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Effectiveness of interactive web based review

Eric John Viebach

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EFFECTIVENESS OF INTERACTIVE WEB BASED REVIEW

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Instructional Technology

by
Eric John Viebach
March 2007
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15. Mar. 07
ABSTRACT

The study concerns the development and testing of an online test preparation system to address low-test scores in history at a local high school. The study hypothesized that an online interactive review tool is as effective or better than the normal paper type review. This study divided the participants (n=71) into two groups, treatment and control in a quasi-experiential model. Students received test preparation via an online interactive quiz, and their performance on a test was compared to students who received quiz preparation in a traditional class model.

All the students began by taking a pretest. This will gauge the students' knowledge regarding the post-World War II Era. All the students received normal instruction regarding the post-World War II Era. All the students received a normal question and answer review on the upcoming test. The treatment group received accesses to the review instrument through an on-site computer lab. The control group received a normal question and answer review based on the selected review questions. The study was repeated reversing the control and treatment groups to ensure accuracy of the results. The data was compiled and compared. The first round of treatment supported the
hypothesis that an online interactive review is as effective with an average growth of 3.697 for the treatment group and an average growth of 1.375 for the control. The test scores were tested for significance using an unpaired two sample t test assuming unequal variances \((t = 2.0329, df = 67, t \text{ critical } = 1.9960, p > 0.046)\). The second round of treatment saw an increased growth of 4.8250 for the treatment group and 1.6670 for the control group. The scores were again tested for significance using an unpaired two sample t test assuming unequal variances \((t = 2.9533, df = 71, t \text{ critical } = 1.9939, p > 0.0043)\).
ACKNOWLEDGMENTS

First, I would like to thank my mom and dad for their enduring patience in my upbringing. My upbringing was not the easiest. I want to give special thanks to my mother for her support in my quest in becoming an educator. For all your sacrifices, I will always be grateful.

Second, I would like to thank the professors of California State University, San Bernardino’s Instructional Technology program. Professor Brian Newberry guided me in both the Instructional technology program and in teaching. Your insights to design not only helped me advance as a student, but also helped me become a better teacher for my students. Professors Eun-Ok Baek and Amy Leh added to my educational experiences at CSUSB. Each had a unique style and guided me to center my study and increase the tools available to enrich my classroom environment.
DEDICATION

This work is dedicated to all teachers who strive to give their students the best tools to achieve.
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CHAPTER ONE

BACKGROUND

Introduction

Students naturally acquire certain skills to help them advance academically. This is not necessarily the case within our school system. It seems many students are lacking the ability to study material required for completion of a class. Many students do not use their time wisely when preparing for an exam. Kralovec and Buell (2005) note low student performance is due to student’s lack of preparation. Students today are flooded with images and interactivity throughout their normal day. Cell phones, internet, radio, and television are consistently bombarding students with stimuli. This increased stimulus tends to distract the students willingness to engage in traditional textbook studying.

Statement of the Problem

Our students are struggle across the curriculum. It seems many students are in a losing battle with the content presented. A recent study shows students are particularly lacking in knowledge of United States History (Bell, 2005). In the crumbling American educational system, this is just the latest problem realized among the
many problems that exist. Thomas Jefferson once wrote one must be educated to participate in the process of democracy. The Honorable Senator Lamar Alexander, of Tennessee with the following quote, shares his sentiment: “You can’t be an educated participant in our democracy if you don’t know our history” (American History Achievement Act, 2004, S8704). This becomes a real crisis when the current No Child Left Behind (NCLB) legislation only centers on the problems of student achievement in reading and mathematics. Connected to the poor overall performance, students are lacking the ability to prepare for any examination. This issue transcends elementary, middle, and high school to the college level (McKeachie, YiGuang, & Middleton, 2004).

Purpose of the Project

There were three main goals of this study. First, utilize technology in a non-conventional way to enhance students’ study process. Second, gauge if the students access such a tool when it is available to them. Third, assess the students’ learning based on the study tools available. The project also examined if there was a difference in comprehension of post-World War II era information between students who use the online test
preparation program and those that received only traditional instruction. It also examined student motivation to study by their access of the instrument outside the normal instructional setting.

Significance of the Project

AB High School is struggling to achieve proficiency among its students in World History. The school is located in an area that the state of California considers an improvement district. Socioeconomic disadvantaged students, identified by the Title I Statue, are a large segment of the school's population. In addition to their economic status, the school is listed as a lower performing school by the NCLB's performance indicators.

The annual school accountability report for 2004-2005 highlights their deficiency in history as a whole. Less then 46% are proficient in World History. Specifically less then 37.6% are proficient in the history of the post World War II period (Moreno Valley Unified School District, 2005). This parallels the issue of student's preparedness for classroom assessments.

Many teachers are noticing their students are not preparing for exams. The students are relying on in-class reviews for their test preparation. Many freshman students
have not realized the benefits of studying for exams. This issue plagues a majority of teachers at AB High School. This reflects on the scores of their history exams. A qualitative study of high school students revealed they are surprised that teachers expect them to study. In fact the study revealed high schools lack the academic rigor to reinforce the students need to study (Coleman, 2002).

Research Questions and Hypothesis

The following questions have been identified to center the research and answer with the results of the study:

1. Do students take full advantage of study tools available to them?
2. Does the interactive quiz motivate the students to continue to study for an exam?
3. Does the interactive review increase a student’s grasp of the post- World War II era?
4. Does an interactive study quiz give students the same level of effectiveness as a paper-based study guide?

The first and second research questions were examined by reviewing the server logs of the online study guide to see patterns, trends and length of engagement. This
examination provided data on how much time students use such a tool, as well as how fully the students use each of the features or elements of the tool.

The third research question is evaluated by comparing mean growth of the treatment groups between pre and post-tests to ensure there is indeed learning taking place. This was done by testing the hypothesis $H_1$ "There is a difference in learning growth as measured by comparing the pre and post-test scores of the treatment and control groups." The fourth research question was evaluated by testing the following hypothesis $H_2$ "There is no significant difference in performance on the test between students who receive access to the online study aide and those that study only in the classroom using the paper version of the instrument."

Limitations

A number of limitations arose during the development of the project. The implementation of the research took place in a high social economically disadvantage student population. Many students had limited access to the internet outside of the school setting. Part of the study was to gauge whether the students would access the review outside of the normal school environment. Convenience
sampling was the grouping method used during the study. The students were enrolled with the researcher at the same school. The convenience sampling also created unequal control and treatment groups.

The unique visitor statistic to the interactive review was the only gauge used to judge student motivation. Therefore, accessing the interactive review outside of normal instructional period infers motivation.

Definition of Terms

Interactive quiz - (n.) A web page, in a quiz format, which allows students to test themselves when they prepare for an exam.

NCLB - (abv.) A piece of civil legislation, which prompts states to design, track, and promote academic performance in their schools.

HTML - (n.) hypertext markup language

IP - (abbr.) Internet Protocol

GET REQUESTS - (command) Command given to UNIX serves to request a specific web page.

Test anxiety - (adj.) Stress induced by the thought of or performing a test on content knowledge by an individual.
Authentic Assessment - (n.) Measurement of important abilities and scheme using procedures, which stimulate the application of these abilities to real-life problems (Woolfolk, 2001).

Achievement tests - (n.) Standardized tests measuring how much students have learned in a given content area (Woolfolk, 2001).

URL - (abbv.) Uniform Resource Locator: a protocol for finding a webpage on the internet by stipulating the protocol (http) and domain name.
CHAPTER TWO
REVIEW OF THE LITERATURE

Introduction

Chapter Two consists of a discussion of the relevant literature. Specifically, the questions dealing with why students are failing, important study skills, and the best internet quizzing practices are discussed as they connect with the study. The prevailing body of literature highlights issues facing a majority of students across the educational genre. Finally, how can the internet facilitate learning in other content areas?

Why are Students Failing?

Students’ lack of performance in their history class has many different facets. Student materials, historical excitement, and student class preparation are all factors in poor performance. A study conducted by Austin, Chen, Pinkleton, and Johnson (2006) on “Media One” found in the March 2006 issue of Pediatrics, discovered students remember advertisements better than the educational material in the broadcast. The Media One station broadcasts every day for approximately twelve minutes; ten minutes for educational materials; two minutes for advertisements and public service messages. The study
noted students remembered ads more often than the educational content. This provides credence to the idea students remember in smaller chunks compared to larger ones. The study also revealed that students preferred the entertainment value of the commercials to the educational. Schelene (1991) states entertainment value is one of the shortcomings in the modern textbooks.

Modern textbook authors have to balance the task of accommodating each state’s standards and equal access. In doing so, many textbooks jump through topics and lack a flow characteristics students need for comprehension. This mirrors Schlene’s (1991) belief that textbooks are poorly written. When a textbook lacks the cohesion needed, the students are turned off and loose motivation to study.

Many times, there is a break in the sequencing. These breaks cause students to question the validity of the information contained. Schlene also notes the books are biased. They are also interpretive and culturally bias. By trying to rewrite books to accommodate all cultural aspects, the books generally trivialize ethnic groups to footnotes (Bower & Lobdel, 1999). These all reinforce to the students that history is boring and not exciting.

