PRACTICE TESTS AND STUDENT ACHIEVEMENT ON THE ACT TEST

BY
Deanna Koelliker

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

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The following study was prepared to find if there is a correlation between high American College Test (ACT) scores in students who have had more practice in taking the ACT test. The ACT test is an important indicator of college success, and the School District for which I am employed prides itself on having top scores in this part of Missouri, however, it is important to note how much practice for the ACT test is completed by each student scoring well on the test. Correlations between practice test taking and the final ACT composite scores will be shown. Additionally, gender differences in final ACT composite scores will be analyzed to see if a notable difference can be discerned between males and females on the ACT test. It was found that there was a significant difference in those who had taken ACT practice tests and those who had not. Additionally, it was found that there was significant difference between female and male scores on the ACT.
INTRODUCTION

Background, issues and concerns.

The American College Test, most commonly known to parents and students as the ACT test, has become a staple test in Middle America for all students with post-secondary collegiate plans. All students attending college in the area not only take the ACT test, but prepare in different ways including private tutoring, school workshops and classroom practice. Additionally, school districts in the greater metropolitan area compete yearly for this coveted top position in the ranking of the scores, and because of this, prepare students in different ways within the high school curriculum and with extra-curricular workshops and even by adding curriculum based on the ACT test to the English Department class listings. The following study will also show whether or not there is a correlation between practice tests completed by students and the final ACT composite scores of high achieving test-takers, and will additionally show if there is a noticeable difference between males and females on the final test composite scores and show if possible remediation is needed for either gender.

Practice under investigation.

The practice under investigation will be how practice tests for the ACT test are given at school and outside of school to improve ACT scores. There will be an investigation to see if a correlation actually exists between how many practice tests a student has completed before the final composite score is earned by the student, or if students who score well are doing so of their own volition with private practice and not an orchestrated practice in small groups or with a tutor. Gender of students will also be noted and compared to see whether or not there is a notable difference between gender and ACT scores.

School policy to be informed by study.

Much debate has occurred concerning whether or not the school needs to dedicate formal practice time for all students to practice taking the ACT test to improve test scores. Currently, no ACT preparation class exists at one high school, but exists at the other. The school with the comparatively higher ACT
scores is the school with no ACT preparation class. Teachers have often wondered if this preparation class could make ACT composite scores even higher for our students. If we can prove that test preparation makes a significant difference in ACT composite scores, perhaps more formal test preparation and practice will occur in the building. Additionally, the study will show if males or females need different amounts of test preparation. Recently funding has been allotted to have three in-house tutors for ACT preparation workshops. The amount of workshops and frequency is a matter of differing opinion, and the data from this study could inform administration and selected tutors as to the amount of additional time needed for workshops planned by the school.

Conceptual underpinning.

Theories exist within the ACT tutoring community that students preparing for the ACT English and Reading test do better not only by studying individual concepts from the ACT test, but by practicing taking timed-tests in general. Current published research doesn’t necessarily exist concerning this theory as it is applied to important standardized tests or admission tests. Many teachers feel that a score on a high pressure test such as the ACT test has less to do with the actual knowledge being tested, but more to do with the ability of the student to be comfortable taking the type of test given. More exposure to a timed test atmosphere and the types of questions given on a certain test will help students more than teaching specific tested components of the test. More exposure to timed tests such as the ACT or practice ACT tests will, in theory, help students perform under pressure with better results. In the ELA department at the school for which the study was conducted, the predominant opinion is that the students should have more formal practice timed tests in formal atmospheres. The students claim to do better when exposed to more of these opportunities, and teachers claim students do better after multiple exposures to such tests as well, however data does not exist concerning whether or not this is a real phenomenon or if it is merely perception. The data gleaned from the results of this test is to help the department understand if the practice testing is actually helpful for the improvement of scores, or just to ease students’ nerves and state of mind.
Statement of the problem.

If there is a marked difference between students who have practiced by taking timed ACT prep tests and those who have not, teachers need to add additional test preparation in the 11th grade classrooms and possibly add additional timed test preparation in general to the curriculum. Additionally, if there is a marked difference between students who have practiced and who have not, the school administration will allow for additional funding and time allotted for formal large scale testing environs for all junior and senior students.

Purpose of study.

The purpose of this study is to ascertain whether students who are given practice ACT tests achieve better ACT scores than peers who have not been given ACT practice tests. The information garnered by this study will better inform teachers on the 11th grade level and perhaps prompt administration to dedicate more formal time in classrooms for ACT test preparation and time spent on practice testing.

Research questions.

RQ #1: Is there a difference in ACT Composite scores between students who took practice tests and students who did not take practice tests?

