

IMPLICATIONS OF INCREASED GRADUATION REQUIREMENTS
FOR STUDENTS IN SCHOOLS OF SOUTHEAST MISSOURI

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Doctor of Education

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The undersigned, appointed by the Dean of the Graduate School, have examined the dissertation entitled

IMPLICATIONS OF INCREASED GRADUATION REQUIREMENTS
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Presented by Rhoda G. Collier Barnett

a candidate for the degree of Doctor of Education

and hereby certify that in their opinion it is worthy of acceptance.

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This work is dedicated to my awesome family whom I love dearly; my daughter Jackie Rae, pre-K teacher, who has always believed in and encouraged her mother; to my son John Thomas, serving in the US Air Force, who set high standards for me and never allowed me to look back; and to my daughter Brooke Danielle, who was only 5 years old when the process began and who can finally see the light of the end. Also, to my longest, dearest friend, Shirley Bradshaw who believed in me long before I knew myself. Finally, to my stalwart cheerleader husband, Bobby. His tireless coaching and endless patience kept me on course. To all, I am eternally grateful, from the bottom of my heart, for without this joint effort my pursuit and completion of this doctorate degree would not have been possible.

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ABSTRACT

This study examined the relationship between graduation requirements of Southeast Missouri schools and graduation rates, percent of students scoring at or above the national average on the ACT, and percent of students enrolled in 2- or 4-yr colleges or post-secondary, non-university institutions. The study identified schools of the Southeast Region of Missouri by the counties of the Southeast Missouri Association of Secondary Principals. Seventy-eight schools of the 20-county region were surveyed to collect information that was used to link existing data provided by the Missouri Department of Elementary and Secondary Education. Data collected encompassed a 17-year period of time marked by the impact Missouri School Improvement Legislation of 1983. Sixty-one of the 78 schools surveyed responded providing a reliable working sample of schools for the study.

The survey provided information regarding the number of credits each of the sample schools required when Missouri's minimum was 22 credits for graduation. The survey also collected information on whether schools altered their curriculum based on concerns for improved student performance in areas such as MAP testing, ACT scores, and college preparation.

An analysis of variance (ANOVA) was used to evaluate data. No significant correlations between increased graduation requirements and graduation rates, ACT scores, or college enrollment were found. However, theoretical concepts and research reviewed for this study suggest state expectations for student performance produce slight increases in graduation rates and percent of students enrolled in colleges over periods of time. These tendencies are the same whether schools operated at the state's minimum requirement for graduation or whether schools operated with higher credit requirements. Further research is necessary, however, due to the potential impact on students who may be at-risk for graduation of higher expectations without adequate preparation.

CHAPTER 1

Introduction to the Study

Background

For the past two decades, this nation felt the demands of improving the outcomes of education. Competitive pressure of national and international test comparisons produced educational reform ranging from providing more specific curriculum criterion to establishing accountability assessment for both students and educators (Levin & Wiens, 2003). Discussions on the substance of education for the public and the exertion of national pressures to pursue the best course are not new phenomena. The history of expectations for the public education of children is aptly summarized by the ancient style of Aristotle as quoted by Ozmon and Craver (2003):

That education should be regulated by law and should be an affair of state is not to be denied, but what should be the character of this public education, and how young persons should be educated, are questions which remain to be considered. For mankind are by no means agreed about the things to be taught, whether we look to virtue or the best of life. Neither is it clear whether education is more concerned with intellectual or moral virtue (p. 83).

Historically, the substance and the levels of proficiency evolved according to the demands of the times and the perception of need. The interest in pursuing education beyond the elementary level and the necessity of meeting requirements for college enrollment defined the needs for high school, an advanced level of education introduced in the 19th century. American high schools evolved to provide a secondary level of education, connecting elementary schools to colleges and universities (Shaw & Walker, 1981).

While a necessary link for preparing students for higher education, high schools in America were not in great demand prior to the 1900s. In 1890, less than four percent of all American 17 year olds graduated from high schools with even fewer attending college (Glore, 1984). In addition, few measurable standards existed for American high schools. The lack of a standard unit for measuring course work created inconsistencies in high school performance and outcomes. Initially, colleges were not overly concerned because most had their own entrance requirements with little regard for standardized levels of performance or abilities. Some colleges offered their own high school programs within their educational departments in order to bring students to a level of performance needed to meet the expectations of their respective programs. Other colleges admitted students with little or no high school education. Very few colleges actually adhered to their own published requirements allowing student admissions based on enrollment numbers or demand for college graduates. As a result, American high schools of the 19th century provided a wide array of coursework with often sporadic offerings and little uniformity in output or graduates.

In 1905, Andrew Carnegie established the Carnegie Foundation to promote education and effective research on much needed consistency in secondary educational settings. The Foundation provided a clear definition of high school, separated coursework from college curricula, and established common acceptance to a four-year study program in high school (Shaw & Walker, 1981). A major accomplishment of the Foundation was to create a standard unit of credit. A minimum of 14 units was also established as a requirement to enter college. By 1909, the Carnegie unit and standards had been adopted by many high schools and colleges (Glore, 1984).

As movement toward the standardization of American high schools continued, expectations for performance emerged. The Committee of Ten, chaired by Harvard University President, Charles William Elliot provided the first major national report on high schools (James & Tyack 1983). The primary focus of the Committee of Ten was to update and standardize academic curriculum of secondary education in order to prepare students for college.

Not all the new national reports emphasized college attendance. In 1918, a group focusing on the needs of students not going to college was in direct contrast to the focus of the Committee of Ten. This committee, known as the Cardinal Principles of Secondary Education, reflected the teachings of John Dewey. Sponsored by the National Education Association, the “. . . committee stressed activities, democracy, character, and efficiency over the traditional academic curriculum” (Glore, 1984, p. 9).

The Great Depression of 1929 initiated a renewed examination of high schools. National issues such as unemployment and despair promoted vocational and guidance programs for youth. In spite of the apathy and unrest that permeated the population, high school remained important and resilient throughout the depression (Glore, 1984).

With the launching of Sputnik in 1957, a new element of concern emerged. Schools were being examined once again on the basis of academics. Harsh criticisms included concerns over watered-down curriculum lacking emphasis on mathematics and science (Glore, 1984). Increased spending by the federal government called for higher standards at the high school level and amplified demands for improved student performance.

By the 1970s, the political tone shifted as a result of the effects of the Vietnam War. Public sentiment embraced ideas of humanism and flexibility. Educational emphasis edged toward meeting the needs of all with accentuated interest on minorities, handicapped, and poor (Glore, 1984). The atmosphere of humanism and acceptance that infused American high schools led to colleges lowering their entrance requirements. A cycle of the reevaluation of requirements ensued with high schools reducing or eliminating formerly required units of math, science, and foreign languages. The negative aspect: 70s innovations brought about lowered SAT scores and another cycle of reexamination resulting in a back-to-basics approach in education (Lillard & DeCicca, 2001).

In 1983, a report to the Secretary of Education titled “A Nation at Risk,” warned our nation of the erosion of our educational foundations due to the mediocre educational practices of our nation’s schools (U.S. Department of Education, 1983). Recent school reform law reflects the attempt to address the demands for remaining economically superior by ensuring the success for all children. The No Child Left Behind Act of 2001 (NCLB) requires public schools to raise achievement levels of all students especially the socio-economically disadvantaged students, by means of standards and testing (U.S. Congress, 2001).

National reform recommendations have received widespread approval and prompted action for raising state standards across the nation. At least 40 states have adopted standards that meet or exceed NCLB criterion. In the state of Missouri, the Missouri School Improvement Program (MSIP) is an accreditation system that was implemented in 1989. It has policies that are similar to those of NCLB. Approximately

every four years, Missouri revises accountability and measurement criteria of MSIP and begins new cycles of improvement programs for schools. Missouri is currently in the 4th cycle of MSIP. Revisions include tougher achievement levels for students taking mandated state testing through the Missouri Assessment Program (MAP).

One reactive response to the national trend for public school reform is that of raising graduation requirements for high school students. The premise of increased graduation requirements is that greater expectations result in depth of curriculum and improved achievement (Chaney, Burgdorf & Atash, 1997). Response to Missouri's expanded requirements for state accreditation often result in high schools increasing graduation requirements, especially in core classes of math, communication arts, science, and social studies, the areas tested by MAP. Pressures to ensure accreditation result in curricular changes and completion requirements imposed by Missouri's local school boards. Such decisions are often made without sufficient evidence of the potential impact on students.

While the burden of responsibility for quality school reform is emphasized at the elementary and middle school levels by NCLB, what high schools can and actually should do is implied. NCLB requires states to institute annual performance targets for all students to attain the proficient level in scoring on the state's assessment by 2014 (MODESE, 2006). In order to receive federal government funds, schools must make adequate yearly progress (AYP) in specific areas of performance that include achievement in core subject areas, attendance, and graduation rates. The state of Missouri bases public school accreditation on the Annual Performance Report (APR), an accountability report of adequate yearly progress. Of the thirteen standards reported by

the APR, eight are the sole responsibility of high schools within each K-12 district. A ninth standard, based on attendance, is shared by all buildings in the district. The APR includes a category for the number of high school students who complete course requirements for graduation. School completion, as evidenced by receiving a high school diploma, culminates the expectations of NCLB. Regardless of the educational efforts and results of the elementary and middle school settings, if a student reaches high school and then drops out, the implication may be that the high school has fallen short in meeting the educational needs of the child. Crucial high school reform joins the focus in ensuring the educational success of all students.

Studies such as *Breaking Ranks II: Strategies for leading high school reform* states, “Public high schools in the United States are at a crossroads. Federal and state legislation has established benchmarks intended to improve achievement for all students—including those who in the past were accepted as part of the ‘normal’ failure curve” (NASSP, 2004, p. xiv). The National Commission of Excellence in Education report specifically called for a dramatic increase in graduation requirements with approximately fifty-five percent of the required Carnegie units being mandatory core classes such as English, mathematics, science, and social studies (National Commission of Excellence in Education, 1983). In 2004, The High School Task Force for Missouri was appointed by the Missouri Commissioner of Education, D. Kent King. The commission was appointed to examine current state graduation requirements and to recommend possible changes. King stated:

It has been 20 years since we revised the minimum high school graduation requirements in the state of Missouri. The world has changed dramatically in that time. I think it is time to raise state standards and increase the

academic rigor of the high school experience for all young people (Missouri Department of Elementary and Secondary Education, 2005, p. 1).

Increasing graduation requirements with specific curriculum areas targeted is one response to the concerns regarding student achievement in public high schools.

Mathematics is the subject that has received the most attention. The National Science Board (as cited in Hoffer, 1997) reported the number of high school students completing the minimum of a first-year algebra course rose from approximately 68 percent to 79 percent from 1982 to 1992. The number of high school students completing geometry and second-year algebra rose from 48 to 70 percent and from 37 to 56 percent respectively during the same time period. According to the National Assessment of Educational Progress (as cited in Hoffer, 1997), the average math proficiency of high school students increased significantly during 1982 to 1992, the same time period of increased requirement for math coursework.

Increasing graduation requirements to address national concerns over achievement is compelling. During his announcement of the High School Task Force panel of educators and representatives of businesses and labor groups, King stated, “the issue of reforming high schools is becoming a big issue across the nation, and there are a lot of ideas about changes that could lead to more highly qualified graduates” (Johnston, 2004, p. 30). However, some studies point to higher dropout rates with increased graduation requirements at a time when higher standards and levels of achievement are in great demand (Alspaugh, 1997). Lillard and DeCicca (2001) argue in their findings “. . . that state mandated minimum course requirements cause students to drop out of high school” (p. 459). The aggregate data in the Lillard and DeCicca (2001) study of the

impact of higher standards on dropout rates reveal an increase in the dropout population of 3.0 percent in 1980 to 7.4 percent in 1990.

Increased graduation requirements may very well increase the dropout rates resulting in schools hesitating to require more from their students (McDill, et al., 1986). Increasing graduation requirements may increase access to academic content, but only for some students and for some content (Hoffer, 1997; Wilson & Rossman, 1993). With strong pressures to increase requirements for graduation, it is imperative that educational leaders be fully aware of potential hazards as well as anticipated outcomes (Lillard and DeCicca, 2001).

