some core academic courses and some electives (such as data interpretation, Meteorology, or niche ELA genres), now closely followed MMC curricular course guidelines.

Regulation of what "counted" as an English, math, or science credit shifted from local to state authority. "[It] used to be that varieties of elective classes could count toward your English credits. Now it's very prescribed…Those are some new shifts in thinking and mentality" (G. Fletcher, personal communication). Echoing experiences in Clayton High School and statewide trends, Mr. Daniels candidly addressed changes in teacher course assignments in Petronila.

> I would like to say we had to add more staff, but because you take the requirements and the fact that we have, the schools, have no money, we basically had to do away with…[or] teach a lot less elective type courses and teach more of the required courses. (M. Daniels, personal communication).

According to principals' experiences, enacting the MMC suggests both teachers and students may have to adjust their expectations of high school curriculum.

Across rural and suburban settings, both Mr. Daniels and Dr. Fletcher perceive changes in teacher course assignments to be primarily driven by student schedules adhering to MMC requirements. In Pine Ridge High School, Mr. Carlson felt most course assignment movement resulted from his focus on ninth grade retention and academic success. While in Ashmore High School, Ms. Hudson perceived district teacher sorting and student enrollment to have the greatest impact on teacher course assignments. Distinctively, in an urban district, in which district

involvement constrains principal purview, experiences responding to the MMC curricular reform diverge from other principals interviewed.

***Part II: Increased demands for foreign language teachers.*** After initial reorganizations to accommodate increases in core academic subject requirements, Michigan high schools were tasked with phasing in a required two years of foreign language by fall of 2012 (MDE, 2006). Rural high school principals, Mr. Carlson and Mr. Daniels, responded differently; working within the framework of their school schedule. In Pine Ridge High School, Mr. Carlson added another foreign language course in the trimester schedule (K. Carlson, personal communication). While for Mr. Daniels, in Petronila, the additional foreign language requirement meant larger class sizes. "Unfortunately, we haven't been able to hire more people, so the class sizes at all levels get bigger and bigger" (M. Daniels, personal communication). Petronila's budget and semester schedule, which allowed for little flexibility in additional courses, posed difficulties meeting foreign language requirements. Conversely, in a larger urban district, Ms. Hudson could rely on the additional influx of teachers with core academic certifications, arranged by central office, to ease obstacles associated with foreign language requirements. However, for all principals interviewed the additional foreign language coursework implied a decrease in student elective opportunities.

***Part III: Systemic consequences and reductions in non-core licensed teachers.*** As the MMC imposed significant changes in student schedules, teacher course assignments adjusted accordingly. Mirroring statewide trends (MCER, 2012) all four principals interviewed acknowledged that adjustments related to increased demands for teachers in several departments—including math and science—rippled outward across other disciplines in the

building. Across urbanicities and communities, principals in Ashmore, Petronila, Clayton, and Pine Ridge High Schools reported decreases in elective offerings.

In Clayton, elective programs decreased across the board including going from a full time to a half-time art teacher, shifting from two full time to one and one quarter time business teachers, and laying off several others (G. Fletcher, personal communication). For Dr. Fletcher, the impact was obvious.

> You're doubling the number of years kids are taking [math]. So you double the number, really, effectively of math teachers…When it's a zero sum game in some regards…if this departments' gaining so much, those kids [are] no longer in elective classes. (G. Fletcher, personal communication).

Mr. Carlson shared a similar experience. He reported, though Pine Ridge High School followed trimester scheduling—allowing for more elective opportunity—reductions in elective teachers have occurred.

> Even though I have an increase of students in the school, I have a reduction in elective art offerings, my art and wood shop teachers are here three fifths of the day, there were there full time…The MMC has changed the master schedule. But those [elective teachers] are not teaching things outside their area, they're teaching part of their day at the middle school. And the middle school, instead of hiring someone after they retired, started sharing teachers (K. Carlson, personal communication).

Ms. Hudson also reported teacher sharing; Ashmore High School shares elective teachers across middle and high school courses. Recent district consolidation, combining middle and high school students within one building, meant fewer costs (i.e. travel time, transportation, etc.) to teacher sharing (M. Hudson, personal communication).

*Interactions between teacher employment and high school scheduling frameworks.* While all principals reported reductions in elective course offerings, trimester scheduling seemed to mitigate the losses. Clayton High School, which initially changed to trimester scheduling after MMC implementation, reverted back to semesters after budgetary constraints (G. Fletcher, personal communication). Dr. Fletcher reflects on the multi-dimensional considerations—political and social—moving to and from a trimester schedule. "There were some who…realized that the trimester system was a good way…They were mostly elective teachers who saw it as a way of keeping stability in their hiring" (G. Fletcher, personal communication). According to Dr. Fletcher, though elective teachers were enthusiastic about the trimester scheduling change, teachers in the mathematics department felt reluctant (G. Fletcher, personal communication).

> [The math department] saw it as time... 'Wow, you're going to give me less instructional time to meet these higher standards…I'm supposed to have 9900 minutes. Now I'm going to have 8600 minutes to cover a much tougher curriculum with kids that aren't really prepared for it?' (G. Fletcher, personal communication).

After pausing, Fletcher conceded that the math department may have had a valid point (G. Fletcher, personal communication). In a system of limited resources: time, money, and educational discretion; expanding schoolings' reach to include all party interests is not always possible.

Three years after implementation, Clayton High School returned to semester scheduling. The scheduling change coincided with reductions in elective teachers (G. Fletcher, personal communication). Core academic teachers regained their previously lost instructional time. "Those who wanted that instructional time back for core courses were glad to go back to a semester system. It was like putting on an old coat you haven't worn for three years and liking it

again" (G. Fletcher, personal communication). Math teachers, perhaps behaving individualistically or collectively within their department, ignored larger employment changes happening at the school level.

The MMC, a curricular reform increasing academic coursework and rigor, both increased the number of required courses and their relative value. In Clayton High School, instructional time ultimately prioritized MMC core departments and left others on the periphery. According to Dr. Fletcher, teachers within the math department, focused on students' completion of MMC curriculum. "[They] didn't worry about colleagues being employed…[and] were either happy or were neutral about going back" (G. Fletcher, personal communication). For Clayton math teachers, curricular reform in an era of accountability, may have trumped concern for colleagues.

Table 28

*Teacher assignments to courses: Personnel considerations post-MMC*

| | Course assignments change | More core course teachers | Teachers out of expertise area | More teacher hires | Principal determines course assignments | Department chairs determine course assignments |
|---|---|---|---|---|---|---|
| Petronila High School | X | X | X | | X | X |
| Pine Ridge High School | X | X | | X | X | |
| Ashmore High School | X | X | | X | | X |
| Clayton High School | X | X | X | X | | X |
| Total | 100% | 100% | 50% | 75% | 50% | 75% |

**Overview.** All interviewed principals indicated their teacher course assignments changed after MMC implementation. Within all four high schools, changes included more teachers teaching core courses. Adding foreign language coincided with additional rearrangements of teachers and course scheduling. For some, these shifts could be absorbed into the school schedule, for others course class sizes increased.

> With the language requirement…you're going to have…eighteen [credits]. It's just the sandbox is only so big. And what's happening is the sand is shifting toward the required courses and shifting away from the electives. So you have, logically, people teaching more required courses. There's just no way around it. (G. Fletcher, personal communication).

Three out of the four high schools reported hiring more teachers for MMC courses. In rural Petronila High School principal, Mr. Daniels, said budgetary constraints were the barrier to additional teacher hires. (M. Daniels, personal communication). An increase of students in courses provided reason for him to continue hiring attempts (personal communication). During our interview, Mr. Daniels remarked he was waiting for the superintendent to approve two new teachers for next year (M. Daniels, personal communication).

While in all four schools principals had input in teacher course assignments, degree of influence varied. Principal input combined with department chair recommendations for course assignment allocations in three of four high schools. Rural Pine Ridge High School was the exception to this norm; Mr. Carlson noted that he organized teachers according to their qualifications. Qualifications under consideration included cognitive and non-cognitive skills such as certifications, experience, and nurturing personalities (K. Carlson, personal communication).

Regardless of urbanicity, schools somewhat similarly experienced MMC curricular course changes. All schools reorganized to meet additional mathematics and science demands. Furthermore, specifications in the nature of a given course requirement narrowed the scope of potential course offerings. However, increased requirements had ramifications. In two high schools, changes to courses meant some teachers were outside their area of expertise. Two of four principals interviewed stated teachers mentioned concerns about teaching outside their usual course load. Finally, shifting sand for elective teachers created what, for some, seemed like a non-negotiable reduction in elective opportunities.

**Changes in Schedule and Course Offerings**

Course scheduling and offerings sits at the crux of contentions between instructional time, academic and elective courses, and teachers' assignment to courses. Principals determine course offerings based on student enrollment, expected per pupil expenditures, and curricular expectations. Depending on a school's scheduling structure, there may be more or less opportunity for course variety. Across urbanicities, and schedule organization—semesters and trimesters—principals report reducing elective opportunities. Furthermore, sampled principals observed less flexibility in students' schedules.

Michigan principals may have reorganized schedule structures, within their financial constraints, during MMC enactment efforts. Though both principals with trimester schedules felt they could better differentiate courses and provide credit recovery, time conflicts with year round electives remained. Additional increases in foreign language coursework further complicated school schedule organization. Ultimately principals, operating within an economic theory of action, attempted to create workable structures in which students might navigate MMC demands and achieve measurable success.

**Trimesters.** There are many schedules a school may adopt to organize instructional time. According to Kubitschek, Hallinan, Arnett, and Galipeau (2005) "time is an important school resource. Research consistently shows that more instructional time leads to higher achievement" (p. 63). While block scheduling provides students and teachers with longer time segments together, research is mixed on its efficacy, and implementation costs are high (Lare, Jablonski, & Salvaterra, 2002).

Trimester scheduling allows schools to provide more course variety and opportunity. Courses may include additional electives or credit recovery, depending on individual student preferences and demands. However trimester scheduling often decreases instructional time within courses. In a study of a Midwestern high school, Kubitschek et al. (2005) examine the academic consequences of lost instructional time. They find though significant instructional time was lost through scheduling errors, students' achievement was not impacted (Kubitschek et al., 2005). "At a larger level, this finding is more troubling than reassuring. Should a student be able to miss a significant number of classes and not have it affect his or her grade? This seems unlikely" (Kubitschek et al., 2005, p. 70). Yet, within a trimester schedule, teachers are often asked to do just that; teach the same amount of material, elicit the same amount of student mastery, and do it all within less instructional time.

Out of the four high schools in this study, two changed to trimester scheduling after MMC adoption. Considering scheduling options within a budget constraint, schools' preferences may or may not have aligned with financial realities. Statewide and nationwide recessions may have influence schools' scheduling choices. For Clayton High School, trimester scheduling was short lived; cuts to the school budget coinciding with the 2009 Great Recession required the suburban high school to return to semesters. Though matter of fact about schedule

reorganization, Dr. Fletcher noted difficulties associated with credit recovery in a semester system; in a limited schedule, with few electives, there is little room for retaking courses (G. Fletcher, personal communication). Financial concerns was a theme echoed by all four high school principals, who cited the economic recession as a strain on budgets.

For Mr. Carlson at rural Pine Ridge High School, the trimester system allowed Pine Ridge to better differentiate mathematics instruction—providing students more opportunity to master rigorous MMC mathematic demands. "Taking Algebra II…[breaking] it into [a] two-year, four trimester course, to accommodate those learners that are struggling with math…that change happened in the last six or seven years" (K. Carlson, personal communication). Interventions extended into the ninth grade, where students could enroll in intervention courses in math and English, helping them prepare for the forthcoming rigorous curriculum (K. Carlson, personal communication). In summary, while for some the trimester schedule allowed for more elective opportunities, for others it meant additional time for mastery of core course material.

Students in Petronila High School, adhering to a semester based system, had fewer course choices. Mr. Daniels was well aware of school budget constraints contemporaneously coinciding with MMC requirements. He explained with little discretionary funds, his school could not afford course schedules providing both elective and required courses offerings (M. Daniels, personal communication). Thus, school finance decreases shifted Petronila scheduling preferences up the budget constraint. Petronila High School could not afford to reorganize schedule structure; within a semester system course opportunity constraints were clear.

**Reducing electives.** Observed statewide teacher mobility, increasing teacher proportions in core academic fields and decreasing elective teacher prevalence (MCER, 2012), were echoed in principals' reports on school course offerings. Regardless of course scheduling

configurations, all school leaders interviewed perceived a reduction in students' elective opportunities. Electives reduced included art, visual art, business, and career center. School context heavily may have related to principals' perceived elective reductions. For Ms. Hudson at Ashmore High School, becoming a Priority School caused more families to consider other high schools, and she saw electives as a way to excite students to come to school each day.

> [We have to] try to make it more attractive. [Families] look at all the offerings you have as far as sports, as far as after school clubs and programs. So we have to try to compete and to campaign why you would put your child in our building, as opposed to another building next-door, or in the same community. (M. Hudson, personal communication).

Again, school context created a scenario with various schedule reorganization possibilities and inherent difficulties in each. Statewide reform initiatives required more rigorous academic coursework, while nationwide accountability laws mandated annual gains in student achievement. Free market ideas undergirding charter school growth and school of choice policies chipped away at Ashmore's student population base and therefore per pupil funding, the majority of a school's revenue. Finally, exogenous impacts from statewide and nationwide recessions constrained community, district, school, and family budgets. For Ms. Hudson, maintaining electives was both imperative and elusive.

***Career center considerations.*** In rural Petronila and Pine Ridge High School, decreasing elective opportunities caused scheduling difficulties for career center students. Career center is a separate school students may elect to attend where they may gain a credential for employment after high school. Career centers attempt to incorporate academic knowledge with real world demands.

Mr. Carlson explained, even in a trimester system, students who participate in band or choir and career center do not have opportunities for any other electives (personal communication). He added, additional requirements from the State of Michigan around work-based learning influenced what counted as a MMC credit (K. Carlson, personal communication).

Mr. Daniels at Petronila remarked things have become easier for career center students since the Michigan Department of Education allowed specific MMC credits to be counted within certain career center courses.

> We do have a little more flexibility now and students that go on to a two-year career tech. ed. program, because…we've done the work to, for example, map out that two years in this school...in the building trades class…we can incorporate the fourth year of contextual math in there. But those kind of things have made it... difficult. (M. Daniels, personal communication).

Broadening definitions of worthy MMC courses allowed Petronila building trades students the opportunity to count coursework toward MMC requirements.

With a state emphasis on achievement and college-going, both Mr. Daniels and Mr. Carlson found themselves struggling to retain additional opportunities, such as career technical education (CTE), which may not obviously align to MMC requirements. Differing from rural high schools, principals in suburban Clayton and urban Ashmore High School did not report issues of CTE-MMC compatibility.

**Shifting requirements to the middle school.** With significant increases in course requirements for high school graduation, many principals mentioned earlier academic preparation. In urban Ashmore School District, Ashmore High School for the first time (2012-2013) combined seventh and eighth graders into their building. This was a result of budgetary

constraints and school closures. However, according to Ms. Hudson, the opportunity has allowed Ashmore teachers to collaborate with colleagues across schools. "We have not separated…what previously was the middle school from high school. We worked very deliberately and purposefully to try to make sure that they are one full department because it offers many opportunities for collaboration" (M. Hudson, personal communication).
She notes these conversations typically center around students' academic preparation and needs. "What's happening is that our teachers actually have conversations... and they're meaningful...Whereas before they were a building away and we rarely had an opportunity to have those real day-to-day conversations" (M. Hudson, personal communication). Ms. Hudson's belief in teacher collaboration and teachers' understandings of their discipline's educational landscape girdered her encouragement of teacher communities and middle school preparation for the MMC.

In suburban Clayton High School, Dr. Fletcher reflected on students' preparation for middle school retrospectively. "They didn't say, 'Okay, this is going to take place now for these kindergartners coming in'…what we're seeing is there are some people who are challenged by this curriculum now. But that's because they didn't have the foundation earlier" (G. Fletcher, personal communication).

The wish for more lead-time in preparation for the MMC was shared by Mr. Daniels in rural Petronila High School (M. Daniels, personal communication). In fact, preparing students for the MMC has become an institutionalized part of the Petronila curriculum. Educators moved foreign language, computers, and mathematics requirements down to middle school eighth graders.

> We've pushed down...the computer requirement, we expect them to get in middle school. We want them to have at least one year of their foreign language out of the way in middle school...[and] we have more kids now getting their credit for Algebra I in eighth grade than we probably ever thought we...would. And we probably have pushed kids along too far. (M. Daniels, personal communication).

Pushing kids along generally entailed allowing students to move onto the next course regardless of course mastery; a passing grade was sufficient proof of success. According to Mr. Daniels, this practice snowballed into a chain of poor grades and comprehension within a specific subject. When asked why this occurs, Mr. Daniels said, "Well, because 99 percent of the people [parents]…when we say you need to stay back and retake it, they say, 'No, he already has his credit.'" (M. Daniels, personal communication). Shifts in middle school curriculum also had consequences in Petronila School District for teacher hiring, teacher course assignments, and increased middle school class size (M. Daniels, personal communication).

**Foreign language.** Although, administrators generally felt the MMC was rolled out without much time for educators to react and prepare, foreign language coursework lagged initial MMC requirements. The MMC, which was first imposed in 2008 on the graduating class of 2011, did not require two years of foreign language. Four years later in 2012, ninth graders in the class of 2016 began high school as the first class under both the MMC and the additional foreign language requirement.

While foreign language requirements were given additional implementation time, constraints in students' already brimming course schedules may have related to high schools reorganization of student coursework. Students in Petronila High School begin foreign language coursework in middle school years (M. Daniels, personal communication).

Pine Ridge High School students—following a trimester schedule—were able to accommodate foreign language within the high school years. However, CTE students had difficulty fitting world language into their schedule. Pine Ridge responded by adding an additional foreign language to their course offerings.

> The career center being available to students pushed us to have their foreign language in the first two years of their high school experience. And that forced us to add the second foreign language this year, because this year's ninth graders have to have two years of a foreign language when they graduate in the Michigan Merit Curriculum. (K. Carlson, personal communication).

According to Mr. Carlson, the additional language requirement adds to the competition faced by non-essential electives such as art. "Kids come to school because they have fallen in love with the electives and now we're going to have less and less of the electives for the students because we have the extra foreign language [and] the MMC" (K. Carlson, personal communication). Both rural high schools were forced to think creatively to meet state requirements, student interests, and scheduling constraints. To preserve some elective opportunities, each principal worked to integrate foreign language into the curriculum in the least disruptive avenue, be it adding additional language courses or shifting foreign language requirements to middle school.

While working in a different community context, Dr. Fletcher was faced with the same task to integrate foreign language into all students' curriculum. The additional requirement prompted many parents to call concerned about their child's scheduling choices.

> I get parents concerned, especially now, with the increased language requirements, that, "My kid wants to be in band. How can we make it work?" And we've gone from a

> trimester to a semester, so it's even crunched more...we're having a real contraction of options for parents. (G. Fletcher, personal communication).

This contraction of student options was the greatest obstacle Dr. Fletcher reported after MMC implementation. In fact, Clayton High School supplemented MMC coursework with additional opportunities for both remediation and credit acceleration (G. Fletcher, personal communication).

