

Running Head: Student Achievement on a Four-Day School Week Schedule

THE IMPACT OF THE FOUR-DAY SCHOOL WEEK ON STUDENT ACHIEVEMENT

By

MIRANDA GIGER

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The Educational Leadership Faculty  
Northwest Missouri State University Missouri  
Department of Educational Leadership  
College of Education and Human Services  
Maryville, MO 64468

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## ABSTRACT

The purpose of this study was to indicate whether or not implementing a four-day school week instead of a five-day school week affects elementary (grades 3-5) MAP scores. The research includes findings that answer the question, “Is there a difference in elementary (grades 3-5) student achievement between a four-day school week and a five-day school week?” The research was conducted by collecting MAP (Missouri Assessment Program) scores from the DESE (Missouri Department of Secondary and Elementary Education) website for grades 3-5 from three years previous to switching to the four-day school week when the traditional five-day school week was used to the MAP scores the year the school district implemented the four-day school week. The findings were analyzed through Microsoft Excel and A Statistical Program (ASP) software. Findings from this research indicate that there is not a significant difference in Communication Arts MAP test scores based on a 4-day or 5-day school week. This research also showed the students on the 4-day school week schedule scored higher on the MAP Math assessment than on the five-day school week schedule. However, the rise in math MAP test scores could have been due to a number of factors. With limited test scores available so far from the four-day school week, more data is needed to make further indications of how the four-day school week affects student achievement.

## INTRODUCTION

### *Background, Issues and Concerns*

Due to decreasing financial assistance from the state, a rural school district located in the Midwest, hereafter referred to as LSD, was forced to make some changes. Beginning in the 2010-2011 school year, LSD implemented a four-day school week instead of the traditional five-day school week. This study is going to compare student achievement in the elementary school (grades 3,4,5) by analyzing MAP (Missouri Assessment Program) scores from three years previous to switching to the four-day school week when the traditional five-day school week was used to the MAP scores the year the school district implemented the four-day school week. Many concerns have risen due to talk of implementing a four-day school week. Some of the major concerns from staff, parents, and community members include lack of student focus due to longer school days, childcare on the extra day off each week, and how student achievement and performance will be affected.

### *Practice under Investigation*

The practice under investigation is whether or not switching to a four-day school week from the traditional five-day school week affects student achievement at the elementary (grades 3,4,5) level.

### *School Policy to be Informed by Study*

The school policy to be informed by the study is whether or not switching to a four-day school week from the traditional five-day school week affects student achievement at the elementary (grades 3,4,5) level.

### *Conceptual Underpinning*

Teachers, principals, superintendents, and school board members need to make sure the decisions they make are the best decisions for the students. If student achievement is negatively affected, then the district needs to find other ways to cut the budget and may need to return to the traditional five-day school week. In theory, there should be no difference in student achievement when moving from a five day school week to a four day school week.

### *Statement of the Problem*

When a school district implements a four-day school week, student achievement could be affected. School districts need to keep in mind what is best for their students.

### *Purpose of the Study*

The purpose of this study is to indicate whether or not switching from a five-day school week to a four-day school week affects elementary (grades 3-5) MAP scores. The information gained from this study will provide administrators and school board members with a better understanding of how the four-day school week affects student achievement.

### *Research Question(s)*

RQ 1: Is there a difference in elementary (grades 3-5) student achievement between a four-day school week and a five-day school week?

### *Null Hypothesis(es)*

The Null Hypothesis is that there is no difference in MAP scores whether the school district implements a four-day school week or uses the traditional five-day school week.

*Anticipated Benefits of the Study*

There are a couple of anticipated benefits from this study. The first anticipated benefit from this study is to have a better understanding of whether or not the four-day school week affects student achievement. The other anticipated benefit from this study is there will not be any noticeable change in MAP scores moving from a five-day school week to a four-day school week.

*Definition of Terms*

Four-day school week: students attend school only four days a week (Tuesday through Friday)

DESE: Missouri Department of Secondary and Elementary Education

MAP: Missouri Assessment Program

Fifth day: the extra day of the week that students are not in school, usually Monday or Friday

*Summary*

This study is to indicate whether or not switching to a four-day school week from the traditional five-day school week affects student achievement. This study will benefit the LSD because it will begin to indicate whether or not switching to the four-day school week is affecting student achievement. Soon, the school board is going to be looking at whether or not the four-day school week is benefiting the students and if it is worth continuing. This study also might benefit school districts that might be thinking about switching to a four-day school week. So the question is- Is there a difference in elementary (grades 3-5) student achievement between a four-day school week and a five-day school week?