Conceptual Underpinnings for the Study

Reactive responses to political pressures or social problems are often the basis for changes within an organization or system. Fowler (2000) states that social or government problems are legitimately addressed through policy issues. Often, however, policymakers step up to address the demands for change without giving full consideration to research and the potential impact of select policy formation. The result can be a careless reaction to a problem or situation with little or no foundation with which to build a solid solution in the form of public policy to address the issues at hand. In order to provide basic support for this study, the classical stage model of the policy process will be the undergirding for the topic discussed and will provide the conceptual framework for the study (Fowler, 2000).

Fowler (2000) states that, “The policy process is the sequence of events that occurs when a political system considers different approaches to public problems, adopts

one of them, tries it out, and evaluates it” (p.13). Problems with public education were brought to light by events such as Sputnik and reports such as “A Nation at Risk.” Fowler (2000) defines public policy as “. . . the dynamic and value-laden process through which a political system handles a public problem. It includes a government’s expressed intentions and official enactments as well as its consistent patterns of activity and inactivity” (p. 9). The No Child Left Behind Act of 2001 is an example of government policy created to address public education problems. Policy issues were identified with the process completed in the form of official enactment or public law.

The identification of a policy issue is only the beginning of the policy process. From there, the “. . . issue must be placed on the policy agenda, or list of subjects or problems to which governmental officials, and people outside government closely associated with those officials, are paying some serious attention at any given time” (Kingdon as cited in Fowler, 2000, p. 16). Powerful politicians usually set the policy agenda. Special interest groups with the ability to draw attention to an issue through lobbying can also bring a policy issue to the agenda stage. Power groups seem to have a clear advantage over the disempowered in bringing an issue to the table. Cobb and Elder (as cited in Fowler, 2000) stated “. . . where agenda setting is involved, all citizens are definitely not equal: the powerful have more influence on policy agendas than do the disempowered” (p.184). Public school systems might well be considered the disempowered with little influence on policy issues that are actually brought to the agenda stage.

Policy agendas must appear in written form which is required for policy formulation. The written text moves through the policy formulation stage where it

becomes the draft of a statute and through policy adoption where it becomes law (Fowler, 2000). Wording is critical for passage and future interpretation of the statute as well as the resulting implications. Statutes are interpreted in many ways resulting in successive policies and practices which may stray from the original intent. In Missouri, local school board efforts to meet state and federal expectations produce diverse local policies and consequently produce varied results.

Not all policy issues, however, end up in the form of public law. Many result in official practices supported by statutes (Fowler, 2000). Policy issues can result in policy formation at the local or institutional level as the result of statutes or mandatory regulation. Regardless, policies are often formulated at the top of a political entity while “. . . put into practice close to the grass roots” (Fowler, 2000, p. 11). Fowler (2000) states, “Education policies must be implemented at the grass-roots level by district administrators, principals, and classroom teachers” (p.17). If not, the desired outcomes of policy formation and successive adoption may not reach intended potential and may produce subsequent problems upon implementation. In Hoffer’s (1997) study, implementation efforts can result in watered-down effects. Requiring all students to take more mathematics may occur, but less knowledge may be gained. Hoffer (1997) also cites lack of resources to support policy may have the effect of rendering it ineffective. Kohn (1999) calls school reform the “Tougher Standards” movement:

This remarkable consensus around Tougher Standards is closely connected to the perpetuation of Old School styles of teaching Holding schools ‘accountable’ for meeting ‘standards’ usually means requiring them to live up to conventional measures of student performance, and traditional kinds of instruction are most closely geared to—and thus perpetuated by—these measures. The dominant philosophy of fixing schools consists of saying,

in effect, that ‘what we’re doing is OK, we just need to do it harder, longer, stronger, louder, meaner, and we’ll have a better country’ (p. 16).

Kohn (1999) and Lillard and DeCicca (2001) suggested that state mandates to increase graduation requirements based on the philosophy of tougher standards cause more students to drop out. The Lillard and DeCicca (2001) study stated, “Existing evidence from unpublished studies suggests that students are more likely to drop out when they face higher standards” (p. 459). The study further pointed out the lack of empirical evidence regarding the relationship between increased high school graduation requirements and dropout behavior. Lillard and DeCicca (2001) recommended further research is vital before policy has further detrimental effects on students.

Statement of the Problem

As schools increase graduation requirements in attempts to improve performance, interest in research related to increased high school graduation requirements spiked due to concerns over how such increases affect high school dropout rates (Lillard & DeCicca, 2001). Yet little empirical research exists on the true impact of increased graduation requirements on student performance and decisions to remain in school. As a result, inadequate research suggests inept policy structuring and decision-making. McDill, Natriello, and Pallas (1985) contend that raising standards may have a positive impact on at-risk students by encouraging greater effort by such students thus raising achievement levels. However, concerns over the potential negative impact of increased graduation requirements remain. On reform commission report findings, McDill, et al. (1985) explained, “Although the reports of the reform commission have been acclaimed by both the lay public and educators, there is concern from several sources about their alleged

failure to give balanced emphasis to the ideas of quality and equality of education. . . .” (p. 416).

Empirical studies on the impact of increased graduation requirements on at-risk students are limited in focus (Lillard & DeCicca, 2001). The study conducted by Lillard and DeCicca (2001) speaks of the dangers of creating policy without adequate examination of the evidence that does exist. “Given the magnitude of the dropout problem in terms of personal, social, and economic costs, it is important to investigate the likely consequences for potential dropouts of raising academic standards. . . .” (p. 416). Limited research on the impact of increased graduation requirements offers little toward making good judgment calls on doing what is best for students. In addition, results of the studies that exist are a bit clouded as indicated by the Lillard and DeCicca (2001) study.

The Lillard and DeCicca (2001) study found students are more likely to drop out of school when faced with higher graduation requirements. However, the study lacked clarity on the actual impact of student decisions to drop out of school and whether those decisions were directly related to the increased graduation requirements. In addition to potentially negative effects on students from arbitrarily raising requirements, Lillard and DeCicca (2001) stated that issues of apathy, poor socio-economic backgrounds and school relationships must not be ruled out as even greater causes for student dropout. While school related factors are reported to be the most prominent reasons for dropping-out of high school, other factors include students’ family conditions and economic situations (McDill, et al., 1985). Roderick and Engel (2001) presented findings that warn of assuming low-achieving students not meeting raised expectations, but pointed out that policies on raised graduation requirements are moot compared to such issues as teacher

guidance, work habits, and educational support. Other studies reflect unclear connections between increased graduation requirements and achievement levels of students. Increased graduation requirements have little effect on those college-bound students who already participate in a challenging curricular program. The greatest impact of increased graduation requirements is on the students who are not motivated to take higher level classes and are not considered to be high achievers (Lillard & DeCicca, 2001; McDill, et al., 1986).

Existing studies conducted throughout various parts of the country that examine increased graduation requirements and possible correlation to dropout rates may not be reflective of policy and subsequent effects on students in the state of Missouri. Missouri has not increased its state-wide graduation requirements in twenty years and only recently formulated policy for graduation requirement increases in 2006 beginning with students who will be graduates of 2010. Students entering their ninth grade year in the fall of 2006 were faced with increased graduation requirements that included an extra credit in each of the four core areas, math, communication arts, science, and social studies along with $\frac{1}{2}$ credit each of health and personal finance. Students in the state of Missouri will now have to complete a total of 24 credits, up from the previous required 22 credits (MODESE, 2005). To accommodate this graduation requirement increase within the normal four year, eight semester high school program, the number of elective credits has been decreased. To students, Missouri's most recent graduation requirement increase means fewer options for elective credit choices. For at-risk students, any failure of more than two credits throughout their high school career puts them at a loss to complete career center or other programs of high interest. With little or no access to high interest elective

courses, and with the prospect of attending high school for an additional semester, the probable negative impact on at-risk students is great. Local and perhaps sporadic core requirement increases by Missouri school districts have occurred largely in response to Missouri's accreditation requirements with little or no research existing on the impact on students' persistence to graduation.

Purpose of the Study

Schools in the process of meeting the mandates for increased graduation requirements in the state of Missouri need valid information to prepare for potential effects of the increased requirements on students already prone to drop out. An applicable study pertinent to the state of Missouri is needed to examine such effects. This study examined past graduation requirement increases and any possible correlations with dropout rates. The study also included the examination of local school policy formation, specifically increased graduation requirements and the evaluation of implementation and effectiveness.

Research Questions

1. What is the relationship between increased graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation?
2. What is the relationship between increased graduation requirements and ACT scores?
3. What is the relationship between increased graduation requirements and the number of students attending college?

Hypotheses

The following hypotheses were tested in this study:

1. There is no relationship between increasing graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation.
2. There is no relationship between increased graduation requirements and ACT scores.
3. There is no relationship between increased graduation requirements and the number of students attending college.

Limitations, Assumptions, and Design Controls

The findings of the study were subject to the same limitations as other studies utilizing existing data. The findings were limited to the availability of existing data and the validity and reliability of the interpretation of the data used. One limitation was the accuracy of the dropout data. The data may not be an accurate reflection of students who are high-school age and no longer attending school, or an accurate, up-to-date reflection of drop-out recovery due to GED or reenrollment in private or home-school settings. A limitation of research question number three was the difficulty in identifying and tracking those students who actually attend college. Tracking students who actually enroll in college is difficult. Many schools utilize senior exit interviews which collect student intention to attend college and not actual attendance. Other schools base their college attendance data by transcript request information.

Statistical procedures and the analyzing process used in examining the data determined a correlation between increased graduation requirements, the independent

variable, and student graduation rates, ACT scores, number of students attending college, the dependent variables. Historical data was a vital component of the findings and offered a considerable level of validity. Still, subjective interpretation is an aspect of the findings and was taken into consideration.

Every attempt was made to access relevant data. Educational performance data from the School Data and Statistics link of the Missouri Department of Elementary and Secondary Education website was analyzed. From the MODESE website, data pertaining to graduation rates, composite ACT scores, and college placement rates from the Annual Performance Report (APR) was gathered and analyzed. The study focused on schools considered the Southeast Region of Missouri as defined by the Southeast Missouri Association of Secondary Principals. A questionnaire was utilized to ascertain those schools that have increased graduation requirements as a result of the Missouri School Improvement Act of 1993. The Wiersma (1995) text was referenced as a resource for insuring successful questionnaire construction and completion.

The general format of the questionnaire or survey was selected-response. Selected-response was chosen over open-ended items to provide consistency of respondent answers and to offer ease in data tabulation (Wiersma, 1995).

Obtaining sufficient return on the survey instrument was a concern. The initial contact was to deliver the instrument and solicit response via U.S. postal service mail. Postal service mail was chosen as first choice due to the nature of work of the intended respondents and to provide a tangible, simplified request for information. The questions were short, quick answer and called for information relative to the work environment of the intended recipient (Wiersma, 1995). Target respondents were high school

administrators. Backup respondents for each district were central office administration and high school counselors. Updated information on school contact information is provided annually by the Missouri Department of Elementary and Secondary Education via their Missouri School Directory publication. In each survey mailing was included a self-addressed, pre-stamped envelope for the survey to be returned with minimal effort for and no cost to the respondent.

A final, notable concern was the overall number of schools fitting the criteria for data collection from the Southeast Region of Missouri. Increased graduation requirements were not mandated by the Missouri School Improvement Legislation of 1993. The focus of school accountability was tied to state assessment via the Missouri Assessment Program (MAP). Schools may have been slow to respond with making any changes in graduation requirements, and any such changes lacked consistency. Many schools responded to the demands for improved assessment scores by quickly raising the requirements for corresponding core subject areas. For these schools, the additional requirements either replaced existing electives and had no effect on the total credits required for graduation, or the additional requirements did not replace electives thereby raising the overall total. Other schools may have had additional credits to cover core areas in place or may have chosen to make no changes at all in response to assessment demands.

The study examined two benchmark periods established by the author of the study. These benchmarks were based on the projected implementation of increased graduation requirements of Missouri School Improvement Legislation of 1993 by allowing approximately four years from the time MSIP reviews began, fall of 1994, and

the first cohort of graduates of increased graduation requirement policies, the graduates of 1998. The second benchmark falls as MSIP review stakes increased pressures of Adequate Yearly Progress (AYP) and as evidenced by district Annual Performance Reports (APR) or for those schools initially slow to respond by increasing graduation requirements. This year 2002 benchmark was also selected as it was about mid-range of MSIP review cycles to date.

Definition of Key Terms

At-risk students. Students identified to be in danger of not completing traditional high school programs (Lillard & DeCicca, 2001).

