GENDER DIFFERENCES IN MAP-A SCORES

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ABSTRACT

This study was completed to find if there is a significant difference in male and female test scores in the Missouri Assessment Program Alternate. The study group selected for this study was 10th and 11th graders. Data was collected and the t-Test Analysis was used to determine the relationship of gender and test scores. The source of data was randomly collected from two major school districts in the state of Missouri who were administered the Missouri Assessment Program Alternate in 2011. The analysis results indicated that females are outperforming males on the MAP-A.
INTRODUCTION

Background, issues and concerns.

Over the years there has been a concern of academic achievement between genders. To test the level of achievement of students’ students are given the Missouri Assessment Program (MAP) or the Missouri Assessment Program Alternate (MAP-A). The Missouri Assessment Program Alternate is a portfolio-based assessment that measures student performance based on alternate achievement standards, which is designed only for students with significant cognitive disabilities who meet grade level and eligibility criteria. This test and its results on individual students ensure that students are meeting their IEP goals based on the Missouri Standards. There could be a difference or relationship in academic achievement between males and females, which has been long speculated among education researchers.

Practice under investigation.

The practice under investigation will be looking at MAP-A performance scores, and investigating if there is a significant difference in MAP-A scores based on gender. Data from the Department of Elementary and Secondary Education will be used in this investigation.

School policy to be informed by study.

This study will inform educators if the instruction approach should be different for males and females.

Conceptual underpinning.

It has been widely documented that the gap in student achievement may be due to gender differences. As educators we must be able to identify the reasons, factors or indicators that contribute to the gender gap to ensure success for all students. When teachers use various
methodologies that relate to both males and females, then student achievement increases.

*Statement of the problem.*

If there is a gap in student achievement between genders on MAP-A testing, educators must use various teaching strategies that relate to males and females to increase student achievement.

*Purpose of the study.*

The purpose of the study is to find if there is a significant difference in Map-A scores based on genders.

*Research questions.*

RQ#1: Is there a difference in MAP-A achievement scores between males and females?

*Null hypothesis.*

There is no difference in MAP-A achievement scores between genders.

*Anticipated benefits of the study.*

The study will determine if there is a difference in achievement between boys and girls who take MAP-A.

*Definition of terms.*

DESE- Department of Elementary and Secondary Education

MAP-A- Missouri Assessment Program Alternate is a portfolio-based assessment that measures student performance based on alternate achievement standards, which is designed only for students with significant cognitive disabilities who meet grade level and eligibility criteria.
SPED-Special Education: To qualify for special education services, a student must meet specific criteria for one of the 13 disability categories that have been defined by the federal government in IDEA 2004. The determination process begins with a referral for services for children who may be experiencing unexplained academic or behavioral difficulties at school. The next step is assessment to determine if a child qualifies for services. Assessments will determine the individual needs of the student as well as the services and supports that are needed to provide the child with a free appropriate public education. Once an assessment has been completed specific criteria under the disability categories will determine which disability or disabilities a child has and qualifies for special education services. Lastly, an IEP team meets to develop an Individualized Educational Plan based on a child’s specific needs that will be implemented in the classroom.

Summary:

A study was conducted to see if there is a significant difference in MAP-A scores between males and females. A t-Test was used in this study to find if there is a difference in scores. If the t-Test concludes there is a difference, educators and teachers must learn how identify and address those differences to increase the academic performance of all students.
REVIEW OF LITERATURE

Over the last decade there has been a growing amount of evidence that points to the growing gender gap in achievement between boys and girls. Educational statistics have indicated that females are outperforming males at all levels of the school system, attaining more school and post-school qualifications. Although males have traditionally outperformed females in mathematics and science, this advantage appears to be disappearing (Gibb, Fergusson, & Horwood 2008). There are numerous studies that have examined the gender gap in achievement between boys and girls.

Various explanations attribute gender differences in educational achievement to biological differences in male and females. These explanations propose that gender differences in behavior, skills and cognitive abilities are determined by biological factors such as brain organisation, hormones and genetics, and that these biologically determined differences in behavior and abilities are responsible for gender differences in educational achievement (Gibb et al., 2008).

A study conducted by Matthews, Morrison & Ponitz (2009) examined gender differences in self-regulation and their connection to gender differences in five areas of early achievement: math, general knowledge, letter-word identification, expressive vocabulary, and sound awareness. Behavioral self-regulation was measured using both an objective direct measure and a teacher report of classroom self-regulatory behavior. The results of this study showed that girls outperformed boys in both assessments. Even though gender differences in self-regulation were clear, no significant gender differences were found on the five academic achievement outcomes, as measured by the Woodcock-Johnson III Tests of Achievement.