RQ #2: Is there a difference in gains from the first test experience to the final test experience between females and males?

Null hypotheses.

Ho#1: There is no difference in ACT Composite scores between students who took practice tests and students who did not take practice tests.

Ho#2: There is no difference in gains from the first test experience to the final test experience between females and males.
Anticipated benefits of study.

The result of this study will inform school officials and teachers of the 11th and 12th grade about the need of test practice in the classroom to improve ACT scores for the school. This may also motivate school officials to dedicate more formal opportunities for practice testing during regular school hours, and may prompt building administration to und more practice materials for 11th and 12th grade teachers.

Definition of terms.

ACT – American College Test-test given to most Midwestern 11th and 12th graders to determine admission to college and/or possible financial assistance given in scholarships or grant money from collegiate institutions. The test was originally given to determine college readiness.

Summary

A study was conducted to find if there was a significant difference between students given exposure to timed practice ACT tests and those who did not receive exposure to timed practice ACT tests. If the T-test shows a significant difference between students who took practice ACT tests and those who did not, more time needs to be dedicated to practice tests in the classroom or in workshops outside of class time. After the study is completed, the school can also better determine if an ACT preparation class could be beneficial to the English department class offerings.
REVIEW OF LITERATURE

A staggeringly scant amount of information is available concerning practice testing and high-stakes exams. Most literature and discourse which exists currently is concerning current test practices in the classroom and the best methodology for large stakes tests to compare test scores from state to state. Additionally, literature exists concerning how unfair or biased the high-stakes testing procedure is, as well as how biased the tests themselves are in the way that they are written, etc. Literature addressing the specific core of the topic of this paper was scarce and what literature did discuss the topic was only fringing the subject at hand of this hypothesis.

In Test Wars by Mathews (2006), he analyzes the need for such tests as the ACT and the SAT for high school students. In the past, the SAT was reserved as an indicator of college success until the arrival of the ACT. The ACT is not the more widely-used test for must students for college admissions. This article analyzes which test is a better indicator for the student’s achievement and the trend that some schools are going to, which is to abandon both tests completely for student admissions. Mathews notes that students feel that the lack of being penalized for guessing on the ACT gives it an advantage over the ACT while noting “Drew University dropped its SAT or ACT requirement for good students in 2003” and hints that many may be soon to follow suit (p.4)

The article, Should students be required to take the SAT or ACT, and apply to college, before graduating? by Myers (2012) discusses the political promptings of the popular attention given to standardized tests such as the ACT and the SAT and whether or not the tests are really merited, or if it is simply for political banter. The article considers such statistics
concerning gender, completion rates and the fact that many colleges no longer require the standardized tests. According to the author, many politicians have put this in the forefront of their platforms, and in reality it may just be for show; the tests are not always a precise indicator of college success, and many children are simply not college bound to begin with. Myers asserts, that the ACT may be over-hyped and irrelevant by stating, “hundreds of colleges no longer require them for admission. These schools recognize that the tests are of limited educational value, do not correlate with academic success and often simply reflect socioeconomic inequality in secondary schools” (Myers, 2012, p.3).

Wright discusses outcome assessment in the article, Standardized Testing for Outcome Assessment: Analysis of the Educational Testing Systems MBA Tests, published in the College Student Journal. The article explains that the use of standardized tests has grown considerably in recent years. Two driving factors have been due to government involvement in education—such as the “No Child Left Behind” act, and the movement toward outcome-based assessment by the state. Although the surge in use of such standardized tests is obvious, less time has been expended on investigating the test procedures, and evaluating the usefulness of any and all standardized tests. This discussion focuses specifically on standardized testing, and looks at testing procedures the results and whether or not the tests are even useful to the students of today. This article did not focus on specifically ACT or SAT type tests, but links the need for high stakes testing to the “no child left behind movement,” but much of the article is focused on the testing in colleges, and not testing for college entrance (Wright, 2010).

A lengthy look at ACT reading outcomes, A Four-Year Study of ACT Reading Results: Achievement Trends Among Eleventh-Grade Boys and Girls in a Midwestern State by Conrad-Curry notes reading differences of eleventh grade girls and boys in a state in the Midwest by
studying four years of reading scores on the ACT by demographic issues such as income and race. Female students tended to score higher than boys did on the reading test, but the boys scored higher than the girls on the social studies and science reading test. This essay studies the gender differences in reading achievement between eleventh-grade girls and boys in a Midwestern state using ACT standardized reading assessment data, along with race income and ethnicity. The study also focuses on regular education students only, and not students from Special Education subsets. This article continues by discussing the Common Core State Standards and Conrad-Curry concludes that “for many students, the complex interactions of classroom dynamics and textual learning tools will require differentiated pedagogies in recognition of learning and gender differences” (Conrad-Curry, 2010-2011, p.15) but until here is a better grasp on Common Core standards and the expectations and how they will translate, the country is at a standstill as to how to rectify the differentiation of the male and female differences in the reading scores of the ACT. Perhaps Common Core Standards will even the variation.