Carnegie Units. The measurement of the amount of time that a student spends studying a subject at the high school level. The measurement was developed in 1906 by the Carnegie Foundation as an internal standard for reporting to colleges and universities the amount of time a student had spent studying respective high school subjects (Shaw & Walker, 1981).

Cohort. A group of students entering and progressing toward completion as identified by their respective graduation date. A cohort in Missouri schools is those students together upon enrollment in high school their freshman year continuing together for four years through their graduation year (Missouri Department of Elementary and Secondary Education, 2006)

Drop-out. Identification of a student who has quit school in the traditional educational setting (The American Heritage College Dictionary, 2002). A student who

has left his/her respective cohort and does not re-enroll to complete high school graduation (Missouri Department of Elementary and Secondary Education, 2006).

Functional Illiteracy. The inability of adults to read, write, and comprehend information deemed necessary for everyday functioning (Schultz, 2001).

Graduation Rate. The percent of students graduating each year with that particular year's intact, original cohort of students (Missouri Department of Elementary and Secondary Education, 2006).

Persistence to Graduation. A student's determination to complete requirements in order to obtain a high school diploma from a traditional school organization (McDill, et al., 1986).

Policy. "Public policy is the dynamic and value-laden process through which a political system handles a public problem. It includes a government's expressed intentions and official enactments as well as its consistent patterns of activity and inactivity" (Fowler, 2000, p. 9).

Socioeconomically disadvantaged. Students with personal, financial, and structural barriers that hinder full access to the educational process (Lillard & DeCicca, 2001).

Summary

Demands placed on public schools to increase student achievement have resulted in high schools and states perceiving the need to examine and possibly increase high school graduation requirements. Federal legislation such as the No Child Left Behind Act of 2001 (NCLB) have prompted state action to insure compliance with the demands for

educating all children. In the state of Missouri, the Missouri School Improvement Program (MSIP), the state's accreditation system, is policy that establishes school-improvement closely aligned with NCLB policies. In an effort to meet the "4th Cycle" MSIP standards, some Missouri schools have increased core class requirements.

The Missouri High School Task Force reported findings and made a recommendation to the State Board of Education that graduation requirements be increased. Stricter graduation standards were approved requiring increased requirements for students beginning as soon as the 2006-07 school year. Since Missouri had not experienced mandated state-wide graduation requirement increases for 20 years, data on the impact of such increases on students' persistence to graduation may not exist.

Few empirical studies provide information on the implications of increased pressures of graduation requirements affecting dropout rates. With states such as Missouri aggressively addressing student performance and achievement concerns, understanding potential impact on students' persistence to graduation should be considered critical.

A review of literature in Chapter 2 examined the historical trends of increasing graduation requirements and existing research on correlation with student persistence to graduation. The historical trends of increasing graduation requirements on student performance will also be examined. The current findings on students enrolling in college and increasing graduation course unit requirements were examined as well.

CHAPTER 2

Review of Related Literature

Introduction

Pressures to improve public education have set forth challenges throughout the past few decades. Inadequacies in American education have been noted as the result of studies such as 1983 National Commission on Excellence in Education, the National Science Board Commission on Precollege Education in Mathematics, Science, and Technology 1983, and the 1984 Study Group on the Conditions of Excellence in Higher Education. These studies offer ideas for change in the organization, content, and operation of public schools (McDill, et al., 1986).

National reports and data collection called for public school reform, especially at the high school level. Many states responded by implementing higher or stricter graduation requirements and some local districts increased their graduation requirements beyond the state requirements. Some states and local districts justified their sometimes controversial policy changes on the basis of the various national and state reports and increased accountability. However, studies on the impact of such programs are limited. In some available studies, findings suggest that higher standards result in higher dropout rates. “Existing evidence from unpublished studies suggests that students are more likely to drop out when they face higher standards” (Lillard, & DeCicca, 2001, p. 459). The McDill et al. (1986) study suggests that “. . . required higher levels of achievement may lead to more student experience with failure . . .” (p. 150).

This chapter analyzes the historical perspectives and the national findings that prompted American public high schools to begin the process of increasing their graduation requirements. Public Law 107-110, the Federal “No Child Left Behind” Act is the platform for more recent program changes. This chapter continues with findings from existing studies regarding the impact of increased graduation requirements or standards and ends with studies that identify the importance of increased quality versus increased quantity of programs.

Background on High School Graduation Requirements

The Carnegie Unit, developed in 1906, was designed to provide a standardized measurement of “seat time” required for graduation. The design was an attempt to provide a functional, consistent level of measurement to meet the demand of college entrance requirements. Such measurement reflected college expectations and not those of the workforce (Lillard & DeCicca, 2001).

Across the nation and for several decades, graduation requirements changed very little. “From 1946 through 1983 the average state graduation requirements rose only 1 Carnegie unit, from an average of 16.73 units in 1946 to an average of 17.78 units in 1983 (Lillard & DeCicca, 2001, p. 460). Then, from 1983 through 1990, the average graduation requirement for states became 20.20. The increase in required Carnegie Units for this seven year period was more than twice as high as compared to the previous thirty-seven years (Lillard & DeCicca, 2001).

The National Commission on Excellence in Education (1983) called for all high school students to take four years of English, three years each of mathematics, science,

and social studies, and one-half year of computer science. The Task Force on Education for Economic Growth (1983) recommended the elimination of what was considered soft electives or nonessential coursework. The general message to schools as a result of the reform trends of the 1980s was that students should be required to take more demanding coursework with greater emphasis on success in the core areas of English, math, science and social studies (McDill et al., 1986).

National and State Reports

Reports on the status and implications of public school performance began to emerge at both the national and state levels. These various reports were the result of commissions and studies that occurred over the next two decades.

National Commission on Excellence in Education (1983). In April, 1983, a national report titled *A Nation at Risk* was published and presented to the American public based on the findings of the National Commission on Excellence in Education appointed by the Secretary of Education under President Ronald Reagan's direction. The report was thorough and powerfully conveyed concerns over American public schools falling behind other countries. The report called for the American public to take a proactive stand on the education of their children. *A Nation At Risk* was, ". . . as much an open letter to the American people as it was a report the Secretary of Education. We are confident that the American people, properly informed, will do what is right for their children and for the generations to come" (National Commission on Excellence in Education, 1983, p.1).

Eighteen months of study honed in on the outcomes of public education with many of the concerns directly related to high school performance. Specific data revealed 23 million American adults as being functionally illiterate with functional illiteracy among 17-year olds considered to be at 13% and minority youth estimated to be as high as 40%. The military and business world reported millions of dollars spent to provide remedial education such as basic reading and writing skills to their enlistees and new employs. The report identified a decrease in science achievement scores, SAT scores, and achievement in physics and English. The lack of higher order thinking skills among 17-year olds was pointed out with concerns over the ability to draw inferences, to write persuasive essays, and to solve multi-step mathematical problems (National Commission on Excellence in Education, 1983). Gifted students were found to have fallen short in school achievement based on their tested ability to perform. While the report recognized the average citizen of the day to be better educated with more exposure to mathematics, literature, and science than the previous generation, the report stated that the *average graduate* was “. . . not as well-educated as the average graduate of 25 or 35 years ago . . .” (National Commission on Excellence in Education 1983, p.4).

Underlying frustrations were revealed with implications for the future. The *A Nation at Risk* report identified frustrations among students, parents, teachers, and citizens in general (National Commission on Excellence in Education, 1983):

On the personal level the student, the parent, and the caring teacher all perceive that a basic promise is not being kept. More and more young people emerge from high school neither ready for college nor for work. On a broader scale, we sense that this undertone of frustration has significant political implications, for it cuts across ages, generations, races and political and economic groups. We have come to understand that the

public will demand that educational and political leaders act forcefully and effectively on these issues (p. 4).

The report gave a summary of the 1982 Gallup Poll of the *Public's Attitudes Toward Public Schools* stating that individuals' beliefs in education as the foundation for the strength of the country were steadfast and vital to a person's success (as cited in National Commission on Excellence in Education, 1983). The impact of the report on pressures to increase high school graduation requirements are revealed in the following statement (National Commission on Excellence in Education, 1983):

At the same time, the public has no patience with undemanding and superfluous high school offerings. In another survey, more than 75 percent of all those questioned believed every student planning to go to college should take 4 years of mathematics, English, history/U.S. government, and science with more than 50 percent adding 2 years each of a foreign language and economics or business. The public even supports requiring much of this curriculum for students who do not plan to go to college. These standards far exceed the strictest high school graduation requirements of any State today, and they also exceed the admission standards of all but a handful of our most selective colleges and universities (p. 7).

While the impact of the *A Nation At Risk* (National Commission on Excellence in Education, 1983) report spawned movements across the country resulting in state mandated increases of graduation requirements for public high schools, many states had already proposed dramatic changes in their high school programs. School officials in the District of Columbia recognized that while the commission's recommendations were ". . . impractical to implement fully. . ." (Muscatine, 1983, p. 1), the political attention provided an impetus for the proposed changes. Virginia had proposed and was now able to approve ". . . a controversial 'advanced studies' diploma for students planning to attend college" (Muscatine, 1983, p.2). Maryland's Board of Education approved

“Project Basic,” a program which required freshman to pass competency tests in basic areas of citizenship, reading, writing, and math (Muscatine, 1983).

In 1983, the year of the *A Nation At Risk* (National Commission on Excellence in Education, 1983) report, the state of Missouri increased graduation requirements from 20 to 22 (Missouri Department of Elementary and Secondary Education [MODESE], 1983). Missouri’s minimum graduation requirements had changed little from 1916 when the state, through the Department of Elementary and Secondary Education, began specifying the number of units required to receive a high school diploma. In 1973, the State Board of Education in Missouri increased graduation requirements from 17 to 20 units while reducing specific courses from 11 to 9 units to provide flexibility for students’ high school planning. The Missouri State Board of Education received a great deal of criticism while the new standards were in effect (MODESE, 1983). Concerns were raised over not insuring competency upon graduation by not requiring sufficient credits in mathematics and science, and over lack of systematic implementation of the plan across the state.

The 1983 revision, from 20 to 22 units of credit, was based on the study of national reports, specifically *A Nation At Risk* (National Commission on Excellence in Education, 1983) and other national data and by Missouri Department of Elementary and Secondary Education (MODESE) staff members and the solicited input of some 4,000 Missourians who attended the 1983 Regional Educational Conferences. Beginning with the class of 1988, 10 elective credits along with increased credits in areas such as science, English, and social studies, totaling 12 required credits completed the minimum graduation requirements of 22 for the state of Missouri (MODESE, 1983).

Public Law 107-110-Jan. 8, 2002. Known as the “No Child Left Behind (NCLB) Act of 2001,” the law was designed, “To close the achievement gap with accountability, flexibility, and choice, so that no child is left behind” (United States Congress [USC] 107-110, 2001). Representative John Boehner (2001) provides a summary of the NCLB:

- (1) yearly testing and assessments of student performance;
- (2) state standards for and assessments of Adequate Yearly Progress (AYP);
- (3) local educational agency (LEA) identification of schools for improvement and corrective actions;
- (4) reporting to parents and the public on school performance and teacher quality;
- (5) eligibility requirements for school-wide programs; and
- (6) increased qualifications of teachers and paraprofessionals (p.1).

The law provided options for students attending schools that fail to meet AYP. Those options included public school transfer options and supplemental services for low-income students who chose to remain at schools that did not meet AYP standards (Boehner, 2001). NCLB requires each state to implement an accountability system statewide. While the law does not specifically require a state to examine and subsequently increase graduation requirements, the implications of the mandates require action at the high school level. Common reaction to increased accountability demands often result in schools increasing their graduation requirements (Lillard & DeCicca, 2001). NCLB requires attention to issues that are attractive to the public albeit a challenge to educational providers.

National Education Summit on High Schools (2005). An action agenda of the National Education Summit on High Schools (2005) that was formulated and hosted by the Governors Association and Achieve Inc, a bipartisan, non-profit organization to help states raise academic standards. The results were 10 specific recommendations for redesigning and improving America's high schools. Those recommendations are:

- 1) Create a permanent Education Roundtable or Commission to foster coordination between early childhood, K-12 and higher education;
- 2) define a rigorous college and work preparatory curriculum for high school graduation;
- 3) challenge business, education, parent, community and faith-based organizations to support initiatives that improve college awareness;
- 4) give college and work-readiness assessments in high school;
- 5) create statewide common course agreements so that college-level work in high school counts towards a post-secondary credential;
- 6) provide financial incentives for disadvantaged students to take rigorous AP exams and college-preparatory and college-level courses;
- 7) expand college-level learning opportunities in high school to minorities, English language learners, low-income students, and youth with disabilities;
- 8) help get low-performing students back on track by designing literacy and math recovery programs;
- 9) develop and fund supports to help students pass the high school exit exam; and
- 10) develop statewide pathways to industry certification (National Education Summit on High Schools, 2005, p. 1).