## REVIEW OF LITERATURE

With so many school districts facing state budget cuts, schools have had to find alternative ways to save money. As expenses are increasing and funding for schools is decreasing, school districts have to find some way to continue educating their students and continue raising test scores. One of the alternative ways some school districts across the United States are saving money is by implementing a four-day school week.

One of the earliest four-day school weeks implemented was in Madison Central School District located in Madison, South Dakota in 1931 (Hewitt & Denny, 2011). This schedule was implemented to have academic studies four days a week and then all extracurricular activities took place on the fifth day. This four-day school week model is a little different than the typical four-day school week model now used. Then in 1973, many school districts in the northeastern United States were forced to switch to the four-day school week for financial savings, especially energy costs (Hewitt & Denny, 2011).

State legislators are now in the process of making academic calendars more flexible that would allow for more four-day school week possibilities. Currently, more than 100 school districts in at least 17 different states operate on a four-day school week schedule (Herring, 2010). Additionally, dozens of other school districts are looking into the possibility of adopting the four-day school week calendar. The majority of school districts that have implemented the four-day school week are small, rural school districts. Many of the school districts that have implemented the four-day school week are in session Monday through Thursday. However, some districts have chosen to go Tuesday through Friday. Even though the students are only going to

school four days each week, they still attend the same number of hours because the four days are longer days with an hour or hour and a half added on to them.

There are numerous concerns when making the switch from the traditional five-day school week to a four-day school week. One of the major concerns about switching to a four-day school week is whether or not student achievement will be affected. Some parents and teachers worry about keeping children engaged and focused for that extra added time on to each school day. However, a superintendent from a small, rural school district in Minnesota reported that the longer school days are a trade-off that the community has really accepted (Aarons, 2008). Community members also worry that with an additional day off every week, students could have a more difficult time retaining information learned the previous week. Childcare for the fifth day (the day of the week the children have off from school) is a major concern for parents. Many parents cannot afford to put their children in daycare on the fifth day each week and are unable to take the days off from work. Also parents of older children worry about leaving them home all day unsupervised. One source suggested to school districts to explore options to partner with local daycare providers for the fifth day, consider offering a list to parents of high school students that are able and willing to babysit on the fifth day, or expand any after-school programs to the fifth day, if possible (Beesley & Anderson, 2007). Another concern is some school employees such as bus drivers, cooks, custodians, and secretaries see about a 20% cut in pay due to not working as many hours.

There are numerous benefits from implementing the four-day school week as well. First of all, a number of school districts that have implemented the four-day school week schedule have shown financial savings. In Peach County, Georgia school officials reported over a \$200,000 savings in one semester due to switching to the four-day school week (Herring, 2010).

Secondly, teachers are able to tutor and give more focused, small group instruction to those struggling students that need the extra support. Teachers are also able to take part in additional teacher training and professional development on the fifth days (Bronson, 2011). School officials in Webster County located in Kentucky reported they were able to save enough money from implementing the four-day school week that the school district was able to save the full-day kindergarten program that would otherwise not have been able to continue due to financial circumstances (Weldon, 2008). Additional benefits include staff and student absences have significantly decreased, student grades have improved significantly, teachers are reporting less discipline issues, and teaching time has increased due to less time lost in transitions with the new schedule (Chmelynski, 2003). One school district in Georgia reported holding athletic events and practices on the “fifth day” reducing the school time missed the rest of the week (Shellenbarger, 2010).

Rachel Yarbrough and David Alan Gilman (2006) discuss their first-hand experience when their Webster County School District in Kentucky decided to implement the four-day school week to help the school district save money. The following is the plan that their school district used in order to successfully implement their four-day school week schedule. According to Yarbrough and Gilman the first step in successfully implementing the four-day school week schedule in your school district is to check your state’s law. Some states have not yet passed legislation allowing school districts the option of implementing the four-day school week. The next step to successfully implementing the four-day school week in your district is to conduct research. They suggest doing plenty of research to make sure the four-day school week would be a good fit for your school district. However, they go on to say that there is still little research available right now on how implementing the four-day school week has affected student