In an article by Sparkman, Non-cognitive Predictors of Student Success in College, Sparkman claims student success rates in college and graduation are important to students seeking a degree and to the nation's overall economy; however only half of the students who enroll in 4-year colleges and universities will finish a bachelor's degree within 6 years. Studies show that students who graduate from college also report skills in multiple areas such as factual knowledge, intellectual skills, and a broad spectrum of social and communicative areas. Traditional predictors of college persistence and academic success center on the student's high school grade point average and standardized test scores, such as the ACT and the SAT for establishing admissions and college success. Although ACT seems to be a good predictor of how
a student will succeed in college, data shows that this traditional approach isn’t always the case. Many academics would like to see more college students judged on other predictors for college success other than the typical ACT score (Sparkman, 2012).

Laura Kearns discusses disregarded students in High-Stakes Standardized Testing & Marginalized Youth: An Examination of the Impact on Those Who Fail. This essay examines the impact of high-stakes, large-scale, standardized testing on students who have failed the Ontario Secondary School Literacy Test. Because the study and its findings are based on Canadian school systems, it isn’t obviously about the ACT test. However, the article concerns interviewing students about the stressors and disappointments of the high-stakes testing environment. After interviewing the students, the writers show that the accidental impact of high-stakes testing is more challenging than school districts and educators may appreciate. The district feels that it is promoting things such as “well-being” and equality; the students interviewed are embarrassed and self-conscious after receiving the results. Kearns states that they “noted the potential for alienation when youth perceive a lack of care and concern for their well-being, maintaining that non caring is active, and students feel rejected” (Kearns, 2011, p.124). This statement supports the possibility that perhaps the practice tests given may only support the student’s self-confidence and allows the students to feel that the adults in the school care for their well-being.

McNeal & Lawrence, in their article, Teachers from the "Neighborhood": Standardized Testing as a Barrier to Certification of Minority Candidates do not discuss the ACT explicitly, the article is interesting because it notes minorities and how well they achieve on standardized tests. This study focuses on students who take the Praxis test, which is a test one must take to become a teacher. This study focusses on students from lower income families, minority students and students who are from urban areas. The study finds that students in this situation need
support groups and area similar demographic teacher mentors to help get them through the process. They found that the ability for students to do well on the Praxis is not correlated to GPA (McNeal and Lawrence, 2009) and that tutoring for such tests or practice testing may be the way to improve the existing dichotomy (McNeal and Lawrence, 2009).

Allensworth, Ponisciak & the Consortium on Chicago School wrote From High School to the Future: ACT Preparation--Too Much, Too Late. Why ACT Scores Are Low in Chicago and What It Means for Schools. This lengthy study discusses the fact that the students in the Chicago public schools are not receiving the ACT goal scores that they wish and why exactly that may be happening. The students obviously need these scores for college acceptance and scholarship opportunities. The essay discussed that the Chicago public school students prepare consistently for the test, but that the scores they would like to achieve cannot be attained without a different type of preparation. In this lengthy article, the authors claim that several reasons point to this failure in the system, such as but not limited to improper studying and practice, misaligned standards K-12 and the direct correlation of the student success in curriculum and the test itself, when students do not feel that they are accountable for the ACT in their courses. The authors state that “test practice during students’ regular classes does not boost ACT scores” (Allensworth, Ponisciak & the Consortium on Chicago School, 2008, p.42) and the study used the PLAN test (pre-ACT test given by ACT to prepare students for ACT) to show non-improvement as well. They also noted that “Average ACT scores were lower the more that teachers reported using ACT materials by test-prep companies and ACT instructional guides” (Allensworth, Ponisciak & the Consortium on Chicago School, 2008, p.44).

Mo’s article, ACT Test Performance by Advanced Placement Students in Memphis City Schools, studied the correlation of taking specific types of Advanced Placement (AP) courses
and the amount of Advanced Placement courses taken forecasts the likelihood of mastering subject standards and the ability to earn a score of 19 or more as a composite score on the ACT test; The authors also examined the part gender plays in the projection of these outcomes. Authors found indication that taking an AP mathematics course and taking more AP courses points to a tangible advantage. Results show young males are more likely to succeed in passing ACT mathematics and ACT science tests than are young females, but no gender difference outcomes were found when looking at ACT Reading and ACT social studies tests. This article presented the most shocking of all with the following material-- Mo found in her study that “students who did not take an AP English Course were 1.672 times as likely to pass the English portion of the ACT test than students who did” (Mo, 2011 p. 357) but students who had taken three AP courses were more likely to pass the English benchmark (p. 357).

