GENDER GAP IN THE AMERICAN HISTORY END-OF-COURSE TEST SCORES

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Abstract

The purpose of the study was to determine if there was a gender gap in the outcomes of the Missouri American History End-of-Course assessment. Many teachers in the United States unknowingly promote gender bias in their classrooms and this can lead to gender gaps on examinable assessments. The findings of this study aims to increase awareness that gender gaps exists in the subject area of American History and that instructors need to diversify ways to educate students of both sexes. The study was conducted using Missouri American History End-of-Course assessment data from the 2013 and 2014 school years. The data was obtained from the DESE archives. The data was separated by gender and a t-test was conducted to see if there was a significant difference in achievement between males and females. The results of the study show that males are outperforming females on the Missouri American History End-of-Course assessment.
Gender Gap 3

Introduction

Background, Issues and Concerns

Every high school in Missouri participates in standardized state tests. These tests are called End of Course (EOC) exams, in the state of Missouri. Schools are assessed by the performance of their students on the EOC exams. If a certain percentage of students score proficient or advanced on the exams the school makes Adequate Yearly Progress (AYP). The AYP and EOC are both means to track the progress and success a school district. Several may wonder if gender has any influence on the scores earned on the standardized tests, especially in the area of American History. Several researchers feel that gender gap is a problematic and stagnating concern in education.

Practice under Investigation

The practice under investigation will be looking at EOC performance scores. The investigation will be to see if there is a significant gap in American History EOC test results based on gender. The data will be provided by the Department of Elementary and Secondary Education (DESE) and if a gap exists, different methods of instruction will be studied to see how the methods could be applied in a classroom setting.

School Policy to be Informed by Study

Every school district in Missouri is expected to meet AYP standards on the Missouri Assessment Program (MAP) and EOC tests. If there is a gap in test scores on the American History EOC exam based on gender teachers should use alternative methods of instruction to diminish the gap and improve scores for both genders.
Conceptual Underpinning

Gender inequality is an issue that America has been dealing with since colonial times. Gender inequality is prevalent in nearly every aspect of American life. One aspect is education. Boys and girls learn differently. Educators have known and observed this statement through several years of education. One gender may learn more from hands on activities while the other one would rather read to learn. A study conducted at the University of Harvard, by Professor Catherine Krupnick, (1985), revealed that gender does play a role on students’ education. Krupnick found that gender can determine participation in different types of activities in a classroom, due to long held cultural beliefs about gender. Determining if a gender difference exists and also determining teaching methodologies that would capture both genders, student achievement would increase.

Purpose of the study.

To find if there is a significant difference in American History EOC scores between boys and girls. By determining if a difference is present, educators can be made aware of the difference and given suggestions to eliminate that difference and increase student achievement.

Research Questions.

RQ # 1: Is there a significant difference between males’ and females’ scores on the End of Course American History exam?

Null Hypothesis.

There is no significant difference in male and female scores on the End of Course American History exam.
Anticipated Benefits of the Study.

If there is a difference in the History EOC scores, teachers will need to use different instructional strategies that target the gender whose scores are inferior.

Definition of Terms

EOC- End of Course Exam- Test, created in 2009, given in the state of Missouri to assess students in certain courses at the end of the year. (Algebra 1, Geometry, English I, English II, Biology, Government, American History)

MAP- Missouri Assessment Program- Assessments given to students, kindergarten through eighth grade, to assess student progress, throughout the state, in certain areas. (English, Math, Science, Social Studies)

AYP- Adequate Yearly Progress- A performance grade, in the state of Missouri, for a school based upon their MAP and EOC tests scores.

DESE- Department of Elementary and Secondary Education- Governing body of education in the state of Missouri. DESE sets the standards Missouri schools are to meet and determine proper assessments for those standards.

Gender Inequality- A person who does not get to participate equally because of their gender.

Gender Bias- The favoritism of a person based upon their sex.

Gender Gap- When one sex dominates another sex in an assessable area.