History teachers are experiencing these student complaints with increasing frequency. Bower notes in a
study that the boring nature of history is their biggest reason for not engaging in the subject matter. He continues by suggesting the teacher needs to engage the students at their interest level. This includes increasing the availability and use of additional materials used in the classroom to deliver content. The additional materials will increase student involvement, because that material is not a textbook (Bower, 1999). This will increase a student’s interest in a particular topic.

Student preparation is a problem plaguing student success across the curriculum content areas. The National History and Civics Assessments most recently highlight this issue. The assessment showed a majority of twelfth graders could not adequately explain the system of “checks and balances” used in our government. David McCullough testified that the majority of schoolchildren lack the basic knowledge of United States history to be an informed voter (American History Achievement Act, 2004). At the fourth grade level, the vast majority could not recite the beginning phrase of the Declaration of Independence (Bell, 2005). At ABHS, 37.6% of the students scored less then proficient on knowledge pertaining to the post World War II era (Moreno Valley Unified School District, 2005).
Low performance on these assessments is a direct result of two main issues. These issues are student preparation and test-taking skills. First, student performance is linked directly to student preparation (Kralovec & Buell, 2005). Kralovec notes student laziness is not necessarily the main issue, however their access to quite places, available resources, and a knowledgeable adult have a larger effect. This adult connection is also seen in their cognitive development. Students learn their cognitive strategies from family members and friends. If parents or friends lack sufficient strategies, the students will lack cognitive strategies to connect with the material (Martin, 2005). Lack of cognitive skills limits student’s effectiveness in test preparation. Kralovec declares performance in tests directly linked to their lack of preparation for the exams. McKeachie agrees with Kralovec that student performance is linked to student preparation.

Test anxiety affects student performance on standardized assessments. Test anxiety is classified into two major forms. Each of these forms effect the individual different in their performance on a test. The first form of test anxiety interferes with student performance on a test. They divide their energy between performing on the
test and to their negative self-image as a test-taker (Eysenck, 1988). This test anxiety will generally cause the test-taker to make numerous smaller errors on the test. The second type of test anxiety is from a lack of preparation for the test. This lack of preparation is from a lack of study skills (Paulman & Kennelly, 1984). The student realizes during the test they are not adequately prepared and make serious judgment errors on the test. A study completed in a high school setting suggests there are two possible treatments to counteract the two types of test anxiety. The study prescribed teaching test-taking skills for the interference of test anxiety, and effective learning studying skills for the deficit model (Brenbaum & Nasser, 1994). This study parallels action research concerning ninth grade failure rates. The research surveyed teachers and students regarding student performance. The survey revealed students perceive study habits and test anxiety as their top distracters of performance. This study also highlighted that students spend far less time studying then suggested by the surveyed teachers (Faulk, 2003). This shows the need for test taking and study skills in core curriculum instruction.
McKeachie (1988) reports students with lower tests and class scores are due to lack of preparation skills in general. Student with "C" and "D" grades are unfamiliar with sufficient test strategies for adequate achievement on exams (1988). McKeachie's (1988) study also noted that the students have the ability to improve their own outlook on learning. McKeachie's (1998) research suggests students with the ability to regulate their own motivation for learning had a better success rates. This highlights the ideas expressed by Blackerby (1996). Martin (2005) also suggests when teaching cognitive strategies, the students must be motivated to learn the material. Each of these studies expresses the need for students to self-motivate and improve their personal outlook on learning.

There is a movement where achievement tests are believed not to be a true indicator of a student's knowledge of content. This has lead to the idea authentic assessment is a more reliable way to assess a student’s knowledge regarding content. The movement promotes the idea to students that test preparation is not necessary to successfully completion of a course. It also hides a student’s lack of testing strategies. Blackerby (1996) notes students with poor exam scores usually lack test-taking strategies to be successful in testing
environments. These students have learned poor test-taking strategies. They will generally make impulse guesses when they do not know the answer. These students generally wait for the teacher to answer questions rather than hunting for the answer on assessments (1996). During a testing situation, the student may ask for help; when they do not receive it, they will generally shut down and guess on the remainder of the test questions. Again, this shows how a lack of test-taking skills will affect a student’s ability to perform on an assessment. Attendance is another issue relating to student performance.

Williams and Clark (2004) noted several factors in student performance on exams. One particular was student attendance. Williams remarked when a student missed classes before and after exams, they generally received lower scores than those whose attendance was more regular. It is also described that students ranked attendance as the highest indicator of student performance. Again, this highlights the fact students may not have the ability to access content effectively without instructor guidance.

Study Skills

Test studying skills are the main issue for student performance on genuine assessments. These skills transcend
just study skills to include other successful skill or habits. There are three main areas of inquiry regarding study skills, which include test-taking strategies, motivational strategies, and stress regulation. First, does the student have the ability to utilize sufficient test-taking strategies on exams? Second, is the student willing to study for an exam? Third, is the classroom environment’s built in stress a factor of performance?

Modern classroom teachers use a variety of assessments. These assessments include projects, portfolio assignments, and reports. Each of these assignments is graded by the student’s advancement towards content mastery. However, modern assessments lack the ability to teach test-taking strategies. Many students take an average of three batteries of state mandated assessments. However, the constructionist movement, which promotes authentic assessment, may reduce the practice students have for achievement tests.

Test-taking strategies are a problem for the average and below average students. Many times these students struggle for different reasons. For the majority of “C” and “D” students, they lack the understanding of sufficient test-taking strategies (McKeachie 2004). Many students have issues processing visual information. These
problems are linked with the absence of teaching processing information or learning (Kralovec & Buell, 2005). Another study investigated how student interacted with texts. It was discovered students interact with the text at different levels. More serious student actively attempted to extract meaning from the text, while other students interacted with the text less. They generally lacked the drive to engage the material actively.

Gettinger and Seibert in 2002 listed four study models. One is the cognitive based study guide. This guide has the students activate prior knowledge and question the relevance of what is presented. Gettinger’s study also noted students have the ability to learn and apply their study skills across curriculum areas. This study again highlights several of Vygotsky’s theories of learning. B. Bakunas and W. Holley (2004) performed a qualitative study regarding needed student skills. Their study centered on how to teach students organizational skills and their connection to content acquisition. Objective six in their study noted student need to organize and plan to prepare for a test. They also included students needed to be taught how to study (Bakunas & Holley, 2004).

A student’s willingness to study is directly linked to how they feel regarding studying. Self-efficacy plays
an important role in how a student learns or connects to content. The higher the student’s self-efficacy the more time that student will spend studying. Linnernbrink and Pintrich in 2003 stated the higher feeling of success the more engaged the student would be when engaged with the content material. Paralleling this submission, Gettinger (2002) suggested this would prompt the student to increase the time they spend learning the material. It is also suggested that students have the ability to regulate their study habits based on their own grade expectations (Linnernbrink & Pintrich, 2003). A qualitative study conducted with college students highlighted key student performance indicators for multiple-choice exams. The study also demonstrated a link between student performance on exams and effort during the test. It also brought additional attention to critical thinking and test-taking strategies for increased test performance (Williams & Clark, 2004). The study’s most profound discovery was the effects of student preparation on exam performance. There is a direct correlation between exam performance and the effort put forth during studying.

Expectations in the classroom lead to stress. Teachers need to motivate students to develop thinking skills. Teachers should included cognitive processes such
as analysis, problem solving, and reasoning. This promotes higher order thinking and advances the cognitive thought process (Woolfolk, 2001). In addition, if teachers expect students to think cognitively they will perform at higher rates (Martin, 2005). Expectations for student performance also prompts students to process the material at a deeper level. This focuses the learning on the relationship to prior knowledge (Craik & Lockhart, 1972). This connection uses the idea regarding learning expressed by Vygotsky’s view of cognitive conflict. The more internal connections to prior knowledge the more the students retain and learn.

Students widely believe the more you study the more you will learn (Wyatt, Saunders, & Zelmer 2005). This acknowledgement shows that students have the ability to regulate their own learning based on their expectations in the class. The more students interact with the learning process the more likely they will stay engaged. In a study regarding learning strategies, questionnaires were used to judge successful study strategies (Zimmerman & Pons, 1986). It was noted students were more successful at learning when they mastered the self-regulated learning process. Theses students more actively participated in their own learning process. However, this motivation is effected by test anxiety. Test anxiety negatively affects
student's performance on an exam. A suggested remedy for test anxiety is to practice a test format until the anxiety subsides. The more practice a student has taking an exam, on similar content; the lower their test anxiety becomes (Daniel & Broida, 2004). It was also noted in a study how students interact with multiple-choice exams that students need to have reasoning skills to eliminate answers on a multiple-choice exam (Wallace & Williams, 2003). Daniel and Broida's (2004) study adds to the literature calling for teaching test-taking skills. Pintrich (1990) suggests giving practice quizzes with no grade connection to students to decrease their anxiety but increase their self-efficacy.

The classroom environment does contain some level of stress. The teacher can work to eliminate the stress, but the classroom situation itself is the leading cause for stress. Stress directly affects the student's ability to connect and interact cognitively with material. Reducing this stress allows students to absorb material and connect it to prior knowledge at a higher rate (Boekaerts, 1993). Stress also affects the student's ability to cognitively connect and interact with materials. The cognitive process is a major factor in studying (Gettinger & Seibert, 2002).
Interactive Quiz

The interactive quiz would allow the students to review for an exam in a reduced stress environment. Given via the World Wide Web would give students a multitude of access points throughout their community, whether it is school or public libraries or computer labs. This will address one of Kralovec’s (2005) factors of a student’s access to a knowledgeable adult. Students also gain their cognitive strategies from family members or friends (Martin, 2005). If the student does not have access to these strategies outside of school, they will lack them during testing.