achievement. The next step is to develop a solid plan. They suggest finding a school district with similar demographics as your school district that has already implemented the four-day school week and use their example as the primary data resource of your planning. Calculate savings is the next step suggested for successfully implementing a four-day school week schedule in your district. The next step is to anticipate potential problems with implementing the four-day school week in your district. It is very important to anticipate the community concerns and come up with resolutions to the concerns so the entire community is on board with implementing the four-day school week. The next step they suggest is to plan and monitor training. Yarbrough and Gilman stress the importance that the day off each week is not viewed as just another day off each week for teachers and staff. They go on to say how it is a great opportunity for teachers to participate in further training and professional development opportunities on the day off. Finally, the last step in successfully implementing the four-day school week in your school district is to document student results. The decision to implement the four-day school week should not solely be based on financial savings, but the school district needs to keep in mind if implementing the four-day school week would be the best decision for student achievement in the district as well.

One of the main concerns about school districts implementing the four-day school week schedule continues to be how the four-day school week affects student achievement. A study conducted in 1990 in New Mexico examined testing data from the first ten school districts to implement the four-day school week schedule. The study compared eight years of test scores from those ten school districts and from school districts that continued with the traditional five-day school week schedules. The study found that the mean scores from the four-day school week school districts were higher, although the difference was not significant (Reeves, 1999). Webster County located in Kentucky compared their test scores on the Comprehensive Test of Basic

Skills in spring 2002 and 2003, in which they had the traditional five-day school week, to spring 2004 and 2005, in which they implemented the four-day school week. Their test scores improved significantly in all content areas. However, test scores had already been improving in recent years, but the trend suggested that the four-day school week did not have a negative effect on their student achievement (Yarbrough & Gilman, 2006). Another article examined two school districts and found that in one of the school districts, ACT scores rose above state averages after switching to the four-day school week, while the other school districts test scores remained relatively flat (Ray, 2003).

A study was also done in Colorado that focused on student performance in 62 school districts that had implemented the four-day school week schedule. The study used the test results of the Colorado Student Assessment Program to examine student performance in reading, math, and writing in grades three through ten. This study found that while the mean test scores of the five-day school week schedule were higher than those of the four-day school week schedule in 11 out of the 12 areas compared, the differences were very slight (Spengler, 2011).

Currently, with so many school districts facing major budget cuts, school districts are being forced to make some major changes. Many districts have had to start cutting programs or staff or think of alternative ways to save money. One solution that some school districts have decided to implement is the four-day school week. While many concerns come along with the four-day school week from school staff, parents, and community members, many benefits come along with the four-day school week schedule as well.

## RESEARCH METHODS

### *Research Design*

MAP scores from grades 3, 4, and 5 will be compared from the traditional five-day school week with the MAP scores from the four-day school week. The independent variable is the four-day or the five-day school week. The dependent variable is the student achievement based on the percentage of students scoring in the proficient and advanced areas of the MAP test. The test used is the t-test.

### *Study Group Description*

The study group for this research paper is 3, 4, and 5 grade students in the LSD. Each grade consists of about 65-75 students. The following are the free or reduced lunch percentages for the elementary school in the LSD. In 2008, 31.3% of the students were on free or reduced lunch. In 2009, 35.7% of the students were on free or reduced lunch. In 2010, 34.9% of the students were on free or reduced lunch. In 2011, 36.5% of the students were on free or reduced lunch. The student to teacher ratios have stayed pretty consistent the past few years. In 2008, 2009, and 2010 the student to teacher ratio was 12 students to 1 teacher. In 2011, the ratio increased to 13 students to 1 teacher. In 2008, .5% of the students in the elementary school in the LSD were Asian, 1.3% were Black, .8% were Indian, 1.5% were Hispanic, and 95.9% were White. In 2009, .3% of the students were Asian, 2.8% were Black, .3% were Indian, 1.5% were Hispanic, and 95.2% were White. In 2010, there were no Asian students, 2.6% were Black, .8% were Indian, 2.9% were Hispanic, and 93.7% were White. In 2011, there were no Asian students, 2.5% were Black, .8% were Indian, 1.8% were Hispanic, and 94.9% were White.

*Data Collection and Instrumentation*

MAP scores will be taken from the DESE website to conduct this research. The test scores that will be collected are the MAP scores from grades 3,4,5 from the three school years previous to switching to the four-day school week and then the MAP scores from the 2010-2011 school year, the year LSD implemented the four-day school week.