**Credit recovery.** Research shows patterns in students' perseverance within academic courses. Hoffer, Rasinski, and Moore (1995), analyzing data from the National Education Longitudinal study, find students' socioeconomic background strongly influences perseverance in rigorous academic courses (Hoffer et al., 1995). While students' with more rigorous high school math requirements were no more likely to drop out (compared to students with two year math requirements) they were also no more proficient in math achievement tests (Hoffer, 1997). Hoffer (1997) concludes, "additional courses that students in schools requiring three years of mathematics take are not sufficiently demanding to improve achievement" (p. 600). Schooling factors, such as remediation and credit recovery may also be considered.

Credit recovery is an opportunity extended to high school students to recover a lost credit due to a failure or incompletion of a given high school course. Recovery is typically offered in core high school courses required for graduation.

***Suburban demands for credit recovery.*** Credit recovery at Clayton High School was offered both over the summer and during the school year in computer labs. Students who failed a given course and could no longer fit it into their schedule were allowed to take courses through Michigan Virtual High School.

> Normally we don't allow that…but we have no other option at this point...So we also looked at it as... "let's bring the kids who failed Algebra IA and Geometry IA into that class and put them into all of our credit recovery labs, so those kids don't get behind either," which is what we did. (G. Fletcher, personal communication).

As an added bonus to the collective student body, students in the recovery lab resulted in smaller class sizes in the general education math courses. And, while recovery courses were offered online, students were supported by a recovery lab teacher and para-pro in addition to the online teacher. Dr. Fletcher noted that as of May 2012, all students were passing.

> So we feel like that was a...a pretty good intervention. I just wasn't going to let them fail, like, "Okay, well, this is the semester system and this is what we have. And, you know, too bad there's all these budget cuts that make it impossible." (G. Fletcher, personal communication).

In Clayton High School, creatively working on alternatives to the MMC's rigorous requirements for course mastery and completion proved successful. Engaging in creative solutions was a strategy echoed by Mr. Daniels in rural Petronila High School.

***Institutionalizing summer school.*** According to Mr. Daniels, credit recovery has significantly increased since MMC implementation in 2006. "Typically before all this started...there were years we didn't even run summer school....Last year...we had roughly 20 students, I think, and like I say, we've had 38 as of yesterday...So it's really doubled" (M. Daniels, personal communication). Mr. Daniels attributed the increase in math recovery both to the increase in math courses enrolled and also to the strain of completing all requirements within a semester schedule and in four-year's time. "They have to get through Algebra II. So...you know, we've stressed it with them, that, listen, there's no room to make it up, unless you're

planning on coming back to school for a fifth year" (M. Daniels, personal communication). Mr. Daniels added that increases in five-year graduation rates are not positive for annual yearly progress school reports.

In Petronila, Mr. Daniels met students' summer school demands through virtual schooling. Petronila High School students engage in credit recovery options over the summer in a program called Education 20/20 (most often referred to as E 20/20). E 20/20 offers online courses for credit recovery or acceleration in which students may enroll in an entire course or a portion of the course (to catch up after being absent from school). Offering a wide array of subjects and courses, E 20/20 is relatively inexpensive when compared to providing traditional teacher-led summer school courses. Students may work at their own pace to complete course objectives; while staying on track toward four year graduation, an ultimate goal for both students and Petronila educators.

***Virtual schooling successes in credit recovery.*** At Pine Ridge High School, students have engaged in credit recovery for years. During the school year, students are given the opportunity to attain credit recovery online through Michigan Virtual High School. While Mr. Carlson acknowledged its success, he was cautious about its use.

> We do a lot of online credit recovery options, and that's been successful for a lot of students…So they've been through the classroom instruction at least once before they go into it...We're seeing less [students there] now because we put more of an emphasis on the ninth grade year. But kids who don't do work were there before the Michigan Merit Curriculum, and they're there now. That hasn't changed, and those are the typical credit recovery students. (K. Carlson, personal communication).

Mr. Carlson's did not see a noticeable difference in the number of students who were engaged in credit recovery options, outside a traditional classroom environment. Perhaps of note, he was also the only principal representing a school on trimesters, in which students had many more choices when scheduling credits.

Overall**,** in schools with noticeably tighter student course schedules, summer school and credit recovery began serving many different students. For some, it became a way to fit in desirable courses before high school graduation. For others, it became a necessary requirement to receive a diploma.

Observed responses in Michigan high schools mirror nationwide movement toward credit recovery, with educators attributing growing interest to accountability requirements (Zehr, 2010). Boston superintendent, Irvin L. Scott, remarked, "he would be 'completely untruthful' if he didn't acknowledge that his district's decision to launch a new online credit-recovery program was spurred by an interest in improving graduation rates to meet regulations for… [NCLB]" (Zehr, 2010, p. 1). Similarly in Chicago, academic year 2009-2010 district efforts focused on online credit recovery for freshman students (Zehr, 2010). In Boston, Chicago, and Michigan students engage in online credit recovery courses (Zehr, 2010). For educators, online credit recovery courses promise an opportunity to raise graduation rates and maintain legitimacy in a highly public and globalized educational system (Zehr, 2010), while for students, they offer flexibility to complete work in their own space, at their own rate.

**Credit acceleration.** In a system that rewards educational advantage (Cohen & Neufeld, 1981), students may seek to master additional academic content. Horn & Nunez (2000) examine a panel of 1992 high school graduates from the National Educational Longitudinal and find completion of advanced coursework, beyond algebra II, positively relates to college enrollment,

with 85 percent of students going on to postsecondary institutions. Naturally, students and parents may emphasize credit acceleration opportunities.

Credit acceleration is an alternative extended to high school students who have shown both interest and aptitude to excel in a given subject. Examples of acceleration could include Advanced Placement courses in which students can receive college credit, courses at a local community college, or additional courses (not typically offered) in a subject of your interest.

Demands for credit acceleration presented one principal with a unique concern; there was little room for additional rigorous coursework. After the implementation of the MMC in 2006, and the foreign language requirement in 2012, a problem emerged in suburban Clayton High School; course scheduling. Students went from 16.5 credits necessary for graduation to 18.5 credits required for graduation (G. Fletcher, personal communication). For some students, additional participation in a year round elective monopolized almost all remaining credits.

> If a kid's a band kid… you've got four years of band... that gives you only…four classes of other electives…If you're really a motivated kid and you wanted to be in Advanced Placement classes, or you're in our Math-Science Academy, you're going into summer school now. And this is why we've also changed. (G. Fletcher, personal communication).

Dr. Fletcher responded by allowing students the opportunity to continue their education over the summer through Michigan Virtual High School.

Michigan Virtual High School offers many more courses than would typically be offered by any given high school over the summer. "You can do credit recovery...Or you can do credit acceleration...if you want to make space in your schedule. Many schools already had credit acceleration…to get ahead. This...summer will be the first time ever in the history of [our] district" (G. Fletcher, personal communication). Dr. Fletcher reported that while some students

were enrolling to take a course not offered at Clayton, others were taking summer school as a way to get ahead and take more electives during the school year. Students are also given opportunities to take an additional seventh hour during the regular school day through Michigan Virtual High School; however course cost was deferred to the family (G. Fletcher, personal communication).

Table 29

*Schedule and course offerings: Accommodating the MMC and shifting requirements*

| | Trimester | Shifting requirements to Middle School | Reducing electives | Credit recovery | Credit acceleration |
|---|---|---|---|---|---|
| Petronila High School | | X | X | X | X |
| Pine Ridge High School | X | | X | X | |
| Ashmore High School | | X | X | X | |
| Clayton High School | X | | X | X | X |
| Total | 50% | 50% | 100% | 100% | 50% |

**Synthesizing perspectives.** Overall, all high school principals, across urbanicities and despite scheduling differences, report reducing elective opportunities. As the state required significantly more courses for graduation, flexibility in students' course taking simultaneously diminished. According to both Mr. Carlson and Dr. Fletcher, trimester scheduling in some ways better accommodated statewide requirements. Increased course taking opportunities provided flexibility to academically differentiate course instruction, and if necessary, complete credit recovery. However, a shorter trimester, founded tensions in concerns over content mastery.

For schools adhering to trimesters, students' schedules were better able to accommodate elective opportunities. However, year-long or multi-year commitments such as band or career center complicated MMC completion. Juggling requirements was further perplexed by foreign language requirements, imposed four years after initial MMC requirements. Adding foreign language coincided with rural and suburban principals' efforts to innovate course-taking

alternatives. In rural high schools, Mr. Daniels shifted foreign language requirements to the middle school, while Mr. Carlson added a foreign language course to accommodate students' scheduling conflicts. In the suburbs, high achieving families prompted Dr. Fletcher to offer additional opportunities for course acceleration after school or over the summer. Finally, in urban Ashmore High School, the shadowed label of Priority School and the imperative need to keep students both in high school and the district overrode existential thoughts on MMC feasibility or impacts.

## Part II: Principal Perspectives

Inescapably, the nagging question of any policy or reform is, "what was the outcome?" Interviewed principals reflected on outcomes for students. This study will examine principals' perceptions of student success as they relate to meeting academic expectations and college-going, underlying motivations of the MMC reform. Finally, it will analyze principals' overall perceptions on the MMC.

Several principals recognized new requirements substantially changed the average student profile within MMC courses. While, principals regarded the MMC as pushing many students past preconceived academic limitations, optimism regarding student outcomes varied. Some principals suggested navigating student success meant alternate routes to MMC completion—the personal curriculum. Principals discussed the personal curriculum option within MMC requirements, what it meant for their students and school. Detailed below are principal perceptions of the MMC as they relate to student success. In chapter five, I will interpret principals' behaviors and responses to institutional forces, within the theory of action established in chapter two.

**Perspectives on Student Success**

Principals in all four high schools indicated students were taking more rigorous curriculum. According to sampled principals, the MMC impacted both courses and their student composition. Following a changing composition within courses, all four principals reported more course failures and implied increases in students remediating courses including, summer school, online credit recovery, math labs, or remedial math/ELA preparation courses. Though the MMC allows personal curriculums, principals across schools reported few student cases.

Changes in high school graduation rates varied among schools. Urban Ashmore High School experienced a decrease in high school graduation, which led to state sanctions and an undesirable Priority School status (M. Hudson, personal communication). Conversely, Pine Ridge found that while initially graduation rates decreased, they eventually increased to above average levels (K. Carlson, personal communication). Finally, both Petronila and Clayton High School principals did not report changes in their high school graduation rates.

For all principals, school context dictated MMC enactment. Though the MMC disordered school schedules and student coursework, principals varied in their ability to respond. According to suburban Dr. Fletcher, the college preparatory curriculum well aligned to a majority of student plans. Conversely, for Ms. Hudson in under-resourced and academically struggling Ashmore High School, additional requirements constituted an increase in rigor that students failed to meet. Sampled principals confronted varying school, community, and academic resources endeavoring to make decisions to best optimize student success. Principals' personal experiences making sense of the MMC, its requirements, and its consequences are detailed below.

**Raising the achievement bar and meeting it.** Raising the academic bar in an era of accountability is an exercise fraught with a fair amount of risk and reward potential; the academic consequences of which are, by law, public knowledge. For high schools, measured consequences included high school graduation rates and MME scores (MDE, 2008).

***Academic gains for special education students.*** For rural Petronila principal, Mr. Daniels, the additional MMC requirements challenged his ideology on students in special education. Mr. Daniels remarked on his surprise at students receiving special education services and their success. "I look at kids sitting in classes, and it's like four years ago, five years ago, we would have never dreamed that this kid would be sitting in Algebra II, and there he is" (M. Daniels, personal communication). According to Mr. Daniels, Petronila student success has not been moderated by MME test score results (M. Daniels, personal communication). He states that graduation rates have not decreased (M. Daniels, personal communication). Additionally ACT scores, a portion of MME results, have not decreased but rather stayed relatively stable (M. Daniels, personal communication).

Mr. Daniels feels achievement results show progress in academic success and seemed to be willing to take average test scores in exchange for more students learning rigorous material (M. Daniels, personal communication). With genuine disbelief, he points to another success story. "This student wouldn't be in chemistry and being able to pass it, and there she is…So I think overall…it hasn't really affect our graduation rates, which I kind of anticipated it would" (M. Daniels, personal communication). Relatively consistent graduation rates coupled with increased academic rigor spelled success for Mr. Daniels in rural Petronila.

***Aligning curriculum with pre-existing academic expectations.*** In Clayton High School, Dr. Fletcher relates raising achievement expectations to his years as a classroom teacher. "I

think the move to the ACT as the test for the MMC…was a good idea…my experience [as a] classroom teacher, [was] every year that I ratcheted up expectations…the kids would…respond to the challenge" (G. Fletcher, personal communication). This firm belief in expectations driving student results was validated by insignificant changes in high school completion rates (G. Fletcher, personal curriculum).

Dr. Fletcher cautions that it is still too early to entirely determine MMC effects. "Last year was the first graduating class…whether they go on or not [to college in] any different numbers than previously, it's tough to say yet, because again, our rate of kids going on is I think really high" (G. Fletcher, personal communication). With that caveat, Fletcher speculates that the MMC may drive some to attend college who, prior to the MMC, may not have considered post-secondary schooling. "It's not like in Virginia where they have about three or four diplomas you can earn. And one is a career track…This is clearly a curricular change designed toward getting kids to be prepped for college" (G. Fletcher, personal communication). An overt emphasis on college aligned well for the already high alumni postsecondary enrollment in Clayton.

***Graduation declines in Michigan high schools.*** High school graduation for the first cohort of students required to complete MMC courses declined statewide (Dynarski, Frank, Jacob, & Schneider, 2014). Dynarski et al. (2014) find significant graduation declines across schools regardless of prior achievement history. Furthermore, Dynarski et al. (2014) find disproportionate negative effects on high school graduation for those entering students with the least amount of mathematics proficiency.

In Pine Ridge, MMC consequences seemed somewhat ubiquitous. While Mr. Carlson was unsure how the MMC impacted students' postsecondary attendance, he could reflect on recent graduation rates (K. Carlson, personal communication). "Initially, I think the MMC may

have lowered the graduation rate and caused more five year graduates" (K. Carlson, personal communication). In fact, Mr. Carlson states that the graduation rate for the first cohort under MMC requirements was the lowest in a decade (K. Carlson, personal communication). Since then, graduation rates have steadily increased. Mr. Carlson reports that last year's graduating class had the highest graduation rate in a decade (K. Carlson, personal communication). He attributes this polar shift in graduation to intervention initiatives engaging ninth grade students (K. Carlson, personal communication).

Righting runaway non-completion rates and low scores is an uphill battle. At Ashmore, increased requirements imposed by the MMC posed yet another hurdle to graduation efforts. Furthermore, postsecondary outcomes may not align with policy implications. For rural Pine Ridge and urban Ashmore High School principals, college preparation was one of two post-secondary choices: college or career. Later examined in principal perceptions on students' college-going, both Mr. Carlson and Ms. Hudson held multifaceted viewpoints of success. On student results, Ms. Hudson remarked, "We'd like to make [students] ready for either options" (M. Hudson, personal communication). Mr. Carlson shared similar sentiments (K. Carlson, personal communication).

**Raising the bar and missing.** Making the AYP grade with additional MMC requirements is a point of pride for Mr. Carlson, Mr. Daniels, and Dr. Fletcher. However, in urban Ashmore High School, with district wide school closures, a dwindling budget, and a draining community, Ms. Hudson seemed focused on maintaining a student population base that would keep school doors open.

***A case of an urban high school.*** In Ashmore High School, the MMC and its sister test, the MME, presented a measured and public view on students' MMC course mastery. "My first

year in the building, when I came in it would appear there has been a negative impact [of the MMC], results are the bottom five percent of the state" (M. Hudson, personal communication). Exiting the Michigan Department of Education's priority status entailed both increasing MME scores and graduation rates.

> It was the graduation rate that stopped us from making AYP status this year, [Ashmore's] results in the past had been able to pass muster and from my understanding, that was the one variable that kept us down, and I would conclude from that it has had a negative impact and has made it harder for us to achieve the goal. (M. Hudson, personal communication).

For Ms. Hudson, the goal was getting off priority status; everything else was secondary. "It has made us pay notice or take a look at what we are doing to address the Common Core so we can accomplish what is needed to make us a school that is not a priority status" (M. Hudson, personal communication). Bureaucratic regulation incentivized MME results, as important components of school AYP, and thus Priority Status, to the forefront of Ashmore High School's agenda.

***Navigating course failure.*** Though urban Ashmore High School was the only school that did not meet state AYP requirements, all principals interviewed lamented on the increases in course failures among their students, especially in Algebra II. In Clayton High School, 24 students, or one-third of students enrolled, failed Algebra II in the first semester. "We have a well reputed school and we do quite well…So, we scrambled" said Dr. Fletcher. In a system with little room for failure, quick reactions and intervention from administration may be the difference between a four and a five-year high school graduate. "If you need four years of [math] credit, and these kids are in their senior year, and they fail Algebra IIA, they're no longer on track to graduate" (G. Fletcher, personal communication). Mr. Daniels also attempted to provide

a safety net for Algebra II failures at Petronila High School. "We have implemented co-teaching with a math teacher and with a special education teacher…that's an adjustment in itself…And [teachers might] also be pulling students out to reteach those that need it to modify assignments" (M. Daniels, personal communication). Providing accommodations for math students, regardless of an individualized education plan, supported Petronila efforts towards on-time graduation for high school seniors.

**Personal curriculums.** As part of the MMC, the MDE included an option for specific students to utilize a personal curriculum. The personal curriculum can alter one or many MMC course requirements. For example, a student may opt to waive a health requirement in favor of an additional A.P. course. In the opposite extreme, students may exempt themselves from the second semester of Algebra II if they pass the first semester. However, personal curriculum guidelines are still relatively stringent for students without IEP's, principals interviewed did not report many students with personal curriculums. Michigan analyses on students' course taking do not account for personal curriculum totals or averages. Furthermore, to date there is no statewide information on personal curriculum prevalence.

According to Mr. Daniels, rural Petronila students with personal curriculums generally had an IEP (M. Daniels, personal communication). While personal curriculums may adapt students' course taking requirements, they do not substantially change the nature of course requirements or sequencing. In Petronila, one enclosed classroom of cognitively impaired students were no longer able to receive diplomas after MMC implementation. According to Mr. Daniels, they were unable to participate in general education courses, and were therefore awarded certificates of completion (M. Daniels, personal communication). This change was disquieting for Mr. Daniels.

> You've been here four years or some kids [longer]…and they're not going to be able to live on their own, but it was still a special moment for them to get a diploma. And it's good for their families…They can at least say they had a diploma. (M. Daniels, personal communication).

For Mr. Daniels, a diploma was more than a piece of paper, preparation for college, or a career, it was a point of pride—a right of passage that all students who journeyed toward should attain.

Rural Pine Ridge High School also struggled to help students complete Algebra II (K. Carlson, personal communication). According to Mr. Carlson, the course was a difficulty for some. However, in an effort to follow MMC guidelines and intent, he did not certify personal curriculums. "If we follow the true guidelines of a personal curriculum [it] doesn't make sense for those students necessarily, they still need to get through at least half of Algebra II" (K. Carlson, personal communication). Mr. Carlson's understanding of personal curriculum policies, its relationship to the MMC, and to students' college-going guided his policy implementation. Operating under the belief that universities require Algebra II, regardless of IEP, it was illogical to implement a personal curriculum. Overall, Algebra II presented a barrier to Pine Ridge students' high school graduation and MMC course completion (K. Carlson, personal communication). This challenge was not unforeseen, imposing significant increases in required courses and narrowing options for students with and without IEP's, both changed students course taking and the composition of students within courses.

