

A STUDY OF THE INSTRUCTIONAL EFFECTIVENESS OF
Holt McDougal The Americans iBook

Report Number 468

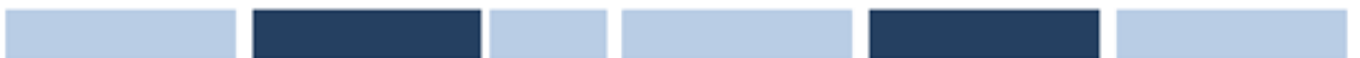
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Advisory Board:

Michael Beck, President
Beck Evaluation & Testing Associates, Inc.

Jennifer M. Conner, Assistant Professor
Indiana University

Keith Cruse, Former Managing Director
Texas Assessment Program



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ABSTRACT

To help secondary school students develop better knowledge and analysis skills and strategies about American History, *Houghton Mifflin Harcourt* has published, **Holt McDougal *The Americans* iBook**. American History can be boring if not presented in a lively fashion that emphasizes the people and their lives. For that reason, Holt McDougal designed an innovative program that focuses on the lives of Americans during various historical periods.

Houghton Mifflin Harcourt contracted with the *Educational Research Institute of America* (ERIA) to conduct a one semester study to test the effectiveness of the program. The study was conducted during the second semester of the 2012/2013 academic year.

A test was designed to assess students' understanding, knowledge, analysis skills and strategies. The **Holt McDougal *The Americans* iBook** program had not been previously used in the schools by any classes.

The results showed that the **Holt McDougal *The Americans* iBook** classes made statistically significant gains over the course of the single semester. The results also showed the **Holt McDougal *The Americans* iBook** program proved equally effective with both higher and lower pretest scoring students.

Overview of the Study

This report describes semester study conducted to determine the impact of the *The Americans* © 2012 program for high school students. The program provides a strong narrative of U.S. History centered on essential questions so students can absorb information with a deeper understanding. The study took place over a single semester, from January to June in 2013. For the one-semester study *The Americans* iBook was the primary instructional program.

Houghton Mifflin Harcourt contracted with the *Educational Research Institute of America* (ERIA) to conduct a one-semester study to determine the program's effectiveness.

Research Questions

The following research questions guided the design of the study and the data analyses:

1. Is **Holt McDougal *The Americans* iBook** effective in improving the skills and knowledge of high school students in American History?
2. Is **Holt McDougal *The Americans* iBook** effective in improving skills and knowledge in American History of lower performing as well as higher performing high school students?

Design of the Study

The program's efficacy was evaluated using a pretest/posttest design. The study took place during the 2012/2013 academic year. All of the students in the study were grade 8, 11, or 12 students. A total of three different teachers in two different schools in two states were included in the study. The study took place over a single semester.

Before the program instruction started, students were administered a comprehensive test designed to cover the content of the *Holt McDougal The Americans* textbook. A similar posttest was used at the end of the study. Pretest and post-test administration was under the direction of the classroom teacher. All tests were returned to ERIA for scoring and analyses.

Project Background

The following focus for the program as put forth by the publisher highlights the importance of a research/best practices based program:

Holt McDougal The Americans © 2012 is a highly integrated program that provides teachers with a practical and motivational approach to teaching U.S. history and to helping students think critically and reflectively. **The Americans** explores the story of U.S. history, weaving the reflections of people who experienced history firsthand throughout the narrative. Thought-provoking lessons make history human and relevant to students' everyday lives, helping them to realize the richness of our nation's history.

The edition of **The Americans** used in this study was an iBook edition. The Holt McDougal iBooks are designed to engage students and bring the curriculum to life. The iBooks textbooks for the iPad® feature multi-touch technology that allows today's digital learners to truly interact with content. The rich, magazine style student editions include embedded interactive features to maximize learning engagement and promote higher order thinking skills.

Special features of the iBook textbook programs are the inclusion of:

- image galleries
- audio summaries, 3d graphics, and interactive activities and quizzes
- text highlighting, note-taking, and bookmarking
- built-in search for any word or phrase

Timeline and Program Use

The teachers used *The Americans iBook* as the primary American History instructional program. One of the teachers reported using the program 5 days per week and for about 20 minutes per day over the full semester. The other teacher used the program 2 to 3 days per week for 15 to 20 minutes per day over the full semester. Pretests were administered at the beginning of January, 2013 and posttests were administered the middle of June, 2013.