Differentiated Instruction- Different instructional strategies to increase student learning regardless of student level of learning or gender.
Summary

A study was conducted to see if there was a significant gap in American History EOC test scores between male and female students. If a t-test concludes there was a significant gap, teachers should differentiate instruction and reduce behaviors that allow gender inequality so that all students can reach a high level of achievement. After this study is completed, school districts can be informed if a gap exists between males females and provide proper instruction to teachers to benefit both genders if needed.
Review of Literature

Ever since there have been males and females there have been inequalities between the two. The idea and blind obedience of gender inequalities throughout history is why they still exist in the twenty-first century (Kitch 2009). Kitch attributes gender inequality to the biological difference between males and females in that females are the only one of the two that can give birth. This simple biological factor has been the catalyst for gender inequality from the beginning of civilization and why gender inequality, while a world problem, is prevalent in the United States of America (Kitch 2009). The gender inequality Kitch speaks of can be found in several aspects of American life but nowhere more prevalent than in the nation’s educational institutions.

A study conducted by Catherine Krupnick (1985) at Harvard University provided insight on what gender inequality in a classroom looks like. The study produced results that proved that there was an undeniable gender inequality in Harvard’s education. The study found that classroom discussion was heavily dominated by males and that the sex of the instructor usually affected how the two sexes responded. Females were more apt to respond when there was a female instructor and vice-versa for males. An interesting find was that females were more often interrupted by male students. Krupnick (1985) attributed this find to society’s bias that males are more assertive than females. The findings from Krupnick’s studies showed that gender inequality was prevalent at Harvard but likely prevalent in all educational institutions in the United States.

A reoccurring problem in the field of education is unconscious gender bias. “Gender bias occurs when people make assumptions regarding behaviors, abilities or preferences of others based upon their gender” (Scantlebury, 2009, para 2). The bias is, in most cases, unconscious but can have negative effects on a students’ academic abilities. Scantlebury writes that, “Overall,
teachers have lower expectations for girls' academic success compared to boys, and their attitudes are shown through the type and quality of the student-teacher interaction” (Scantlebury, 2009, para 15). When a teacher is unconscious to the fact that they are biased based on a student’s gender they unknowingly start to build the perception that gender plays a role in everyday life.

A study conducted by Mathews, Binkley, Crisp, and Gregg (1998) aimed to prove that gender bias in students, and ergo teachers, develops in early elementary schools. The focus group for the study was a class of twenty-two fifth grade students with eleven being male and eleven being female. The observations showed evidence of gender bias whether it be boys were disciplined more or that the teacher called on boys more than girls. The observers then confronted the students over a time period of three months in which the observers went through gender sensitive examples and different ways that other students reacted in these examples. The observers concluded, “Elementary teachers often unwittingly play a part in creating inequitable environments for the children in their classes” (Binkley, Crisp, Gregg & Mathews, 1998, p. 57). The fact that there is unconscious gender bias in classrooms leads to yet another educational issue in the area of gender gap.

Gender gap is used in education when one sex tends to excel in a certain assessable area that the other struggles in. Research shows most male and female students are most comparable during their eighth grade year but due to unpredictable factors that affect adolescents the gap in their education could be a product of several different environments (Latham, 1998). Regardless of its causes gender gap remains a prevalent factor in American education from state to state.

One study conducted by Duckworth and Seligman (2005) looked to see if there was an intelligence gap between males and females correlate the findings to school related activities.
The study compared the IQ’s of males and females to their attendance, test scores, grades, and discipline. The study showed that males typically scored higher on the IQ test but were curiously outperformed by females in every other area. Duckworth and Seligman (2005) attributed this to superior female self-discipline which allows them to excel at a much higher rate than males. The study concluded that there is no direct correlation between intelligence and school assessments.

Another study conducted by Reilly (2009) looks at Gender Gap not as an American issue but a worldwide issue. Sixty-five nations took part in this study and the assessment areas were reading, science literacy, and mathematics literacy. The scores were then broken down by gender and the results were diverse. Females were superior to males in literacy while males were superior in math and science. Reilly concludes, “Evidence from national testing for the United States shows that there are meaningful gender gaps to be addressed in academic achievement across reading, mathematical and science literacy” (Reilly, 2012, p. 15). The study shows that both females and males have gender gaps in different areas of academia.