**Changing student composition.** Courses that had once been for the academic elite, post-MMC were required for all. Legislators tasked Michigan high schools with both increasing high school graduation rates and test scores—while requiring more difficult courses. For students who could not or did not qualify for a personal curriculum, yet were still struggling to

pass, schools were left to create a feasible course completion model. Mr. Daniels in rural Petronila remarked,

> With math…you know, they come in at all different levels. And we basically had to figure out ways that we could, for a lack of a better term, get students through…And so there were adjustments made to how our teachers would teach Algebra II. (M. Daniels, personal communication).

Statewide graduation patterns support the presence of challenges encountered by Mr. Daniels (Dynarski et al., 2014). Dynarski et al. (2014) find entering high school with sufficient mathematical knowledge is a statistically significant indicator of later high school graduation.

Experiences in rural Pine Ridge echo problem-solving efforts in Petronila; moving students through the math course sequence. Mr. Carlson offered Algebra II in a two-year, four trimester course to accommodate struggling learners (Mr. Carlson, personal communication). Similar to Mr. Daniels, the primary goal was high school completion. "All those [interventions] were prompted by the curriculum. You know, we got to get 'em through the curriculum" (K. Carlson, personal communication).

Suburban experiences somewhat resembled rural principals' accounts. According to Dr. Fletcher, changing student compositions in math courses, tracking them into varying levels, accommodated more Clayton students attempting to pass. School educators confronted problems with additional credit recovery and math lab options.

Across the board, principals attempted to prepare *all* students for success. As Ms. Hudson in Ashmore High School succinctly identifies, "My prediction [is] that we struggle to make sure they're at grade level and able to keep up with the increased standard" (M. Hudson, personal communication). This struggle has been become personal for some, as in the case of

Mr. Daniels, who was openly disappointed he could no longer grant diplomas to his cognitively impaired students. While Dr. Fletcher relates the struggle to his own child, "if this were my child…and this was his situation—that he'd failed a required course—what would I want the administrator to try and do…Because graduating with your class is a big deal in our culture" (G. Fletcher, personal communication). Students' trajectory, development, and attainment of culturally significant milestones (Jekielek & Brown, 2005), contributed to Mr. Daniels' and Dr. Fletcher's viewpoints and pressure to support student graduation efforts. This viewpoint contrasted with Mr. Carlson and Ms. Hudson, in which concrete tasks concerning AYP guided implementation efforts.

Table 30

*Principal Perspectives: MMC Impacts on Student Outcomes*

| | | | Graduation Rate Change | | Changed the % of College Enrollment | |
|---|---|---|---|---|---|---|
| | Increases in rigorous curriculum | More course failures | Increase | Decrease | Increase | Decrease |
| Petronila High School | X | X | No change | | No change | |
| Pine Ridge High School | X | X | X | X | Unknown | |
| Ashmore High School | X | X | | X | Unknown | |
| Clayton High School | X | X | No change | | Unknown | |

Overall, principals suggest MMC mandates changed both courses and the student composition. Students' increased rigor prompted rural and suburban principals to reimagine student course-taking and success. Within these boundaries, some principals report allowing students to use a personal curriculum. While two of four principals report no change in high school graduation requirements, one principal reports both a decrease and subsequent increase, with another reporting only a graduation decline.

Observing MMC enactment through principals' vantage, it seemed to be enacted and adapted to each school context. Curricular adaptation varied and may have related to preexisting attitudes and structures surrounding college preparatory curriculum and students' college-going. Policy implementation disrupted schooling traditions across all four schools observed. For some, such as Dr. Fletcher in suburban Clayton High School, changes were manageable, for others curricular requirements posed dramatic problems in efforts to maintain achievement standards.

**Perceptions of College-Going**

In chapter 3, we examine MMC diffusion through schools and educators. Figure 9 displays MMC intent, to change student outcomes and college perceptions in an effort to increase students' college-going creating a competitive Michigan workforce. For suburban principal Dr. Fletcher, better student preparation and a natural progression to college easily situated within college-going perceptions. While, for rural and urban principals, personal and community beliefs regarding relevant learning and prospective employment undermined reform assent. Though all principals reported implementing the curricular reform, principals' prior perceptions regarding college-going relevance interwove into their sense-making, with those principals who questioned a college for all model more focused on satisfying formal state requirements.

Mandating the MMC as a high school graduation requirement, and monitoring its mastery through the MME, the state bypassed addressing the community on college-going expectations. This besought the questions,

1. What are educators' unique perspectives on students' college-going?
2. What is their perception of prevailing attitudes held by their colleagues on students' college-going?

3. What is the school community's attitude on students' college-going?

**Redefining student preparation.** Definitions of successful student preparation varied across principals and contexts. Urban and rural principals presented a more nuanced vantage of future success, prioritizing students' preferences and their fruition. Whereas, for suburban principal Dr. Fletcher, students' successful futures entailed their college-going.

Principal conceptions may differ based on the communities they attempt to serve. Bryk, Sebring, Allensworth, Luppescu, and Easton (2010) identify principals as integral leaders facilitating schools' learning climate. "Principal leadership is a catalyst for change and a key driver of the development of the other essential supports" (Sebring, Allensworth, Bryk, Easton, & Luppesco, 2006, p. 30). Learning climate is one of four important schooling areas; others include curricular trajectories, human capital, and community ties (Bryk et al., 2010). Sebastian and Allensworth (2013) find principals impact teaching and learning primarily through creating a college-going culture and safe educational climate. As the instructional leader in a school, the efforts are often indirect and involve creating a structure and vision for success. Below are principals' perceptions of students' college-going and its relevance.

***An urban principal perspective.*** Ms. Hudson, principal at Ashmore High School, mirrored district expectations when first asked what her feelings were on students' college-going. "We would hope that they would go to college or to a career...This is a math, science, and engineering magnet building…so we have high expectations" (M. Hudson, personal communication). However, when asked whether her priorities for students' college-going had changed since 2006, she indicated her goals were largely tempered by concerns for later employment.

> My perception has been modified because it is very difficult for college graduates to find respectable employment...And I always promoted college. But at this point, I have some

> hesitation, because of promises that we've made or incentives that in the past were available. They're not necessarily available at this time in our state, meaning employment.....gainful employment. (M. Hudson, personal communication).

Ms. Hudson's observations on Michigan's economic context reflect external macroeconomic changes. While Michigan's per capita income began declining in 2003, additional education cuts coinciding with the Great Recession in 2009 (Covay-Minor et al., 2014), contributed to a more stringent economic context; one in which educators, students, and families closely observed postsecondary investments and reward.

Operating within an urban high school, navigating both Michigan and nationwide recessions, Ms. Hudson found it more useful to take a holistic approach to post high school options when discussing priorities and goals with teachers and staff.

> We talk about preparing students for life. And that includes preparing them for college, careers, and, you know, other options as well. I think most of them feel that we should prepare [students], so that they could enter any college if they choose to do so. (M. Hudson, personal communication).

According to Ms. Hudson, this same sense of preparation for what life brings—not a scripted expectation—carries into the community as well, "the community is hopeful that we will prepare students for life, and it doesn't necessarily have to be college for all of them" (M. Hudson, personal communication).

Expectations for student success differ from presiding neighborhood averages. Locally, 86.1 percent of Ashmore adults graduated high school while 24.5 percent hold a bachelor's degree (U.S. Census Bureau, 2012a). Moreover, while about 59 percent of students went on to two or four-year colleges, within 12 months of graduation, in 2012—37.19 and 21.49 percent

respectively (MDE, 2014e)—college persistence for low income or minority populations remains significantly lower than their more advantaged peers (Niu & Tienda, 2013; Rumberger, 2010; Carter, 2006).

***Rural conceptions of student success.*** While it is well documented that there are significant roadblocks to college for those students growing up in an urban area (Carter, 2006), what is less obvious, are the unique concerns related to students in rural settings. However, when speaking with principals from rural high schools, similar concerns for students' real world opportunities were shared. That is, students must be prepared not only for college but for whatever postsecondary opportunity they pursue.

Educator and community perspectives on college-going may reflect established norms in postsecondary success. While in both Pine Ridge and Petronila High School over 70 percent of students pursued a degree in 2012, a minority hold bachelor degrees, 20.4% and 12.4% in Petronila and Pine Ridge, respectively (U.S. Census Bureau, 2012a). Though a majority of rural students may seek postsecondary opportunities, college-going complexities may impede degree completion (Rumberger, 2010).

Mr. Carlson's expectations at Pine Ridge High School have always included college. "I think the one thing that I've always had is an expectation that kids get post-secondary education. I don't necessarily call it college-going…because I still think we need pipe-fitters and plumbers…and things like that" (K. Carlson, personal communication). But, according to Mr. Carlson, for many teachers at Pine Ridge High School feel college is the only way to succeed. "[Teachers] know some kids aren't going to college, but I think the thought is that those kids aren't looking at their future, and they're just being short-sighted" (K. Carlson, personal communication). Teachers' perceptions of success may stem from their own class or culture

(Tyler, Boykin, & Walton, 2006). The majority of teachers come from middle class or upper middle class families in which a bachelor's degree is an entrenched fixture in one's coming of age and identity (Fussell & Furstenberg, 2005).

Instead, local community expectations, as perceived by Mr. Carlson, had a more flexible conception of success. He felt that while the larger part of the community was satisfied with the college preparation of their students, a few sought a more applied curriculum.

> I think the community as a whole believes we do a good job preparing kids to go on to college. The kids that struggle at high school, I mean, as a subset of that community...I don't think believe that. I think they believe…we need to offer things that are better suited for their children... I think they're looking for the work-study programs, things that they can put their hands on that would be directly related to jobs, and not college. (K. Carlson, personal communication).

According to Mr. Carlson, some Pine Ridge families felt underrepresented by Michigan's college preparatory curricular reform. For them, career technical education was a valuable alternative and eventual next step, distinct from college-going outcomes.

In a democratic society, in which both minorities and majority interests may be served, depending on their ability to influence decision makers, Mr. Carlson and Ms. Hudson's inclination to define success broadly meeting all parties' interests both makes political and personal sense. Political in that they relate to multiple audiences of parents, and personal in that they validate school efforts when examining students' post high school outcomes.

College preparatory curriculum and its questionable application to all Michigan students was a consideration echoed by Mr. Daniels in Petronila High School. While he acknowledged implementing the MMC, his thoughts regarding Algebra II, suggest Mr. Daniels may not believe

in a college for all model. "[Teaching Algebra II], it's not just to the topnotch students that are going to college. It's to everyone" (M. Daniels, personal communication). Bifurcating college and non-college bound students, Mr. Daniels deviates from overarching policy goals.

***Aligning postsecondary goals to long-standing traditions: A suburban principal's outlook.*** According to Dr. Fletcher in suburban Clayton High School, expectations for college were widely held by staff, parents, and personally.

> I think it's been an overwhelmingly positive change, to be honest...the idea that kids were coming out of Michigan schools not really prepared...That's still not going to be cured by this, but there sure is going to be a big difference. (G. Fletcher, personal communication).

Clayton, a community with some amount of economic diversity, annually sends a majority of graduating seniors to college. In 2012, 25.48 percent of their students went to a two year institution and 55.41 percent of their students went to a four year institution, totaling about 81 percent of students who went onto a postsecondary schooling (MI School Data, 2014e). Thus, in a community in which college-going is both expected and established, college preparatory curricular reform was received positively by Dr. Fletcher—regardless of organizational juggling.

Across urban and rural high schools, principals seemed to indicate a need to balance priorities for college-going with student and parental preferences for applied work and more immediate employment opportunities. This differed from expectations mediated by Dr. Fletcher in suburban Clayton High School, where all parties were in agreement on the importance of college. Despite differences in parental alignment to college-efforts, all four sampled principals—across urbanicity and regardless of community social capital—attempted to satisfy parent and student demands. Common efforts to meet stakeholder demands differ from previous conceptualization of principal and teacher behavior, in which schools' community and workplace

structures mediate educators' responsiveness to stakeholder demands (Bidwell, Frank, & Quiroz, 1997). This may relate to school of choice competition across schools, with educators responding to stakeholders in an effort to preserve student enrollment.

**Principal Perceptions of the MMC**

With so many extraneous concerns and adoptions required, principal views on the MMC could be categorized into two main notions:

1. The MMC was implemented with good intentions and poor planning

2. The MMC created tension between local visions for school and student success

Three out of four principals interviewed felt the MMC was implemented to help students succeed. However, three out of four principals also felt the curricular rigor—specifically Algebra II—created difficulty in maintaining student success. Principals continued to consider curricular reform within a theory of action in which external requirements for student success juxtaposed against economic and community considerations regarding MMC implementation. Further insight into principals' perceptions on the MMC may be found below.

**MMC implementation: Good intentions, bad roll out.** Principals reflecting on the MMC and its implementation generously felt policymakers set out with good intent when creating the MMC and instituting its roll out. "Good or bad, I think it's good to have the expectation and the rigor for students, but I just think…we needed to phase it in and make certain that…we were getting the proper training at the younger levels to be ready for the MMC" (Mr. Daniels, personal communication). Mr. Carlson, in rural Pine Ridge High School, also felt students were taking more rigorous curriculum as a result of the MMC. "I think that…what has happened with the MMC is that everybody is taking a more rigorous curriculum to get a

diploma" (Mr. Carlson, personal communication). Rigorous courses combined with more mandated course requirements contributed to principal criticisms for additional roll out time.

**Local versus state control.** State mandates for student courses, both in number, type, and content represented a deliberate shift in high school education practice. Curricular choices, previously housed in district, became state matters. High school diplomas, representing highly varied subject mastery, became slightly more streamlined. Meeting high standards was all too well known to Ms. Hudson, who cited MME results as the primary reason for her school's Priority School label.

> As a Priority School, the state has intervened and has dictated some directions that we have to go, based upon our bottom five percent performance in the past years… So the MME has been a very important factor, which is actually the gatekeeper for college too…that has been the most pervasive theme all year. (Ms. Hudson, personal communication).

With a pressing need to satisfy state requirements and avoid additional sanctions, college and career aspirations were a far off concern. "You know, college, careers—all those are our goals…But to get there, we have to begin with the end in mind, which is…our result on the state test" (Ms. Hudson, personal communication). Ashmore necessarily prioritized both student graduation rates and MME scores. While Ms. Hudson did not proliferate on MMC impacts, the indirect consequences of MME testing requirements and more difficult graduation standards, colored her vision for school success.

Table 31

*Principal Perceptions of the MMC*

| | MMC policy intent was positive | Enough enactment time for MMC | Greatest MMC obstacle |
|---|---|---|---|
| Petronila High School | X | | Algebra II |
| Pine Ridge High School | X | X | Algebra II |
| Ashmore High School | | | The rigor |
| Clayton High School | X | | Schedule contractions |
| Total | 75% | 25% | ---- |

Principals interviewed discussed their overall perceptions of the MMC. The majority felt it was written and implemented with good intent. However, Mr. Daniels in Petronila and Dr. Fletcher at Clayton High School remarked on the lack of enactment time for MMC mandates to take effect (personal communication). Mr. Carlson entered Pine Ridge High School with a large freshman drop-out rate prior to MMC implementation. Thus, one could imagine that from his perspective, problems with high school preparation may or may not relate to MMC implementation—or its corresponding enactment time frame.

Principals' responses to the greatest challenge imposed by the MMC patterned by urbanicity. Both rural principals quickly cited Algebra II as the most challenging obstacle to MMC implementation (K. Carlson & M. Daniels, personal communication). For urban principal Ms. Hudson, a more encompassing answer—the rigor—summed up MMC difficulties (M. Hudson, personal communication). In suburban Clayton High School, Dr. Fletcher found the decreasing schedule opportunities to be most difficult since MMC implementation (personal communication).

**Overall Reflections**

In the four high schools interviewed post-MMC implementation required give and take from principals, teachers, and students alike. Principals worked to reorganize personnel to best

meet curricular demands and student needs. Students received fewer opportunities for elective course taking, many had larger class sizes with less one on one opportunity to interact with an instructor, students had less leeway to make a mistake, and for some the opportunity to earn a high school diploma was removed all together. As a whole, students gained an increase in academic rigor, preparation for college-going, and a free opportunity to take the college entrance exam (ACT).

What began as an effort to increase college-going and high school academic rigor diffused throughout schools in various ways, differing starkly. Principals engaged in sense-making (Coburn, 2004; Spillane, 2004), enacting MMC requirements at the ground level, formed opinions of the policy, its motivations, and its shortcomings. Their beliefs connected to reform priorities, with some concentrating on formal compliance rather than implicit curricular goals. Mr. Daniels reflects on legislator intentions.

> The research shows that you get through Algebra II and your success in college goes up astronomically...I guess I think the thought was, well, if we get through Algebra II and everybody can go to college, everybody will be successful. They weren't necessarily getting those students that didn't take Algebra II...most of them weren't even going to college. (M. Daniels, personal communication).

To Mr. Daniels, policymakers' misunderstandings of the selection bias associated with college preparatory courses, is but one piece of a larger narrative surrounding MMC complexity. Across districts, principals shape behaviors within educational realities; making it work—within their budget and mandated requirements.

Generally, financial constraints and increasing state curricular demands have impressed upon all four leaders a sense of doing more with less. However—regardless of perception—

principals strategized to meet increasing demands and maintain relevance in a competitive schooling market. Similar to existing education research examining educational leadership decision making (Hallinan, 1996), financial context guided choices made. Principal behaviors functioned within a theory of action in which their decisions optimized federal definitions of academic success, community definitions of valuable schooling, while aligning to economic constraints. Principals worked to provide additional elective opportunities, reorganizing school schedules, and creating after school and summer school opportunities. They made efforts to encourage co-teaching, hire additional instructional aids, or engage in virtual learning to increase instructional ratios and credit recovery options. Principals looked to share resources through teacher sharing and engaging middle schools in fulfillment of MMC requirements. Finally, they looked ahead to the next MMC phase, incorporating foreign language requirements, creatively implementing coursework in response to state demands.

School context interwove within education reform efforts. Principals, aware of unique community concerns and values, attempted to satisfy students, families, and state law. This task seemed more or less complex when contrasting MMC requirements to preexisting community traditions and values. Educational, political, and theoretical implications will be examined in chapter five.

# CHAPTER 5—DISCUSSION

In chapter four, I examine Michigan high school principal experiences and observations during and after MMC implementation in 2006. I see experiential incidences surrounding teacher assignments, school scheduling, and student outcomes. Furthermore, behaviors align within a theory of action with education finance and principal sense-making impressing upon schools and communities. Descriptions of principal behaviors relate to the four principals sampled and therefore may not be generalized to all Michigan principals. I discuss each theme below, drawing conclusions and considering potential implications. A qualitative work, study purview relies upon Max Weber's prerogative, "nor are we solving problems here; we are trying only to make their significance apparent" (1949, p. 50). In this effort, I hope to contribute a more thoughtful analysis to policy discourse surrounding curricular reform.

## Reallocating Teacher Resources

In four sample Michigan high schools, clever reorganization of teacher resources included shifting teacher course assignments and employment to suit MMC demands. Teacher qualifications generally prioritized MMC core courses, while reducing FTE elective staff. Variations within school context defined other characteristics principals valued in teacher leadership. For Pine Ridge principal, Mr. Carlson, this included non-cognitive skills to deal with entering freshman. Teachers, adjusting to new assignments, new academic demands, or departmental shifts, may have found new social contexts.