Description of the Research Sample

Table 1 provides the demographic characteristics of the schools included in the study. It is important to note that the school data does not provide a description of the make-up of the classes that participated in the study. However, the data does provide a general description of the schools and, thereby, an estimate of the make-up of the classes included in the study.

Table 1
Demographic Characteristics
Of the Schools Included in the Study

Location	Grades	Enrollment	% Minority	% Free/Reduced Lunch	% Special Education
Suburban	9-12	108	0%	0%	0%
Suburban	K-12	340	72%	0%	N/A
AVERAGES		224	72%	0%	0%

Description of the Assessment

The pretest and posttest used in the study were developed to assess standards-based history topics across the program chapters. Based on these standards a 40 item multiple-choice assessment test was developed focusing on the skills, strategies, and knowledge necessary for effective understanding of American history.

Table 2 provides the statistical results for the administration of the pretest and the post-test. The KR 20 reliabilities for the post-tests indicate the test was reliable for arriving at decisions regarding the achievement of the students to whom the tests were administered.

Table 2
Pretest and Post-Test Test Statistics

Test	Reliability*	SEM**
Pretest	.85	2.97
Post-test	.81	2.69

**Reliability computed using the Kuder-Richardson 20 formula.*

*** SEM is the Standard Error of Measurement.*

Data Analyses

Standard scores were developed in order to provide a more normal distribution of scores. The standard scores were a linear transformation of the raw scores. A mean raw score was translated to a mean standard score of 300 and the standard deviation of the raw scores was translated to 50. Standard scores were then used for the statistical analyses.

Data analyses and descriptive statistics were computed for the standard scores from the *Holt McDougal The Americans* assessments. The $\leq .05$ level of significance was used as the level at which increases would be considered statistically significant for all of the statistical tests.

The following statistical analyses were conducted to compare students' pretest scores to posttest scores:

- A paired comparison *t*-test was used to compare the pretest mean standard scores with the posttest mean standard scores for all students.
- The students were split into two groups based on pretest scores. Paired comparison *t*-tests were used with the group that scored higher and the group that scored lower on the pretest to determine if the program was equally effective with lower performers and higher performers.
- A further descriptive analysis was conducted by determining the percentage students who scored below 50% on the pretests and who scored 50% or higher on the post-tests.

An effect-size analysis was computed for each of the paired *t*-tests. Cohen's *d* statistic was used to determine the effect size. This statistic provides an indication of the strength of the effect of the treatment regardless of the statistical significance. Cohen's *d* statistic is interpreted as follows:

.2 = small effect

.5 = medium effect

.8 = large effect

Data Results and Analyses

Total Group Analysis

Researchers at ERIA conducted a paired comparison *t*-test to determine if the difference from pretest standard scores to posttest standard scores was statistically significant. For this analysis, researchers were able to match the pretest and posttest scores for 41 students. Students who did not take both the pretest and the posttest were not included.

Table 3 shows that the average standard score on the pretest was 275, and the average standard score on the posttest was 325. The increase was statistically significant ($\leq .0001$). The effect size was large.

Table 3
Paired Comparison *t*-test Results
Pretest/Posttest Comparison of Standards Scores

<i>Test</i>	<i>Number Students</i>	<i>Mean Standard Score</i>	<i>SD</i>	<i>t-test</i>	<i>Significance</i>	<i>Effect Size</i>
Pretest	41	275	42.6	8.886	$\leq .0001$	1.36
Posttest	41	325	43.9			

Higher and Lower Scoring Students

An additional analysis was conducted to determine if students who scored lower on the pretest made gains as great as those students who scored higher on the pretest. For this analysis students were ranked in order on the basis of their pretest standard scores. The group of 41 students was divided into two approximately equal groups of 21 and 20 students. The first group included those students who scored lower on the pretest with a mean of 240 with scores ranging from 207 to 273. The higher scoring group scored an average standard score on the pretest of 311 with scores ranging from 273 to 376.