The interactive quiz takes an approach based on Strategy Centralism (Gibbons, 2003). Meaning, the design was to implement a message based on goals. The message is the content, and goals are increased exam performance on a genuine assessment. The design implementation used a combination of the three modes described by Robert Taylor (1980) in “The Computer in School: Tutor, Tool, Tutee.” In essence, the computer is playing the role of tool, the student the tutee, and the webpage as tutor in the learning process. In a study conducted using computers as tutors in a mathematics class, noted they are an effective use for disseminating content to students (Frith, Jaftha,
& Prince, 2004). They also aided in the tutoring of complex concepts requiring the student to apply what they have learned. Cabot (1998) in a parallel study regarding high school world history noted electronic communications helped students organize information they received. In a study assessing a computer's usage in promoting educational goals student knowledge, discovered computers actually helped the student create relationships between the new knowledge and knowledge they already knew regarding the topic (Ridgway & McCusker, 2003). This study centered on the concept that a computer could center new information around the personal scheme of the student. The study also based its premise on Vygotsky's principle regarding intellectual tools in learning. The study linked computer usage to an accepted cultural tool to motivate learning within the participants. The web page, accessed on a computer gives the student external stimuli. Vygotsky believed a person's learning is affected by external stimuli to their personal scheme.

Students are assailed by electronic stimuli daily; however, most of this stimulus does not address any cognitive thinking or questions their personal scheme. Vygotsky's theory also notes the tools used in processing the information affect learning (Frith, Jaftha, & Prince,
The internet is something most students are familiar with, but do not use to study or learn. General student perception is the more they study the more they will learn (Brown, 2000; Wyatt, 2005). So ultimately, the quiz will prompt the student to spend additional time studying for an exam.

To increase the likelihood a student will engage in an interactive quiz, the design must connect to the students. This connection to a student’s favorite pastime will help them stay engaged in the material presented (Howard & Mendenhall, 1982). Schlene (1991) describes that connecting content to a student’s favorite pastime will increase their connection to the material. In addition, knowing the interactive quiz will not affect their classroom grade will increase the likelihood they will fully engage in the quiz (Pintrich & DeGroot, 1990).

A properly formatted interactive quiz is as effective as classroom-based reviews (Daniels & Broida, 2004). Daniel and Broida’s design must include several key components. These components are interactivity, motivation, and feedback. First, interactivity gives the entertainment value for the student. Interactivity also facilitates comprehension and cognitive thought within the participant (Lin & Dwyer, 2004). Interactivity also
mirrors another favorite pastime activity of a video game. A video game configuration will help keep students motivated through the study process (Underwood, et al., 2005).

Second, motivation is a key component in an effective interactive quiz. Motivation in an interactive quiz is given by either a sound or a short verbal confirmation of the correct answer. Pintrich (2004) studied motivation in college students and found that the design should contain a student approach to learning (2004). This qualitative study noted students interact and are motivated to learn when activities are student centered. If the activity contains a notion or element connecting to their daily lives, the students were more likely to engage in the activity (Pintrich, 2004). Simple feedback on correct answers reinforces the cognitive process and connects the question and answer correctly in the students’ study process. Simple feedback also increases the students’ ability to process and retrieve information on future exams (Pineda de Romero & Dwyer, 2005). The students are also motivated to participate in quizzing if it is not punitive. Meaning the student is not receiving a grade for the quiz. The students view the quiz more as a fun activity rather then an actual quiz. This motivates the
students to participate, practice both test-taking strategies, and review content (Thorne, 2000).

Third, feedback is a key component in an effective interactive quiz. Feedback will give a student early motivational rewards when they answer correct to quiz answers. Wilkinson-Riddle and Patel (1998) noted feedback on questions was highly effective in aiding a student’s understanding about the content being addressed. This motivation will promote the students to continue with the exercise (Underwood, 2005). A study researching the effectiveness of computer assessment listed several best practices when using computers to gauge practice for assessment. One important practice is that incorrect responses should contain information why the response is incorrect. This will guide the students to correct their personal scheme regarding the topic or information (Erwin & DeMars, 2002). As was discussed earlier, the more time spent interacting with content the more the students will retain. However, it was noted in a study relating patterned responses to student-computer interaction, students will pattern their responses to positive or negative stimuli they receive during an electronic interaction. The study recommended shorter interaction time lessoned the patterned responses of the students.
This study suggested there is a point at which too much interaction will cause the students to view the interaction as patterned and no longer benefit from continued interaction.

Summary

Student materials, historical excitement, and student class preparation are all factors in poor performance. History teachers are experiencing these student complaints with increasing frequency. Student preparation is a problem plaguing student success across the curriculum content areas. According to a recent study, student performance is linked directly to student preparation (Kralovec & Buell, 2005).

Students learn their cognitive strategies from family members and friends. If parents or friends lack sufficient strategies, the students will lack cognitive strategies to connect with the material (Martin, 2005). Lack of cognitive skills limits student’s effectiveness in test preparation. McKeachie (1988) agrees with Kralovec (2005) that student performance is linked to student preparation.

Test anxiety affects student performance on standardized assessments. One form of test anxiety
interferes with student performance on a test. The study prescribed teaching test-taking skills for the interference of test anxiety, and effective learning studying skills for the deficit model (Brenbaum & Nasser, 1994). The research surveyed teachers and students regarding student performance. The survey revealed students perceive study habits and test anxiety as their top distracters of performance. This study also highlighted that students spend far less time studying then suggested by the surveyed teachers (Faulk, 2003). McKeachie (1988) also noted that the students have the ability to improve their own outlook on learning. Martin (2005) also suggests when teaching cognitive strategies, the students must be motivated to learn the material.

Poor test scores also show a student’s lack of testing strategies. Blackerby (1996) notes students with poor exam scores usually lack test-taking strategies to be successful in testing environments. These students have learned poor test-taking strategies. Attendance is another issue relating to student performance. Williams and Clark (2004) noted several factors in student performance on exams. One particular was student attendance. It is also described that students ranked attendance as the highest indicator of student performance.
Test studying skills are the main issue for student performance on genuine assessments. First, does the student have the ability to utilize sufficient test-taking strategies on exams? Second, is the student willing to study for an exam? Test-taking strategies are a problem for the average and below average students. Many times these students struggle for different reasons. Many students have issues processing visual information. More serious student actively attempted to extract meaning from the text, while other students interacted with the text less. Gettinger’s (2002) study also noted students have the ability to learn and apply their study skills across curriculum areas. B. Bakunas and W. Holley (2004) performed a qualitative study regarding needed student skills. Their study centered on how to teach students organizational skills and their connection to content acquisition. Objective six in their study noted student need to organize and plan to prepare for a test. They also recommended students needed to be taught how to study (Bakunas & Holley, 2004).

A student’s willingness to study is directly linked to how they feel regarding studying. The higher the student’s self-efficacy the more time that student will spend studying. A qualitative study conducted with college
students highlighted key student performance indicators for multiple-choice exams. The study also demonstrated a link between student performance on exams and effort during the test. The study’s most profound discovery was the effects of student preparation on exam performance. Teachers need to motivate students to develop thinking skills. Expectations for student performance also prompts students to process the material at a deeper level. Students widely believe the more you study the more you will learn (Wyatt, Saunders, & Zelmer 2005). It was noted students were more successful at learning when they mastered the self-regulated learning process. Theses students more actively participated in their own learning process. Test anxiety negatively affects student’s performance on an exam. Stress directly affects the student’s ability to connect and interact cognitively with material. Stress also affects the student’s ability to cognitively connect and interact with materials. General student perception is the more they study the more they will learn (Brown, 2000; Wyatt, 2005). So ultimately, the quiz will prompt the student to spend additional time studying for an exam.

To increase the likelihood a student will engage in an interactive quiz, the design must connect to the
students. First, interactivity gives the entertainment value for the student. Pintrich (2004) studied motivation in college students and found that the design should contain a student approach to learning. The qualitative study revealed students interact and are motivated to learn when activities are student centered. Simple feedback on correct answers reinforces the cognitive process and connects the question and answer correctly in the student’s study process. Meaning the student is not receiving a grade for the quiz. This motivates the students to participate, practice both test-taking strategies, and review content (Thorne, 2000).
CHAPTER THREE

METHODOLOGY

Introduction

Chapter Three documents the steps used in developing the project. Specifically, the four major questions to center the research and answer with the results of the study:

1. Do students take full advantage of study tools available to them?
2. Does the interactive quiz motivate the students to continue to study for an exam?
3. Does the interactive quiz increase a student’s grasp to the post World War II era?
4. Does an interactive study quiz give students an effective study guide?