### MMC Teacher Increases and Social Context Considerations

Increased academic rigor led Clayton, Petronila, and Ashmore High School to focus teacher employment resources on MMC core teachers. As aforementioned, this pattern echoes

statewide teacher employment patterns. From 2004-2011, Michigan MMC core teachers increased to nearly three quarters of employed teachers, up 13 percentage points (MCER, 2012).

Departmental inequalities in teacher employment numbers or instructional focus may have implications for teachers' social context. Chapter four presents examples of potential consequences in Clayton High School during course schedule reorganization. Within a trimester schedule model, elective teachers enjoyed more course offerings and instructional time, while core academic teachers—including Clayton math teachers—lost about 1300 minutes, or approximately 26 instructional days.[13]

After three years, due to budget constraints, Clayton High School returned to semester scheduling. Course reorganization coincided with elective teacher reductions—both eliminating and reducing full time positions to part time employment. According to Dr. Fletcher, math teachers more focused on recouping lost instructional time for student mastery were less concerned over impacted colleagues (G. Fletcher, personal communication). Motivated by the necessity to enact MMC requirements and maintain AYP performance standards, math teacher perceptions may be rational.

**MMC Influence Over Departmental Caché**

The larger story is about a system, which values particular fields and in turn, departments. In an arrangement in which there are costs to each decision or opportunity taken, departmental divisions may occur. Academic fields, anticipating implicit value associated with curricular reform may lobby for inclusion within policy mandates. In fact, Mr. Daniels, at Petronila High School describes this scenario in regards to the foreign language requirement. "That's why the foreign language is [in the MMC]. They felt left out. So their association, they lobby to get foreign language put in the curriculum" (M. Daniels, personal communication).

According to Mr. Daniels, there are costs to MMC inclusion; primarily a changing composition of students within courses. “And I always tell our foreign language teachers… ‘Careful what you ask for, because all those kids that were going to auto shop now, that you don’t want in your classroom; but you don’t have the topnotch kids, you have everybody’” (M. Daniels, personal communication). According to Mr. Daniels inclusion of foreign language courses within MMC curriculum, with no additional funding, required increasing class sizes by approximately 10 students. While MMC teachers may have larger and more diverse student populations in courses, they also have established themselves as a priority discipline; with non-negotiable enrollment and therefore employment. Department representatives may weigh costs of inclusion, potentially more challenging instruction—due to more varied student needs—for a more stable employment outlook.

**Course Scheduling Reorganization**

Several principal accounts cite teacher course assignment changes relating to student schedules. Examining qualitative interview data, I find principals report various course scheduling, with two schools implementing trimesters after MMC enactment in 2006. Figure 21 illustrates school scheduling preferences given budget constraints. These figures are theoretical, representing perfect market conditions and reflecting observed principal responses. They may not account for principal experiences statewide. Rather, the theory of action presents possible principal experiences responding to educational reform.

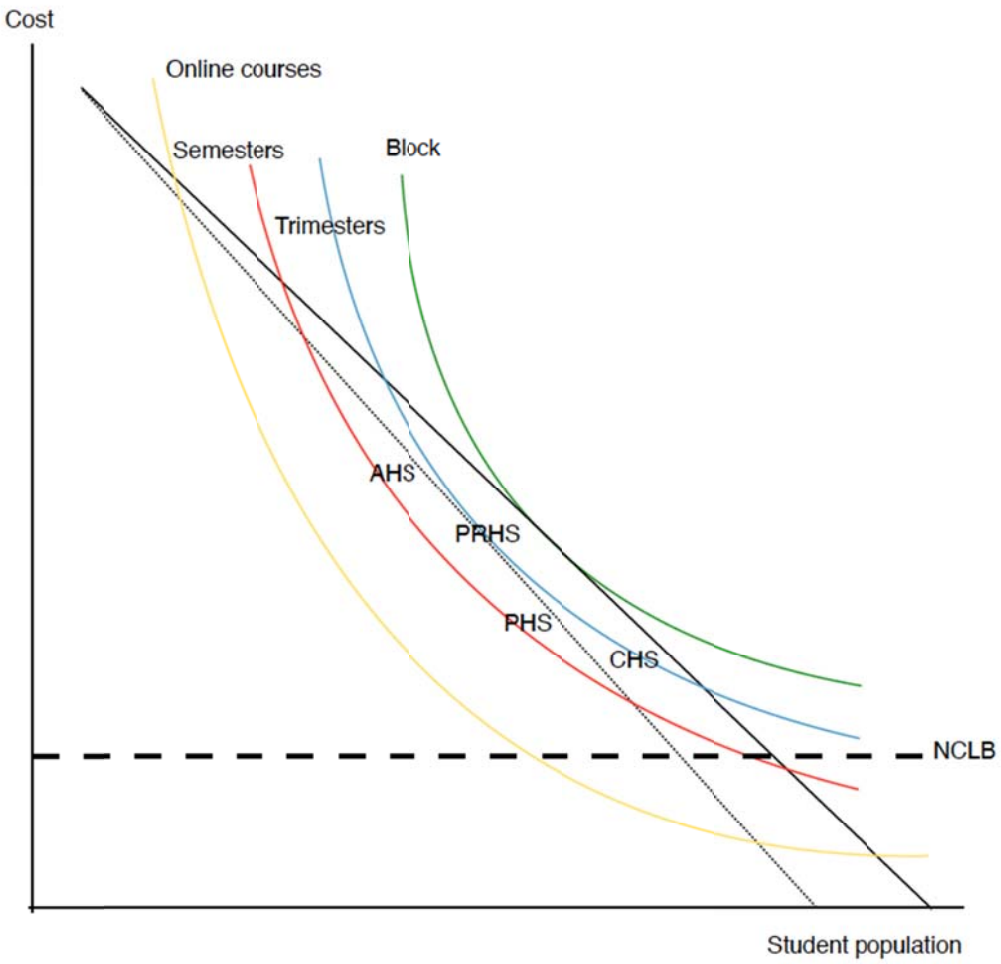


*Figure 21*. High school scheduling alternatives and cost: Examining post-MMC school budget constraints. This figure depicts sample schools' location on a given budget constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 21 presents the four sampled high schools imposed on a course scheduling budget constraint, where student population increases along the x-axis with educational cost given on the y-axis. Ashmore High School, on a semester schedule, has the highest per student education cost while Clayton High School has the lowest. Both Pine Ridge and Clayton High School implemented trimester scheduling following MMC enactment in 2006; Petronila High School uses a semester system. All high school principals choose course schedule options above NCLB requirements. According to educators at each school, multiple factors contributed to scheduling decisions, however no clear relationship with a schools' urbanicity emerged.

**Examining Course Schedule Preferences**

In Clayton, school leaders decided to move to a trimester course schedule following the implementation of the MMC. "There was a process for deciding to move the schedule...The initial decision was decided as a way of trying to adjust to the required courses, and how that was viewed as taking away elective options" (G. Fletcher, personal communication).

Pine Ridge transitioned to trimester scheduling in 2006 (K. Carlson, personal communication). This schedule allowed them to not only maintain many of their elective courses, but also allow for career center opportunities. Even with the additional schedule flexibility, Mr. Carlson acknowledged limits. Students participating in year round electives such as band, choir, or career center, had little room for non-core courses.

Three years after MMC implementation, Dr. Fletcher reports Clayton High School returned to semester scheduling due to the recessions impact on education budgets. Figure 22 shows schools' revised preference choices given economic recession constraints.

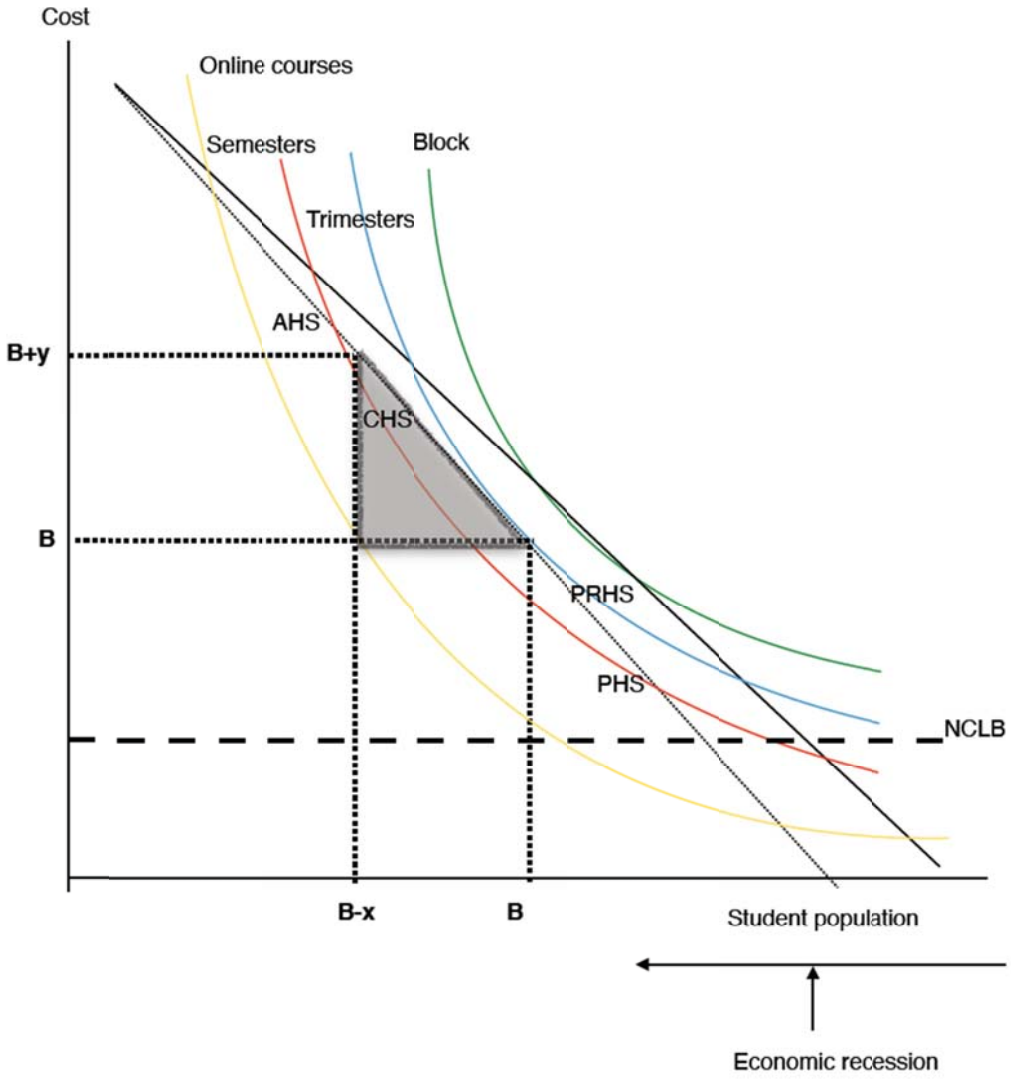


*Figure 22.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints within the economic recession. This figure depicts sample schools' location on a given budget constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. The bold line represents a school's budget constraint prior to MMC implementation in 2006. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 22 illustrates impacts of the Great Recession on sampled Michigan high schools. Using district enrollment figures (MI School Data, 2014), I find three out of four schools experience decreases in student enrollment. Student population decreases, denoted with an arrow under the x-axis, push Petronila, Clayton, and Ashmore High School up the budget constraint and potentially outside previous course schedule preferences. For Clayton, impacts are obvious, where before the district afforded trimester scheduling at cost ***B***, with a 2.4% loss in district enrollment it now must pay ***B + y***. Clayton High School's realized loss in cost per unit is illustrated by the shaded gray triangle. Instead, Clayton chooses to purchase semester scheduling at a comparatively lower cost.

For rural Pine Ridge and Petronila, recessionary impacts range. For Pine Ridge High School, district enrollment slightly increases and recession impacts have little effect on course scheduling preferences. Pine Ridge continues to offer trimester scheduling at relatively affordable price. In Petronila, district enrollment decline moves Petronila High School up the budget constraint. They must continue to offer semester scheduling, the most affordable option; yet now pay a higher cost.

Figure 22 identifies the theoretical relationship between economic recession, student population, and educational cost. However, concurrent movement in student enrollment due to school of choice may mitigate recessionary impacts. Students may choose to enter desirable schools that meet their educational priorities. Conversely, for those school districts losing students to neighboring schools, school of choice may further aggravate economic constraints.

In Table 32, I examine district revenue and expenditures, per student in 2010-2011. I find though Ashmore School District has the highest revenue per student at $12,199, it also has the highest per pupil expenditures at $10,793, leaving the district with the least cost differential

amount within sampled schools (Education Finance Statistics Center, 2014). Ashmore High School situates highest along the budget constraint, aligning with financial reports and principal observations. Interestingly, Clayton High School, with $11,425 in per pupil revenue has the greatest cost differential at $3,017 (Education Finance Statistics Center, 2014). This may be due to adjustments in teacher employment following semester scheduling implementation. With potentially less teachers, Clayton High School could have less educational expenditures per student, and therefore more discretionary funds.

In rural Pine Ridge and Petronila High School, I again see differences in revenue and expenditures per student. Though Pine Ridge receives approximately $800 less in student revenue than Petronila High School, they spend nearly $500 more per student (Education Finance Statistics Center, 2014). Thus, Pine Ridge pays more than Petronila for students' education, as indicated in Figure 22.

Table 32

*School District Revenue and Expenditures: 2010-2011*

| School | Revenue/student | Expenditure/student | Difference |
|---|---|---|---|
| Clayton School District | $11,425 | $8,408 | $3,017 |
| Ashmore School District | $12,199 | $10,793 | $1,406 |
| Pine Ridge School District | $10,023 | $8,541 | $1,482 |
| Petronila High School | $10,824 | $8,085 | $2,739 |

**Foreign Language Requirements and Increasing Elasticity**

In the fall of 2012, foreign language requirements took effect for all Michigan students. Adding to other MMC requirements, students are expected to complete two years of a foreign language before graduation. For schools, additional academic coursework joined an already crowded student schedule. Figure 23 identifies the four sampled school course schedule preferences after foreign language implementation.

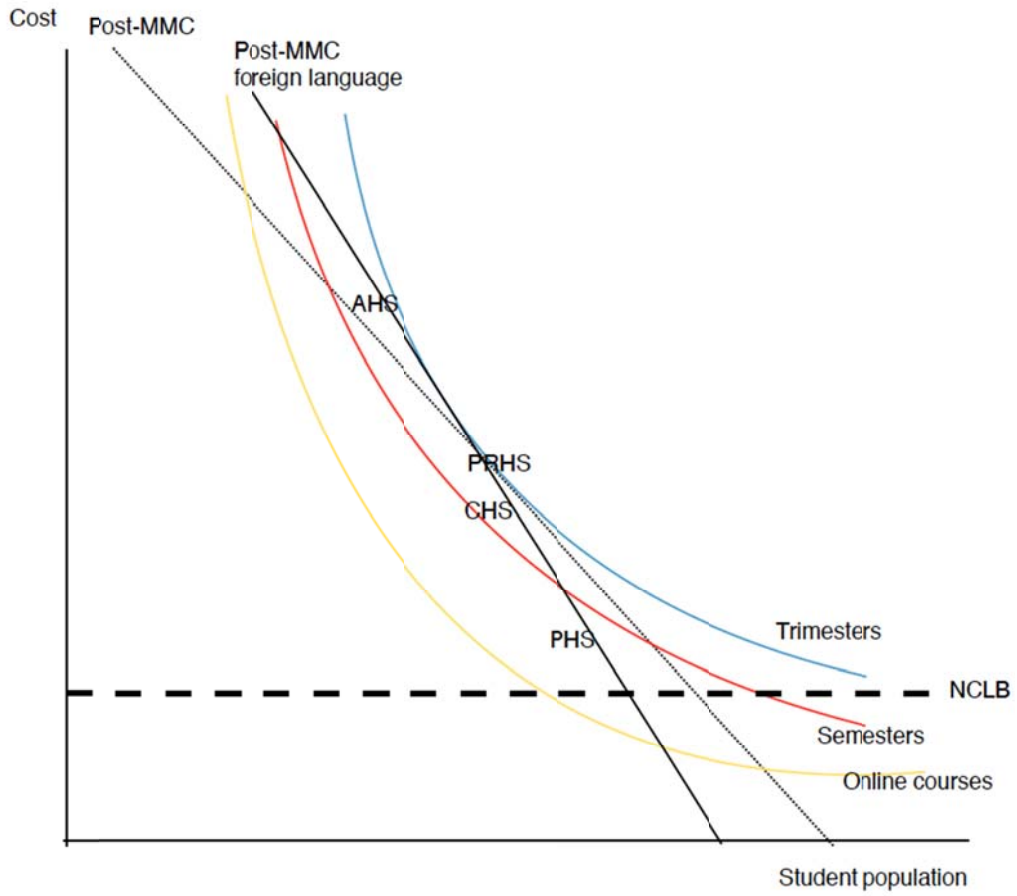


*Figure 23.* High school scheduling alternatives and cost: Examining post-MMC foreign language school budget constraints. This figure depicts sample schools' location on a given budget constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. The bold line represents a school's budget constraint after foreign language implementation in fall 2012. The dashed line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 23 examines three scheduling preferences including online course taking, semesters, and trimesters. For simplification, a budget constraint prior to MMC implementation

is no longer present nor is block scheduling. Schools' MMC budget constraint is shown on the small dashed line in Figure 23. The solid line denotes a less elastic budget constraint after foreign language implementation. Three of four sampled high schools incorporate foreign language requirements into MMC coursework and school schedules. Ms. Hudson, Mr. Carlson, and Dr. Fletcher move up their budget constraint, due to increased inelasticity. However, these schools continue to provide establish course scheduling with additional MMC coursework requirements. Differing from other sampled schools, Mr. Daniel's budget constraint in Petronila High School does not allow for foreign language incorporation into existing scheduling. Mr. Daniels, positioned beneath all other schools along the budget line, is unable to reach the semester preference curve, without additional cost. While he may choose to implement online course taking, Michigan law does not allow more than 25% of students to take all of their courses online.

**Moving MMC Curriculum to Middle Schools**

To increase elasticity in student course scheduling, Mr. Daniels shifts foreign language requirements down to the middle school.