Pretest-to-posttest comparisons are shown in Table 4 for the lower and higher pretest scoring students. Scores were analyzed using a paired comparison *t*-test to determine if both groups made significant gains.

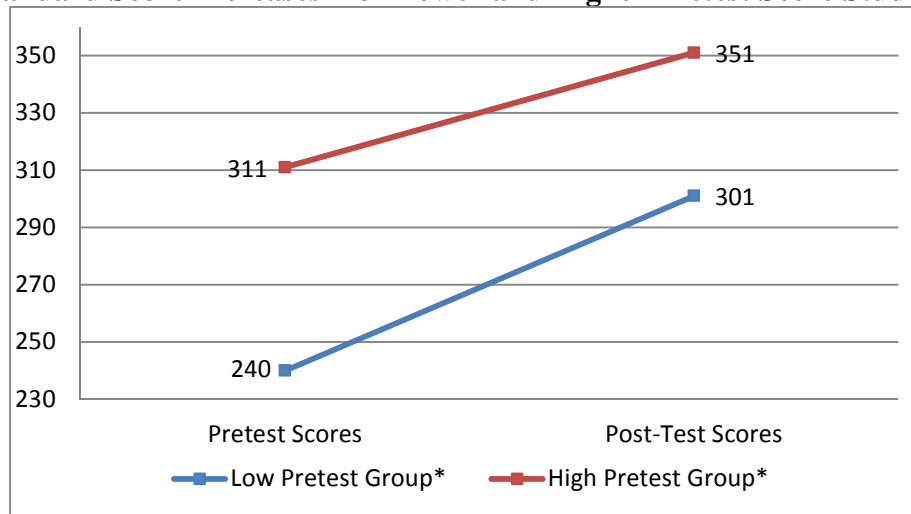
For both the higher and the lower scoring group, the average scores increased. The increase for both groups was statistically significant ($\leq .0001$). The effect size for the lower scoring pretest group was large and for the higher scoring group the effect size was medium. In line with those results, the data shows that the lower pretest group increased 61 standard score points and the higher pretest scoring group increased 40 standard score points.

Table 4
Paired Comparison *t*-test Results for Pretest/Posttest Standard Scores
for the High- and Low-Scoring Pretest Groups

<i>Test</i>	<i>Test Form</i>	<i>Number of Students</i>	<i>Mean Standard Score</i>	<i>SD</i>	<i>t-test</i>	<i>Significance</i>	<i>Effect Size</i>
Lower Scoring Group							
Total	Pretest	21	240	18.2	6.460	≤.0001	.86
Total	Posttest	21	301	37.0			
Higher Scoring Group							
Total	Pretest	20	311	28.7	6.941	≤.0001	.79
Total	Posttest	20	351	35.0			

Figure 1 provides a pretest-to-posttest comparison of the standard scores of lower and higher scoring pretest students. The lower scoring pretest group increased their scores more than the higher scoring pretest group resulting in scores that showed a 71 point difference at the beginning of the academic year and only a 50 point difference by the end of the academic year.

Figure 1
Standard Score Increases* for Lower and Higher Pretest Score Students



*Statistically significant

Figure 2 shows the percentage of students scoring below 50% and 50% or higher on the pretests and post-tests. The percentage of the decline scoring at the lowest level declined by 44% and the increase at the highest level was 44%.

Figure 2
Percentage of Students Scoring Less than 50% Correct
50% and Higher Correct on the Pretests and Post-Tests