While the recommendations of the National Education Summit on High Schools outline strategies for student achievement, the committee's chairman, Governor Mark R. Warner, noted, "Whether a young adult is going on to college or beginning a career, he or she must leave high school with a foundation for success. Too often, that is not the case—too many of our public schools are failing our students" (National Education Summit on High Schools, 2005, p. 2). His statement suggests the need for increased program effectiveness and accountability. "It is time for a new approach to high school, one that challenges students and gives them new opportunities to transition to college or careers" (National Education Summit on High Schools, 2005, p. 2).

Missouri High School Task Force Report (2005). The report of this committee consisting of 23 members from educational, industrial, and business groups was presented to the Missouri State Board of Education. As a result, state-wide graduation requirements for the class of 2010 went into effect on October 6, 2005.

The task force report recommended increasing minimum graduation requirements for Missouri high school students from 22 to 24 units of credits. Specific course requirements within the increases included raising English from three to four credits, math, science, and social studies each from two credits to a total of three credits each. Health education would be required as a one-half credit, and schools would be required to demonstrate that students had a minimum of one-half credit in the area of personal finance. Other recommendations of the task force include the development of end-of-course exams to replace the current Missouri Assessment Program (MAP) tests to be implemented in 2008-09 school year, and the adoption of a two-tier diploma program for public high school students (MODESE, 2005).

The impact of national and state reports brought about numerous policy examinations and changes. In Missouri, state began the process of setting standards of desired outcomes with schools responding with policy changes and implementation.

Desired Outcomes and Resulting Policies

Overall, reports and policies concerning educational standards and the move toward increasing graduation requirements resulted in the call for higher standards in three somewhat broad areas: the academic content of courses, the use of time for school work, and student achievement (McDill, et al., 1986). As a result, a policy agenda or issues that required serious attention called for changes in the expectations of public schools. Those responsible for policy formulation at various levels begin to take note of pressures, in this case, to address higher standards and move toward implementation of perceived solutions (Fowler, 2000).

Concerns arise from policymakers responding to external pressures with little or no understanding of potential impact. Fowler (2000) defines policymakers as actors, all with some level of power, who act on the policy agenda usually determined by powerful politicians. In their report on the National Longitudinal Study of Schools, 1980-1993, Stevenson and Schillar (1999) commented:

Schools operate in a complex policy environment with numerous policy actors creating policies at different levels of governance. The large number of policy actors and the lack of coordination in policy-making decisions generates a policy environment for schools that is highly fractured, often inconsistent, and lacks coherence around a shared vision of instruction and learning (p. 262).

Merely raising requirements without specific focus on content serves little to meet demands for quality (McDill, et al., 1986). Longer hours, more time spent in school will become necessary in order to fulfill credit requirements. Quality instruction, higher expectations, raising the bar for excellence all seek to improve student achievement. National and state reports provide the findings, policymakers provide the remedy.

Reports and subsequent policymaking are often conducted without adequate consideration given to differences in student background and increased potential for dropping out (McDill, et al., 1986, Alexander, Natriello, & Pallas, 1985). In the effort to increase academic standards, the high school graduate is redefined “. . . by changing the number of required courses in a subject” (Stevenson & Schillar, 1999, p. 264).

Conceptual Issues

In their study on the impact of increasing standards on dropouts, Lillard and DeCicca (2001) note that the net effect of increasing graduation requirements should be examined based on the benefit versus cost. The drive behind increasing graduation requirements is the perception that positive benefits will ensue. The productivity of individual students will increase thus increasing the potential for future success in either continuing educational situations or employment or both. Direct and indirect costs of increasing graduation requirements include increased dropout rates and time spent to complete increased coursework (Lillard & DeCicca, 2001):

. . . as students are required to take more courses in specific subject areas, they pay directly in terms of time spent in courses they would not have freely chosen. If the extra courses are more challenging, students will also have to expend more effort to pass them. Consequently, they forego earnings and thus indirect costs arise (p. 461).

Benefits realized from increasing standards such as requiring more credits to graduate may be the result of the increased efforts by students for reasons other than merely meeting extra requirements. Natural competition among students in reaction to increased standards may result in extra effort when the standard is raised (Beck & Rosen, 1992). Such increases in effort may result in higher educational achievement and

increased employment opportunities, but expectations for such outcomes are limited to students' desires to excel. "Regardless of the assumption one imposes in developing theoretical models, it is important to remember that all students were free to exceed existing requirements prior to any increase" (Lillard & DeCicca, 2001, p. 461).

In general, policymakers of increased graduation requirements seek to produce greater levels of achievement of high school students, regardless of socioeconomic backgrounds. In fact, the general hypotheses related to the studies of the impact of increased graduation requirements on students is that the negative impact of lower socioeconomic backgrounds will be diminished. Hoffer (1997) states that by requiring all students to complete increased credits in courses of study, the result may be that students of lower socioeconomic backgrounds will take classes they would not have normally taken, thus reducing the differentiation of those students with respect to student achievement. However, the desired results may not materialize because higher standards may be ". . . an insurmountable hurdle for some students, leading them to drop out of high school" (Hoffer, 1997, p. 587).

Chapter 3 provides the research design and methodology for the study of the potential impact of increased graduation requirements on specifically identified schools in the Southeast Region of the state of Missouri. The population will be defined as will the instrument chosen for surveying and data collection. Chapter 3 also provides the statistical analysis that was utilized to answer the research questions and to test the research hypotheses.

CHAPTER 3

Research Design and Methodology

Introduction

Research reflects cyclical tendencies throughout the history of public school education. In 1890, only 3.5 percent of school-aged children graduated from high school level programs with only a small fraction of these students going to college (Glore, 1984). The resulting trends of the time were high schools providing nominal transition programs from elementary education to a level of preparation for college entrance. Vocational or trade preparation became the new focus as the nation experienced economic hardships and competition within the workforce. With the occurrence of Sputnik in the 1950s, educational emphasis shifted to the back to basics approach (Glore, 1984). The “*A Nation at Risk*” report in the 1980s was another example of such trends to examine the status of American public education in comparison with other countries of the world and to generate public school reform in response. Fowler (2000) pointed out the ideological shift in education politics over the last 20 years. “In general, the focus of education politics has shifted from equality issues to issues relating to excellence, accountability, and choice” (Boyd & Kerchner as cited in Fowler, 2000, p.5). Public education concerns also stem from suspicions that students may not be adequately prepared for continued education or even employment after high school thus becoming economically disadvantaged (Lillard, 2001).

Studying the potential impact on dropout rates as a result of increasing graduation requirements in the state of Missouri is important, especially in light of the new

graduation requirements for the class of 2010. Schools should not be caught off guard by the possible negative reactions to the increased work load by students who are already at-risk for completing school (Kohn, 1999). Many of these at-risk students are normally attracted to career education programs that often become the catalyst of their persistence to graduation. Career education programs are often in competition with other coursework students are required to complete. Missouri's increased requirements in areas of mathematics, science, communication arts, and the new personal finance and health requirements all imply greater difficulty for those at-risk students to be involved in career education. If schools are not given the latitude or do not possess the foresight to incorporate concepts such as imbedded credit for their students, the implications are that dropout rates will increase.

On the surface, increased graduation requirements resulting in increased student achievement does not seem likely. Students who manage the increased requirements are students who would most likely have taken the extra coursework on their own (Chaney, Burgdork, & Atash, 1997). The true measurement of greater achievement as a result of increased graduation requirements would be if students make changes in their course-taking from what would have been taken without the required increases. Also, students would have to learn more from their increased coursework, thus increasing achievement. According to Chaney, et al. (1997):

If students do not learn anything from their coursework, or if achievements tests actually measure intelligence or learning outside the classroom, then course-taking and achievement may not be related or they may be related only accidentally (e.g., bright students may take demanding courses, but they would do well on the tests in any case), and graduation requirements may again have no effect. If students are already operating at their potential and only take courses in which they are capable

of success, then pushing students to take more courses or different courses may have no benefit and might even cause harm (e.g., if the students fail) (p. 230).

Such students as those, whose course-taking choices are less affected, are those students who most likely had purposed to attend college regardless of increased requirements. The hypothesis is that the number of students attending college will not be affected by increased graduation requirements. However, students may have the potential to attain higher goals and aspirations with changes in course-taking that might not have otherwise occurred in their high school experience. Many students who do not choose to take subsequent advanced courses fear the coursework would be too difficult (Chaney, et al., 1997). Therefore students are introduced to coursework that might not have been attempted if it were not for the increased requirements and thereby are possibly presented with additional opportunities. Increased graduation requirements may not have an impact on the number of students attending college, but those increased requirements could provide opportunity for choices otherwise not considered.

Problem and Purposes Overview

With the new graduation requirements for the state of Missouri in place, schools must be proactive in their preparation for subsequent impact whether positive or negative. Schools have limited information on potential impact due to lack of research specific to graduation requirement increases, especially in Missouri.

Pressures by the state for maintaining accreditation and by the federal government for achieving adequate yearly progress create little room for error. Missouri schools must be well informed and equipped to provide solutions and programs for student success.

This study provides applicable information and research for assistance in the incorporation of Missouri's graduation requirements and for successful implementation of supportive policies from the Southeast Region of the state of Missouri.

Research Questions

The research questions proposed for this study are:

1. What is the relationship between increased graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation?
2. What is the relationship between increased graduation requirements and ACT scores?
3. What is the relationship between increased graduation requirements and the number of students attending college?

Hypotheses

The following hypotheses were tested in this study:

1. There is no relationship between increasing graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation.
2. There is no relationship between increased graduation requirements and increased ACT scores.
3. There is no relationship between increased graduation requirements and the number of students attending college.

Population and Sample

The population represented by this research was high school students in what is considered by the Missouri Association of Secondary School Principals as the Southeast

Region of Missouri. The region consisted of 20 counties with a total of 78 high schools. Data collected from the 78 high schools were from the time periods encompassing state graduation requirement increases. This study focuses on three specific time periods. They began with the years, 1991-1997, prior years of full impact of the Missouri School Improvement Legislation of 1993. The second time period, 1998-2001, was identified by first likely effected groups of students, beginning with the graduating class of 1998. By this time period, many schools had begun to voluntarily increase their graduation requirements in order to meet the new Missouri School Improvement Program (MSIP) review cycles. The third time period, 2002-2007, was established in order to examine data from years of increased MSIP review pressures. A simple survey used to determine which schools voluntarily increased their requirements by 1998 above the 22 required minimum and to identify those who did not. The survey also attempted to determine those schools that increased graduation requirements by raising core class requirements or by increasing requirements due to concerns over MAP performance, ACT scores, and/or college attendance rates. The sample population was a convenience sampling of schools from the Southeast Region of Missouri and chosen to be a representative sample of Missouri students. Existing data regarding graduation rates, ACT scores, and continuing education reporting, specifically college attendance were attained from the Missouri Department of Elementary and Secondary Education. Other data on free and reduced lunch rates, per pupil expenditures, school size were provided to give additional information on the schools sampled. No personal student identification was be made, nor was any specific school district identified.

Data Collection and Instrumentation

The existing data base provided by the Missouri Department of Elementary and Secondary Education (MODESE) was the primary source accessed. The validity and reliability of data gathered was considered high based on the integrity of the MODESE records and collection of information. The following sources of MODESE were used in gathering data:

MODESE Archives. Data provided historical benchmarks for specific graduation requirement changes in the state of Missouri. The first benchmark was based on existing graduation requirements since 1983 legislation which required 22 credits for graduation. The 22 credits for graduation requirement was implemented with graduates of 1988. However, limited availability provided data beginning with graduates of 1991. Successive time periods were the result of Missouri school improvement legislation of 1993. Many schools voluntarily increased their graduation requirements locally in order to better prepare students for the new Missouri School Improvement Program (MSIP) standards. First effected graduates were estimated to begin with the class of 1998. MODESE archival data provided information on the time period of the impact of increased MSIP review demands and requirement, the years 2002-2007.