*Statistical Analysis Methods*

A Statistical Package (ASP) software was used to compute the statistical calculations in this study. A t-test was used to compare the MAP scores from the three years previous to implementing the four-day school week when the traditional five-day school week was being used to the year when the four-day school week was implemented. Microsoft Excel was also used to compile the numbers in the research before entering it into the ASP software.

## FINDINGS

Table 1

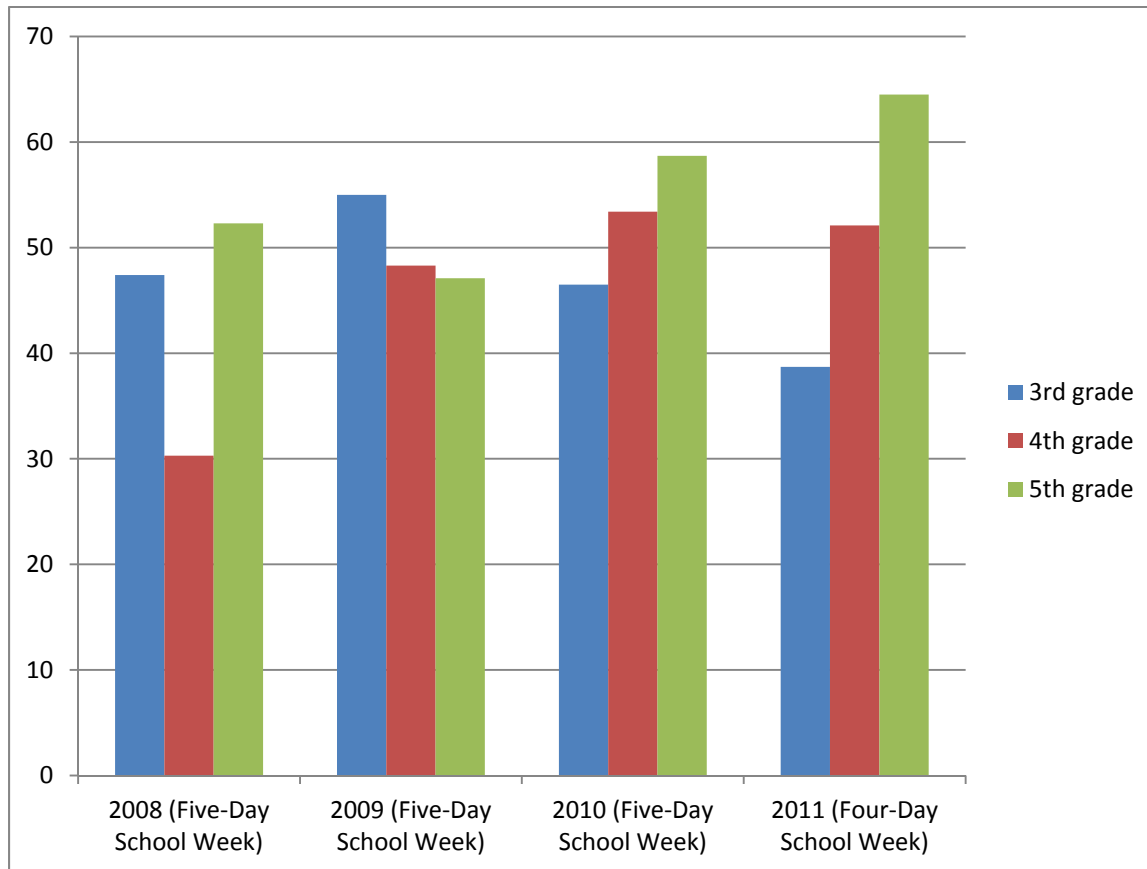
*t-Test Analysis Results for 4-Day and 5-Day School Week and Communication Arts MAP scores*

Source	Mean	Mean D	t-test	df	p-value
4-Day (n=3)	51.767				
5-Day (n=9)	48.778	-2.989	-0.485	10	0.638

Note: Significant when  $p \leq 0.25$

MAP scores were gathered from the DESE website for LSD for grades 3, 4, and 5. MAP scores were used from the 2008, 2009, and 2010 school years (the traditional 5-day school week) and then the 2011 school year (when the 4-day school week was implemented). The MAP scores were evaluated to produce two groups: the 4-day school week results (3) were placed in one group and the 5-day school week results (9) were placed in another. The mean of the 4-day school week was 51.767 and the mean of the 5-day school week was 48.778. The Mean D, or difference between the two groups, was -2.989. The t-test result was -0.485 and the df (degrees of freedom) was 10. The null hypothesis states there is not a significant difference in Communication MAP scores based whether the school district has a 4-day school week or a 5-day school week. Since the p-value was 0.638, and the Alpha number was set at 0.25, the null hypothesis is not rejected. Therefore, there is not a significant difference in Communication Arts MAP test scores based on a 4-day or 5-day school week.