Another study conducted by Gibb, Fergusson and Horwood (2008) examined gender
differences in achievement that consisted of 1265 individuals that were studied from birth to age 25. This study not only examined differences in achievement but it also looked at gender differences in cognitive ability (ages 8-9) and classroom behavior (ages 6-12). Results of the study showed that there was a small but pervasive tendency for females to score better than males on standardized tests and to achieve more school and post-school qualifications. The differences could not be explained by differences in cognitive ability as males and females had similar IQ scores. When it came to differences in classroom behavior two measures were taken into account: the extent to which participants engaged in distractible, restless and inattentive behavior; and the extent to which participants engaged in aggressive, anti-social or oppositional behavior. Teacher ratings of classroom behavior revealed that males were more prone to restless, distractible and aggressive behaviors than females. Overall, this study found that from ages 8-25 there was a pervasive tendency for females to outperform males on measures of educational achievement.

In an international study conducted by Aqeel Kahn (1991) gender differences in educational encouragement and their predictiveness of academic achievement was examined among 442 (197 boys, 245 girls, 12-17 years of age) secondary school students. All of these students were randomly selected from public secondary school in Federal Territory Kuala Lumpur. Education-related encouragement received from family, friends and teachers were assessed and academic achievement was based on student self-reports and grades. Kahn points out that understanding whether educational encouragement contributes to academic success is important to not only to those who study adolescent socialization in general, but also to educators interested in the development of programs to enhance the academic performance of adolescents. Prior studies have indicated the benefits of parental engagement in academic outcomes. Results
of this study revealed that female adolescents experienced more educational encouragement than male adolescents did from family, friends and teachers. In regression, sex and educational encouragement were found to be significant predictors of academic achievement. The results also revealed that effectiveness of the predictor variables of gender and educational encouragement from family, friends and teachers in predicting students' academic achievement. It was also found by Hammer (2003) that home environment is as important as school in predicting achievement outcome.

Learning how to read is one of the most important skills that children will learn in their lifetime. However, many experts agree that reading comprehension is one of the most important, if not major, parts of reading a reader must be able to conquer before becoming a competent reader (Prado & Plourde, 2011). A study was conducted to examine the relationship between the intentional teaching of reading strategies and the increase in reading comprehension. In this study The Northwest Evaluation Association (NWEA) reading pretest and post test scores of 57 subjects were analyzed to see if there was a significant increase in performance after the reading strategies were taught, as well as analyzed the difference in how boys performed in comparison to girls. The results of the study showed that girls outperformed boys in reading, but it also showed that the explicit teaching of reading strategies can help increase the reading comprehension of all students. Moreover, this study pointed out that it is important for teachers to be aware that boys and girls are different and learn differently as well (Prado & Plourde, 2011). Since research supports that notion the teaching approach should be different when teaching boys and girls in order to ensure academic growth for both genders.

Under the No Child Left Behind Act, the penalties for public school that do not improve test scores each year and achieve adequate yearly progress (AYP) become progressively more
severe. Effective teacher training can help schools to achieve AYP over time. Research consistently confirms that training teachers to understand gender differences and to use related instructional strategies can significantly boost test scores (Costello, 2008). According to the U.S. Department of Education boys, in every age group, have been scoring lower than girls for three decades on reading tests. The longer the boys are in school, the wider the reading gap becomes. To close this gap Costello (2008) offers strategies that will help teachers to improve the reading scores of boys. With recent development with neuroimaging technologies such as functional magnetic resonance imaging (fMRI), researchers can now look inside the human skulls and view images of the brain as it engages in various activities. They have discovered that males and female process information differently. Teachers who receive training in boy/girl brain differences will understand why boys take longer to learn how to read. Using brain research combined with research from other fields can effectively inform gender-based instructional strategies that boost test scores.

Closing the achievement gap has intensified since the No Child Left Behind Act was passed in 2001. Disparities or “gaps” in the achievement levels of different groups of students have concerned political and educational leaders for decades (Guskey, 2007). Over time researchers have learned a vast amount about identifying and reducing achievement gaps. Benjamin Bloom, known for his pioneering work developing Bloom's Taxonomy, worked on Learning for Mastery that offered keen insights into the challenge of reducing gaps in the achievement of diverse groups of students. Bloom saw that the gaps in achievement could be reduced by reducing the variations in student learning. He observed that when teachers teach all students in the same way and give them the same time to learn, providing little variation in the instruction, generally result in great variation in student learning. Bloom believed that all
students could be helped to reach a high criterion of learning if both the instructional methods
and time were varied to better match students' individual learning needs (Guskey, 2007). In short
this means that educators and teachers must have variety of instructional approaches/methods
that fit the diverse needs and learning styles of all children.
RESEARCH METHODS

Research design.