Annual Performance Report. The sampling of school districts from the Southeast Region of the state of Missouri was examined utilizing their respective Annual Performance Report (APR). Specific data gathered included graduation rates, ACT performance, and college attendance. Data collected were compared to historical benchmarks and examined for possible correlation. Recent changes in APR called for

adjustment in the data collection with regard to dropout rates. New APR data reflects percent of graduates versus dropout rates.

School Report Card. Data collected were organized by information provided by the School Report Card for each district in the sample. Organization consisted of specific school demographics such as size, student population, socioeconomic status (percent of students on free or reduced lunches, and students in respective counties living below the average poverty level for the state of Missouri), and assessed valuation.

School Questionnaire. A building-level administrator from each high school and the superintendent from each district was contacted via mail with an attached questionnaire. All mail addresses were provided by the Missouri School District Directory found on the MODESE website. The questionnaire (*see* Appendix A) was designed to collect historical data specific to each high school with regards to graduation requirement increases and other board action taken in response to increased state mandates for school improvement. The questionnaire was piloted by superintendents, high school principals, and counselors of two local districts for a total of seven completed pilot questionnaires. The purpose of the pilot was to check for vagueness, confusion, and poorly prepared items (Wiersma, 1995). Based on the pilot, the instrument was judged to be satisfactory.

Data Analysis

Utilizing a quantitative research design, correlations were established between the independent variable, increased graduation requirements, and the dependent variables of student graduation rates, the percentage of students scoring above the national average on

the ACT, and the percentage of students enrolled in either 2- or 4-yr colleges, or post-secondary (non-college) institutions. The quantitative method of design was chosen to provide answers to the research questions. The researcher provides additional descriptive data pertaining to free and reduced lunch rates, percent of children living below poverty level in each school's respective county, and the size of the schools in this study. Data were collected from reports provided by MODESE for free and reduced lunch rates of students, the Office of Social and Economic Data Analysis (OSED) via the OSED website (OSED, 2007) for rates of poverty, and Missouri High School Activities Association (MSHSAA) website (MSHSAA, 2007) for the size classification of schools.

Summary

The population and samples of schools included in the data collection process provided a collective sampling of school sizes and backgrounds representing the Southeast Region of the state of Missouri. Interest and concern over the impact of increased graduation requirements on student populations enhanced data collection probabilities. Accessibility of historical data and school statistics from MODESE archives provided applicable, reliable information to provide answers to the research questions as outlined in Chapter 1. The school questionnaire collected information on schools that have either maintained their graduation requirements or have voluntarily increased their graduation requirements due to increased MSIP review pressures. The information collected was cross-referenced with the data on respective school statistics. Schools from the Southeast Region of Missouri that have maintained the minimum or

voluntarily increased their graduation requirements and responded to the questionnaire provided for data collection on the era since school improvement legislation of 1993.

Chapter 4 presents the analysis of data which includes the organization and descriptive characteristics of schools sampled. Research questions and associated hypothesis are addressed. A summary of the study containing findings and conclusions is provided in Chapter 5. Implications and suggestions for further research are also given.

CHAPTER 4

Presentation and Analysis of Data

Introduction

The State of Missouri, as most states across the nation, has responded to reform recommendations to raise state standards for student achievement. Missouri has implemented school improvement programs and criteria that challenge Missouri schools to reexamine their course offerings and student performance expectations. While Missouri's mandated minimum credit requirement for graduation until just recently remained steady, many Missouri schools have voluntarily increased graduation requirements based on the desire to increase student performance. Now, with Missouri's minimum requirement for graduation increased from 22 to 24 total credits, those schools that have held the line in sync with the state minimum must implement graduation requirement increases over a short period of time with little empirical guidance on what to expect on the true impact on students. Increased graduation requirements may result in concerns over the impact on students and especially on those who have a propensity to drop out of school as required credits are raised and classes become more difficult. Schools must be knowledgeable of potential consequences and be ready to implement safeguards to ensure student success.

Study Design

For the purpose of investigating the impact of increased graduation requirements on student performance and persistence to graduation, data regarding school districts in the Southeast Region of Missouri were examined. The Southeast Region was chosen as a

manageable number of schools to survey with expectations for a valid rate of return while remaining representative of school district populations throughout the state. The region consisted of 20 counties with a total of 78 high schools. Questionnaires mailed to the 78 high schools were designed to obtain information regarding number of required credits each district put into place as the Missouri School Improvement Program (MSIP) was implemented. The questionnaire was piloted by superintendents, high school principals, and counselors of two local school districts for a total of seven respondents. The questionnaire was determined to be satisfactory for this study.

For the actual surveying of the sample population, a questionnaire was mailed to the superintendent and to the building administrator or counselor of each high school in each district for a total of 156 mailings. Eighty-one questionnaires or surveys were returned with 17 of the districts returning a survey from both the superintendent and a building representative from the respective high school. Seventy-nine of the returned surveys could be successfully linked via MODESE school codes to enable data collection and analysis. Two other returned surveys did not provide school identification, stating the desire to remain anonymous thereby making a successful link with MODESE data impossible. Those two surveys were eliminated from this study. The 61 successfully surveyed high schools provided information on total number of credits each school required when Missouri's minimum requirement for graduation was 22 credits. The returned surveys also supplied information on whether credit changes or increases were due to MAP testing performance, ACT performance, college enrollment, or core class participation concerns.

Data collected from the 61 high schools were compared with data acquired from the Missouri Department of Elementary and Secondary Education (MODESE). Existing data utilizing school districts planning profiles from the MODESE website provided information on graduation rates, percent of students scoring above the national average on ACT, and percent of students enrolling in either two- or four-year college programs or post-secondary (non-college) institutions. Data from these three areas were available for the years 1991-2007 at the time the study was conducted. Other data collected from the MODESE website include each school's percentage of students eligible for free or reduced lunches, and total dollars spent per pupil by each district.

Two specific phases for potential impact on graduating classes were identified and examined. The first phase, beginning with graduating class of 1998 data, was identified by recognizing the first group of students most likely affected by the newly implemented Missouri School Improvement Program (MSIP), the product of the Missouri School Improvement Legislation of 1993. The second phase, beginning with 2002, was determined by identifying the first group of students most likely affected by the increased standards of cycles three and four of MSIP, the graduating class of 2002. In order to assess the phases, the data were divided into three time periods.

The first time period, noted as pre-MSIP, began with 1991 or the earliest year of data utilized in this study, through 1997. This first time period provided a benchmark with which to compare the time periods of MSIP influence. Data on graduation rates, ACT performance, and college enrollment were examined from 1991, the first available year of data for this study, through 1997. The resulting information helped to establish pre-MSIP impact.

The second time period, 1998-2001, was identified to be the years most likely affected by initial MSIP implementation. During this time period, the effect of schools that had begun voluntarily increasing their graduation requirements above the state's minimum of 22 was examined. Many of these schools also made changes in core curricular requirements, and advanced course work in order to better prepare students for college readiness and assessment.

The final time period, portraying data from 2002 through current data of 2007, provided information on the ongoing effects of MSIP. This third time period marked the years most likely affected by increased MSIP pressures on student achievement such as graduation rates above state average, percent of students scoring above the national average on the ACT, and percent of students enrolled in college. MSIP standards were raised with each new cycle of school evaluations. Data from this time period provided information the effects of such changes on graduation rates, ACT scores, and college enrollment as schools moved through successive cycles of MSIP reviews.

Descriptive Statistics

According to the Missouri Association of Secondary School Principals website, 20 counties are identified as part of the Southeast Region of the State of Missouri. Sixty-one high schools from the 20 counties were successfully surveyed and included in this study. Population of the high schools ranged in size from 94 students to 3, 589 students. The high schools were grouped by the number of credits they required for graduation during the period when the state of Missouri's minimum requirement for graduation was 22 credits. The frequencies of four different total credits requirements from the sample

schools are presented in Table 1. Fifteen schools held their minimum credits at 22. Ten schools required 23, twenty-nine schools required 24, and seven required 25 credits to graduate.

Table 1

Frequencies of Sample Schools in Study by Total Credits Required for Graduation

Number of Credits required By Schools when Missouri's Minimum was 22	Frequency	Percent
22 Credit Schools	15	24.6
23 Credit Schools	10	16.4
24 Credit Schools	29	47.5
25 Credit Schools	7	11.5
Total	61	100.0

The independent variable was identified as the number of credits the sample high schools required for graduation. Dependent variables were graduation rates, percent of students scoring at or above the national average on the ACT exam, and the percent of students enrolling in either a two- or four-year college program.

Additional information from schools surveyed revealed specific changes in graduation requirements. The survey mailed to schools requesting total number of credits each school required for graduation also inquired about specific reasons for increasing or changing graduation requirements of respective schools. Responses indicated change based on concerns over Missouri Assessment Program (MAP) and ACT scores. College enrollment concerns were assessed by determining if changes were made to college preparation and core class requirements. Table 2 provides the frequency of survey responses for each of the four credit group schools.

Table 2

Frequency of Survey Responses for Concerns over MAP, ACT, College Enroll., & Core Class Requirements

Credits increased due to: (N=Number of Schools)	22 Credit Schools	23 Credit Schools	24 Credit Schools	25 Credit Schools
MAP Concerns	1	2	14	3
ACT Scores	2	5	21	5
College Preparation	1	6	23	6
Core Class Requirements	3	9	24	5
N	15	10	29	7

School enrollment of each of the sample schools was identified by the classification of the Missouri State High School Activity Association (MSHSAA). The classification system places schools in one of five classes, Class 1 through 5, based on the grades 9-12 enrollment figures for MSHSAA calculation (MSHSAA, 2008). The enrollment figures from MSHSAA’s website were utilized due the familiarity and reliability of the data reported.

Sample schools were also identified by percent of children living in poverty by the schools’ respective counties. Data for poverty level by counties were provided by the Office of Social and Economic Data Analysis (OSED) via the OSED website (OSED, 2007). Sample schools were identified and ranked according to their rates of children living in poverty as compared to the average for the State of Missouri. The two identifiers, size and poverty levels along with the free and reduced lunch rates from the MODESE website, were provided to give additional insight descriptors of the sample schools of this study.

The mean and standard deviations for additional descriptors of sample schools are presented in Table 3. The percentage of children living in poverty as compared to

Missouri's state average of 19.5% for each district and the population of each high school according to the activities classification system of the Missouri State High School Activities Association is shown.

Table 3

Descriptive Statistics Sample Schools Categorized by Total Graduation Credits

Descriptor	22 Credit Schools			23 Credit Schools		
	N	M	SD	N	M	SD
District Size	15	245.47	151.47	10	539.70	555.83
% Poverty	15	39.40%	5.95%	10	29.64%	10.03%
\$ Spent Per Pupil	15	\$6614.00	\$673.83	10	\$6405.00	\$778.37
% Free & Reduced Lunch	15	63.10%	15.33%	10	54.87%	16.12%
Descriptor	24 Credit Schools			25 Credit Schools		
	N	M	SD	N	M	SD
District Size	29	485.48	383.45	7	662.00	1292.91
% Poverty	29	27.38%	9.62%	7	32.45%	11.97%
\$ Per Pupil	29	\$6373.00	\$704.71	7	\$7357.00	\$1394.12
% Free & Reduced	29	50.30%	10.67%	7	70.31%	10.22%

Table 3 shows the means of district size for 22 credits schools to be the smallest of sample schools, but those schools had the highest means for percent of children in the respective counties living below the poverty level. Twenty-five credit schools spent more dollars per pupil and had the highest free and reduced lunch populations. Twenty-four credit schools had the lowest means of percent of children living below poverty, lowest means of dollars spent per pupil, and had the lowest means of free and reduced lunch populations.

Presentation of Results

Research Questions and Associated Hypotheses

Using a quantitative means analysis research design, each research question was addressed to determine a relationship between increased graduation requirements and data collected on graduation rates, percent of students scoring above the national average on ACT, and percent of students enrolling in either 2- or 4-year universities or non-college, secondary institutions.

Research Question 1 - What is the relationship between increased graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation?

Hypotheses 1 - There is no relationship between increasing graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation.

For this analysis the dependent variable, the total required credits for graduation was compared to each school's graduation rate from 1991 through 2007 by comparing means through Analysis of Variance (ANOVA) via Statistical Process of Social Sciences (SPSS) Graduate Pack 16.0 for Windows software. Table 4 shows there is no significant difference in graduation rates for each of the credit school groups.