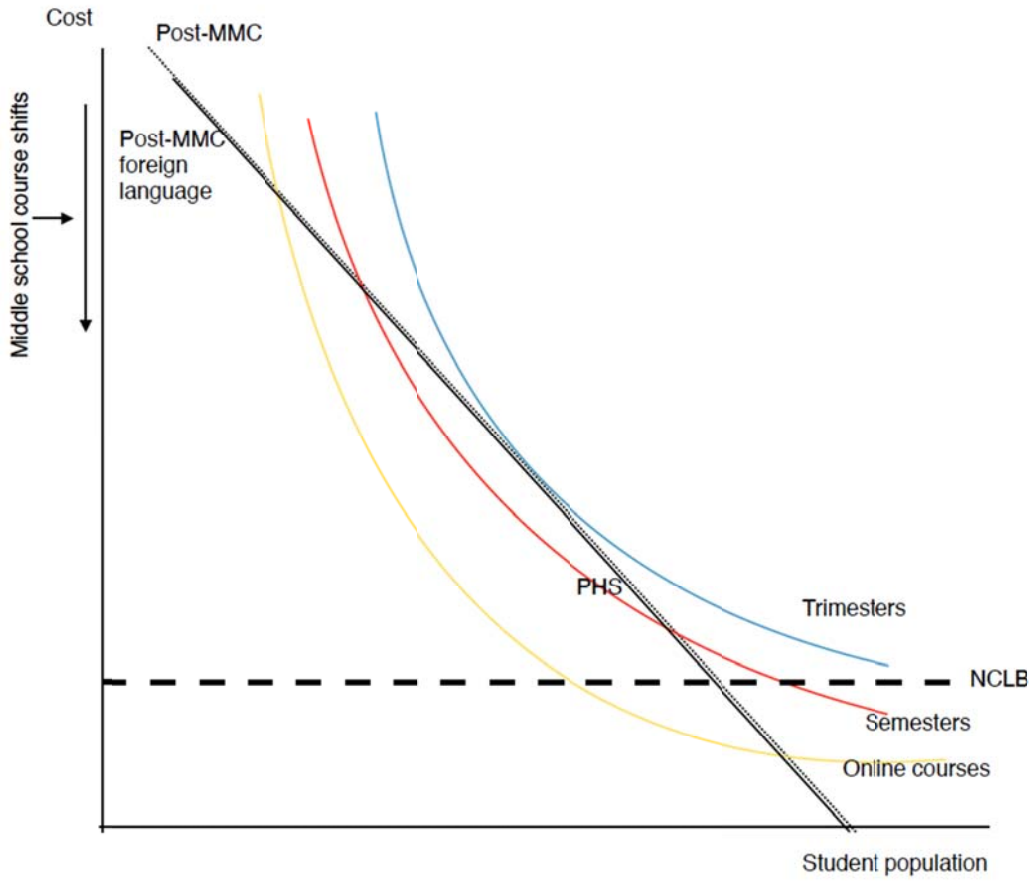


*Figure 24.* High school scheduling alternatives and cost: Examining post-MMC foreign language school budget constraints. This figure depicts a sample schools' location on a given budget constraint. The school is denoted by an acronym, where PHS is Petronila High. The bold line represents the PHS budget constraint after foreign language implementation in fall 2012. The dashed line represents the PHS budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 24 presents Mr. Daniels' experience in Petronila High School, moving foreign language requirements to the middle school. Building upon Figure 23, where foreign language requirements moved Petronila below the semester scheduling preference curve, Figure 24 depicts middle school course shifts along the y-axis. Petronila High School costs decrease as courses are allocated to the middle school, allowing for greater budget constraint elasticity—shown in a

more gradual slope—nearly identical to pre-foreign language school finance constraints. For Mr. Daniels, foreign language requirement shifts to the middle school, allows increased budget elasticity and the ability to again offer semester scheduling. By creatively reorganizing student requirements, Petronila may continue to provide semester scheduling for MMC coursework.

**Maintaining Electives, Preserving Enrollment: The MMC and School of Choice**

Elasticity constraints may drive school scheduling decisions; however student and family demands require attention in a school of choice state. Principals as rational decision makers may attempt to preserve existing electives while also meeting MMC demands. One might imagine principals identifying this potential when comparing scheduling preferences. Figure 25 presents bundles of elective preferences given scheduling flexibility and MMC mandates.

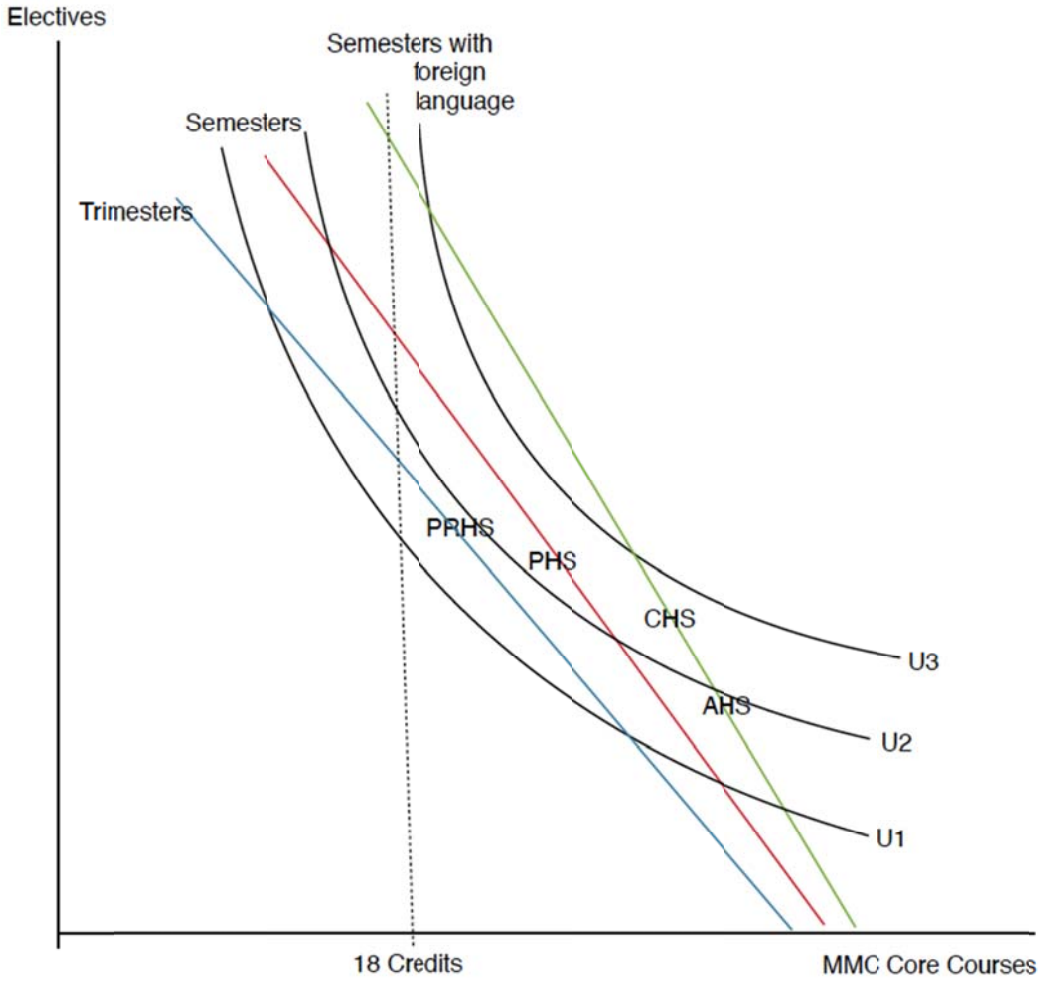


*Figure 25.* High school scheduling constraints and coursework preference. This figure depicts sample schools' location on a given scheduling constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. Colored lines represent schools' scheduling constraints, blue is trimesters, red is semesters, and green is foreign language. Coursework preferences indifference curves are imposed where U1, U2, and U3 represent different amounts of elective and MMC core courses students may take.

Figure 25 compares students' opportunity for elective courses after MMC implementation. MMC Core courses are given on the x-axis and elective courses are given on the y-axis. Students may prefer bundles of courses along indifference curves U1, U2, or U3, however, may only choose coursework bundles that intersect with their high school scheduling constraint. Furthermore, coursework preference bundles must lie above MMC curricular mandates of 18 high school MMC credits. Scheduling constraints are more or less elastic given MMC coursework proportions in overall student course-taking.

**Trimester variance in elective potential.** Trimester scheduling, with the most amount of courses provided, may allow the greatest potential proportion for elective or Advanced Placement coursework. Conversely, high schools implementing MMC coursework and additional foreign language requirements, within a semester schedule, may have the least potential proportion for non-MMC coursework.

I examine potential for elective opportunities in Table 33. Students potential to enroll in non-MMC core courses are estimated using MDE supplied sample schedules (MDE, 2008). Non-MMC courses are compared to total high school course requirements and proportions are drawn. Interestingly, trimester scheduling allows for both the greatest and least amount of elective potential, depending on whether courses are two or three trimesters. If a student took all three-trimester elective courses over high school, 29.75% of their high school coursework would comprise elective curriculum. This contrasts to a student in the same school who takes all two-trimester elective courses over their high school career; in this case students' non-MMC coursework would categorize 44.64% of high school curriculum.

Table 33

*Elective Opportunity Potential During High School*

| Schedule | No. of total Non-MMC Courses | No. of Total Courses | Proportion |
|---|---|---|---|
| Trimester | 25 trimesters | 28 | |
| Year-long Courses | 8.33 | 28 | 29.75% |
| Two Tri. Courses | 12.5 | 28 | 44.64% |
| Semester with foreign language in middle school | 12 | 28 | 42.86% |
| Semester with foreign language requirement | 10 | 28 | 35.71% |

Schools place across scheduling constraints in Figure 25. Pine Ridge High School, utilizing a trimester model, may provide the greatest variance elective opportunities. I rank Pine Ridge at its highest potential for elective coursework in Figure 25. For Petronila, scheduling constraints are less elastic due to less flexible semester scheduling, however, since they were able to shift foreign language coursework to middle school grades, they have more potential for elective courses during high school. In suburban Clayton and urban Ashmore High School, this is not the case, increased foreign language requirements further decrease potential for elective course-taking within high school curriculum, and thus they place below rural sample schools.

**Purchasing additional elective credit.** For suburban Clayton High School, parent demand necessitated a new way to provide elective potential. Students and parents desired opportunities for additional academic coursework (A.P. classes) or traditional electives (such as both band and physical education). To provide opportunities for elective engagement during the school day, Dr. Fletcher allows parents to buy additional academic credits. Credits may be completed before school, after school, or over the summer. Figure 26 illustrates potential consequences of credit purchase.

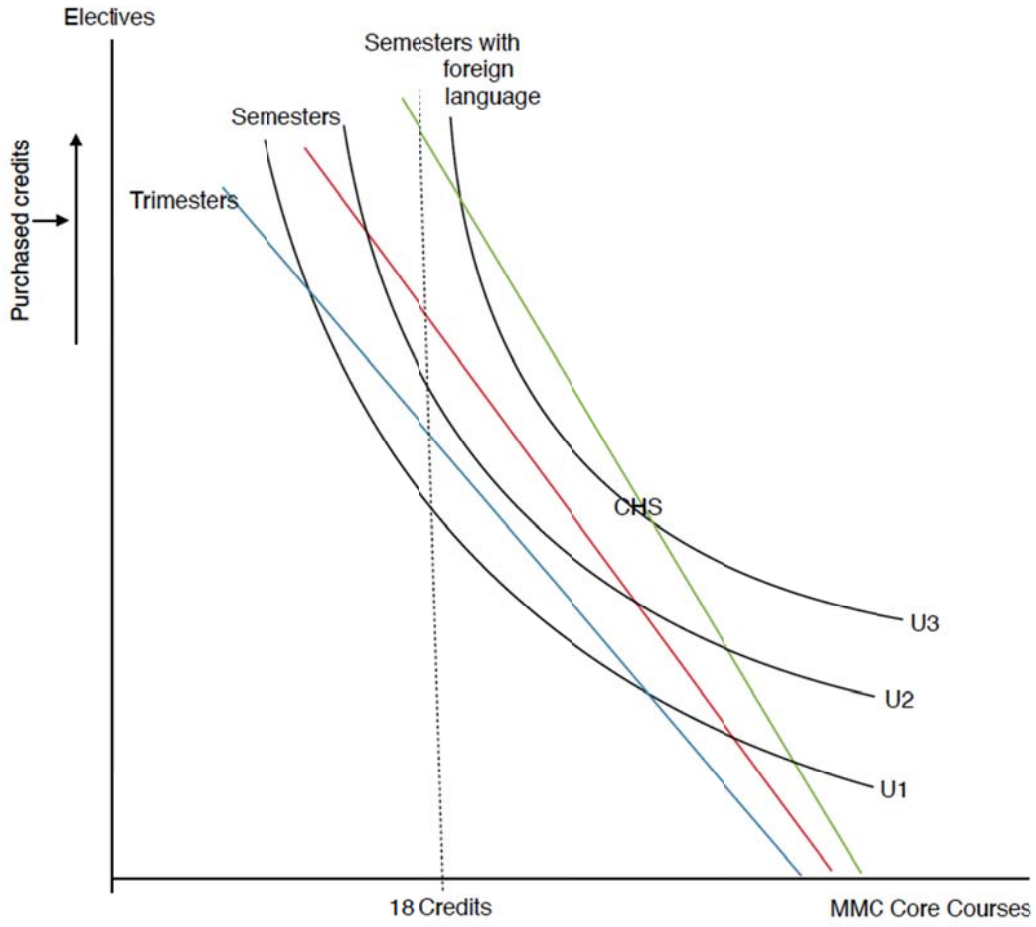


*Figure 26.* High school scheduling constraints and coursework preference: Purchasing academic credit. This figure depicts sample schools' location on a given scheduling constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. Colored lines represent schools' scheduling constraints, blue is trimesters, red is semesters, and green is foreign language. Coursework preferences indifference curves are imposed where U1, U2, and U3 represent different amounts of elective and MMC core courses students may take.

Figure 26 presents Clayton High School student behavior after allowing parents to purchase additional high school credits. Examples include purchasing extra credits for zero hour, seventh hour, or online summer school. Similar to Figure 25, number of MMC core courses are given along the x-axis and number of elective courses are given along the y-axis. Students may choose any course-taking bundle along indifference curves that either intersect their position on the scheduling constraint or meet at or below their point along the distribution.

In Clayton High School, parent purchases of high school course-taking shifts students' position up the scheduling constraint. Whereas before Clayton High School students could choose course-taking bundles along indifference curve U1 or U2, after opportunity to buy additional elective credits, students have increase potential and can therefore choose coursework bundles along all three indifference curves.

Hence, Mr. Carlson in Pine Ridge, Mr. Daniels in Petronila, and Dr. Fletcher in Clayton High School all devised outside ways of mitigating coursework schedule constriction. Through coursework shifts to lower grades, schedule flexibility within trimesters, or opportunities for additional work outside traditional school days and at parent cost, rural and suburban schools attempted to satisfy student interests and family demands.

Though Ms. Hudson in urban Ashmore High School, confronted similar demands for academic coursework that excited students and catered to their hobbies or interests, she did not demonstrate alternative strategies used by rural and suburban sample schools. Ms. Hudson, aware of students' elective interests, prioritized offering courses to meet student needs. However, in a semester schedule, 35.71% potential for non-MMC coursework, a majority of high school classes center around MMC academic requirements.

**Credit recovery.** MMC requirements may comprise a larger majority of students' course schedules as students' credit recovery needs vary. Figure 27 illustrates potential elective losses with a per unit increase in MMC core courses.

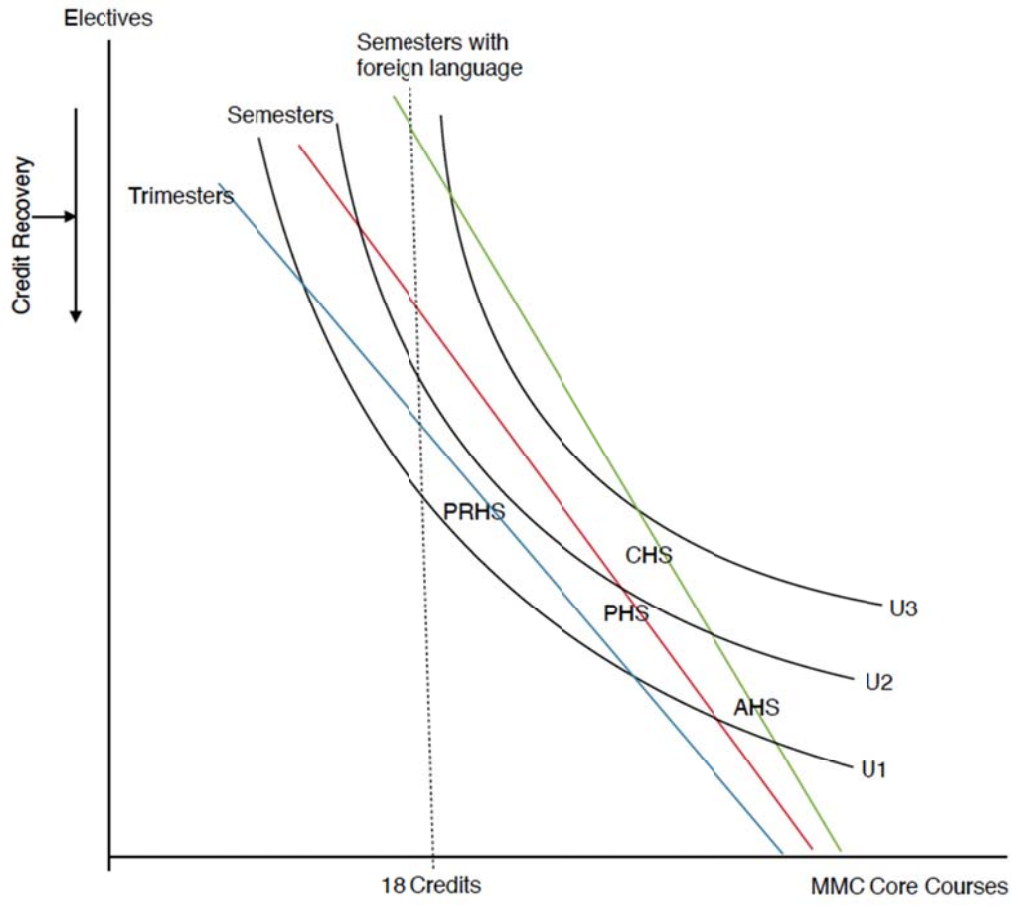


*Figure 27.* High school scheduling constraints and coursework preference: Credit recovery. This figure depicts sample schools' location on a given scheduling constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. Colored lines represent schools' scheduling constraints, blue is trimesters, red is semesters, and green is foreign language. Coursework preferences indifference curves are imposed where U1, U2, and U3 represent different amounts of elective and MMC core courses students may take.

All four principals discussed remediation and credit recovery efforts within their high schools. In Figure 27, credit recovery impacts are shown on the y-axis as a decreasing pressure on elective course bundles. Correspondingly, all four sampled principals move downward along their schedule constraint. New locations provide access to fewer indifference curves with coursework bundles representing less elective course-taking. For example, Ms. Hudson in Ashmore High School, previously able to choose U1 or U2 indifference curves (as shown in Figure 25) may now only choose coursework bundles along U1. Similarly in Petronila High School, Mr. Daniels also loses access to U2 indifference curves, however, on semester scheduling with foreign language at the middle school, he is able to retain more elective potential than Ashmore High School.

Credit recovery may be a spill over impact of MMC requirements. Though not explicitly necessary for high school graduation, increased academic rigor for all students creates a scenario in which failure may be more likely. Credit recovery provides students with another chance at class mastery and therefore high school graduation. For all four high school principals interviewed, it became an important component of high school coursework.

Often times, students most at risk for failure are also those more interested in work based learning or vocational education (Schwartz, Ferguson, & Symonds, 2011). Decreases in elective opportunity, either due to credit recovery or the inherent requirements built into MMC coursework, complicated access to career and technical education for principals at Petronila and Pine Ridge High School. Attempting to meet student and family demands for vocational education and satisfy state emphasis on college preparatory curriculum proved increasingly difficult after foreign language requirements were levied.