Participants

The students (n=73) currently attend a high school located in southern California. The school is located in an area that the state of California considers an improvement district. The school contains a large population of students, which are identified by the Title I Statue as socioeconomic disadvantaged students. All of
the participants are currently enrolled in World History Honors at AB high school. Every student enrolled received an informed consent form on May 2, 2006 (see Appendix A). One-hundred-sixteen informed consents were returned. However, not all the students attended throughout the treatment period. Seventy-three (n=73) students complete both the treatment and control phases. There were forty-six female students and twenty-seven male students. Their grade levels range from ninth grade to tenth grade. The students were spread throughout four different classes. The classes were divided into two convenience groups consisting of two periods each. Each of these classes received instruction from the same teacher. The instruction was given the same to each class.

Design and Development

The construction of the interactive review quizzes used the analysis, design, development, implementation, and evaluation (ADDIE) approach to instructional design. The research also used rapid prototyping to implement the interactive review quiz. As indicated by the annual state testing report, students are lacking in knowledge of the core content area of World History. This assessment is done through state mandated testing through grades 9-11.
This testing highlighted the need for intervention to improve test scores. Further research of the prevailing literature revealed the problem lies in several key areas. Test preparation was the specific center of this study. The researcher believes if students receive both content and test-taking strategies in an interactive review type tool will be equivalent to or better than an in-class review.

The design needs to satisfy five goals. First, facilitate content delivery in an organized format that satisfies the goals of content delivery and test-taking practice (Gibson, 2003). Second, deliver content in a low stress environment (Kralovec & Buell, 2005). Third, use an external source to make connections to prior knowledge with the students (Frith, Jaftha, & Prince, 2004). Fourth, make a connection with student’s favorite pastime such as computer usage (Howard & Mendenhall, 1982). Finally, construct a review tool that provides feedback to promote motivation for the students to continue (Wilkinson-Riddle & Patel, 1998).

The first goal required the format to be organized, but familiar to the students. This was achieved by organizing the webpage similar to a multiple-choice quiz. The page was divided into thirds. The first third contains
the title of the chapter the students are reviewing. The second third contains the question numbered sequentially. The last third contains the four possible choices. This design closely resembles the standardized multiple-choice paper assessment that students are taking extensively in classrooms (see Figure 1).

![Question One](image)

In the late 1940s and again in 1972, India and Pakistan fought a war over

A. East Punjab
B. New Delhi
C. Kashmir
D. Nepal

Figure 1. Question layout used for each question page in the Interactive Review.

This layout will both organize and give students practice taking multiple-choice exams.
The second goal was achieve by the interactive quiz accessibility outside the classroom. The delivery chosen was the World Wide Web. This decision allowed students access anytime, and gave students access outside the classroom where the anxiety levels are lower. The format chosen was a multiple choice type instrument. This format gave students experience in taking a multiple-choice test (Paulman & Kennelly, 1984; Blackerby, 1996). The students were also encouraged to access the quiz outside of the school setting on their own accord. This will also help students who have limited access to a knowledgeable adult (Kralovec & Buell, 2005).

The third goal was to use an external connection to content material. This external connection will help students organize and gain cognitive strategies regarding the content material (Martin, 2005). The programming language chosen to deliver the interactive quiz through the internet is HyperText Markup Language (HTML). This programming language was chosen for its cross platform compatibility. It was also chosen because of its benefit to the rapid production ability. The popularity of internet, blogging, and internet communities made the internet the most likely connection to students and their favorite pastime.
The fourth goal was to make the connection with student’s favorite pastime. Students at AB high school have the benefit of attending a technology rich environment. The students have five places where they can access computers and the internet. This gives all students the access to the internet no matter their socioeconomic status. Given the recent popularity of internet communities, the quiz was given via an internet web site. This gave students some conformability and familiarity when accessing the interactive quiz review.

The final goal was to include feedback for the student’s interaction with the interactive review quiz. This design strategy takes into account the prevail body of literature regarding feedback. Incorrect and correct responses both received feedback. This gave the quiz more interactivity. This interactivity will foster cognitive thought in their usage of the interactive quiz (Lin & Dwyer, 2004). The feedback for both correct and incorrect was simple and short. This was to keep students engaged and not randomly guessing (Pineda de Romero & Dwyer, 2005). Most important was the corrective feedback. The corrective feedback addressed a possible misconception leading to the selection (Erwin & DeMars, 2002). This
feedback helps student’s correct cognitive connections, which are incorrect in the content area (see figure 2).

Incorrect.
The Philippines was a protectorate of the US, so the sanctions against the Philippines would be detrimental to US interests.

Figure 2. Incorrect response layout used for each incorrect response page in the Interactive Review.

The development and testing was conducted using Macromedia’s Dreamweaver® 7.0. The software, in its advance features, has the ability to check links within the constructed site. This lends itself to the rapid prototyping model of development. The layout of the interactive quiz was simple in its design. The launch page gave students instructions and several suggested test
strategies. On the bottom of the page, there was a link to start (see figure 3).

Figure 3. Start page layout used for each treatment in the Interactive Review.

Each question was constructed into a multiple choice type question. The questions contained one correct answer and three incorrect choices. Figure 4 shows an example of positive feedback linked to both the correct answer and answer button.
Correct
This piece of land is still hotly debated over today. High in the mountains the population actually want autonomy from both Pakistan and India.

Click here for next Question

Figure 4. Correct answer page layout used for each correct response in the interactive review.

On the bottom of the page is a link prompting the student to the next question. The page also contained a short reason for the answer correctness. The incorrect buttons and answers were linked to corrective feedback unique to each selection. On the bottom of each corrective feedback page was a link requesting the students to "Click here to try again" (see figure 5).
The order of the question started at general knowledge and increased in difficulty. Each correct answer gave the students positive feedback and a short reason to why the answer was correct. The incorrect response feedback is modeled after Wang's (2004) idea that suggestions to the correct answer will help a student connect to the correct prior knowledge. Incorrect answers furnished the students to why their choice was incorrect and asked them to try again. This setup insured early motivational rewards to encourage the students to continue
(Underwood, 2005). This format continues until all ten questions have been answer correctly.

Each quiz was designed around 10 questions regarding the post World War II era. These questions encompassed core content covered under the California Social Studies Content standards 10.8.5, 10.8.6, 10.9, and 10.9.4:

10.8 Students analyze the causes and consequences of World War II. . . . [5] Analyze the Nazi policy of pursuing racial purity, especially against the European Jews; its transformation into the Final Solution; and the Holocaust that resulted in the murder of six million Jewish civilians. [6] Discuss the human costs of the war, with particular attention to the civilian and military losses in Russia, Germany, Britain, the United States, China, and Japan. . . . 10.9 Students analyze the international developments in the post-World War II world. . . . [4] Analyze the Chinese Civil War, the rise of Mao Tse-tung, and the subsequent political and economic upheavals in China (e.g., the Great Leap Forward, the Cultural Revolution, and the Tiananmen Square uprising).

The content was centered on chapter 18 in Modern World History: Patterns of Interaction for the first quiz. Ten questions were extracted from content (see Appendix B). The second quiz was constructed from chapter 20. Again, 10 questions were extracted from the content (see Appendix C).

Data Collection

Two convenience samples were created one each from two periods of a World History Honors class. The first
group was designated as the treatment group, which was given access to the online quiz review. The second group was designated as the control group, which received only in class review. The method was repeated after the first data collection point, switching the treatment and control groups to increase validity of the results. Data was collected in six separate ways. Pretest, Post-test and web trends statistics are the categorized used to categorize data collected.

The study began by giving the students a pretest to gauge the student’s prior knowledge regarding the post World War II era (see Appendix D). The test was constructed as a paper pencil type of assessment. The students were given Scanmark\textsuperscript{®} answer sheets to mark their answers. The test was first graded using a ScanTron\textsuperscript{®} machine, and then graded a second time by the researcher to ensure accuracy. The tests scores were recorded in a normal educational setting. After the test, the students received seven days of instruction covering chapter 18 in Modern World History: Patterns of Interaction textbook. This chapter covered California Social Studies Standards 10.9 and 10.9.4. On the seventh day, the students participated in a typical review for the assessment on Friday, May 12, 2006.
Two periods were selected as the treatment group. The students in attendance received the oral assent statement (see Appendix E). These classes were given access to the interactive web review through a written note with the Uniform Resource Locator (URL) http://test.mrvsedesk.us. The students accessed the website via an on-site computer lab containing 36 computers connected to the World Wide Web. The district currently monitors all traffic for appropriateness. During the review period, the treatment group was informed how to access the website after school hours. The students were instructed to access the site on their own time and not to share it with their other classmates. The remaining two periods received a normal review session contain 55 minutes of questioning and answering.

All students have internet access at AB high school. Their internet access is achieved through 3 computer labs and 20 computers in the library. Students have access to library computers from 7am-4pm throughout the school calendar.

The control group received a typical question and answer type review. The questions and responses were identical to the interactive quiz review instrument. The following class day, May 16, 2006, all classes, both
treatment and control, were given the same pretest as a post-test instrument. Both of these tests were identical. This format and layout was chosen to eliminate any inferred results into the testing. The pretest and post-test were identical to insure the students were familiar with the test format, questions, layout, and answer document. Again, this was done to ensure there was no external interference into the data collection. The tests were graded by the researcher and recorded in normal educational practice. The test was first graded using a ScanTron® machine, and then graded a second time by the researcher to ensure accuracy. The tests scores were recorded in a normal educational setting.