Table 4

Results for Hypothesis 1

Dependent Variable= Graduation Rate	22 Credit Schools	23 Credit Schools	24 Credit Schools	25 Credit Schools
22 Credit Schools				
N	15	10	29	7
M	82.80	82.28	83.07	85.40
Mean Diff		.521	-.274	-2.604
Std. Error		2.329	1.814	2.611
ANOVA				
Graduation Rate:	df	F	Sig.	
Between Groups	3	.463	.709**	
Within Groups	57			

**=>.05 or not significant

A one way analysis of variances was conducted to test for the significance of difference among the four credit group school means of graduation rates. The obtained $F(3,57)=.46$ $P>.05$, is not significant indicating there is no real difference between means of the rate of graduation of the four credit group schools. For schools that maintained 22 credits required for graduation throughout the time period covered by this study, there was a slight positive mean difference ($M=.521$) between those schools and the 23 credit schools. The mean difference between 22 credits schools and the 24 and 25 credit schools were negative mean differences ($MD= -.274$ and $MD= -2.604$, respectively). There was only a nominal drop in the graduation rates of 23 credit schools as compared to 22 credits, the 24 and 25 credit schools actually had slightly higher graduation rates over the 17-year time period of this study.

Research Question 2 - What is the relationship between increased graduation requirements and ACT scores?

Hypotheses 2 - There is no relationship between increasing graduation requirements and ACT scores.

For analysis of graduation requirements on ACT performance, the dependent variable, percentage of students who scored at or above the national average on the ACT, was associated with the number of credits each of the four groups of schools required for graduation. Due to missing data from DESE for the years 1991 through 1994, only 13 years of data could be accessed as compared to the 17-year time period of this study. As shown in Table 5, there is no significant relationship between those schools requiring more credits for graduation than the 22 credit schools and percent of students scoring at or above the national average on the ACT exam.

Table 5

Results for Hypothesis 2

Dependent Variable= ACT Scores Above Nat'l Avg.	22 Credit Schools	23 Credit Schools	24 Credit Schools	25 Credit Schools
22 Credit Schools				
N	15	10	29	7
M	23.85	27.89	26.62	20.17
Mean Diff		-4.047	-2.766	3.669
Std. Error		3.012	2.347	3.378
ANOVA				
ACT Scores:	df	F	Sig.	
Between Groups	3	2.032	.120**	
Within Groups	57			

**=>.05 or not significant

A one way analysis of variances was conducted to test for the significance of difference among the four credit group school means of students scoring at or above the

national average on the ACT. The mean ACT score percentages over 13 years of those schools requiring more than the schools maintaining the state of Missouri's minimum of 22 were analyzed. The obtained $F(3,57)=2.032$ $p>.05$, is not significant indicating there is no real difference between the four credit group school means of ACT scores. Negative mean differences, (MD= -4.047) for 23 credit schools and (MD= -2.766) for 24 credit schools and a positive mean difference, (MD= 3.669) for 25 credit schools were found. Analysis showed there was no significant difference in levels of performance on the ACT with students of schools with increased graduation requirements versus those students of schools whose graduation requirements were at the state's minimum. While scores for percentage of students performing at or above the national average on the ACT were higher in schools requiring 1 or 2 more credits than the state minimum, the differences were not significant. In addition, schools requiring 25 credits for graduation produced lower percentages of students scoring at or above the national average on the ACT than 22 credit schools.

Research Question 3 - What is the relationship between increased graduation requirements and the number of students attending college?

Hypotheses 3 - There is no relationship between increased graduation requirements and the number of students attending college.

For analysis of graduation requirements affecting the percentage of students attending college, the dependent variable, percentage of students enrolled in either 2- or 4-year colleges or post-secondary institutions, was associated with each of the four credit groups of schools in this study. Table 6 reveals the results of a one-way ANOVA analysis of variance.

Table 6

Results for Hypothesis 3

Dependent Variable= Students Enrolled in College.	22 Credit Schools	23 Credit Schools	24 Credit Schools	25 Credit Schools
22 Credit Schools				
N	15	10	29	7
M	52.01	57.54	54.62	48.03
Mean Diff		-5.529	-2.621	3.980
Std. Error		3.474	2.706	3.895
ANOVA				
College Enrollment:	df	F	Sig.	
Between Groups	3	2.028	.120**	
Within Groups	57			

**=>.05 or not significant

A one-way analysis of variance was conducted to test for the significance of difference among the four credit group school means of percentages of college enrollment. The obtained $F(3,57)=2.028$ $p>.05$, is not significant indicating there is no real difference between the four credit group school means. Negative mean differences, (MD= -5.520) for 23 credit schools and (MD= -2.621) for 24 credit schools and a positive mean difference, (MD= 3.980) for 25 credit schools were found. Based on the analysis results, students graduating from schools with increased graduation requirements revealed only slight variances in college enrollment rates than students graduating from schools operating with the state's minimum graduation requirements. While percentages of students enrolling in 2- or 4-year colleges or post-secondary institutions were moderately higher in schools requiring 1 or 2 more credits than the state minimum, the differences were not significant. In addition, schools requiring 25 credits for graduation revealed lower percentages of students enrolled in either 2- or 4-year colleges or post-secondary institutions.

Data pertaining to graduation rates, ACT scores, and college enrollment that were examined over the 17 year period marked by this study, revealed no real impact by increased graduation requirements. However, when the data of the sample schools data were examined over three periods of time marking MSIP influence, some notable tendencies were observed.

Data of sample schools were examined over three periods of time providing a benchmark category of data prior to the impacts of MSIP and two categories of data for the two potential phases of graduation requirement or curricular changes. Schools were compared by total number of credits required by each respective school when Missouri's minimum requirement was 22 credits. Each of the four credit groupings were examined over the three periods of time. The first period, from 1991-1997, established as a benchmark of average graduation rates, ACT performance, and college enrollment prior to the effects of MSIP. The second time period, 1998-2001, established the first graduating classes impacted by MSIP beginning with the class of 1998. Finally, the years 2002-2007 provided information on the impact of ongoing MSIP review pressures on Southeast Missouri schools' graduation rates, percent of students scoring at or above the national average on the ACT, and percent of students enrolled in 2- or 4-yr colleges or post-secondary institutions.

Examination of credit group schools for graduation rates over the three specified time periods as shown in Table 7 revealed growth in graduation rates during the years 1998-2001 for all credit groups of schools with the exception of those schools requiring 25 credits for graduation. This time period marks the era of the first likely effected students, graduates of 1998, of the Missouri School Improvement Legislation of 1993

(MSIP). The third time period sees a growth in graduation rates for all credit group schools. This third time period is based on increased MSIP pressures most likely effecting students beginning with the class of 2002.

Table 7 also provides comparison with State of Missouri averages for graduation rates. While most schools requiring more than the 22 credit minimum for graduation had graduation rates lower than averages for the State of Missouri, 24 credit schools actually produced higher rates for graduation than the state averages over all three time periods of this study.

Table 7

Graduation Rates of Schools by Credits Examined Over Time Periods (n=number of years in time period)

		22 Credit Schools (15)	23 Credit Schools (10)	24 Credit Schools (29)	25 Credit Schools (7)	State of Missouri
Time Periods		Graduation Rates				
1991-1997*	N	7	7	7	7	7
	M	79.25%	72.40%	79.76%	70.54%	78.14%
	SD	4.99%	4.29%	4.21%	5.55%	4.78%
1998-2001*	N	4	4	4	4	4
	M	83.55%	74.63%	82.49%	69.49%	79.38%
	SD	1.90%	3.16%	2.42%	3.72%	1.69%
2002-2007*	N	6	6	6	6	6
	M	87.20%	77.72%	87.69%	77.94%	85.05%
	SD	1.90%	1.15%	1.88%	1.91%	1.44%
Tests of Within-Subjects Effects			df	F	Sig.	
Factor 1	Sphericity Assumed		2	61.925	.000*	
Error (Factor 1)			118			
Tests of Within-Subjects Contrasts			df	F	Sig.	
Factor 1	Linear		1	94.812	.000*	
Error (Factor1)			59			

*=<.05 significance

While the number of credits required for graduation had no significant impact on the graduation rates of the sample schools of this study, graduation rates among the four credit groups of school steadily increased over the three time periods. Tests of within-subjects effects with the obtained $F(2,118)=61.925$ $P<.05$, sphericity assumed, provide significant repeated measures effects. This is supported by tests of within-subjects contrasts with the obtained $F(1,59)=94.812$ $P<.05$. Twenty-two credit schools, those schools which maintained the state's minimum, experienced growth in graduation rates similar to those schools with increased graduation credits. A plot of the estimated marginal means of measure revealed a significant linear trend for all schools.

Table 8 reflects the four classifications of schools by total credits with data broken down between the same three periods of time. Missing data for ACT scores for the first four years of the data collection period are noted. For the time period 1991-1997, only 3 years of data were calculated.

All credit group schools with the exception of schools requiring 25 credits for graduation saw an increase in percentage of students scoring at or above the national average on the ACT. Fifty-percent or more of the 23 and 24 credit schools adjusted their curriculum to increase ACT scores. Only 2 of the fifteen 22 credit schools, whose scores improved slightly, made any adjustment in curriculum over concerns to increase ACT scores. Twenty-five credit schools saw a steady decrease in ACT performance over all time periods even though 5 of the 7 schools sampled in this study made changes in their curriculum to improve both ACT scores and core class participation. While differences in percent of students scoring at or above the national average on the ACT were not significantly different between schools that maintained the minimum credits required for

graduation and those schools with higher credit requirements, the analysis over the three periods of time suggests that schools adjusting their curriculum to better prepare students for the ACT, saw slight improvement over schools that did not. However, all sample schools in this study within all credit groups fell significantly below averages for the state of Missouri. Table 8 provides the mean percentages of students scoring at or above the national average on the ACT for all credit group schools in this study.

Table 8

Percentage ACT Scores Above National Average of Schools by Credits Examined Over Time Periods (n=number of years in time period)

		22 Credit Schools (15)	23 Credit Schools (10)	24 Credit Schools (29)	25 Credit Schools (7)	State of Missouri
Time Periods		ACT Scores Above National Average				
1991-1997*	N	3	3	3	3	3
	M	22.22%	26.28%	26.51%	21.14%	33.56%
	SD	1.86%	.711%	.98%	4.82%	.29%
1998-2001*	N	4	4	4	4	4
	M	25.47%	27.91%	26.56%	20.15%	34.00%
	SD	2.32%	3.84%	1.25%	4.21%	1.56%
2002-2007*	N	6	6	6	6	6
	M	23.60%	28.66%	26.70%	19.97%	33.78%
	SD	1.45%	1.13%	1.76%	4.79%	1.44%
Tests of Within-Subjects Effects			df	F	Sig.	
Factor 1	Sphericity Assumed		2	1.178	.312**	
Error (Factor 1)			118			
Tests of Within-Subjects Contrasts			df	F	Sig.	
Factor 1	Linear		1	.599	.442**	
Error (Factor 1)			59			

**=>.05 or not significant

Analysis of all credit group schools over the three time periods revealed no significant increases of ACT performance. Tests of within-subjects effects with the

obtained $F(2,118)=1.178$ $P>.05$, sphericity assumed, provide no significant repeated measures effects. This finding is emulated by tests of within-subjects contrasts with the obtained $F(1,59)=.599$ $P>.05$. Those schools which required more than the state's minimum credits for graduation, experienced similar performance in students scoring at or above the national average on the ACT to those schools maintaining the minimum requirements. Even over the three time periods when schools were implementing curricular changes to improve student performance, no significant growth was found. A plot of the estimated marginal means of measure revealed a significant linear trend for all schools.

College enrollment percentages of sample schools were examined over the three time periods to determine the relationship within the credit school groups. The percentage of students enrolling in 2- or 4-yr colleges or post-secondary institutions increased steadily for 22, 23, and 24 credit schools even though 22 credit schools did not increase credit requirements and only 1 of the 15 schools adjusted their curriculum to specifically improve college enrollment. Twenty-five credit schools saw increases most likely after implementing curriculum changes within the second time period, but their averages were significantly lower than all other credit group schools. In comparison with state averages, all credit group schools fell short. Table 9 provides the mean percentages of students enrolled in 2- or 4-yr colleges or post-secondary institutions by their respective credit group schools and categorized by the three time periods within this study.