**Meeting Community Demands**

In fact, meeting community demands is an obstacle to schools across urbanicity. For suburban Clayton principal Dr. Fletcher, it was the single most challenging obstacle he faced after MMC implementation; finding time in students' schedules to accommodate their unique interests or talents—band, choir, advanced coursework. For urban Ashmore principal, Ms. Hudson, maintaining electives was a lifeline to maintaining student enrollment, a way to excite students to come to school, in a district struggling with daily student attendance. For rural principals, incorporating long-standing traditions of career center training proved difficult after MMC implementation.

**Shifting advantage: Broadening definitions of MMC coursework.** Nearly eight years after MMC implementation, Michigan policymakers recognized difficulties associated with a one-size-fits-all model of academic preparation. Recent changes in high school graduation rules have provided a more encompassing view of MMC coursework. In June of 2014, Governor Rick Snyder signed policy revisions allowing additional flexibility incorporating mathematics and foreign language requirements. "One provision gives students flexibility to meet the algebra II credit by taking welding or another career tech class" (AP, 2014). These changes evolved out of an acknowledgement that students, with differing needs and goals, may require various approaches to schooling. Michigan House Education Committee Chairwoman, Lisa Posthumus, said, "Michigan students are diverse in interest and personality and this legislation gives these students the best possible options to pursue the type of education best suited for them" (AP, 2014). However, Wendy Zdeb-Roper, executive director of the Michigan Association of Secondary School Principals, felt policy revisions were unnecessary, as high school principals have balanced career center demands with MMC requirements since its implementation in 2006 (AP, 2014).

One factor underlying contentions over MMC credit is funding appropriation. Most career centers take a proportion of per pupil funding for each high school student served. Incorporating MMC coursework requirements could potentially both increase the number of students choosing career centers, and also the proportion of per pupil funds they receive. In addition to potential funding loss, student enrollment shifts to career centers may impact high school teacher employment, as fewer students often require less teachers.

## Education Finance and the MMC

Education finance, per pupil grant funds, and the interaction of school of choice policies interweave in curricular reform defining what schools can offer and who they offer it to. Visualizing principals' budget constraints, figures support the notion schools are indeed limited in what they can offer, as various limits—financial and political—are imposed upon the educational system. Furthermore, examining contentions in high schools' offered electives, principals attempt to satisfy students, families, and state. Yet clearly, from depicted figures, they are more or less able to meet stakeholder demands.

### Discrete Manifestations of Comparative Advantage

One may better understand school variation in educational output by examining their relative position in a competitive market. In a Ricardo (1817) comparative advantage scenario, two firms are given, each with the same two goods, one of which they are most efficient in producing. To sell their goods, the firms specialize in what they are best and most efficient in producing; their comparative advantage. In a post-Friedman educational market, a similar scenario might be imagined. Two high schools are given, each must produce the same results; four-year high school graduates who have mastered MMC academics and are ready to enter college. Each school has a comparative advantage, yet consumers cannot attend both schools to

maximize their dollar and outcome. They must choose. Consequently, schools comparative advantage *becomes* its absolute advantage. Students and families evaluate school advantage relative to their own beliefs, preferences, and society demands, before making decisions.

Consider the comparative advantage of the four sampled schools' four-year graduation rates and college-going in 2011-2012 (the most recent college-going data). In Table 34, Petronila High School has a comparative advantage in four-year graduation rates, with the highest proportion of high school graduates. Conversely, Ashmore High School has a comparative disadvantage, with the lowest proportion of high school graduates at 56.97%. Yet, when examining two-year college-going rates, Ashmore High School has a large comparative advantage, over ten percentage points above suburban Clayton High School. Clayton High School shows comparative advantage in four-year college-going proportions, with 55.41% of graduating students attending a four-year college within 12 months of graduation. Across high school success indicators, three of four schools hold comparative advantage.

Table 34

*High Schools' Comparative Advantage: 2011-2012*

| | | College-going | |
|---|---|---|---|
| High School | Graduation Rate | Two Year | Four Year |
| Clayton High School | 95.03% | 25.48% | 55.41% |
| Ashmore High School | 56.97% | 37.19% | 21.49% |
| Pine Ridge High School | 88.64% | 28.41% | 43.18% |
| Petronila High School | 96.58% | 28.91% | 43.75% |

**Potential marketing advantage.** In efforts to accumulate scarce educational resources, schools may seek additional school of choice students. Understanding educational boundaries require students to choose one school; principals may market advantages to students and families. Therefore, one might expect students and families to seek schools with comparative

advantage that best suit their values and preferences. For example, a student who seeks to be a plumber might not value attending a high school that specializes in sending a higher proportion of students to four-year colleges, whereas for a student who wants to be a doctor, this is a worthwhile characteristic. District school of choice patterns, examined in Figure 11, may be some indication to students and family education decisions.

Yet, school of choice enrollment does not seem to reflect rational consumer behavior. Ashmore and Petronila High School experience declining enrollment and school of choice differentials, Clayton High School reports expanding choice differentials, and Pine Ridge High School sees positive choice differentials, though no comparative advantage was found. Descriptive results may have various interpretations. Perhaps Clayton High School, although lower than Petronila in graduation rates, was within close enough boundaries to show little opportunity cost in graduation potential. While, in Ashmore, though student proportions enrolling in two-year colleges is comparatively high, graduation rates are low. Perhaps students and families are not willing to trade comparative advantage in potential two-year college-going preparation for comparatively low graduation rates.

For Petronila High School, high graduation rates should signal increased student enrollment and school of choice, yet the opposite is true. Over recent years, enrollment has fallen and school of choice differentials went from positive to negative. Students and families may not highly value graduation rates, or they may be willing to seek out other more advantaged schools. Finally, Pine Ridge, the only school with no comparative advantage, increases district enrollment and maintains positive school of choice differentials across recent years. Diverging student and family behavior from schools' advantage may relate to a lack of nearby school

proximity. In a rural district, school of choice discretion can be more costly in transportation and time.

## Conclusions

This study began with an impression that less government interference was better than more and imposing curricular reform did little to change outcomes, rather inciting schools to quietly loosely couple reform realities with preexisting operations. Critical rationalism suggests scientists judiciously analyze theories and guesses put forth prior to study conception (Popper, 1962). In this effort, I disclose finding little evidence of loose coupling with curricular reform. Instead, I define a theory of action in which principals dynamically responding to MMC reform, change school schedules, coursework seat time, human resource allocation, and challenge their own preconceived notions of student success.

Principals with diverse challenges, resources, and responses ultimately demonstrated mixed student outcomes. Overall, small high school graduation rate impacts accompanied MMC implementation (Dynarski et al., 2014). Furthermore, for those students graduating, college-going enrollment rates increased over time. Yet, gaps in college-going outcomes remained, examples including more suburban Clayton alumni enrolling in four-year colleges than those in urban Ashmore.

Between schools, opportunities varied to respond to the MMC. Increased academic rigor ranged from a small hurdle—as in the case of suburban Clayton—to a large problem, as seen in urban Ashmore. For principals in Pine Ridge, Petronila, Clayton, and Ashmore High School, school context mattered. Though obvious, it is worth mentioning in a political environment that leavens educational reform without discrimination. In all four sampled schools, principals attempted change within manifested organizational and financial constraints. Thus, a wide-scale,

increase in academic preparation seemed to have small benefits with relatively high costs to those in most challenged districts.

**Limitations**

There were several limitations within this study. Schools were conveniently sampled, and therefore results may not be generalized—within or outside of Michigan. Data analysis is restricted to principal interviews, focusing on organizational leadership and principal sense-making. However, teachers are also instrumental to policy enactment, and may provide another perspective to policy implementation understanding.

Principal interviews were restricted to one time point with results providing a view of principal perceptions at that time. Furthermore, principals were interviewed at varying time points within one year. It is conceivable that principal experiences across time points may vary systematically, potentially biasing analysis.

It is uncertain how much variance in systematic differences would be necessary to significantly alter study conclusions. Frank (2000) tests causal rigor identifying confounding variables and potential implications to result inferences. A confounding variable may relate to the outcome of interest or an independent variable of interest, both correlations may bias results (Frank, 2000). In addition, the product of confounding bias—between outcome and interest variable—may also bias overall results (Frank, 2000). This qualitative study does not make generalizable or causal claims. If one replicated this study and found differing results, it would not invalidate sampled principal experiences. Experiences described belong to principals and those with differing perspectives or practices provide greater depth to qualitative understandings. Rather than invalidate results, through divergent study results and educator experiences we may

be better able to gain a broad perspective of schools and contribute to the literature and understanding of educational reform, principal leadership, and schooling practices.

**Future Work**

Interviews and data collection included perspectives from teachers, guidance counselors, and principals. Given teachers' importance in any school reform, future analysis will focus on teachers' perceptions and understandings of the MMC. Furthermore, increased academic requirements and rigor may have prompted increased course-planning. Future studies will incorporate guidance counselor interviews examining course-scheduling dynamics and reported interactions with students' families.

Understanding student course-taking patterns across schools and contexts may have implications for policy equity. Currently, MCER is collecting student transcripts from a sample of 150 Michigan high schools. As seen in Table 33, course schedule organization may provide variable elective opportunities. Future work may seek transcript analysis of schedule organization to determine variation in MMC and non-MMC courses taken, relative to students' high school graduation and college-going patterns.

A curricular reform, the MMC understandings may inform CCSS policy enactment. Policymakers may consider potential academic department responses when examining CCSS enactment. Currently CCSS Curriculum guidelines encompass ELA and math. However, discussions are underway to add science to the list (Next Generation Science Standards, 2014). Questions arise regarding implications to non-Common Core fields. Furthermore, valuing particular disciplines—innately at the cost to others—may cause divisions within collegiality and the school community.

This qualitative work seeks to establish a theory of action that may be observed in larger quantitative analyses. The High School Longitudinal Study (HSLS) of 2009 is well suited to identifying scheduling patterns across schools and if merged with Common Core Census Data (CCD), may also be used to observe differences in education finance constraints (NCES, 2014).

The HSLS data contain 49 Michigan high schools, of which 44 are public. Michigan public schools range in their scheduling organization with 2 utilizing quarter scheduling, 6 under block scheduling, 16 with trimester scheduling, and 20 adhering to a semester schedule. Schedule organization could be compared to several variables of interest including education finance data collected from the CCD, as represented in Equation 1 and 2.

$$\ln\left(\frac{P\,(sched=block)}{P\,(sched=semester)}\right) = \beta_0 + \beta_1\chi_i + \beta_2 expend_i + \varepsilon_i \qquad \text{[Equation 1]}$$

$$\ln\left(\frac{P\,(sched=trimester)}{P\,(sched=semester)}\right) = \beta_0 + \beta_{10}\chi_i + \beta_{20} expend_i + \varepsilon_i \qquad \text{[Equation 2]}$$

where the log of the probability of scheduling compares the course scheduling (block or trimester) to traditional semester scheduling. The vector, $\chi_i$ controls for school demographic characteristics including free and reduced priced lunch, proportion minority, proportion of English Language Learners (those students learning English as a second language), and urbanicity. While $\beta_2$, represents school expenditures per student, in varying analysis this variable will reflect revenue/student, expenditures/student, or revenue differential/student. Finally, $\varepsilon_i$ is an error term accounting for any unobserved error.

School of choice opportunities are also included in HSLS data; however initial descriptive statistics indicate little variation in school of choice opportunities across Michigan high schools. However, by expanding the sample of schools to all Midwest high schools, I may be able to detect variation in school of choice opportunity and revenue per student, expenditures per student, and scheduling, or coursework opportunities (i.e. Advance Placement courses).

$$Y_i = \beta_0 + \beta_1\chi_i + \beta_2\Upsilon_i + \beta_3 AP_i + \beta_4 choice_i + \varepsilon_i \qquad \text{[Equation 3]}$$

I will run two separate analysis where $Y_i$ is either the expenditures per student in dollars or revenue per student in dollars. As previously described, $\chi_i$ will account for school demographic characteristics and $\Upsilon_i$ is a vector of dummy variables denoting a school's schedule organization (trimester, block, quarter, or semester). $\beta_3$ is a binary variable accounting for advanced placement courses available, and $\beta_4$ is a binary variable equal to 1 if a school participates in a school of choice program and 0 otherwise. This analysis will provide greater insight into how school of choice exerts pressure on principals' economic constraints and complement Michigan high school analysis described in Equation 1 and 2, by examining cost and scheduling relationships across all Midwestern high schools.

Descriptive analysis indicates nearly all Michigan high schools report some type of ninth grade intervention or remediation efforts. Within this study, principal interviews suggest MMC enactment precipitated ninth grade remediation efforts. However, rigor of high school requirements varies across Midwest states. Using HSLS data, I can identify potential association of ninth grade remediation across states.

$$P(y_i = 1|x) = G(\beta_0 + \beta_1\chi_i + \beta_2\gamma_i + \beta_3\Phi_i + \varepsilon_i \qquad \text{[Equation 4]}$$

where the probability of $y_i$ is school i's likelihood to have remedial ninth grade courses, holding constant a vector of school demographic characteristics ($\chi_i$) including free and reduced priced lunch, proportion minority, proportion of English Language Learners, and urbanicity credit remediation efforts within the school, principals' perceptions of students' preparation prior to high school, and school of choice opportunities. I also account for per pupil revenue and expenditures, in $\gamma_i$. Finally, I examine state association with credit recovery opportunities in $\Phi_i$, a vector representing binary variables representing where each school resides. Logistic analysis

assumes diminishing marginal (or partial effects) to credit recovery opportunities, thus proportional increases in English Language Learners or revenue per student, impact likelihood parameters less with each additional increase.

In summary, nationally representative data may allow quantitative analysis to test an economic theory of action. Specifically, using HSLS 2009 future work will examine potential relationships between course organization and school resources, school of choice and per pupil revenue, and credit recovery opportunities and curricular rigor across Midwest states.

## Principal Sense-Making in Complex Systems

Analysis of reform within sampled schools situates in an economic context of schooling, in which educators rationally respond to financial constraints and external pressures. However, principals may not exist within perfect market conditions. Instead, principals' sense-making might evaluate risks and uncertainties among various potential decisions (Simon, 1972). Discrete choices: scheduling organization, teacher employment, or career center participation may pose risk to students' satisfaction and therefore continued enrollment within a given school. Uncertainty, in school of choice enrollment fluctuation or educational financing could create pressure to most optimally approximate available resources prior to acting. Overall, incomplete information regarding decision-making may require principals to make predictions and decisions with unknown consequences (Simon, 1972). "In the real world, each agent has limited choices, and a limited capability of processing the information available; he has 'bounded rationality'" (Bak, 1996, p. 192). Bounded rationality confronts four principals in various ways, with divergent understandings given school context.

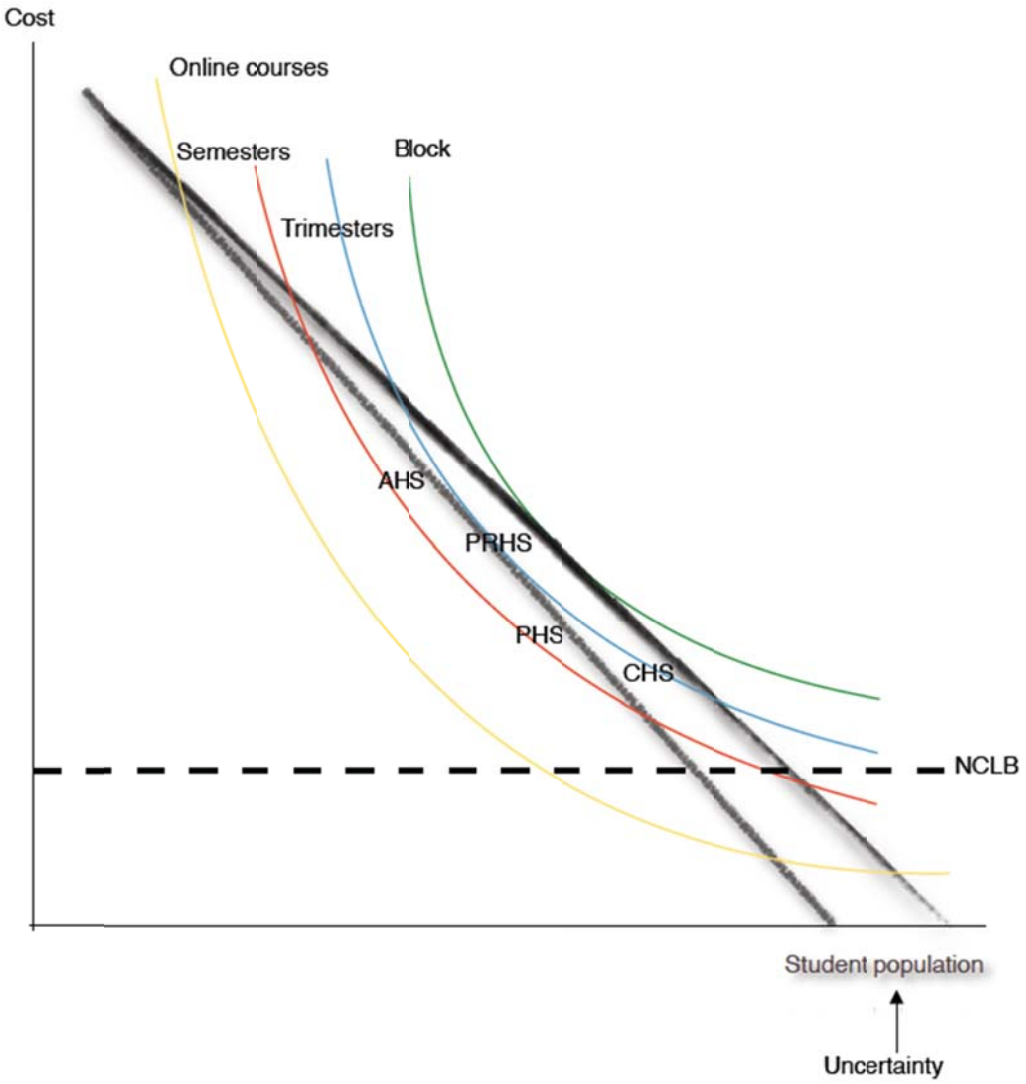


*Figure 28.* High school scheduling alternatives and cost: Examining post-MMC school budget constraints within bounded rationality. This figure depicts sample schools' location on a given budget constraint. Schools are denoted by acronyms, where AHS is Ashmore High School, PHS is Petronila High School, CHS is Clayton High School, and PRHS is Pine Ridge High School. The smudged bold line represents a school's budget constraint prior to MMC implementation in 2006. The chalk line represents a school's budget constraint after MMC implementation. The large dashed line represents the NCLB policy.

Figure 28 illustrates potential for principals' bounded rationality concerning course scheduling preference. On the y-axis, uncertainty influences predictions of student population, and consequently expected per pupil expenditures and scheduling costs. Furthermore, complexity may obfuscate principals' understandings of available choices or potential consequences. Thus, budget constraints considered within a bounded rationality framework are opaque and wider—suggesting more variable and complex decision-making.

Context comprises the foundation for principal choice and understandings. Bak (1996) relates bounded rationality to weather forecasting, "The sand forecaster's situation is similar to that of a weatherman in our complex world: by experience and data collection he can make 'weather' forecasts of local…activity, but this gives him little insight into the 'climate,'" (p. 60). In urban Ashmore High School, I find evidence of bounded sense-making for Ms. Hudson. Though student performance predictions were particularly salient given Ashmore's Priority School status, Ms. Hudson had more difficulty predicting student behaviors or outcomes related to MMC implementation. She could relate her experiences to her past, or to neighboring schools, but had little intuition into Ashmore's rankings or future.