To help eliminate any collusion between groups, the study was not conducted for chapter 19. The study was repeated with chapter 20. This chapter covers content covered under California Social Studies Standards 10.8.5, 10.8.6, 10.9, and 10.9.6. The students were given a pretest on May 18, 2006 (see Appendix F). The students received six days of instruction on chapter 20. The control and treatment groups were switch for the parallel study. The original control group was given access to the interactive review quiz on May 25, 2006. On May 26, the second control group received the exact review quiz
through a verbal review. The students were given the formal assessment on May 30, 2006. The tests were first scored in a ScanTron® machine and check by the researcher for accuracy.

To track student’s access to the internet site AWstats® was used. This service is provided by the web-hosting provider. It tracks page requests based on the date the page was retrieved. It also tracks web usage to individual IP addresses and web pages. Data was also pulled from “GET REQUEST.” This option noted the computer’s IP address and time the page was requested. Both of these data sets were pulled and compared to remove any duplicate data.

Data Analysis

Data for the pre and post-test were transferred to an Excel® spreadsheet removing all identifiable student markings. This was done to insure anonymity. The pretest and post-test were compared for growth for both studies. The scores were group by treatment chapter 18 and control chapter 18. The second study again separated the students into a chapter 20 treatment and chapter 20 control groups. To insure accuracy, students who did not complete both studies were excluded from the data set.
Web usage statistics were pulled from AWstats\textsuperscript{®} service provided by the web hosting service. The data collected resulted in 51 unique pages hits to http://test.mrvsedesk.us/trev/index.htm from May 12, 2006 through May 15, 2006 (see Appendix G). AWstats\textsuperscript{®} also notes the average user spent 178 seconds within the directory of /trev/. This directory contained the interactive quiz html files. It should be noted that two IP addresses on the unique visitors list are known IP addresses for AB high school. Detailed log pulled for May 12 - May 15, 2006 reveals 51 unique “GET REQUESTS” from unique IP addresses. The known IP addresses for the school requested page information for the interactive quiz after school hours on May 15, 2006. The last page in the quiz, however only received 45 “GET REQUESTS”.

AWstats\textsuperscript{®} information for the May 25, 2006 - May 29, 2006 shows 61 unique visitors to http://test.mrvsedesk.us/trev/trev20/index.htm (see Appendix G). Again, it should be noted that two of the IP addresses are known IP addresses for AB high school. The detailed log of unique “GET REQUESTS” from the unique IP addresses is 61 for the days covering May 25, 2006 - May 29, 2006. The last page in the quiz only received 57 “GET REQUESTS.”
Summary

The students (n=73) currently attend a high school located in southern California. The research was specifically focused on student test preparation. The researcher believes if students receive both content and test-taking strategies in a review type tool will improve test scores in history. This layout will both organize and give students practice taking multiple-choice exams.

This decision allowed students access anytime, and to give the students access outside the classroom where the anxiety levels are lower. This format gave students experience in taking a multiple-choice test (Paulman & Kennelly, 1984; Blackerby, 1996). This external connection will help students organize and gain cognitive strategies regarding the content material (Martin, 2005). It was also designed to make the connection with student’s favorite pastime. This gave students some conformability and familiarity when accessing the interactive quiz review. Feedback is delivered for both correct and incorrect responses. This feedback helped student’s correct cognitive connections, which are incorrect in the content area.

The launch page gave students instructions and several suggested test-taking strategies. Each question.
was constructed into a multiple choice type question. The questions contained one correct answer and three incorrect choices. Each correct answer gave the students positive feedback and a short reason to why the answer was correct. The incorrect buttons and answers was linked to corrective feedback unique to each selection. On the bottom of each page was a link requesting the students to try again.

The study was conducted using two convenience groups. These groups are treatment and control. The pretest was given on May 2, 2006. The tests scores were recorded in a normal educational setting. This chapter covered California Social Studies Standards 10.9 and 10.9.4. The treatment group accessed the website via an onsite computer lab containing 36 computers connected to the World Wide Web. The control group received a typical question and answer type review. The following class day, May 16, 2006 all classes, both treatment and control, were given the same pretest as a post-test instrument. The pretest and post-test were identical to insure the students were familiar to the test formant, questions, layout, and answer document. The tests scores were recorded in a normal educational setting.

In the second study, the students were given a pretest on May 18, 2006. The original control group was
given access to the interactive review quiz on May 25, 2006. Both groups were given the multiple-choice exam on May 30, 2006. The pretest and post-test were compared for growth for both studies.
CHAPTER FOUR
RESULTS AND DISCUSSION

Introduction

Included in Chapter Four was a presentation of the result of completing the project. Further, the results of the study paralleled the prevailing wisdom within the body of literature. Students who participated did just as well and better then those students who only participated in an in-class review.

Presentation of the Findings

This study began by asking the questions "Do students take full advantage of study tools available to them?" and "Does the interactive quiz motivate the students to continue to study for an exam?" The statistics listed in AWStats® provided evidence that students were motivated to continue to study after the normal instructional period.

AWStats® listed visitors spent approximately 3 minutes navigating through each of the interactive quiz pages (Appendix G). This is inline with the researcher's literature review. The "GET REQUESTS" also highlighted a difference between the two treatment groups. The second treatment group was more inclined to access the site outside of the school setting. They also reached the last
page more often then compared to the first group (see Appendix H).

The webpage named index.htm contained the directions and launch page. The page named fin.htm was the last page. The interaction level outside of school highlights a previous suggestion, by the prevailing body of literature, students prefer to interact in cyberspace then engage the textbooks provided by the school.

The initial pretests were analyzed for differences between the two groups to determine if the groups were similar in content knowledge before instruction and the first treatment. An unpaired two sample assuming unequal variances t test was performed and supported the null hypothesis $H_0$ that the groups were not statistically significant in their means ($t = 0.8827, df = 71, t\text{ critical} = 1.9939, p > 0.3804$). The analysis was repeated with the second round of treatment and the results ($t = 0.34489, df = 65, t\text{ critical} = 1.9971, p > 0.7313$) supported the $H_0$ that the groups were not statistically significant in their pre instructionl content knowledge.

To evaluate $H_1$ "there is a difference in learning growth as measured by comparing the pre and post-test scores of the treatment and control groups." Each group's pretest and post-test scores are analyzed using paired two
samples for means $t$ test to determine if there is significance difference in the group’s test scores. The first group’s comparison of the pretest post-test determined ($t = 6.0758, df = 32, t \text{ critical} = 2.0369, p > 0.0001$) this shows there was a significant statistical difference in the pretest and post-test scores. It is determined that the first group displayed learning of content. The statistical analysis was repeated for the second group. The resulting $t$ test revealed there was a significant difference between the pretest and post-test ($t = 2.5791, df = 39, t \text{ critical} = 2.02269, p > 0.0138$). It was determined the group displayed knowledge of the content covered. The data analysis was repeated for the second round of treatment. Both $t$ tests showed a statistical significance between the pretest and post-test: first group ($t = 2.9106, df = 32, t \text{ critical} = 2.0369, p > 0.0065$), second group ($t = 8.7369, df = 39, t \text{ critical} = 2.02269, p > 0.0001$).

An unpaired two sample assuming unequal means $t$ test was used to test $H_2$ “There is no significant difference in performance on the test between students who receive access to the online study aide and those that study only in the classroom using the paper version of the instrument.” The $t$ test revealed there was a statistical
difference between the treatment and control groups \((t = 2.0329, \ df = 67, \ t \text{ critical} = 1.9960, \ p > 0.046)\).

Examining the means of each group determined that the treatment group achieved higher scores on the post-test. The data analysis was repeated for the second treatment. The unpaired two sample assuming unequal means \(t\) test showed there was statistical significance between the treatment and control groups \((t = 2.9533, \ df = 71, \ t \text{ critical} = 1.9939, \ p > 0.0043)\).

In each round of treatment and post-test measurement of the treatment group’s scores were higher than the control group’s scores. Listed in Table 1 are descriptive statistics for clarification of treatment growth.
Table 1.

Descriptive Statistics for First Treatment (N=73)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Constructs</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td>33</td>
<td>9.3939</td>
<td>2.3176</td>
<td>6-14</td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
<td>33</td>
<td>13.0909</td>
<td>3.8435</td>
<td>6-19</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td>40</td>
<td>9.9250</td>
<td>2.8229</td>
<td>5-19</td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
<td>40</td>
<td>11.300</td>
<td>3.6247</td>
<td>3-18</td>
</tr>
</tbody>
</table>
Descriptive statistics on the second study are located in Table 2.

Table 2.