Table 2

*Communication Arts MAP test scores- Percent Proficient and Advanced*

In Table 2, Communication Arts MAP test scores are shown for grades 3, 4, and 5 for the LSD in 2008, 2009, 2010, and 2011. In 2008, 47.4% of third grade students, 30.3% of fourth grade students, and 52.3% of fifth grade students scored proficient or advanced on the Communication Arts MAP test. In 2009, 55% of third grade students, 48.3% of fourth grade students, and 47.1% of fifth grade students scored proficient or advanced. In 2010, 46.5% of third grade students, 53.4% of fourth grade students, and 58.7% of fifth grade students scored proficient or advanced on the Communication Arts MAP test. In 2011, the four-day school week was implemented. In 2011, 38.7% of third grade students, 52.1% of fourth grade students, and

64.5% of fifth grade students scored proficient or advanced on the Communication Arts MAP test.

Table 3

*t-Test Analysis Results for 4-Day and 5-Day School Week and Math MAP scores*

Source	Mean	Mean D	t-test	df	p-value
4-Day (n=3)	62.333				
5-Day (n=9)	50.256	-12.077	-1.344	10	0.209

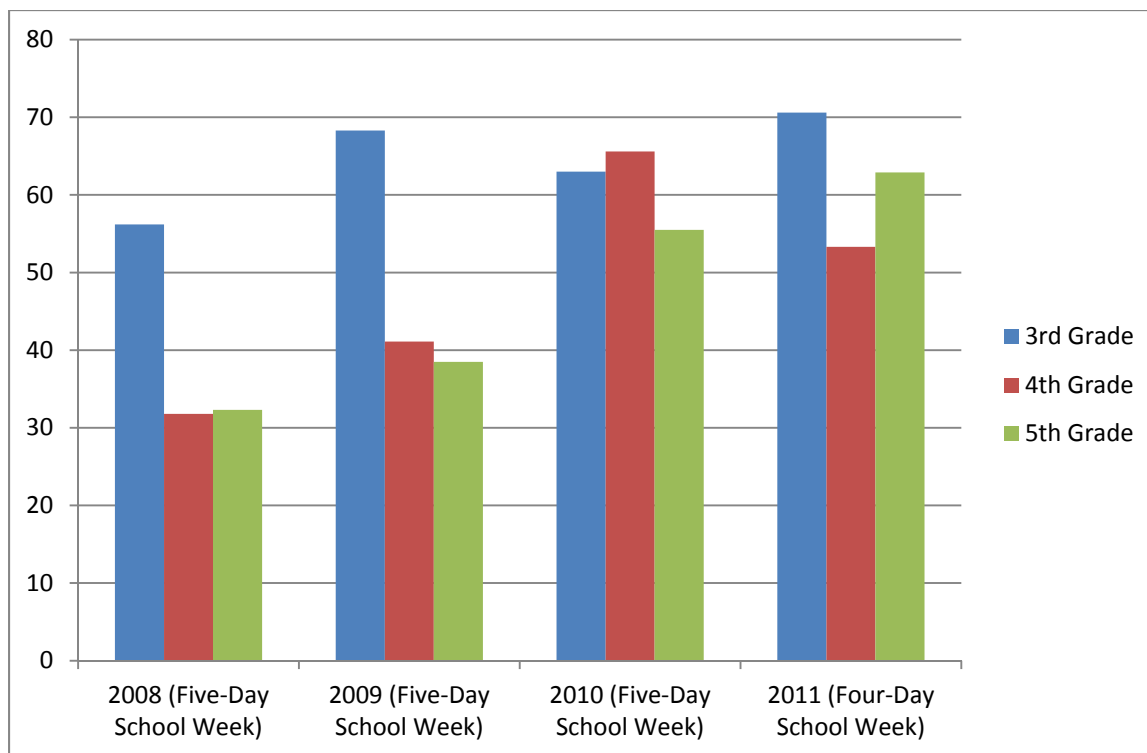
Note: Significant when  $p \leq 0.25$

MAP scores were gathered from the DESE website for LSD for grades 3, 4, and 5. MAP scores were used from the 2008, 2009, and 2010 school years (the traditional 5-day school week) and then the 2011 school year (when the 4-day school week was implemented). The MAP scores were evaluated to produce two groups: the 4-day school week results (3) were placed in one group and the 5-day school week results (9) were placed in another. The mean of the 4-day school week was 62.333 and the mean of the traditional 5-day school week was 50.256. The Mean D, or difference between the two groups, was -12.077. The t-test result was -1.344 and the df (degrees of freedom) was 10. The null hypothesis states there is not a significant difference in Math MAP scores based on whether the school district implements a 4-day or 5-day school week. Since the p-value was 0.209, and the Alpha number was set at 0.25, the null hypothesis must be rejected. Therefore, there is a significant difference in Math MAP test scores based whether the school district uses a 4-day or traditional 5-day school week. The 4-day school week

results with the mean score of 62.333 scored significantly higher than the 5-day school week results with the mean score of 50.256. Based on the limited available data for the 4-day school week test results, students on the 4-day school week schedule scored higher on the MAP Math assessment.

Table 4

*Math MAP test scores- Percent Proficient and Advanced*



In Table 4, Math MAP test scores are shown for grades 3, 4, and 5 for the LSD in 2008, 2009, 2010, and 2011. In 2008, 56.2% of third grade students, 31.8% of fourth grade students, and 32.3% of fifth grade students scored proficient or advanced on the Math MAP test. In 2009, 68.3% of third grade students, 41.1% of fourth grade students, and 38.5% of fifth grade students scored proficient or advanced. In 2010, 63% of third grade students, 65.6% of fourth grade students, and 55.5% of fifth grade students scored proficient or advanced on the Math MAP test.



In 2011, the four-day school week was implemented. In 2011, 70.6% of third grade students, 53.5% of fourth grade students, and 62.9% of fifth grade students scored proficient or advanced on the Math MAP test.