A study was conducted to see if there was a gender gap in achievement on the Missouri Assessment Program Alternate. A t-Test was used in the research. The independent variable is gender. The dependent variable is the MAP-A scores.

Study group description.

Special education students from two randomly selected school districts in the state of Missouri that have participated in the Missouri Assessment Program Alternate in 2011.

Data collection and instrumentation.

 Archived data was collected and submitted by DESE to identify the scores of male and female students on the MAP-A test from the 2011 school year.

Statistical analysis methods.

A t-Test was conducted to find if there is a significant difference in MAP-A test scores between genders. The sources of data were put into two categories: males and females. The mean, mean D, t-Test, df, and p-value were concluded from this test. The Alpha level was set at 0.25 to test the null hypothesis: There is no difference in MAP-A achievement scores between genders.
FINDINGS

A t-Test was conducted to determine if there was a significant difference in achievement on the 2011 Missouri Assessment Program Alternate based on gender. The following table will illustrate the organized findings based on the statistical data found on the Missouri DESE website in 2011.

Figure 1

t-Test Analysis Results for 2011 Female and Male Missouri Assessment Program Alternate scores

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>43.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>34.56</td>
<td>-9.08</td>
<td>-5.25</td>
<td>47</td>
<td>0.0000035</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

Two Missouri school districts were randomly selected for this study to determine if there is a difference between MAP-A test scores and gender. The mean of the female students was 43.65 and the mean of the male students was 34.56. The Mean D was -9.08. The t-Test result was -5.25 and the df was 47. The null hypothesis says that there is not a significant difference in MAP-A achievement scores between genders. This null hypothesis was rejected because the p-value, 0.0000035, is less than the alpha level, 0.25. This shows that the gender of the student does significantly impact the test scores in the MAP-A testing. Overall, females performed better than males on the 2011 Missouri Assessment Program Alternate.
CONCLUSION AND RECOMMENDATIONS

The outcome reported from this study shows that female students are performing better than males on the MAP-A test. The findings show there is a significant difference between genders when performing on the MAP-A. The t-Test results from the 2011 year testing showed that the p-value of 0.0000035 was much lower than the alpha level set at 0.25; therefore, the null hypothesis tested is rejected with confidence. There is a difference between male and female scores on the Missouri Assessment Program Alternate test.

To help close the gender gaps in education teachers need to first understand that boys and girls differ in many ways such as physically, mentally and in how they perform in reading, writing and math. Research has also shown that boys and girls differ in self-regulatory behavior, delay gratification and organization skills (Eliot, 2010). Although these difference are apparent neuroscientists have identified very few reliable differences between boy and girl brains. Eliot believes that if educators hope to close gender gaps, they must abandon the notion of a male and female brain. To reduce the achievement gap between boys and girls teachers should avoid stereotyping (assuming one gender does better than the other in certain areas), appreciate the range of intelligences between genders, strengthen spatial awareness (teach spatial and mechanical skills using puzzles, map reading and building projects), engage boys early in verbal and literary immersion, recruit boys into nonathletic extra-curricular activities and lastly, bring more male teachers into classrooms (Eliot, 2012).

The research of Benjamin S. Bloom offers many recommendations that teachers can use in the classroom to help close the achievement gap. Bloomed believed that all students can be helped to reach a high criterion of learning if both the instructional methods and time were varied to better match students’ individual learning needs. Focusing on each students’ individual
learning needs, instead of teaching to the whole group, will allow all students to learn well based on their individual ability. Bloom also argued that educators and teachers must increase variation in instructional approaches and learning time, which means that teaching methods should be as diverse as the students in the classroom. Bloom labeled this type of teaching strategy mastery learning. Furthermore, teachers must be provided with training and professional development in order to understand gender differences and how to use various teaching methods that relate to both genders to increase student achievement.

With continuous research by scientist and educators on gender differences, future studies in this area of research would be a great benefit to teachers in the classroom. Various teaching strategies and methodologies are constantly being developed to close the achievement gap between genders. To know if these strategies are effective we as educator must continue the research to ensure that these methodologies are working and that the achievement gap is narrowing.

Through my research I found that through functional magnetic resonance imaging (fMRI) scientist have discovered that males and females process information differently. Using the results of this research will help teachers to identify how differently males and females learn, as well as help teachers to address those different learning needs. Once teachers are able to understand and identify gender learning differences they should pursue professional development in gender training. Gender training will give teachers further knowledge of these differences which could ultimately ensure the success of all students.
REFERENCES