*Descriptive Statistics for Second Treatment (N=73)*

<table>
<thead>
<tr>
<th>Groups</th>
<th>Constructs</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
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<td>6.950</td>
<td>2.6981</td>
<td>3-13</td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
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<td>11.775</td>
<td>4.6712</td>
<td>4-20</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td></td>
<td>33</td>
<td>7.1818</td>
<td>2.9839</td>
<td>2-13</td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
<td>33</td>
<td>8.8788</td>
<td>3.7061</td>
<td>4-19</td>
</tr>
</tbody>
</table>

The data analysis determined that both groups were not significantly different before the treatment occurred. On the genuine assessment, the treatment groups outperformed the control groups. They also significantly out performed the results of the studied school’s Annual Yearly Progress in History (Moreno Valley Unified School District, 2004-2005). The first treatment group had a
42.42% group proficiency rate, compared to the control groups score of 30%. In the second round of treatment, the treatment group had 35% proficiency rate, compared to the control group of 12.12%. The achievement for proficient is currently set at 66% or 13 correct out of 20 possible. A closer look at each group’s achievements reveals a brighter picture of the results. In the first study, the treatment group had seven participants pass the pretest with a 60% or higher in the genuine assessment. After six days of normal instruction, the treatment group was engaged in the interactive quiz in an on-site computer lab. The first treatment group resulted in 24 out of 33 passing the assessment with 12 or more correct on the genuine assessment. The average growth for the first treatment group was approximately four correct answers, while the medium of the group as a whole was five correct.

The second treatment group had stronger results in individual growth. Again, this shows how the interactive review is as effective as the on class paper-based study guide, and increases the student’s grasp of the post-World War II era. The average growth was 4.825 correct answers, while the medium is 5.5 (see Table 3).
Table 3.

Growth Average (N=73)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Medium</th>
<th>Mean growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch 18 treatment</td>
<td>4</td>
<td>3.6970</td>
</tr>
<tr>
<td>Ch 18 control</td>
<td>1.5</td>
<td>1.3750</td>
</tr>
<tr>
<td>Ch 20 treatment</td>
<td>5.5</td>
<td>4.8250</td>
</tr>
<tr>
<td>Ch 20 control</td>
<td>1</td>
<td>1.6670</td>
</tr>
<tr>
<td>Total control</td>
<td></td>
<td>1.521</td>
</tr>
<tr>
<td>Total treatment</td>
<td></td>
<td>4.261</td>
</tr>
</tbody>
</table>

The results were in accord with the research objectives regarding the benefit of an interactive review quiz. It also promoted self-efficacy in the students by increasing their scores above the class average. This reflects an average 29.77% improvement over their peers. They were also among the first to complete the genuine assessments.

Discussion of the Findings

The findings are consistent with the prevailing body of literature. The students’ scores were higher with the interactive quiz than the normal review process even though the results were not statistically significantly.
Students also where more inclined to take notes and address the quiz at their own pace. Students spent an average of 3 minutes on each of the 52 web pages. While observed, the student generally read the questions and answers more frequently then those students participating in the in-class review. Through general observation, the students interacted with the quiz at different speeds. Several students were at the end page in significantly shorter time then their peers. These students were more active throughout the learning process. They also displayed several test-taking strategies like elimination and grouping.

In both treatments, the groups were close in the pretest scores of for both chapters. The data analysis supported the $H_0$ that both groups were not significantly different before instruction and treatment. In chapter 18, between 21 and 25% students were proficient at the beginning of instruction. For chapter 20 and 7.5% were proficient in the beginning of instruction. However, the second study saw a higher percentage of students achieving proficiency then the first treatment group. This is most likely from congruent materials within the textbook chapters. The standards covered for both chapters were similar in content. The second group received the same
instruction, however received the treatment at the end of a unit of study. The students may have had more content absorbed into their schema. This made the interactive quiz more effective in their learning process. This would also account for the higher "GET REQUESTS" from the second group. Students recognized the connections and were intrinsically motivate to continue with the activity.

Within the research there were several unique and surprising findings regarding the interactive quiz. There were different tendencies to use the site outside of the normal school day. This also may account for the higher final page request. The second group had 61 starts and 57 finished the quiz. The first group had 51 starts and 45 finishes. This difference is 5.02% between the groups. The second treatment group is a larger group; therefore, a larger percentage of students participated outside of the normal school setting. The study also shows many students still have poor study habits. The AWstats® page gives insight to a student behavior deferential to their success in school. The day before the post-test saw the majority of the page hits outside the normal instructional time. In the first study, 32 hits or 62.627% of the interactive quiz participants were on May 15. The second study 29 or 47.54% was on May 29. This different percentage may give
reason to the higher growth rate among the second treatment group.

Summary

The results of the study concluded there was a significant difference between the control and treatment groups. On average, the treatment group answered 4.4 questions more correctly than the control group. Further investigation shows there was a significance difference between the groups' interaction with the interactive review instrument. The second treatment group spent more time, and reached the final page then did the first treatment group. This interaction could also account in the difference in growth rate between each group when treatment was applied.
CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

Introduction

The internet draws modern students to itself by its entertaining value. Teens today spend a large portion of their day surfing the internet and chatting with their friends online. Introducing a learning environment to the internet and make a classroom connection gives the students an internal connection to the content. The research supported this idea and highlighted how an interactive review quiz could enhance student performance on a genuine assessment.

Conclusions

The conclusions extracted from the project follows.

1. Students engage material on the internet more cognitively then through normal classroom discussion.

2. Connecting review material to students’ favorite pastime increases their proficiency in the content area of World History.

3. Students learn at different rates and an interactive review quiz helps facilitate all learning speeds.
4. Students generally wait until the day before a test to study.

The participants (n=73) had different levels of engagement and cognitive connection to the material. The control groups had lower growth then the treatment groups. The treatment groups far exceeded the control groups on the post-test for both rounds of treatment. The data analysis confirmed the hypothesis, that an online interactive review quiz is as effective as an in-class review. In each round, the treatment groups’ scores were higher and the t test rejected the H₂, and proved there was a significant difference between the scores. This shows the interactive review instrument aided in the students’ ability to engage the content cognitively and then apply that new scheme when performing the assessment.

The interactive review instrument had differing excitement and engagement level between the two groups, however both groups engaged the interactive review more effectively then the in-class review. Again, this was evident by the results of the post-test scores and confirmed through data analysis with a t test. The second control group interacted more effectively then the first treatment group. However, the test results still displayed that there was a significant difference between the
control and treatment groups on the post-test scores. The study highlighted that students accessed the interactive review outside normal instruction. In fact, the normal habits of studying the night before a test were evident in the AWstats® results. The day before the post-tests, page views for the interactive review quiz increased. The first treatment group also requested a review tool for the second treatment. Many students suggested it allowed them to regulate their online activity with interaction with the review instrument.

The students’ interaction outside of the classroom with the interactive review quiz parallels the prevailing body of literature suggestion that students can regulate their own learning based on their own expectations. The interactive review quiz had no time limit, nor had any limitations to entry or exit points. This allowed students track and engage the material at their pace. Again, the statistics from AWstats® provided an idea that many students started and stopped at different times. They also entered and exited the quiz at different stages.

The study also suggested the need to prompt students to study on a more regular basis. The AWSTATS® highlighted the number of hits the day before rose compared to the initial interaction with there review instrument. The
prevailing body of literature has noted this issue. However, the review instrument did help students engage the material, and helped many students find the knowledgeable adult to help them question their wrong assumptions.

Recommendations

The recommendations resulting from the project follows.

1. Repeat the study, but add treatment in additions to the in-class review. Determine if the interactive review has a compounding effect on student achievement.

2. Repeat the study with more emphasis on the tracking of student interaction.

3. Redesign interactive review to include other types of assessments such as matching and true false.

4. Redesign the interactive review to be more visually pleasant and add interactive videos or sounds.

5. Conduct qualitative study from student’s point of view to effectiveness of interactive review instrument.
6. Research the student's interactive strategies with the interactive web review to determine why some students spent more time on interactive review then others.

Summary

The study concluded an interactive review quiz was more effective then an in-class review. The effectiveness of the review instrument gave students the ability to connect social science content to their favorite pastime. This gives the students a reason to study. When prior they had no significant want to study. The study also highlighted the need for students to perform their study well before the genuine assessment is given. The study highlighted that students generally wait until the night before to interact with material provided to help them study. It can be assumed that students will generally wait until the last day to study for an in class assessment.

The study also promoted the design methods for feedback as an effective tool in creating an effective online review for students. The corrective feedback gave students reasoning for their incorrect choices. This also helps students find the answer well before the actual
assessment. This helps those students find their misconceptions before the assessment is given.

Publishers have been increasing the availability of electronic materials as new edition of their texts are published. They have recognized that history texts are growing, as more history is unfolding. The private sector has recognized the ability of the internet to diffuse information effectively. It gives the receiver the ability to self-regulate when and where they are to partake in such information. For our students, it is easier for them to type in an html address to receive instruction and information then it is for them to carry home and to school a textbook of increasing size.

The more technology is infused into people’s lives the more avenues teachers have to deliver content to their students. The modern obsession of the internet gives teachers the ability to deliver content anytime the student is available. These give students the ability to connect to the content when they feel it is necessary. Prompting them to engage this content is now the struggle.

The deeper the connection to student’s favorite pastime the more engaged the students become when accessing the information provided. The deeper the students are engaged the more content is added to their
personal scheme. The ultimate goal of education is to deliver content to the students and have the student retain and connect to that content. Making a partial connection to their favorite pastime will aid the students in the assimilation of information into their schema.
APPENDIX A

PARENTAL INFORMED CONSENT
STUDY OF WEB-BASED INTERACTIVE REVIEW INSTRUMENT IN STUDENT PREPARATION FOR TESTS
INFORMED CONSENT

You are being asked to allow your child to participate in a study designed to investigate the benefit of using a web-based interactive review instrument located on the World Wide Web. Mr. Eric Viebach is conducting this study under the supervision of Brian Newberry, PhD, professor of the College of Education, Department of Science, Math, and Technology. This study has been approved by the Institutional Review Board, California State University, San Bernardino.