In Clayton School District, bounded rationality may account for an educational finance surplus as seen in Table 32. Dr. Fletcher reported Clayton High School, reacting to the economic recession, moved to a semester schedule. Yet, they maintained the greatest expenditure differential within sampled schools, with a surplus of $3,017 per student (Education Finance Statistics, 2014).

Given a bounded rationality, principal behavior may not reflect optimal decision-making. Simon (1972) finds, "the optimal decision in the approximated world is not necessarily even a good decision in the real world" (p. 167). Yet principals, often making dozens of decisions a day

(Hopkins, 2003), must choose. Simon (1972) asserts one may satisfice, making choices, which meet aspiration levels (a given satisfactory threshold).

**Principal Aspirations of Student Success and School Context**

For urban and rural principals, definitions of student success were broadly defined as career or college ready. Success definitions reflected varied expectations, state prioritization of students' college-going, and some parental and student preference for post-high school work. In chapter four, Ms. Hudson suggests a changing educational climate warrants more broad definitions of preparation for life, while Mr. Carlson asserts we will always need pipefitters and plumbers. Yet, for Dr. Fletcher, in suburban Clayton, college preparatory curriculum both makes personal and situational sense. Long-standing traditions of college-going easily contextualize MMC priorities into educational understandings. Principals' aspirations for student success varied in relation to their community context.

**What Works And Why**

Reform interactions complicate or may exacerbate complex systems. Maroulis (2010) suggests educational research is challenged by generalizable findings. "Effects are disproportional to cause…and properties of the macro-level system may be confused with properties of constituent, micro-level elements" (Maroulis, 2010, p. 38). This propensity may be manifest within initial MMC motivations; policymakers observed statistically significant returns in academic performance and college-going behavior of students taking college-preparatory curriculum and implemented statewide college-preparatory requirements. Yet, micro-level, contextual, and disposition-related decisions may complicate policy effects. For example, Covay-Minor et al. (2014) observe general equilibrium effects after MMC implementation, or wide-scale policy implications (Maroulis, 2010), of teacher compositional changes over time and

observe statistically significant impacts, across urbanicity. Furthermore, within this case study, interviewed principals indicate varying success with MMC requirements.

Black box theories map inputs to outputs, attempting to isolate cause. Except, perhaps the most important interactions happen within the dark. Maroulis (2010) asserts, "education research must establish not only what works but also how and why it works" (p. 39). For Weber (1949), understanding nuances of phenomena relates to cultural significance. "Under all circumstances, namely, the more 'general' the problem involved…the broader its cultural *significance,* the less subject it is to a single unambiguous answer on the basis of the data…and the greater the role played by value-ideas" (Weber, 1949, p. 56). Managing reform within the bounds of the known, principals' actions relate to economic demands, school context, cultural definitions of student success, and existing externalities. Within the unknown, perhaps descriptive work may provide a lens to contextual values, perceptions of policy, and implementation.

# APPENDICES

Appendix A

First Contact Letter

March 21, 2012

Dear Administrator,

For the past two years, the Michigan Department of Education (MDE) has been working with the Michigan Consortium for Educational Research (MCER), to examine the impact of the Michigan Merit Curriculum on college-going-rates. MCER is a collaboration of researchers from the University of Michigan, Michigan State University, and the MDE.

As part of this research effort, you have been selected as one of 150 schools to participate in a new and exciting initiative that will help policy makers and educators better understand the broader impacts of the MMC on students, teachers, and schools. For more information on MCER please visit the website at http://michiganconsortium.org/.

As a participant in the first phase of this initiative, you will have access to comprehensive school reports created by MCER staff with expertise in assessment, evaluation, and policy analysis. As I mentioned in my email on March 5th, I would like to meet with you to explain more about this study and hopefully discuss your cooperation. Would you be available to meet at a time most convenient for you before March 30, 2012?

This important research initiative will help us to make better decisions for your schools, the district, and the state. Thank you for your cooperation and participation.

Sincerely,

Kaitlin Obenauf

MCER
Michigan State University
College of Education
516C Erickson Hall
East Lansing, MI 48824-1034

# Appendix B

## Participation Decline Letter

Kaitlin,

Thank you for your interest in Orr Schools. Although your project is very worthwhile, I regret to inform you that Orr High School will not be able to participate. We have numerous initiatives and programs that are happening at the high school and across the district and are concerned about the time commitment this might entail for some of our staff.

-Luke

Appendix C

A Draft Letter of Agreement to Participate

{Insert School Letter Head Here}

Date

Kaitlin Obenauf
Michigan Consortium for Education Research
Office of the John A. Hannah Chair
College of Education
516 Erickson Hall
Michigan State University
East Lansing, MI 48824

Dear Ms. Obenauf:

Our school district is delighted to collaborate with the Michigan Consortium for Education Research (MCER) on your study of *The Michigan Merit Curriculum and its Effects on Michigan High Schools* that you are proposing. This letter represents our intention to collaborate with MCER in your efforts to better understand high schools' responses to the MMC, changes in teachers' behavior and work context, as well as changes in students' course-taking and outcomes since the Michigan Merit Curriculum took effect in 2006.

We understand that administrators, guidance counselors, and teachers who consent to participate will be interviewed one on one about their general attitudes and opinions of the Michigan Merit Curriculum. We also understand that a sample of teachers will be asked to anonymously participate in an online survey. Both interviews and surveys will take about 30 minutes and will be confidential.

We understand that the administrators', guidance counselors', and teachers' opinions may not represent your district's views. These responses will provide context and depth to additional MCER analyses on MMC impacts and hopefully provide us with a broader understanding of the reform's effects on Michigan high schools and teachers

_____ High School is pleased to collaborate with you in this important work. We look forward to the work and the outcomes of our efforts together.

Sincerely,

Principal

Appendix D

Interview Agreement of Participation

**A Study on the Michigan Merit Curriculum and its Effects on Michigan High Schools and Teachers**

**Consent Form**

DESCRIPTION OF THE RESEARCH: The Michigan Consortium of Education Research, a collaboration between the University of Michigan, Michigan State University, and the Michigan Department of Education, are conducting research on how Michigan high schools have responded to the 2006 implementation of the Michigan Merit Curriculum (MMC). Specifically, this research seeks to understand how the MMC has affected Michigan high schools and teachers.

For this study, one measure will be used. We are individually interviewing a small sample of high school educators in Michigan high schools. We will use these interviews to better understand the general attitudes and opinions of administrators, guidance counselors, and teachers regarding the MMC. These interviews will provide context and depth to participants' survey responses.

TIME INVOLVEMENT: Your participation in this research would involve participation in an interview. Interviews will be conducted with one or two members of our team. The time required for either the interview will be 20 to 40 minutes.

DATA STORAGE TO PROTECT CONFIDENTIALITY: We will keep your individual responses private. No personally identifying information will be used in any reporting of the data. No data that will allow you to be identified as an individual will be shared with anyone at your school. Hard copies of interview transcripts will also be deidentified.

Data will be deidentified for storage, and stored by the Principal Investigator for a minimum of 3 years in a locked file cabinet in a locked office. Records identifying research participants (including interview transcripts, internal memos, and internal reports) will be kept confidential and shared only among members of the research team. Your confidentiality will be protected to the maximum extent allowable by law.

Your participation in this research is voluntary. You may elect not to participate without any penalty or loss of benefits to which you would otherwise be entitled. If you participate at first, but later discontinue participation, you will not be subject to any penalty or loss of benefits. Further, you may choose not to answer certain questions without penalty or loss of benefits.

RISKS AND BENEFITS: The risks involved in this study are minimal since the questions are not extremely personal and do not ask you to reveal very personal or hurtful information. However, potential risks may include possible psychological distress due to discussing your current career. Additionally, if participants discuss information outside the interview it is possible unintentional alienation from colleagues could result. It is unlikely that there is any physical, legal or economic risk.

While there will be no immediate benefits to you, over the long term we hope this study will inform the larger public on the impacts of the MMC on high schools, teachers and instruction. This research may better inform policymakers of potential impacts of reform.

If you have any concerns or questions about this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the investigator, Dr. Barbara Schneider by phone: (517) 432-0300, email: bschneid@msu.edu, or regular mail: 516 Erickson Hall, East Lansing, MI 48824.

If you have any questions or concerns about your role and rights as a research participant, or would like to obtain information or offer input, or would like to register a complaint about this research study, you may contact - anonymously, if you wish – Michigan State Human Research Protection Program at (517) 355-2180, fax: (517) 432-4503, email address: irb@msu.edu or regular mail: 207 Olds Hall, MSU, East Lansing, MI 48824.

**********

In some cases, written materials produced, audio tapes, or video tapes may be of value to the research. The written, video and/or audio taped materials will be viewed only by the principal investigator, members of the research team, and/or the Institutional Review Board at Michigan State University. Indicate your consent for us to use these materials by checking on of the following:

___ I consent to be audio/video taped

___ I do not consent to be audio/video taped

Your signature means that you agree to participate in this study.

Participant's signature: _____ Date:____/____/____

Name: _____

Appendix E

Michigan Department of Education Personal Curriculum

## The Personal Curriculum

### A Tool for Modifying the Michigan Merit Curriculum

### Michigan Merit Curriculum (MMC)

| Subject Area Credit Requirements | Personal Curriculum (PC) Modifications (Sequence and delivery up to district; support courses can count for credit regardless of year) |
|---|---|
| **4 English Language Arts (ELA) Credits**<br>• 1 credit in 9th, 10th, 11th, and 12th grade<br>• All credits aligned to state content expectations | ✓ No modification except for students with an Individualized Education Program (IEP) and for transfer students who have completed 2 years of high school |
| **4 Mathematics Credits**<br>• 3 credits aligned with the required state content expectations (i.e., Geometry, Algebra I, and Algebra II)<br>• 1 math or math-related credit (not required to be aligned with state content expectations)<br>• 1 math or math-related courserequired in the final year which could include any of the 4 credits described above or may be an additional district credit<br>• Note: Students may earn 2 math credits for Algebra II when the credit is earned over 2 years, or 1.5 credits over 1.5 years, without requesting a personal curriculum | ✓ 1 credit of Algebra II may be modified to ½ credit Algebra II, statistics, or functions and data analysis<br>✓ Additional modifications allowed for students with an IEP and transfer students who have completed 2 years of high school |
| **3 Science Credits**<br>• 1 Biology credit<br>• 1 Chemistry or Physics credit<br>• 1 additional science credit<br>• All credits aligned to state content expectations | ✓ No modification except for students with an IEP and transfer students who have completed 2 years of high school |
| **3 Social Studies Credits**<br>• ½ Civics credit<br>• ½ Economics credit<br>• 1 U.S. History and Geography credit<br>• 1 World History and Geography credit<br>• All credits aligned to state content expectations | ✓ No modification of Civics<br>✓ Minimum of 2 social studies credits prior to modification<br>✓ 1 social studies credit (other than Civics) can be exchanged for an additional English language arts, math, science, or world languages credit<br>✓ Additional modifications allowed for students with an IEP and transfer students who have completed 2 years of high school |
| **1 Physical Education and Health Credit**<br>• Credit aligned to state guidelines | ✓ Credit can be exchanged for an additional English language arts, math, science, or world languages credit<br>✓ Additional modifications allowed for students with an IEP and transfer students who have completed 2 years of high school |
| **1 Visual, Performing, and Applied Arts Credit**<br>• Credit aligned to state guidelines | ✓ Credit can be exchanged for an additional English language arts, math, science, or world languages credit<br>✓ Additional modifications allowed for students with an IEP and transfer students who have completed 2 years of high school |
| **2 World Languages Credits (Begins with Class of 2016)**<br>• Credits earned in grades 9-12 *or* an equivalent learning experience in grades K-12<br>• Credits aligned to state guidelines | ✓ No modification except for students with an IEP and transfer students who have completed 2 years of high school |
| **Online Learning Experience**<br>• Online course, learning experience, or experience is incorporated into one or more required credits | ✓ No modification except for students with an IEP and transfer students who have completed 2 years of high school |

Personal Curriculum Guidelines / June 2010 5

*Figure E1*. Michigan Department of Education Personal Curriculum Modifications. This figure illustrates the allowed modifications to the MMC for Michigan high school students with a personal curriculum (MDE, 2010a).

Appendix F

Michigan Department of Education Mock Schedules

Added to their Frequently Asked Questions (MDE, 2008)

Table F1

*An Example High School Semester Schedule*

| | **Grade 9** | **Grade 10** | **Grade 11** | **Grade 12** |
|---|---|---|---|---|
| Period 1 | English 9 | English 10 | English 11 | English 12 |
| Period 2 | Algebra I | Geometry | Algebra II | Math-Related |
| Period 3 | Earth Science | Biology | Chemistry or Physics | CTE or Elective |
| Period 4 | World History & Geography | US History & Geography | Government/Economics | CTE or Elective |
| Period 5 | Health/PE | Visual, Performing and Applied Arts | CTE or Elective | CTE or Elective |
| Period 6 | Language Other Than English | Language Other Than English | CTE or Elective | CTE or Elective |
| Period 7 | Elective/ Elective | Elective/ Elective | CTE or Elective | CTE or Elective |

Table F2

*An Example High School Block Schedule: Semester 1*

| | **Grade 9** | **Grade 10** | **Grade 11** | **Grade 12** |
|---|---|---|---|---|
| Block 1 | English 9 | English 10 | English 11 | English 12 |
| Block 2 | Algebra 1 | Geometry | Algebra II | Math-Related |
| Block 3 | Health/PE | Language Other Than English | CTE or Elective | CTE or Elective |
| Block 4 | Elective | Elective | CTE or Elective | CTE or Elective |

Table F3

*An Example High School Block Schedule: Semester 2*

| | **Grade 9** | **Grade 10** | **Grade 11** | **Grade 12** |
|---|---|---|---|---|
| Block 1 | World History & Geography | US History & Geography | Physics | Govt/Economics |
| Block 2 | Biology | Chemistry | CTE or Elective | CTE or Elective |
| Block 3 | Visual, Performing and Applied Arts | Elective | CTE or Elective | CTE or Elective |
| Block 4 | Elective | Elective | CTE or Elective | CTE or Elective |

Table F4

*An Example High School Trimester Schedule: Trimester 1*

| Trimester 1 | Grade 9 | Grade 10 | Grade 11 | Grade 12 |
|---|---|---|---|---|
| Period 1 | English 9 A | English 10 A | CTE or Elective | CTE or Elective |
| Period 2 | Biology A | US History & Geography A | CTE or Elective | CTE or Elective |
| Period 3 | World History & Geography A | Elective | CTE or Elective | CTE or Elective |
| Period 4 | Visual/Performing Arts A | Elective | English 11 A | English 12 A |
| Period 5 | Algebra 1 A | Elective | Algebra II A | Math-Related A |

Table F5

*An Example High School Trimester Schedule: Trimester 2*

| Trimester 2 | Grade 9 | Grade 10 | Grade 11 | Grade 12 |
|---|---|---|---|---|
| Period 1 | Health/PE A | Elective | CTE or Elective | CTE or Elective |
| Period 2 | Biology B | Elective | CTE or Elective | CTE or Elective |
| Period 3 | Algebra 1 B | Chemistry A | CTE or Elective | CTE or Elective |
| Period 4 | Visual/Performing Arts B | Geometry A | Algebra II B | math-Related B |
| Period 5 | Language Other Than English 1A | Language Other Than English 2B | Economics | science A |

Table F6

*An Example High School Trimester Schedule: Trimester 3*

| Trimester 3 | Grade 9 | Grade 10 | Grade 11 | Grade 12 |
|---|---|---|---|---|
| Period 1 | English 9 B | English 10 B | CTE or Elective | CTE or Elective |
| Period 2 | Health/PE B | US History & Geography B | CTE or Elective | CTE or Elective |
| Period 3 | World History & Geography B | Chemistry B | CTE or Elective | CTE or Elective |
| Period 4 | Language Other Than English 1B | Geometry B | Government | English 12 B |
| Period 5 | Elective | Elective | English 11 B | Science B |

Appendix G

Community Profile Descriptions

The United States Census Bureau informed national and state estimates. Tables 9 and 10, the United States Census Profile relied primarily on the 2000 and 2010 Census. For 2010 statistics, Tables 9 and 10 incorporated several Census sources including the Current Population Survey Annual Social and Economic Supplement and the Bureau of Labor and Statistics monthly reported unemployment rate.

Given that a cohesive 2010 Census profile has not yet been released, reported averages may slightly diverge from Census statistics. I describe calculated averages below.

**Economic Well Being**

While the 2000 unemployment rate was directly quoted from the 2000 Census, an unemployment average was calculated for 2010. This was done by averaging monthly reported unemployment rates (as reported by the Bureau of Labor and Statistics) over the 2010 year, as shown in Equation 1.

$$\bar{y} = \frac{\sum_i y_i}{n} \qquad \text{Equation 1}$$

where the annual unemployment average= $\bar{y}$, monthly unemployment average = $y_i$, and $n$ = the number of months in a year (12).

The median family income in 2000 was reported from the U.S. 2000 Census Profile. In 2011, we retrieve this number from the Current Population Survey Annual Social and Economic Supplement (2013). For 2010 reports of median family income within communities, I use the American Community Survey five-year estimates from 2008-2012. Estimates of expected median family income are given. I calculate these by taking 2000 median family income and increasing it 3 percent each year to allow for a 3 percent cost of living increase.

**Minority Proportions**

Percent non-white or multi-racial was calculated by subtracting the number of "white only" individuals from the total population and dividing this number by the total population (U.S. Census, 2000; U.S. Census, 2010).

**Married and Unmarried Households with Children**

Married households with children represent those households with children under 18. This proportion was calculated by dividing the number of married households with children under 18 by the total number of households with children under 18.

$$\frac{\#\ of\ married\ households\ with\ children\ under\ 18}{total\ \#\ of\ households\ with\ children\ under\ 18} \qquad \text{Equation 2}$$

This is different from the United States Census, which calculates averages by comparing married households to the total household population—both with and without children.

$$\frac{\#\ of\ married\ households\ with\ children\ under\ 18}{total\ \#\ of\ households} \qquad \text{Equation 3}$$

Single parent households were calculated similarly. I divide the number of single parent households with children under 18 by the total number of households with children under 18.

**Defining single parent households.** For both the United States and Michigan profiles, these numbers include only single parent households with women. Interestingly, Michigan's 2010 census also included counts of male-headed single parent families. When I include these numbers in our estimates, the proportion of single parent households in Michigan raises statewide and within communities. Table G1 describes rates with both definitions of single parent households in 2010.

Table G1

*Single Households with Children Definitions and Proportional Variations*

| Locality | Single mom households with children under 18 | Single parent households with children under 18 |
|---|---|---|
| Michigan | 25.71% | 33.96 |
| Clayton | 22.53% | 31.32% |
| Ashmore | 41.89% | 52.37% |
| Pine Ridge | 24.26 | 36.17% |
| Petronila | 30.18% | 40.37% |

To maintain comparable descriptives across years and tables, I do not include single parent proportions in Table 9-16.

**Educational Attainment**

Educational attainment statistics are retrieved from the United State Census Profile and the United States Census State and County Quick Facts. Bachelor's degree attainment in 2010 reflects 2008-2012 averages collected through the American Community Survey.