## CONCLUSIONS AND RECOMMENDATIONS

The null hypothesis stated that there is no difference in MAP scores whether the school district implements a four-day school week or uses the traditional five-day school week. The results of this study indicate that there is not a significant difference in Communication Arts MAP test scores based on a four-day or five-day school week. Based on the limited available data for the four-day school week test results, students on the four-day school week schedule scored higher on the MAP Math assessment. Since MAP scores for both Communication Arts and Math were on the rise before implementing the four-day school week schedule, it cannot be determined that the reason MAP scores were higher in 2011 was solely because of the four-day school week schedule. The higher MAP scores could be due to a number of factors. However, it is important to note that the four-day school week has not negatively affected test scores. Once additional MAP scores are received over the next few years, LSD will need to do further study to see if the four-day school week schedule is affecting student achievement over time. With limited test scores available so far from the four-day school week, more data is needed to make further indications of how the four-day school week affects student achievement.

Most of the school districts that are implementing the four-day school weeks are doing so for financial savings in the district. There are several recommendations for a school district that is contemplating implementing the four-day school week schedule. First of all, make sure to do the research. A majority of the school districts that have successfully implemented the four-day school week schedule have been small, rural school districts. Before starting the process of switching to the four-day school week, be sure that the schedule change would be a good fit for the community. The next step is to develop a plan. It would be a good idea to find a model

school district with similar demographics to use as an example on how to successfully implement the four-day school week schedule. The next step is to anticipate problems with implementing the four-day school week schedule in your community. Many of the problems with implementing the four-day school week in a community are very similar to the problems other communities implementing the four-day school week have faced. Think about the major concerns that will arise with talk of the four-day school week and come up with solutions to provide staff, parents, and community members. Next the school district needs to provide training for the teachers and staff of the school district on how to successfully implement and operate on a four-day school week schedule. Finally, the school district needs to monitor student results. If it becomes apparent that the four-day school week schedule is negatively impacting student performance and achievement, then the school district needs to revisit the idea of implementing the four-day school week.

Further recommendations for the LSD is to do an additional study on how the four-day school week is affecting younger students in the lower primary grades, middle school students, and high school students. As more and more data becomes available from this past year (since the second year of the four-day school week has been in place) and the next few years, additional research will need to be completed and the school district will have a much better understanding on how the four-day school week schedule is affecting student achievement and performance.

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