In this study, your child will be asked to use an interactive review instrument to help them prepare for normal in-class tests. The review instrument should take approximately 30 minutes to complete and may be repeated at any time. Your child will be given class time to complete the review in the computer lab. All of your child's test scores, their answers are protected through teacher confidentiality. Your child's name will not be reported with their results. All data will be reported in-group form only.

Your child's participation in this study is voluntary. Your child is free not to use the website to review the world history chapter the class will be working on. You may withdraw your student from the study, at any time during this study. Your child's grade will not be affected by not participating in this study (however, you may not withdraw from the class, per Vista del Lago High School policy). When your child completes the task, they will receive a debriefing statement describing the study in more detail. In order to ensure the strength of the study, we ask that they not to discuss this study with other students.

If you have any questions or concerns about this study or would like to receive the results of the study, please feel free to contact Mr. Eric Viebach (Vista del Lago High School) at (951) 371-4880 or Professor Brian Newberry, PhD (California State University at San Bernardino) at (909) 537-7650.

By placing a check mark in the box below, I acknowledge that I have been informed of, and that I understand, the nature and purpose of this study, and I freely give consent to my minor child to participate.

Place a check mark here: ☐

Student Name: ___________________________ Signature: ___________________________

Parent/Guardian Name: ___________________________ Signature: ___________________________

The California State University
Bakersfield • Channel Islands • Chico • Dominguez Hills • Fullerton • Fullerton • Humboldt • Long Beach • Los Angeles • Monterey Bay
Northridge • Pomona • Sacramento • San Bernardino • San Diego • San Francisco • Stanislaus • Sonoma • Sonoma

Today's Date: ___________________________
APPENDIX B

CHAPTER 18 INTERACTIVE QUIZ
ELEMENTS
1. In the late 1940s and again in 1972, India and Pakistan fought a war over

A. East Punjab. Incorrect. Though this Indian state shares an ethnic heritage with Pakistan, it is not a disputed territory.

B. New Delhi. Incorrect. This is the official capital of India. It lies in the heart of India.

C. Kashmir. - Correct. This piece of land is still hotly debated over today. High in the mountains the population actually wants autonomy from both Pakistan and India.

D. Nepal. - Incorrect. This country lies between India and China. It borders the Himalayan Mountain range.

2. The dividing of India into two nations was referred to as

A. all of the below. - Incorrect you can eliminate two answers based on the reading

B. the separation. - Incorrect. This term would be too drastic to describe the event. Remember the name was coined by the occupying powers.
C. the partition. - Correct this was stated to lesson the blow to the Indian people the powers that be was dividing their country.

D. the civil war. - India never experienced a civil war in it modern times. They were consistently occupied by other forces from Europe, Asia, and the Middle East.

3. After World War II, the greatest source of U.S. Filipino conflict was

A. U.S. trade relations with the Philippines. Incorrect. The trade relation with the Philippines was quite strong. It was a major trading hub for ocean access to the Far East.

B. U.S. industrial interests in the Philippines. - Incorrect. At this time, the Philippines’ economy was centered on trade and had very little production capacity.

C. U.S. economic sanctions on the Philippines. - Incorrect. The Philippines was a protectorate of the US, so the sanctions against the Philippines would be detrimental to US interests.

D. U.S. military bases in the Philippines. - Correct the Filipino people were upset that they traded an occupying power for another. Remember the US gained the
territory of the Philippines through a treaty with Spain after the Spanish American War.

4. The Mau Mau was

A. a secret society that wanted to liberate Kenya from British rule. Correct. By this time in British colonial history, they refrained from indirect rule and chose to directly rule their colonies. Britain ruled this colony with an iron fist forcing freedom movements underground.

B. a Communist organization that wanted to rule Kenya. Incorrect. Most communist movements would enjoy a forceful rule. The Kenyan people were freedom loving and would not chose this type of government.

C. an alliance of tribes that wanted to liberate Kenya from French rule. - Incorrect. This alliance did not form in Kenya. Remember Brittan was effective in dividing its colony and suppression alliances.

D. an organization that wanted to set up a democratic government in Kenya. Incorrect- Most rebels of freedom movement supporters wanted to return to the traditional tribal form of government. The British suppressed the communication in the country so many were unaware of the outside world.
5. Pakistan began as a divided nation. Its east and west regions were separated by

A. the Krishna River. Incorrect. This river is located in the southern part of India.

B. 500 miles of Afghan territory. Incorrect. Afghanistan only shares a border with Pakistan not India.

C. the Brahmaputra River. Incorrect. This river starts in China, flows through India, and enters the Indian Ocean through East Pakistan.

D. 1,000 miles of Indian territory. Correct. East and West Pakistan ceded from India due to Religious, ethnic, and cultural differences.

6. In 1978, the Camp David Accords were signed by

A. Yasir Arafat and Yitzhak Rabin. Incorrect. Yasir Arafat is the leader of the Palestine Liberation Organization. (PLO). Yitzhak Rabin was Prime Minister of Israel during the 1993 Oslo Peace Agreement.

B. Anwar Sadat and Menachem Begin. Correct. Anwar Sadat was the main Arab leader and negotiated with the new Israeli Prime Minister Menachem Begin for peace. The Camp David accords under the guidance of US President Jimmy Carter.
C. Anwar Sadat and Golda Meir. Incorrect. Anwar Sadat led the Arab coalition against Israel from Egypt. Golda Meir was the Prime Minister of Israel during the 1973 War.

D. Yasir Arafat and Menachem Begin. Yasir Arafat is the leader of the Palestine Liberation Organization (PLO). Menachem Begin was the Israeli Prime Minister during the Camp David Accords in 1978.

Using the graph, answer the following questions.

7. Approximately what was the GDP per capita of the United States in 1991?

A. $22,000 Correct. Even though the graph is not divided into $1,000 units this is the most right answer.
B. $25,000 Incorrect. No Bar is touches the top of the scale.

C. $15,000 Incorrect. Singapore is the medium grey bar.

D. $6,000 Incorrect. Look at the graph. The year is 1991 and the US is represented by a white bar.

8. The 1956 Suez Crisis began when

A. Egypt seized control of the Suez Canal. - Correct. Egypt wanted to begin to prosper and instead of renegotiating it agreements with Canal owners they Nationalized the canal and keep revenues to themselves.

B. the United States refused to give up control of the Suez Canal. Incorrect. Thought the US opposed the nationalization publicly they did not pursue the mater with much vigor.

C. the Soviet Union bombed the Suez Canal. Incorrect. The Egyptian government did take ideas from the Soviet Union on nationalizing industries. However, the Soviet Union would not attack an action they smiled upon.

D. Great Britain refused to make improvements to the Suez Canal. Incorrect. The British government did protest the takeover. They were reaping the rewards of the canal
and though reinvestment was small, they did make modern
improvements when needed.

9. In 1967, which of the following did Israel
acquire?

A. Syria. Incorrect. Syria retained its independence
and most of its territory during the 1967 war. However, it
did lose the Golan Heights.

B. the Golan Heights. Correct. Israel acquired this
portion of Syria as a buffer from Syria. Israel intended
the territory as a military holding.

C. the Nile Delta. Incorrect. The Nile Delta is
located in northeast portion of Egypt. During the 1967
war, Israel was stopped before they reached the Nile
Delta.

D. the Negev Desert. Incorrect. The Negev Desert is
in the heart of southern Israel. This land was not
contested in the 1967 war.

10. The first prime minister of the Congo (formally
the Belgian Congo) was

A. Ahmed Ben Bella: Incorrect. A FLN leader who was
imprisoned by the French for his separatist ideology.
After Algeria ceded from France was elected prime minister.

B. Moise Tshombe. Incorrect. He is a tribal member Katanga providential tribe. He declared the mining province independence from the Congo. He was backed by Belgium mining interests until he was wooed from the communist and changed is ideologies.


D. Mobutu Sese Seko. Incorrect. However, he was named the president of the Congo. Mobutu gain power through a military coup de tant. He naturally became a dictator and ruled the Congo for 25 years.
APPENDIX C

CHAPTER 20 INTERACTIVE QUIZ

ELEMENTS
Chapter 20

1. The product most likely to be found in an American household is

A. a videocassette recorder. Incorrect. Only about 88% of Americans have a videocassette recorder in their homes. This number is decreasing due to the modern DVD player.

B. a personal computer. Incorrect. Thought the number of computers per household is increasing, it has yet to surpass the number of Televisions.

C. a television. Correct. 98% of American households have a television. It is generally considered the family’s most cherished possession.

D. a telephone. Incorrect. The telephone is not as prevalent in American households thanks to the cell phone.

2. NASA and the European space agency cooperated in the launch of

A. the space station Mir. - Incorrect. The space station Mir was the Soviet Union’s space station. The Soviet Union invited US astronauts up for a visit. This cooperation leads to the creation of the first international space station.
B. the first manned space flight. - Incorrect. The first manned space flight was completed by Yuri Gagarin, a Russian cosmonaut.

C. the Hubble Space Telescope. - Correct. This was the first time the ESA (European Space Agency) and NASA cooperated on a deep space research satellite. The intention of Hubble was to study the farthest regions of the galaxy.