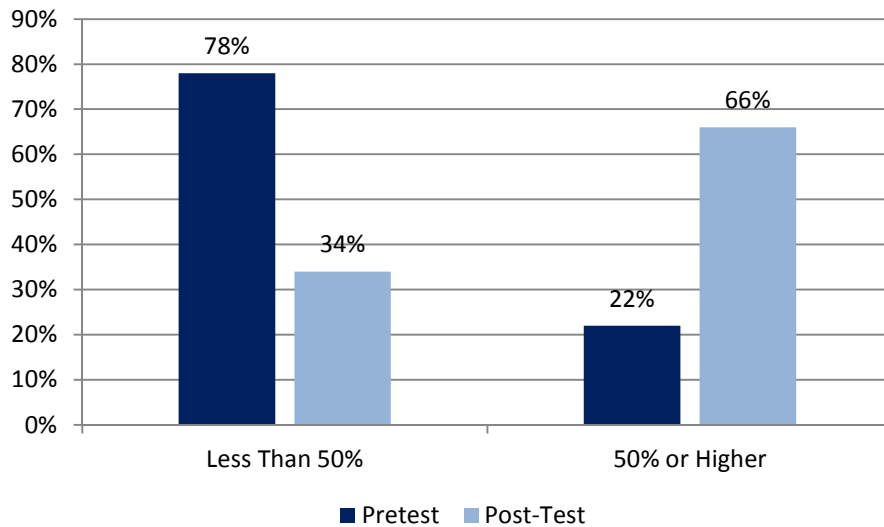
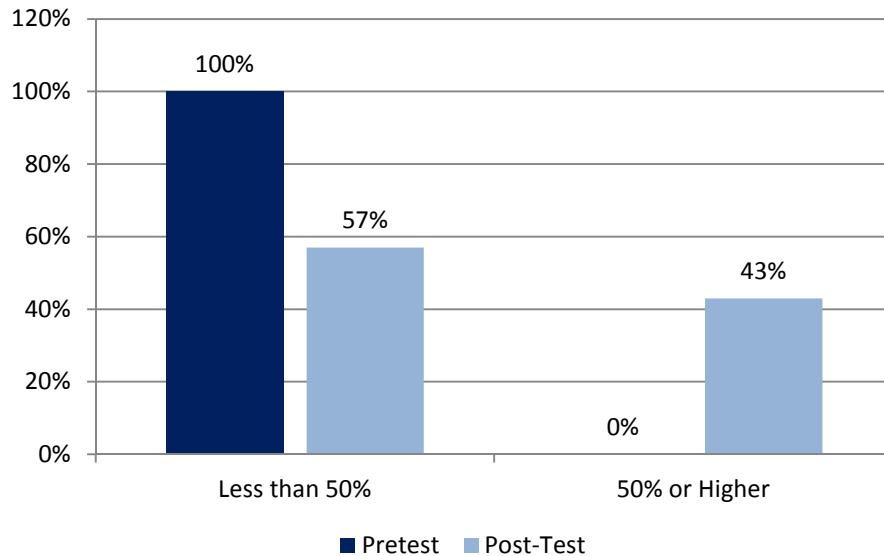


Figure 3 shows the percentage of lower pretest scoring students scoring below 50% correct and 50% or higher on the pretests and post-tests for the. The percentage scoring at the lowest level declined by 43% from pretesting to post-testing. The percentage scoring at the highest level increased by 43%.

Figure 3
Percentage of Lower Pretest Scoring Less than 50% Correct and
50% and Higher Correct on the Pretests and Post-Tests



Conclusions

This study sought to determine the effectiveness of *Holt McDougal The Americans iBook* a high school U.S. History program published by Houghton Mifflin Harcourt. The study was carried out with secondary classes in two schools in two states. The teachers were using the program for the first time and received no special instruction in using the program.

Two research questions guided the study:

1. Is **Holt McDougal *The Americans iBook*** effective in improving the skills and knowledge of high school students in American History?
2. Is **Holt McDougal *The Americans iBook*** effective in improving skills and knowledge in American History of lower performing as well as higher performing high school students?

Question 1: Is Holt McDougal The Americans iBook effective in improving the skills and knowledge of high school students in American History?

A test designed to assess the knowledge, skills, and analytic skills in American History was developed to assess students at the beginning and end of semester tryout of the program. Statistical analyses of students' scores showed that the students increased their scores statistically significantly on the assessment. The effect size was large.

Question 2: Is Holt McDougal The Americans iBook effective in improving skills and knowledge in American History of lower performing as well as higher performing high school students?

Statistical analyses of lower pretest scoring students' scores showed that for both the lower and higher pretest scoring students the increases were statistically significant. For the lowest pretest scoring students the effect size was large and for the higher pretest scoring group, the effect size was medium.

On the basis of this study, both research questions can be answered positively.

- ***The Holt McDougal The Americans iBook program is effective in improving the skills and knowledge of high school students in American History***
- ***The Holt McDougal The Americans iBook program is effective in improving skills and knowledge in American History of lower performing as well as higher performing high school students.***