The reasons behind gender gap may be a sense of inequality or bias in genders but the method the United States uses to expose these gaps are standardized tests. In 2001, President George W. Bush signed the No Child Left Behind (NCLB) Act and its purpose was to increase student success across the nation from state to state. Schools would be assessed by their students’ performances on state wide standardized tests to see if progress was being made by the district (High-Stakes Testing and Student Achievement 2005). Missouri is a state that uses the MAP and EOC tests to track the progress of student achievement and DESE oversees the examinations and results. Missouri EOC exams are required “in the subject areas of Algebra I, Biology, English II, and Government. Beginning with the class of 2016, American History and English I are also required.” (Missouri Department of Elementary and Secondary Education, 2011, para. 1). A test
that was not required but available for districts to participate in was the American History EOC.

The exam is made up of forty multiple choice questions.
Research Methods

Research Design
A quantitative study was conducted to see if there was a gender gap in achievement on the American History EOC tests. The independent variable being tested was gender. The dependent variable tested was American History EOC exam scores. If the study shows a significant gap in scores between males and females then teachers can be made aware of the trend and given suggestions on how to diminish the gap.

Study Group Description
Students from fifty randomly selected school districts in Missouri who have reported the EOC test scores from 2013 and 2014 sorted by gender will be the group evaluated. The fifty districts vary in demographic data in regards to gender numbers, percentage of students on free and reduced lunch, and ethnicity.

Data Collection and Instrumentation
Data was retrieved from the DESE archives in regards to female and male scores on the American History EOC test from 2013 and 2014 school years.

Statistical Analysis Methods
A t-test was conducted to find if there is a significant gap in American History EOC test scores based on gender. Males and females were the two categories the source was broken in to. 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 male and female American History EOC scores.
Findings

A t test was conducted to see if there was a performance difference on the 2013 and 2014 Missouri American History EOC in gender. The following graphic organizers will show the findings of the test and to illustrate the raw data collected from the DESE archives in 2015.

Figure 1

**t-Test Analysis Results for 2013 Male and Female American History EOC 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>Males</td>
<td>50.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>41.52</td>
<td>8.69</td>
<td>3.27</td>
<td>98</td>
<td>1.50E-3</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

Fifty randomly selected school districts in Missouri were chosen to take part of a test to determine if there was a gender gap in the American History EOC test scores. The percentage of students who scored in the top two tiers of the test, proficient or advanced, were recorded and then broken down by gender. Gender was the independent variable for this test. The mean for the male students was 50.20 and the mean for the females was 41.52. The difference of the mean score (Mean D) was 8.69. The t-test was 3.27. The degrees of freedom was 98. The null hypothesis states that there is no gap in male and female scores on the End of Course American History exam. The null hypothesis was rejected because the p-value, 1.50E-3, is lower than the alpha level, 0.25. This means that there is a gap in scores between male and female in which more males scored in top two tiers of the test opposed to females in 2013.
The mean male score for the 2013 American History End-of-Course proficient and advanced test scores were 50.20. The female mean score for the same test was 41.52. This means that only half of the males who took the test scored in the top two scoring tiers for the test and even fewer females did not score in the top two tiers.
Figure 3

The chart shows the percentage of males and females that scored in the top two tiers of the Missouri American History End-of-Course test for the year 2013. If students score in the top two tiers then they meet the state’s requirements. The chart shows that both males and females preformed closely on the exam, but males preformed at a higher level of success. Males outperformed female students by scoring a 50.2% proficient and advanced as opposed to 41.52% proficient and advanced.