Table 9

Percentage College Enrollment of Schools by Credits Examined Over Time Periods (n=number of years in time period)

		22 Credit Schools (15)	23 Credit Schools (10)	24 Credit Schools (29)	25 Credit Schools (7)	State of Missouri
Time Periods		2- or 4-yr college or post-secondary institution enrollment				
1991-1997	N	7	7	7	7	7
	M	44.55%	54.73%	50.07%	38.38%	61.57%
	SD	3.00%	3.42%	1.37%	3.47%	1.24%
1998-2001	N	4	4	4	4	4
	M	46.86%	57.26%	52.56%	37.44%	64.45%
	SD	4.42%	3.44%	.97%	1.86%	1.21%
2002-2007	N	6	6	6	6	6
	M	55.03%	61.00%	61.41%	48.05%	69.13%
	SD	3.55%	1.91%	1.43%	4.30%	.60%
Tests of Within-Subjects Effects			df	F		Sig.
Time Periods (TP) Sphericity Assumed			2	48.376		.000*
Error (TP)			118			
Tests of Within-Subjects Contrasts			df	F		Sig.
Time Periods (TP) Linear			1	88.754		.000*
Error (TP)			59			

*=<.05 significance

Tests of within-subjects effects with the obtained $F(2,118)=48.376$ $P<.05$, sphericity assumed, provide significant repeated measures effects. This is supported by tests of within-subjects contrasts with the obtained $F(1,59)=88.754$ $P<.05$. Twenty-two credit schools, those schools which maintained the state's minimum, experienced growth in percent of students enrolling in 2- and 4-yr colleges and post-secondary students similar to those schools with increased graduation credits over the three time periods within this study 17-year analysis. A plot of the estimated marginal means of measure

revealed a near linear trend for all schools over the three time periods regardless of the number of credits required for graduation.

Summary

Data were presented and analyzed to determine any relationships increased graduation requirements have on graduation rates, ACT scores, and college enrollment. Using a survey to collect information from 78 schools from 20 counties identified as the Southeast Missouri region, 61 sample schools were grouped into four groups; schools with the 22 credit minimum required by the state, 23 credit schools, 24 credit schools, and 25 credit schools. Existing data were then matched from the DESE website to examine each credit group of schools for graduation rates, percentages of students scoring at or above the national average on the ACT, and percentages of students enrolled in either 2- or 4-yr colleges or post-secondary institutions. The survey also collected information from schools in the study regarding credit increases or changes and whether or not they were based on concerns over MSIP evaluated items such as MAP testing scores, ACT scores, and college enrollment. Core class increases, generally utilized to enhance those items, were also determined.

Research questions and related hypotheses one, two, and three were evaluated using a comparison of means by one-way ANOVA analysis of variance. None of the three hypotheses were rejected. However, the schools, regardless of the number of credits required for graduation, had growth in their percentages over three identified time periods of students graduating and of students enrolling in college or post-secondary institutions. Findings of this study will be discussed in Chapter 5.

CHAPTER 5

Findings, Conclusions, and Implications

Introduction

This quantitative research investigation examined the relationship between increased graduation requirements and graduation rates, ACT scores, and college enrollment. The purpose of this study was to examine the voluntarily increased graduation requirements of schools in the Southeast Missouri region for impact on student persistence to graduation and student performance. Many Missouri schools voluntarily increased their graduation requirements or curriculum offerings based on the desire to increase student performance. More specifically, the goal of this study was to determine what effect graduation requirement increases have on students. Chapter Five provides the findings that reveal insignificant levels of impact of graduation requirement increases on students' persistence to graduation. The chapter also provides conclusions, implications, and suggestions for future research.

Summary of the Study

This study was conducted to provide region-specific data that would be applicable to schools facing graduation requirement increases mandated by the State of Missouri beginning with the graduating class of 2010. Concerns over empirical research or the lack thereof, prompted the basis of this investigation. The implications on potential increases in drop-outs are critical. "Existing evidence from unpublished studies suggest that students are more likely to drop out when they face higher standards" (Lillard & DeCicca, 2001, p. 459). Many of the few existing studies point to similar concerns over

the potentially negative impact on students' persistence to graduation. "In view of the magnitude of the dropout problem and the costs to both the individual school-leaver and society, it is important to examine the likely consequences for potential dropouts of raising academic standards in accordance with the new reforms" (McDill, et al., 1986, p. 135). As a result, inadequate research suggests inept policy structuring and decision-making. Schools often react to state pressures for improving student performance by increasing what is required of students without giving adequate recognition to potential impact on students.

The 1983 national report, *A Nation at Risk* conveyed concerns over American public schools falling behind other countries. The report called for the American public to take a proactive stand on the education of their children. *A Nation At Risk* was, ". . . as much an open letter to the American people as it was a report the Secretary of Education. We are confident that the American people, properly informed, will do what is right for their children and for the generations to come" (National Commission on Excellence in Education, 1983, p.1). The resulting impact of this report included state mandated expectations of change in areas of student achievement and accountability. Missouri legislation of 1983 was the result of such national concerns over student performance. This research showed schools were experiencing increased numbers of students persisting to graduation and increased numbers of students enrolling in colleges and post-secondary institutions over time periods within Missouri's step-up in legislation.

In 1983, the state of Missouri increased graduation requirements from 20 to 22 (Missouri Department of Elementary and Secondary Education [MODESE], 1983). Until then, Missouri's minimum graduation requirements had changed

little from 1916. Concerns were also raised over not insuring competency upon graduation by not requiring sufficient credits in mathematics and science, and over lack of systematic implementation of the plan across the state. As a result, the Missouri School Improvement Program (MSIP) was put into place with greatest potential impact on students beginning with the graduating class of 1998.

More recently, pressures from No Child Left Behind (NCLB) legislation of 2002, Public Law 107-110, mandates Adequate Yearly Progress be shown by states' public schools (United States Congress [USC] 107-110, 2001). Missouri's response has been to increase the overall credits required from 22 to 24 credits for graduation beginning with the graduating class of 2010. In addition, Missouri's minimum requirements include increasing math, science, and social studies to 3 units or credits minimum, increasing English to 4 credits, and adding a half-unit or $\frac{1}{2}$ credit course in personal finance and a $\frac{1}{2}$ credit course in health (MODESE, 2005). While many Missouri schools are able to withstand these increases because of voluntary credit requirement and curriculum changes, schools that have maintained the state's minimum of 22 credits may face the toughest challenges. Since what research exists reveals more concerns over the potential negative impact on students, this study sought to look at the effects those voluntary graduation requirement increases had on schools in southeast Missouri whose credit requirements were greater than the 22 minimum. This study indicates schools with higher credit requirements than schools with the state's minimum had no significant differences in their graduation rates, ACT scores, or students enrolled in colleges and post-secondary institutions. However, over three time

periods of adjusting curriculum and raising core class requirements, all schools saw significant improvement in graduation rates and college enrollment percentages regardless of the total credit required among the sample schools.

McDill, Natriello, and Pallas (1986) contend that raising standards may actually have a positive impact on at-risk students by encouraging greater effort by such students thus raising achievement levels. “Overall, results in several different lines of research provide hope that raising standards will lead students to work somewhat harder, at least when standards are originally quite low, and that greater student effort will lead to somewhat higher student achievement” (McDill, et al., 1986, p. 149). Southeast Missouri schools that voluntarily increased their credit requirements did so with the anticipation of greater student achievement. Granted, those decisions to voluntarily increase curriculum demands and overall credit totals were most likely driven by Missouri’s accountability standards, the desired result was the same: increase student achievement. This study focused on schools that operated within four credit groups. The study investigated graduation requirements, graduation rates, ACT scores, and college enrollment. The following research questions were posed to determine the relationships between increased graduation credit requirements and persistence to graduation, ACT scores, and college enrollment:

1. What is the relationship between increased graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation?
2. What is the relationship between increased graduation requirements and ACT scores?

3. What is the relationship between increased graduation requirements and the number of students attending college?

In order to assess the relationship between increased graduation requirements and the impact on persistence to graduation or graduation rates, ACT scores, and students attending college or college enrollment, schools from 20 counties identified by the Missouri Association of Secondary School Principals as being the Southeast Region of Missouri were surveyed. Mailings of the survey were sent to 78 schools with 61 schools responding for successful inclusion in this study. The sample schools were linked with corresponding existing from the MODESE website. The existing data were available from 1991 through 2007 and provided information on each school's graduation rates, percent of students scoring at or above the national average on the ACT, and percent of students enrolled in either 2- or 4-yr colleges or post-secondary (non-college) institutions.

The survey also provided information on the motivation to increase credit requirements of those sample schools by determining whether the credit or curricular changes were based on the desire to improve student achievement. The survey sought for specific changes such as increasing to improve MAP testing scores, ACT scores, or college preparation with increased core class participation.

A comparison of means through ANOVA was applied to graduation rate, ACT score, and college enrollment percentages of 23, 24, and 25 credit group schools as related to 22 credit schools. Three research questions were addressed through three null hypotheses. Each hypothesis was evaluated at the .05 level of significance by the appropriate inferential statistic using the Statistical Process of Social Sciences (SPSS) Graduate Pack 16.0 for Windows software. The research questions and associated

hypotheses were evaluated by a test of means for each of the credit group schools' graduation rates, ACT scores, and college enrollment percentages using ANOVA.

Two categorical phases identified by three time periods allowed further examination of data. The first phase, marked by the first students potentially impacted by MSIP implementation, the graduating class of 1998, was compared to the benchmark rates established by the first time period, 1991 through 1997. The second phase, marked by the first students potentially impacted by MSIP standard increases, the graduating class of 2002 was compared to the first and second time periods in order to understand insignificant yet noteworthy data observations.

Findings

Data were presented and analyzed to determine the relationship of graduation requirement increases on graduation rates, ACT scores, and college enrollment percentages. The findings for each research question are based in the empirical evidence found in this study. While none of the null hypotheses associated with the research questions were rejected at the .05 level of significance, some noteworthy tendencies were observed.

1. What is the relationship between increased graduation requirements as the result of federal and state legislation since 1983 and the persistence to graduation?

Schools with credit requirements that were higher than the minimum required 22 did not have graduation rates that were significantly different than those schools with credit requirements that had remained at the minimum. While most schools requiring more than the 22 credit minimum had lower graduation rates, though

not statistically significant, 24 credit schools actually produced higher rates than those 22 credit minimum schools and higher rates than the state averages over all three time periods identified by this study.

2. What is the relationship between increased graduation requirements and ACT scores?

Schools with credit requirements that were higher than the minimum required 22 did not have ACT scores that were significantly different than those schools with credit requirements that had remained at the state's minimum. However, all credit schools with exception of schools requiring 25 credits for graduation indicated an increase in percentage of students scoring at or above the national average on the ACT. A great number of the 23 and 24 credit schools and only two of the fifteen 22 credit schools had adjusted their curriculum to increase ACT scores. While not statistically significant, schools of the 25 credit group showed a steady decrease in ACT performance over the study's time periods even though five of the seven schools sampled had made changes in their credit requirements to improve both ACT scores and core class participation.

3. What is the relationship between increased graduation requirements and the number of students attending college?

Schools with credit requirements that were higher than the minimum required 22 did not have numbers of students attending college that were significantly different than those schools with credit requirements that had remained at the state's minimum. Still, college enrolment percentages of sample schools for students enrolling in 2- or 4-yr colleges or post-secondary institutions increased

steadily for 22, 23, and 24 credit schools. This considers 22 credit schools that did not increase credit requirements and only 1 of the 15 schools had adjusted their credit requirements to specifically improve college enrollment. Again, while not statistically significant, 25 credit schools showed some increases most likely after implementing curriculum changes within the second time period, but their averages were lower than all other credit group schools.

Table 10 provides a summary of the findings of this study. It indicates the research, hypotheses, statistics, and tendencies.

Table 10

Summary of Findings for this Study

Research Addressed	Hypothesis Tested	Statistic Outcome	Tendencies (Although not Statistically Significant)
Compared graduation rates of schools of increased graduation requirements with schools of 22 credit minimum.	There is no correlation between graduation rates of schools with greater graduation requirements and schools with the required minimum.	ANOVA Mean Comparison Not rejected at .05	While most schools requiring more than 22 credits for graduation had lower than state average graduation rates, 24 credit schools had graduation rates that were consistently higher than state averages over the time periods of the study.

Compared ACT scores of increased graduation requirements schools with schools of 22 credit minimum.

There is no correlation between ACT scores of schools with greater graduation requirements and schools with the required minimum.

ANOVA
Mean
Comparison

Not rejected
at .05

All credit group schools with the exception of 25 credit group schools had increases in the percentages of students scoring at or above the national average on the ACT.