**Geography**

Community business establishments were reported from the 2012 United State Census Business Patterns (U.S. Census, 2012b). I report the top three areas of industry, excepting "other," in these cases; I report the fourth largest business field.

# Appendix H

## School of Choice Calculations

School of choice proportions used MI School Data information on non-resident status to calculate proportions of leavers and stayers by district, across years. Leavers were defined as the proportion of resident students enrolled in a school outside their district boundaries.

$$\frac{\#\ of\ students\ enrolled\ in\ other\ public\ school\ districts}{\#\ of\ total\ students\ enrolled\ in\ district} \qquad \text{Equation 4}$$

While in-district school of choice students were defined as students from outside school districts enrolled in the sampled district.

$$\frac{\#\ of\ students\ residing\ outside\ district\ boundaries\ enrolled}{\#\ of\ total\ students\ enrolled\ in\ district} \qquad \text{Equation 5}$$

Education finance decisions are often made at the district level, therefore district school of choice proportions are reported in chapter 3.

Appendix I

Graduation Rates

Graduation Rates are calculated by CEPI in the Michigan Department of Education. Students, enrolling as first time ninth graders, are followed through high school. High school cohorts are tracked over six years and students are attributed graduation or exit status. Students are counted in high school cohorts if they attend both high school count days—fall and spring. Tables below represent high school graduation and drop-out rates over time corresponding to Figures 15 and 16.

Table I1

*Clayton High School Four-Year Graduation and Drop-Out Rate*

| Year | Number of Graduates | Graduation | Drop Out |
|---|---|---|---|
| 2006-2007 | 149 | 93.12% | 3.12% |
| 2007-2008 | 158 | 90.17% | 5.78% |
| 2008-2009 | 139 | 92.31% | 2.10% |
| 2009-2010 | 187 | 95.31% | 2.60% |
| 2010-2011 | 158 | 96.27% | 3.11% |
| 2011-2012 | 157 | 95.03% | 1.86% |
| 2012-2013 | 154 | 93.90% | 1.22% |

Table I2

*Ashmore High School Four-Year Graduation and Drop-Out Rate*

| Year | Number of Graduates | Graduation | Drop Out |
|---|---|---|---|
| 2006-2007 | 177 | 83.09% | 9.38% |
| 2007-2008 | 188 | 79.37% | 13.00% |
| 2008-2009 | 145 | 73.63% | 12.09% |
| 2009-2010 | 164 | 72.25% | 15.31% |
| 2010-2011 | 164 | 59.13% | 16.09% |
| 2011-2012 | 121 | 56.97% | 18.79% |
| 2012-2013 | 87 | 58.39% | 30.87% |

Table I3

*Pine Ridge High School Four-Year Graduation and Drop-Out Rate*

| Year | Number of Graduates | Graduation | Drop Out |
|---|---|---|---|
| 2006-2007 | 83 | 78.30% | 16.03% |
| 2007-2008 | 99 | 89.62% | 1.89% |
| 2008-2009 | 124 | 87.22% | 7.52% |
| 2009-2010 | 92 | 83.33% | 8.82% |
| 2010-2011 | 71 | 67.00% | 7.00% |
| 2011-2012 | 88 | 88.64% | 3.41% |
| 2012-2013 | 97 | 93.27% | 3.85% |

Table I4

*Petronila High School Four-Year Graduation and Drop-Out Rate*

| Year | Number of Graduates | Graduation | Drop Out |
|---|---|---|---|
| 2006-2007 | 222 | 94.87% | 2.56% |
| 2007-2008 | 245 | 96.17% | 1.53% |
| 2008-2009 | 241 | 95.72% | 1.95% |
| 2009-2010 | 273 | 97.16% | 0.71% |
| 2010-2011 | 241 | 95.16% | 1.61% |
| 2011-2012 | 256 | 96.58% | 1.14% |
| 2012-2013 | 239 | 96.37% | 1.21% |

Appendix J

College-Going Rates Over Time

College-Going rates are calculated by CEPI in the Michigan Department of Education. Rates reflect students entering college within 12 months of graduating high school. College attendance rates are collected from National Student Clearinghouse (NSC) Data. Attendance rates may not account for all Michigan student college attendance. Universities voluntarily participate with the NSC, and while coverage rates are high, they are not universal. Tables below represent college-going rates over time corresponding to Figures 17, 18, 19, and 20.

Table J1

*Percentage of College-Going by Year for Michigan High Schools*

| Year | Number of Graduates | Two Year College-Going | Four Year College-Going | Total College-Going |
|---|---|---|---|---|
| 2007-2008 | 116,733 | 17.24% | 30.88% | 48.12% |
| 2008-2009 | 111,742 | 18.97% | 34.61% | 53.58% |
| 2009-2010 | 109,677 | 19.7% | 35.24% | 54.94% |
| 2010-2011 | 105,989 | 23.11% | 37.58% | 60.69% |
| 2011-2012 | 105,372 | 23.45% | 36.88% | 60.33% |

Table J2

*Percentage of College-Going by Year for Clayton High School*

| Year | Number of Graduates | Two Year College-Going | Four Year College-Going | Total College-Going |
|---|---|---|---|---|
| 2007-2008 | 158 | 18.99% | 46.84% | 65.82% |
| 2008-2009 | 139 | 16.55% | 48.2% | 64.75% |
| 2009-2010 | 187 | 19.25% | 50.27% | 69.52% |
| 2010-2011 | 158 | 23.42% | 55.06% | 78.48% |
| 2011-2012 | 157 | 25.48% | 55.41% | 80.89% |

Table J3

*Percentage of College-Going by Year for Ashmore High School*

| Year | Number of Graduates | Two Year College-Going | Four Year College-Going | Total College-Going |
|---|---|---|---|---|
| 2007-2008 | 188 | 33.51% | 20.74% | 54.26% |
| 2008-2009 | 145 | 45.45% | 16.55% | 60% |
| 2009-2010 | 164 | 37.8% | 14.63% | 52.44% |
| 2010-2011 | 164 | 24.39% | 35.37% | 59.76% |
| 2011-2012 | 121 | 37.19% | 21.49% | 58.68% |

Table J4

*Percentage of College-Going by Year for Pine Ridge High School*

| Year | Number of Graduates | Two Year College-Going | Four Year College-Going | Total College-Going |
|---|---|---|---|---|
| 2007-2008 | 99 | 18.18% | 14.14% | 32.32% |
| 2008-2009 | 124 | 29.84% | 23.39% | 53.23% |
| 2009-2010 | 92 | 25% | 23.91% | 48.91% |
| 2010-2011 | 71 | 45.07% | 29.58% | 74.65% |
| 2011-2012 | 88 | 28.41% | 43.18% | 71.59% |

Table J5

*Percentage of College-Going by Year for Petronila High School*

| Year | Number of Graduates | Two Year College-Going | Four Year College-Going | Total College-Going |
|---|---|---|---|---|
| 2007-2008 | 245 | 14.69% | 34.29% | 48.98% |
| 2008-2009 | 241 | 14.52% | 34.44% | 48.96% |
| 2009-2010 | 273 | 19.05% | 39.19% | 58.24% |
| 2010-2011 | 241 | 22.41% | 43.98% | 66.39% |
| 2011-2012 | 256 | 28.91% | 43.75% | 72.66% |

Appendix K

Administrator Interview Protocol for How the MMC has Impacted Michigan High Schools

In general, the idea is to understand structural (i.e. scheduling and course offering) changes, which have happened in the school that resulted from the MMC.

Note that this protocol can be used for almost any innovation. In fact, when I learn of other innovations in the school I address them through questions III-VI.

**I. Tell the principal what the project is about (see above statement) and present the consent letter.** Answer any questions they may have and obtain informed consent before moving forward.

Provide consent form and ask for signature
Ask for consent to record the interview
Begin recording

"This is _____ from Michigan State University and the Michigan Consortium of Education Research. Today is _____ and I am at ____ High School interviewing _(interviewee says their name)_ about how the Michigan Merit Curriculum has affected his/her school. I have provided a consent form that informed _____ about the risks and benefits. He/she has provided their signature and consent is that correct? ____ Just to confirm, you agreed to record this interview, correct? _____ I may wish to quote from this interview either in the presentations or articles resulting from this work. A pseudonym will be used in order to protect your identity, unless you specifically request that you be identified by your true name. Do you agree to allow me to quote from this interview?_____."

**II. Give person overview of the areas we'll be asking about:**

Students' college-going
Scheduling and course offering changes since 2006
Teaching assignments and how/if they have changed since 2006
Student outcomes and how/if they have changed since 2006

"I want this to be a conversation between us, but I also want to make sure I get all of the important information, so I will refer to my notes so we can make the most of our time."

**III. Basic Information**

How long have you been an administrator?
When did you begin as an administrator at this school?

**IV. College-Going**

What are your views or expectations of students' college-going?

Who should go to college?
Have your views changed in the past six or seven years? If so, why?

What are the views or expectations of teachers in your school about students' college-going?
Have these views changed in the past six or seven years? If so, why?

What are the views or expectations of your school's community on students' college-going?
Have these views changed in the past six or seven years? If so, why?

For any of these changes in views or expectations, how have these changes impacted your work?

**V. Structural Responses**

What have been the top three most significant changes your high school has made in the past six to seven years?
What prompted or caused these changes?
How have these changes affected your school?
(Note: specifically, scheduling, credit recovery, course offerings?)

**VI. Teacher Compositional Shifts**

Have your teacher course assignments changed in the past six to seven years?

Why did teachers' course assignments change?

What was the decision-making process and who was involved, regarding the change in your course assignments related to the Michigan Merit Curriculum?
{If not the administrator decision} How is the responsibility allocated to those deciding course assignments?

**VI. Student Outcomes**

How has the Michigan Merit Curriculum impacted your students?

Specifically, has the Michigan Merit Curriculum changed your graduation rate? How?

How has the Michigan Merit Curriculum impacted the number of your students who go to college?

What is the greatest obstacle students encounter in taking the Michigan Merit Curriculum?

Appendix L

Data Analysis and Coding

Table L1

*Data Analysis and Coding Description and Examples*

| | **Grounded Theory Analysis** | **Focused Coding Analysis** | **Positivistic Approach** |
|---|---|---|---|
| **Approach** | Identify meaning or behavior associated with interview responses, line by line. Emergent themes inform focused coding analysis. | Identify initial emergent themes and situate interview responses within these categories, across sampled participants. Engage in a constant comparative method (Strauss & Corbin, 1990) modifying and narrowing initial codes to a focused coding structure. | Use themes hypothesized at the outset of study to code interview responses, across sampled participants |
| **Examples**<br><br>**Grounded Theory** | *Current experience*<br>*Kids impacted in middle and elementary schools*<br>*Local districts*<br>*did not respond or had difficulty responding to increase rigor appropriately*<br><br>*When these kids came to H.S. they were left unprepared for the increased rigor* | We're right now experiencing kids who were in middle school or even at late elementary when this was all passed, that then core districts correspondently didn't necessarily make —or they struggled to make the adjustment to get that curriculum beefed up,<br><br>so when they got to high school those kids now could now could be successful with this huge paradigm shift. (Dr. Fletcher). | |
| **Focused Coding** | *Students not adequately prepared for new requirements* | We're right now experiencing kids who were in middle school or even at late elementary when this was all passed, that then core districts correspondently didn't necessarily make the re—or they struggled to make the adjustment to get that curriculum beefed up, so when they | |

Table L1 (cont'd)

| | | |
|---|---|---|
| **Focused Coding** | | got to high school those kids now could now could be successful with this huge paradigm shift. (Dr. Fletcher) |
| | *Getting students through the math curriculum* | So for example, with math, there were...you know, they come in at all different levels. And we basically had to figure out ways that we could, for lack of a better term, get students through, because they weren't necessarily getting the background in elementary and middle school that they would need to...to survive in Algebra II. (Mr. Daniels) |
| | *Students not adequately prepared for new requirements* | |
| **Positivistic Coding** | *Differentiating rigorous courses to meet all students* | So for example, with math, there were...you know, they come in at all different levels. And we basically had to figure out ways that we could, for lack of a better term, get students through, because they weren't necessarily getting the background in elementary and middle school that they would need to...to survive in Algebra II. (Mr. Daniels) |
| | *Providing additional opportunities for credit recovery* | So we also looked at it as, okay, we've got a class of four or five kids. And we're going to pay a teacher to be in there. Let's bring the kids who failed Algebra IA and Geometry IA into that class too and put them into all of our credit recovery labs, so those kids don't get behind either, which is what we did. So, I think we've got about roughly 15 kids in the junior Algebra IIA sit-down class with a teacher who is really good with at-risk kids. (Dr. Fletcher) |

Appendix M

High School Longitudinal Study Variable Codes

Table M1

*Demographic Variables*

| | |
|---|---|
| X1REGION | Regions in country |
| A1WHITE | Proportion of white students in school |
| A1ASIAN | Proportion of Asian students in school |
| A1PACISLE | Proportion of Pacific Islanders in school |
| A1AMINDIAN | Proportion of American Indians in school |
| SCHOOLID | Unique school ID |
| X1STATE | School state |
| A1GRADE9 | Grade present in school |
| A1GRADE10 | Grade present in school |
| A1GRADE11 | Grade present in school |
| A1GRADE12 | Grade present in school |
| X1STATESAMPLE | Public School Sample |
| X1GRADESPAN | Grade span of administrator answering questionnaire |
| A1HISPSTU | Proportion of Hispanics in the school |
| A1FREELUNCH | Proportion of free and reduced priced lunch |
| A1ELL | Proportion English Language Learners |
| A1SPED | Proportion special education students |

Table M2

*School Choice Variables*

| | |
|---|---|
| A1CHOICEIN | Students can enroll in another school within their current district |
| A1CHOICEOUT | Students can enroll in another school outside their district at no individual cost |
| A1CHOICESCH | Students from other schools can enroll in the school at no tuition cost |
| A1CHOICEOTHER | School participates in another choice program |

Table M3

*Remediation Variables*

| | |
|---|---|
| A1G9SUMMER | Summer intervention |
| A1G9BLOCKSCH | Block schedule to help struggling 9th graders |
| A1G9DOUBLE | Double dosing to help struggling 9th graders |
| A1G9NOPROG | No programs for 9th graders (could be used at comparison) |
| A1G9TUTOR | Tutoring for 9th graders |
| A1GSTUDY | Study skills to help 9th graders |
| A1G9GRADERS | 9th grade intervention based on bad grades |
| A1G9ABSENTEE | 9th grade intervention based on absences |
| A1G9BEHIND | 9th grade intervention based on credits behind |
| A1G9BEHAVE | 9th grade intervention based on disciplinary problems |
| A19GOTHER | 9th grade intervention based on something else |
| A1ALG1LEVELS | School offers Algebra I for different ability levels |
| A1REPEATGR9 | Proportion of 9th graders repeating grade 9 |

Table M4

*Scheduling and Courses Offered Variables*

| | |
|---|---|
| A1OFFERAP | Advanced Placement courses offered |
| A1MTHSTREQ | How do the math requirements compare to the state? |
| A1SCISTREQ | How do the science requirements compare to the state? |
| A1SCHEDULE | Traditional or block schedule |
| A1CALENDAR | Semester, trimester, quarter, or other |
| A1ACADBLOCK | Are there academic courses block scheduled? |
| A1OTHERBLOCK | Are there other courses block scheduled? |
| A1TRADMINS | The length (in minutes) of traditional courses |
| A1BLOCKMINS | The length (in minutes) of block courses |

Table M5

*Accountability Variables*

| | |
|---|---|
| A1AYP | School in need to improvements due to AYP |
| A1MADEAYP | School made AYP |

Table M6

*Principal Background and Perception Variables*

| | |
|---|---|
| A1HIDEG | Highest degree earned by principal |
| A1YRSADMIN | Years of administrative experience by principal |
| A1YRSHSTCHR | Principals years of high school teaching |
| A1HRINTMGMT | Principal's hours spent on internal management |
| A1HHREXTMGMT | Principal's hours spent on external management |
| A1HRDISCIPLN | Principal's hours spent on discipline |
| A1HRPARENT | Principal's hours spent on parents |
| A1HRSTUDENT | Principal's hours spent on students |
| A1HRPAPERWRK | Principal's hours spent on paperwork |
| A1STUABSENCE | Principal's perceive large problem in student absences |
| A1DROPOUT | Principal's perceive large problem in drop outs |
| A1PRNTINV | Principal's perceive large problem in lack of parental involvement |
| A1UNPREP | Principal's perceive large problem in students coming unprepared to learn |

Table M7

*High School Graduate Variables*

| | |
|---|---|
| A14YRDEGREE | 2008-2009 seniors going onto a 4 year degree |
| A12YRDEGREE | 2008-2009 seniors going onto a 2 year degree |
| A1WORK | 2008-2009 seniors going onto work |
| A1DOOTHER | 2008-2009 seniors going onto something else |
| A1MILITARY | 2008-2009 seniors going onto the military |

FOOTNOTES

FOOTNOTES

**Chapter 1**

[1] Calculations based on 2008 and 2009 Michigan high school graduates attending any postsecondary institution. Matriculations rates based on National Student Clearinghouse data.

**Chapter 2**

[1] Recent college graduate unemployment has steadily risen over the last five years according to data collected from the Current Population Survey. Unemployment by year floated from 9 percent in 2007, 11.9 percent in 2008, 17.6 percent in 2009, 14 percent in 2010, and 13.5 percent in 2011 (Spreen, 2013).

[2] Once investment in rigorous mathematics and science programs (resulting from Sputnik) diminished, the majority of high schools created tracked high school programs aligned to students' interests and varied academic levels (Attewell & Domina, 2008).

[3] Double dosing curriculum refers to student simultaneously taking two courses within a subject, such as remedial Algebra and Algebra I.

[4] Credentialism asserts "individuals seek credentials (usually in the form of educational degrees) in order to monopolize access to occupational positions and legitimate power within organizations" (Brown, 2001 as cited in Maier, 2009).

**Chapter 3**

**[5]** Median family income reported is over the 2011 year, taken from the Current Population Survey Annual Social and Economic Supplement (2013).

[6] This proportion reflects averages taken from the American Community Survey from 2008-2012.

[7] This proportion reflects averages taken from the American Community Survey from 2008-2012.

**[8]** College-going rates reflect graduating high school students' enrollment in college within twelve months after graduation and therefore do not account for high school drop-outs or reflect a "cohort" college-going rate.

**[9]** Enrollment size may contribute to proportional changes, Pine Ridge is significantly smaller than Petronila with a 2012 graduating class of 88 versus 256, respectively.

**Chapter 4**

[10] Priority schools are schools in the bottom five percent of the Michigan Department of Education's Top to Bottom ranking. Rankings include data from student achievement scores, achievement improvement over time, and achievement gap standardized scores (MDE, 2014).

Prior to being labeled Priority Schools, schools in the bottom five percent were known as Persistently Low Achieving (MDE, 2014).

[11] Although related measurements, MME scores and graduation rates, are by no means interchangeable. A student may fail the MME and graduate with honors or vice versa. However, generally, students mastering course material do well on the standardized assessments.

[12] All personal curriculums must be approved by the student, parent or guardian, and school designee. School designee for personal curriculums may include the district superintendent, high school principal, or counselor.

**Chapter 5**

[13] Lost days calculations assume a 50-minute class period.

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