In the article, Kaplan Looks to Test Prep and Common Core in K-12, the discussion focuses on the finishing point of the reformation work at Kaplan Inc. in New York. It argues the fact that the Kaplan is currently working with school districts on test planning and conversion to Common Core State Standards through its K-12 unit. Kaplan also provides services and programs to prepare students for SAT, PSAT, and American College Test (ACT) in numerous ways to help students achieve improved outcomes. Additionally, it has developed an online resource known as “Teach!” which includes strategies and resources with instructional and expert development resources that include lesson plans while its test preparation business department includes standardized test preparation and tutors for K-12 students. (Kaplan, 2012).

Two other articles found recently, Keep your Eye on the Clock by John Saaverdra and ACT Test-Prep Backfiring in Chicago, Study Warns, by Christina Samuels point out absolutely
opposing theories. Saaverdra’s first study tip to conquering the Act is “to help internalize a pace, take tests until you can comfortably finish all the questions” (Saaverdra, 2013, p.1), as opposed to Samuels stating, “Chicago…teachers would spend about one month of instructional time on ACT practice …during junior year. But the ACT scores were slightly lower in the schools where 11th grade teachers reported spending 40 percent of their instructional time in a school year on test preparation, compared with schools where teachers devoted only 20 percent of their class time to ACT preparation” (Samuels, 2008, p.1). This, according to Samuels, is the fact that many of these teachers spent more time on specific ACT preparation and not high quality, rigorous class material (Samuels, 2008, p. 3).

Clearly, the data points in several directions with no clear answers as to whether or not test preparation is the key to success on the ACT test. Traditionally the test preparation push was the key to success for students being successful on the ACT, but it seems that much of the studies completed over the last several years suggests that not to be the case.
RESEARCH METHODS

Research design.

A questionnaire was given to students to compile data concerning whether or not a student had received practice ACT tests before the actual ACT test and then compared to final composite scores. If a difference is found between composite scores of those who receive practice tests and those who have not, teachers in the department will be informed of the outcome and it will be suggested that teachers add practice tests to the class time.

The following questionnaire was used:

<table>
<thead>
<tr>
<th>Gender</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you take a/any practice tests before taking the actual ACT test?</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

What was your first ACT Score? _____ (if you have taken more than one)

What was your Final ACT Score? (mark here if you have only taken one)

Concerning the above survey, the dependent variable would be the ACT Score. The Independent variables are both gender (male/female) and whether or not the students took a practice test.
Study group description.

A group of 48 students were surveyed as to the amount of practice tests they had exposure to in the last year and the final composite ACT score received. Demographically, the students consisted of 39 Caucasians, six African-Americans and three Asian in the study group. Of the 48 surveyed, seven were participating in the free and reduced lunch program. The students surveyed were all in the same level of classes and similar in academic background. None of the students surveyed were at risk or were considered part of the special education program (none had a 504 or IEP). This survey will also ascertain gender and note any possible difference in gender in scores and test preparation.

Data collection and instrumentation.

Students will be expected to accurately self-report amount of test preparation received and composite ACT test composite scores. School-wide test data is available through DESE if needed.

Statistical analysis methods.

A T-Test was used to analyze the self-reported data given by students via a survey given in class or via email to see if there is a distinct, significant correlation between practice tests for the ACT and ACT composite scores. The data will also be divided between the test subjects reporting male and female to ascertain if gender comes in to play concerning ACT composite scores.
FINDINGS

A T-test was used to evaluate the self-reporting of students concerning whether or not taking sample or practice tests affected the students’ final ACT composites. The following information, graphs and charts will show collected data and findings based on the information taken from students.

A t-Test Analysis Result for Question 1:

Is there a Difference in ACT scores between students who took practice tests and students who did not?

<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>Practice (22)</td>
<td>23.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No (26)</td>
<td>19.92</td>
<td>3.44</td>
<td>2.97</td>
<td>46</td>
<td>0.0024</td>
</tr>
</tbody>
</table>

Note: significant when p <= 0.25

According to the data submitted by the students, 22 students claim to have had practice tests taken prior to the survey, while 26 students claimed to have not had practice tests taken prior to the survey. The mean of the group who had practice was 23.36 with a standard deviation of 3.66. The mean of the group who had not taken practice tests was 19.92 with a standard deviation of 4.30. The Mean D, or difference between the two groups, was 3.44. The t-test showed a 2.97 and the degree of freedom was 46. The Null hypothesis must be rejected because the p-value, 0.0024, is lower than the alpha level required of .25. A significant difference is
noted. The practice group had significantly higher scores than the group without having practice testing prior to the ACT. The mean for those who practiced was 23.36 while the mean for those with no practice was 19.92. The difference is beyond the alpha, therefore shows a marked difference between the two.