Figure 4

**t-Test Analysis Results for 2014 Male and Female American History EOC 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>Males</td>
<td>53.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>45.38</td>
<td>8.10</td>
<td>2.45</td>
<td>98</td>
<td>1.62E-3</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25
Fifty randomly selected school districts in Missouri were chosen to take part of a test to determine if there was a gender gap in the American History EOC test scores. The percentage of students who scored in the top two tiers of the test, proficient or advanced, were recorded and then broken down by gender. Gender was the independent variable for this test. The mean for the male students was 53.48 and the mean for the females was 45.38. The difference of the mean score (Mean D) was 8.10. The t-test was 2.45. The degrees of freedom was 98. The null hypothesis states that there is no gap in male and female scores on the End of Course American History exam. The null hypothesis was rejected because the p-value, 1.62E-3, was lower than the alpha level, 0.25. This means that there is a gap in scores between male and female students in which more males scored in top two tiers of the test opposed to females in 2014.

The mean male score for the 2014 American History End-of-Course proficient and advanced test scores was 53.48. The female mean score for the same test was 45.38. This means
that a little over half of the males who took the test scored in the top two scoring tiers for the test and less than half of the females did not score in the top two tiers who took the test.

Figure 6

The chart shows the percentage of males and females that scored in the top two tiers of the Missouri American History End-of-Course test for the year 2014. If students score in the top two tiers then they meet the state’s requirements. The chart shows that both males and females preformed closely on the exam, but males preformed at a higher level of success. Males outperformed female students by scoring a 53.48% proficient and advanced as opposed to 45.38% proficient and advanced.
The Missouri American History End-of-Course test was an optional test for school districts to administer in 2013 and 2014. According to the DESE archives, 54.13% of males who took the test scored in the top two tiers, proficient or advanced as opposed to only 46.66% for females. This data showed that a gap persisted in 2013. In 2014 both sexes increased their percentages with males obtaining 59.94% and females obtaining 51.33% in the top two tiers.

The data answered the research question, “Is there a significant gap between males’ and females’ scores on the End of Course American History exam?” Figures 1-6 show that a gap persists in both the 2013 and 2014 test years. Figure 7 shows that neither sex performed greatly on the tests with males or females not reaching 60% in the top two tiers for either year. Males did outperform females by close to 8% both years. The data did show improvement from 2013 to 2014 and should the trend persist both sexes will improve around 5% for the 2015 testing year.
Conclusions and Recommendations

The findings of this study show that males are outperforming females on the Missouri American History End-of-Course test. The t-test results show that the p-values were 1.50E-3 and 1.62E-3 for the 2013 and 2014 American History End-of-Course test respectively. Both of these scores were well below the alpha level that was set to 0.25 and, therefore, the null hypothesis was rejected. The results of this study show that males are outperforming females on the Missouri American History End-of-Course test.

The conceptual underpinning of Catherine Krupnick is supported by the findings of these study. Krupnick’s findings show that males and females learn at different levels due to unknowing gender bias, as a result of how our society perceives gender roles, by teachers in classrooms. The study shows that there is a gap of knowledge between males and females in the area of American History. This gap can be attributed to unknown gender bias in classrooms. Teachers need to be aware that they may unconsciously be attributing to this gap in knowledge and become aware of the habits that they exhibit in the classroom that could be attributing to this gap.

This study shows that there is a gender gap in the area of American History in the state of Missouri. Identifying where the gender gaps are will help educators understand that they must meet the needs of all students. Educators must begin asking themselves questions to solve the issue of gender gap. Is there a gender gap in other states in the same category? Are there gender gaps in different subject areas? These are questions that could be addressed with additional studies. Some recommendations for future studies would be to determine if a gender gap exists on the ACT, SAT, and MAP tests. By identifying if these tests show gender gap then researchers
can determine if gender gap is either an issue on the Missouri American History End-of-Course assessment or if the problem lies in all forms of standardized tests.

To help solve the issue of gender gap schools must provide their teachers with training and awareness that gender gaps persist in the educational field. Bringing the issue to light with their staff may help teachers identify habits that are present in their rooms that help attribute to this gender gap. Teachers must identify what habits they exhibit and if those habits are due to an underlying gender bias. Identifying these harmful actions with a more non-gender bias differentiated instruction will lead to a decline in the gender gap on test scores.
References


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