Compared college enrollment of increased graduation requirements schools with schools of 22 credit minimum.

There is no correlation between number of students enrolled in college of schools with greater graduation requirements and schools with the required minimum.

ANOVA
Mean
Comparison

Not rejected
at .05

All credit group schools with the exception of 25 credit group schools had steady increases in the percentages of students enrolled in either 2- or 4-yr colleges or post-secondary institutions.

Conclusions

The purpose of this study was to identify the relationship of increased graduation requirements and graduation rates, ACT scores, and college enrollment. Three research questions were designed to acquire knowledge of this relationship and the following conclusions were reached.

Although none of the related null hypotheses were statistically rejected, noteworthy tendencies were observed as follows:

1. The study found that graduation rates were not negatively impacted by increased graduation requirements.
2. Percentages of students performing at or above the national average on the ACT were not greatly impacted by increased graduation requirements. Tendencies showed that the higher credit group school of 25 required credits actually produced lower percentages of ACT scores.
3. Schools with higher credit requirements than those schools with the 22 credit minimum exhibited steady increases in college enrollment. However, the percentages were not significantly impacted by higher credit requirements and schools requiring 25 credits for graduation saw only moderate increases. All credit school groups fell below the percentages of college enrollment of the state's averages.

Research questions and the respective null hypotheses addressed the issue of relationship of graduation rates, ACT scores, and college enrollment percentages between schools that maintained the minimum 22 credits and those schools requiring more than the state minimum required for graduation. Schools were identified and grouped by total number of credits required for graduation and were viewed as 22 credit group, 23 credit group, 24 credit group, and 25 credit group schools. Characteristics of schools including free and reduced lunch rates of students, district per pupil expenditures, percent of children in the respective county that were living below the poverty rate, and the size of the sample schools as classified by MSHSAA were provided to give a clearer view of the

demographic structure of the schools. Time periods were identified to provide a basis for graduation rate, ACT score, and college enrollment changes that might have taken place after the implementation and subsequent performance expectations brought about by MSIP.

A comparison of means of each of the three dependent variables with the credit schools independent variable groups was conducted. No statistically significant relationships between graduation rates, ACT scores, or college enrollment was found with schools requiring greater than the minimum compared to schools maintaining the 22 credit minimum requirement for graduation.

In summary, none of the hypotheses were rejected at the .05 level of significance. However, tendencies including slight increases in graduation rates, ACT scores, and college enrollment percentages were revealed. The size of the sample may have prevented more definitive results. Still, while not statistically significant, increased graduation requirements may produce desired increases in student achievement (McDill, et al., 1986). For Missouri, that can translate to better performance for MSIP standards with increases in graduation rates, the number of students scoring at or above the national average on the ACT, and the number of students enrolled in college or post-secondary institutions.

Throughout the reviews of literature providing the basis for this study, implications included concerns over the negative impact of increased graduation requirements on students' persistence to graduation (Alspaugh, 1997; Lillard & DeCicca, 2001; McDill, et al., 1986) Empirical findings of this study hint at brighter, more positive outcomes. While the tendencies found within this research's data are not statistically

significant, the overall conclusion is that increased graduation requirements alone are not detrimental to the at-risk students' persistence to graduation. Too many other factors may come into play such as poverty level, home and family influences, student-teacher ratios of weaker schools, alienation within the school setting, ineffective teachers, parent-staff relationships, etc.

Complex questions remain, challenging educators to explore more fully the ways in which students negotiate their way. Some are seemingly able to cope with the complexities of the school environment by adapting or demonstrating resiliency, while others find the obstacles insurmountable and quietly disappear or succumb to the temptations of mind-numbing substances and school avoidance in order to survive (Gallaher, 2002, p. 49).

Data on specialized areas of graduation or course requirement increases provide positive correlations with increased student performance. Hoffer (1997) reported on findings of increased performance in math as a result of higher achievement expectations. McDill, et al., (1986) reported on findings relating “. . . to the higher the demand level in the classroom, the more likely students were to report paying attention in class and spending time on homework” (p. 148).

The key perhaps is to balance the impact of increased graduation requirements by providing the challenge of tougher expectations without overwhelming the student, especially those students already at-risk. Students feeling that they are a part of the school and knowing that teachers care has great implications for counteracting negative pressures of increased expectations (Gallagher, 2002).

Once, when pondering the validity of a study and the potential impact of increased graduation requirements and expectations on students persistence to graduation, I over heard some high school kids talking in a restaurant booth next to mine at some

distant town I was visiting. The students could have been mine, and were indeed typical students one might find in any high school. The talk was of how bored they were with school and of certain teachers that never really paid much attention to their inferior homework assignments and class work. They laughed at classes in which they could sleep and talked about how easy it was to copy and share one another's work. Finally, there was a moment of brief silence, as they pondered an English teacher's demanding assignment. For just a moment, there seemed to be thoughtful consideration of what she expected of them, and a quiet respect for that particular teacher was observed.

I will never know who those students were, but I see who they are everyday in my own environment. My parents were from another generation, another time, and raised through the depression years of the 1930s. One with only an eighth grade education, my mother, from whom I never heard misspoken grammar nor ever saw a misspelled word. My father, a first of his family to graduate from high school, could "cipher" nearly as quickly as I could enter numbers in a calculator. They expressed concerns over the years, watching as their children and grandchildren were attending school, concerns they referred to as "dumbing down the kids." Even with the results of this investigation, I understand the reasoning of those concerns.

Implications

Raising the bar and then providing support for students to rise to the challenge is implied by this study. A broader sampling of schools may provide more definitive results that would reinforce the implication of positive correlations between increased graduation requirements and increased student performance. The strength of the quantitative

presentation of data could be greatly enhanced with a combination of a qualitative component. Genuine feedback from students who are in the current system as it is impacted by the new graduation requirements for Missouri would be invaluable. Real life applications could be shaped from such mix-study findings. Applicable solutions to keeping kids in school while helping them to achieve their fullest potential are needed in public education. Such investigations are timely and required if public schools are to provide necessary educational opportunities.

Future Research

While this study utilized data on poverty levels, free and reduced lunch percentages, school size, and district expenditures per pupil in order to provide additional descriptors of sampled schools, it did not take into consideration effect of these variances on the dependent variables. The limited demographic data was provided in order to present some depth on sample schools. However, an examination of these variances would most likely provide more definitive results.

With it being 20 years since Missouri had increased the graduation requirement minimum, it was difficult to perform a longitudinal study. However, a study that examines the long-term impact of evolving graduation requirement increase, such as those that are currently taking place, could provide insight that was lacking in this study. Longitudinal studies allow for validity and for definitive results.

Incorporating a mix-study of quantitative and qualitative research would provide a myriad of data interpretation and subsequent information. The depth of the study and consequent findings would provide invaluable resources for future application.

The tendencies revealed by the time period analysis suggest the need for further attention. While number of credits required for graduation had no significant impact on graduation rates, ACT scores, and college enrollment, schools in this study had significant growth in graduation rates and college enrollment regardless of the number of credits required. The overall 17-year period of heightened expectations for student performance as mandated by MSIP is marked by increased student performance overall for these schools in Southeast Missouri. Further study may reveal what schools were doing to produce the positive results indicated in this research.

Summary

The purpose of this study was to identify the relationship of increased graduation requirements with student performance. Specific research questions targeted comparisons of graduation rates, ACT scores, and college enrollment of schools that required more than the state's minimum credits required for graduation with schools that maintained the minimum of 22 credits required for graduation. A survey was mailed to 78 schools in 20 counties from the region identified as the Southeast Region of Missouri. Data were collected from 61 sample schools and provided information on credit requirements and class changes. The survey's identification of schools provide necessary information to link each school with its respective data on graduation rates, ACT scores, and college enrollment percentages found on the MODESE website.

Sample schools were grouped according to their required credits for graduation and produced the following: 22 credit group, 23 credit group, 24 credit group, and 25 credit group schools. The means for graduation rates, percent of students performing at

or above the national average on the ACT, and percent of students enrolled in 2- or 4-yr colleges or post-secondary institutions were calculated. A comparisons of means utilizing ANOVA examined percentages of 23 credit group, 24 credit group, and 25 credit group schools' variables of graduation rates, ACT scores, and college enrollment with those percentages of 22 credit group schools.

There were no statistically significant comparisons or outcomes that implied increased graduation requirements had either a negative or positive impact on student achievement. However, data suggested tendencies revealed slight trends in positive correlations between graduation requirements of schools requiring more than the 22 credit minimum in areas of graduation rates, ACT scores, and college placement. These tendencies were consistent with the exception of those schools which required 25 credits for graduation.

Credit group schools were also viewed through motivation for increasing credits. The survey gathered information on whether credit increase were based on concerns over MSIP review standards such as MAP testing scores, ACT scores, and college prep or core class participation. There were no statistically significant findings over the impact of specific concern increases compared to the differences of credit group schools.

Data of sample schools were categorized by three time periods in order to provide analysis over two identifiable phases within the 17-year data source. The first phase estimated the potential impact of MSIP implementation on students, the graduating class of 1998, and compared data from the base period, 1991-1997. The second phase, identified by the potential impact of MSIP standard increases on students, the graduating class of 2002, provided data analysis with the first time period of 1991-1997, and the

second time period of 1998-2001. No significant comparisons were found, although tendencies revealed slight, often steady increases in graduation rates, ACT scores, and college enrollment percentages of schools requiring more than the minimum for graduation, with the exception of 25 credit group schools.

Overall, schools that increased their minimum credit requirements above the state's required number of credits for graduation appeared to have no detrimental impact on graduation rates of their students. In addition, those schools that required more for successful completion of high school may have better prepared their students for college and post-secondary training, and those schools may be better equipped for upcoming changes and increases for future graduates.

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Appendix A

Beginning with the graduating class of 1988, the State of Missouri has required all students to complete at least 22 credits for graduation. That has not changed until recent legislation of 2005 raised the total to 24. However, since 1993 Missouri School Improvement Legislation, many schools have responded by voluntarily increasing their graduation requirements to better prepare students for state assessment and performance accountability.

This survey seeks to collect information regarding your school's response to state legislation for school improvement since 1993. No identifiable data will be shared in the research findings.

- 1) Did your district voluntarily increase graduation requirements above what Missouri considered the minimum for any of the following areas?
 - a. More than the 2 required math? yes no
 - b. More than the 2 required science? yes no
 - c. More than the 2 required social studies? yes no
 - d. More than the 3 required communication arts? yes no

- 2) How many total credits did your district require for graduation when Missouri's minimum was 22 credits? _____

- 3) Did you increase your graduation requirements to better prepare students for any of the following:
 - a. MAP testing? yes no
 - b. ACT scores? yes no
 - c. College Prep? yes no

- 4) What changes, if any, has your district had to make in order to accommodate the recent mandated changes for the class of 2010?
 - a. Increased math requirement? yes no
 - b. Increased science requirement? yes no
 - c. Increased social studies requirement? yes no
 - d. Increased communication arts requirement? yes no
 - e. Addition of a personal finance requirement? yes no
 - f. Addition of a health requirement? yes no

- 5) If you checked "no" for any of the above, was it due to a decision to imbed the additional credit of:
 - a. Math? yes no
 - b. Science? yes no
 - c. Social Studies? yes no
 - d. Communication Arts? yes no
 - e. Personal Finance? yes no
 - f. Health? yes no

Please indicate your position:

_____ Superintendent _____ Building Administrator _____ Counselor

Please provide your school district code and the name of your school:

DESE code: _____ School name: _____

VITA

Rhoda “Gini” Barnett was born September 9, 1958, in the suburbs of Chicago, Illinois. After attending public schools in Illinois and Missouri she earned the following degrees: A.S. in Equine Technology (1981) from Connors State College, Warner, Oklahoma; B.S. in Secondary Education (1993) from Oklahoma State University, Stillwater, Oklahoma; M.A. in Secondary School Administration (1999) and Ed. Specialist in Education Administration (2000) from Southeast Missouri State University, Cape Girardeau, Missouri. She is married to Bobby Barnett of Doniphan, Missouri and has three children: Jackie, 23 years old; J.T., 20 years old; and Brooke, 12 years old. She was the assistant principal for two years and has been the high school principal at Doniphan R-I School District, Doniphan, Missouri for the past seven years. Prior to building administration, she taught 9-12 social studies and Spanish for six years. She is the daughter of the late Hershel E. Collier and the late Vera M. Cousineau-Collier.