The findings are surprising considering the expectation was to find that practice tests were fundamentally instrumental in the improvement of ACT scores. The expectation at the onset of the research was that the improvement from students having had practice tests would be higher than they were found to be, but the findings still showed significant improvement from those having had practice tests all the same. Seventeen of the 22 who took practice tests showed improvement. That means 77 percent of students did better after taking practice tests. Five students either stayed the same or went down in scores after completing practice tests. Of the five, three males and two females stayed the same or had scores lower after taking practice tests.
A t-Test Analysis Result for Question 2:

Is there a difference in gains from the first test experience to the final test experience between females and males?

<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 (11)</td>
<td>2.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (11)</td>
<td>2.18</td>
<td>0.27</td>
<td>1.267</td>
<td>20</td>
<td>.109</td>
</tr>
</tbody>
</table>

Note: significant when p ≤ 0.25

According to the data submitted by the students, 11 females reported to have had practice tests taken prior to the survey, while 11 males claimed to have had practice tests taken prior to the survey. The mean of the male group who had practice was 2.18 and the mean of the female
The mean for the female group was 2.45 while the mean for the male group was 2.18. Because this shows a difference of .27 which is higher than the alpha, it can be concluded that the difference is significant.

See Diagram C

The males increased their scores by 2.18 on average, while the females increased their scores on average by 2.45. The standard deviation was 1.86 for females and 1.72 for males. To the average eye this seems that it is a significant gain from the practice testing procedure for the makes and especially the females. Because the p-value is less than the alpha, however, the null hypothesis is rejected. There is significance in the difference in scores because the difference
between the two is more than the alpha of .25. Only one male scored worse after practice tests than did females.

See Diagram D.
CONCLUSIONS AND RECOMMENDATIONS

The conclusions from the completed study show that practice testing for the ACT is something that is a major game-changer in student’s ACT scores at Park Hill South, at least for the sample which provided data.

This was the expectation (although the expectation was that the difference would be much higher) when beginning the research; when noting the 77 percent of students in this sample did better after taking practice ACT tests, it is in the best interest of the school to mandate more ACT practice tests and time devoted to such during formal school hours. Although the test score increase was not as high as expected before the research began, one point improvement on the ACT can make major changes in a student’s life and a school’s overall scores and averages. One or two points on the ACT can mean a change in admission to a university or not, not to mention the ability to receive money from federal and private aid programs. If the study were to be reviewed or revamped, a larger pool of surveys would be given during the process to collect a larger sample from the school.

Concerning the data gleaned from the gender differences of ACT practice test results, the research points to the significant change in gender outcomes to delineate whether or not one gender would benefit more from practice tests than the other. The practice tests given at Park Hill South should not be changed from the status quo concerning a student’s gender, however—because little could be changed based on the data gleaned from this survey. If the research were to be supplemented, the next data collected would be based on more specifics concerning the gender and how the practice tests could be implemented differently for each specific gender.
Although both null hypothesis were rejected in this study, and the numbers were not as high as expected by the researcher, the data shows that practice tests do improve the students’ scores with significant gains. The research completed before this analysis showed conclusions of both gains and losses in test scores after practice tests given. If the practice tests are given and even a handful of students are made to feel more comfortable while taking the test enough that scores go up by a point, then the practice of giving sample tests in advance is worthwhile. After noting significant gain after practice tests in students’ overall composite ACT scores, the findings show all the more reason to add practice testing to the preparation for the ACT in area schools. The conceptual underpinning shows that students work better in familiar situations and the study shows the same. Whether the students did better on the ACT due to the ability to function concerning skills and practice of subject area material, or whether the students simply did better on the exam based on the ease and relaxation exhibited due to multiple exposure to high pressure high stakes testing experiences remain to be seen. Further study with significant data breakdown would be needed. It seems that John Saavedra (2013) is on to something in his assertion that practice tests will help one’s tests scores (p.1). Saavedra echoes the mantra of teachers everywhere in every subject: practice makes perfect. In this instance, practice makes improvement—and that is all we can ask for concerning an important test like the ACT.
References


Myers Asch, Chris. (2012) Should students be required to take the SAT or ACT, and apply to