D. the first spacecraft with an international crew. - Incorrect. The Soviets were the first country to send up an international crew. The international crewmember onboard of Soyuz 28 was a Czech named Vladimir Remek.

3. A nation that opposed the principles of free trade would

A. import more products than it exports. - Incorrect this is known as a trade deficit. This promotes a countries dependence on goods and services internationally.

B. refuses to trade with a particular nation. - Incorrect. Though this action would limit countries trading partners, it would not necessary limit its trading relationship with other countries.
C. increases the price of an exported product. Incorrect. This would hurt the domestic manufacture that is producing the product to be use internationally. It would not be economically good to increase the price of your product sold outside the country.

D. establishes product will be selected over the imported one.

4. The term "global economy" refers to financial interactions that

A. occurs anywhere in the world. Incorrect - Yes the global economy can occur anywhere in the world, however it must include two separate countries to be considered Global.

B. crosses international borders. Correct - the term "Global" includes all nations on the globe. The term "economy" means any action resulting in an economic action.

C. are controlled or overseen by the United Nations. - Incorrect. Though the United Nations controls the majority of international negotiations, it does not ultimate control the global economy. There are several other international agencies, independent to the UN, which have a more direct effect on the Global economy.
D. decrease one nation's dependence on another.
Incorrect - The emergence of a "Global Economy" increases the world's dependence on each other for their economic advancement.

5. A developed nation is usually LOWER than a developing nation in the area of its
A. likelihood of political instability. Correct. The more unstable the government is, the less likely the people will have confidence to advance the civilization.
B. life expectancy. Incorrect. Many underdeveloped countries have a longs average life span. This may be do to the lack of exposure to pollutants. Many developed nations expose their inhabitants to a high quantity and frequency to age limiting pollutants.
C. standard of living. Incorrect. This is a result of being underdeveloped. This is actually a judgment value. One country's rich may not be another country's poor. The value is relative to the person studying the countries views.
D. literacy rate. Incorrect. However, this is usually a result of low development, and is not the root cause for a countries underdeveloped status.
6. A multinational corporation is one that

A. produces products for export. Incorrect. Yes, this is a characteristic of a Multinational corporation it is not the only characteristics. Many companies produce products for sale in other countries. Not all of these companies are considered multinational corporations.

B. operates in a number of countries. Correct. The prefix “Multi” points to the definition of more then one. Therefore, a multinational corporation is a corporation that does business in more than one country.

C. depends on the import of raw materials. Incorrect. This can be a characteristic of a multinational corporation, but more likely, the raw material is what draws a multinational corporation to build factories in a host country.

D. has stockholders from many nations. Incorrect. The stock market has allowed investors from different countries to participate in the economy of the United States.

7. The Taliban movement in Afghanistan is an example of how politics and government can be controlled by

A. fundamentalism. Correct. - Fundamentalism is when a country’s laws are directly derived from a religious
ideology. Other views, religions, or cultures are severely suppressed

B. wealth. Incorrect. - During the Taliban reign the majority of Afghanistan's citizens lived well below the world's average standard of living. Consistent war also ruined any infrastructure within the country.

C. nationalism. Incorrect. - Though the Taliban did have nationalism, for Afghanistan they did not give other any political power. Remember Nationalism can be both positive and Negative depending

D. industry. Incorrect. - When the Taliban gained control of Afghanistan, they destroyed the major sources of income. The number one export of Afghanistan is opium

8. In the Gulf War, 39 allied nations fought against the nation of

A. Iraq. Correct. Iraq invaded Kuwaiti and refused to leave. Saddam Hussein claim Kuwaiti was a traditional territory or Iraq and they had every right to occupy Katie

B. Iran. - Incorrect - Iran may currently be on the United States "axis of evil" they were not part of the First Gulf War.
C. Kuwait. Incorrect—Kuwait was invaded by Iraq. This is the action, which the 39-member collation was formed to liberate.

D. Saudi Arabia. - Incorrect. This country was feared as the next country Iraq was to invade.

9. The most instrumental event in prompting the UN to issue the Universal Declaration of Human Rights was

A. apartheid in South Africa. - Incorrect. - The Apartheid happened after the declaration of Human rights. The declaration of Human rights is not a binding document; many nations signed the document as a symbol, but rarely address the abuses in their own country.

B. the Holocaust in Europe. Correct. The general purpose was to insure that all people have the right to life, liberty, and security of persons. The Genocides of the past gave credence to the need of a universal declaration of natural rights.

C. the Cultural Revolution in China. Incorrect. - The Cultural Revolution resulted in thousands of people loosing their lives. It was not a migrating factor in its creation.

D. the civil rights movement in the United States. Incorrect. - However, the civil rights movement in the
United States did give movement members a road map as to the creation, and what abuses should be addressed.

10. The Internet was originally developed for use in

A. spying. Incorrect. - Though the internet is used in spying today, it was not the original intent.

B. missile control. - Incorrect. - Though the internet was modeled after the original communications network between missile silos, this was not its original intent. This network is still in use today and does not have a civilian access point.

C. scientific research. Correct - The original intention of the "Internet" was a communication tool used by scientists to discuss and exchange research.

D. space exploration. - Incorrect. Space exploration may have effect technology used on the internet, such as, communication satellites. The internet did not play a role in the beginnings of space exploration.
APPENDIX D

CHAPTER 18 PRE / POST-TEST
Chapter 18
Choose the correct answer.

1. The dividing of India into two nations was referred to as
   A. the civil war
   B. the partition
   C. the separation
   D. all of the above

2. In the late 1940s and again in 1972, India and Pakistan fought a war over
   A. Kashmir
   B. Nepal
   C. New Delhi
   D. East Punjab

3. Pakistan began as a divided nation. Its east and west regions were separated by
   A. the Brahmaputra River
   B. 1,000 miles of Indian territory
   C. 500 miles of Afghan territory
   D. the Krishna River

4. After World War II, the greatest source of U.S. Filipino conflict was
   A. U.S. trade relations with the Philippines
   B. U.S. industrial interests in the Philippines
   C. U.S. economic sanctions on the Philippines
   D. U.S. military bases in the Philippines

5. All of the following are true of Burma's Aung San Suu Kyi EXCEPT that she was
   A. the daughter of an assassinated leader.
   B. kept under house arrest for six years.
   C. killed by the military government.
   D. active in the National League for Democracy.

6. French-speaking Africans and West Indians formed a movement to celebrate
African culture, heritage, and values called
   A. Negritude.
   B. African Peoples.
   C. Black Pride.
   D. African Heritage.

7. The Mau Mau was
   A. a secret society that wanted to liberate Kenya from British rule.
   B. a Communist organization that wanted to rule Kenya. Incorrect
   C. an alliance of tribes that wanted to liberate Kenya from French rule
D. an organization that wanted to set up a democratic government in Kenya.

8. The 1956 Suez Crisis began when
   A. the United States refused to give up control of the Suez Canal
   B. the Soviet Union bombed the Suez Canal
   C. Great Britain refused to make improvements to the Suez Canal
   D. Egypt seized control of the Suez Canal

9. The first prime minister of the Congo (formally the Belgian Congo) was
   A. Mobutu Sese Seko
   B. Patrice Lumumba
   C. Moise Tshombe
   D. Ahmed Ben Bella

10. In 1978, the Camp David Accords were signed by
    A. Anwar Sadat and Golda Meir
    B. Anwar Sadat and Menachem Begin
    C. Yasir Arafat and Yitzhak Rabin
    D. Yasir Arafat and Menachem Begin.

Using the map, answer the following questions.

<table>
<thead>
<tr>
<th>Comparing Economies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Domestic Product is the dollar value of all goods and services produced within a country during one year. In this graph, the GDP is divided by the number of productive workers in each country, This results in the GDP per capita, or per person.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Philippines</th>
<th>Singapore</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>$15,000</td>
<td>$20,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>1985</td>
<td>$22,000</td>
<td>$30,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>1991</td>
<td>$25,000</td>
<td>$35,000</td>
<td>$40,000</td>
</tr>
</tbody>
</table>


11. How many miles apart are Tel Aviv and Haifa?
    A. 40
    B. 70
    C. 85
    D. 100

12. In 1967, which of the following did Israel acquire?
A. the Nile Delta  
B. Syria  
C. the Golan Heights  
D. the Negev Desert

13. Which of the following covers the least area?  
A. the Sea of Galilee  
B. the Dead Sea  
C. the Gulf of Aqaba  
D. the Gulf of Suez

14. Which of the following borders the West Bank?  
A. Israel, the Sea of Galilee, and the Jordan River  
B. the Golan Heights, the Dead Sea, and the Jordan River  
C. Israel, the Dead Sea, and the Jordan River  
D. the Golan Heights, the Sea of Galilee, and the Jordan River

15. Which of the following cities is the furthest west?  
A. Beersheba  
B. Jerusalem  
C. Gaza  
D. Haifa

Using the graph, answer the following questions.

16. Approximately what was the GDP per capita of the United States in 1991?  
A. $6,000  
B. $15,000  
C. $22,000  
D. $25,000

17. Which of the following had the lowest GDP per capita in 1985?  
A. Philippines  
B. Singapore  
C. the United States  
D. the Philippines and Singapore (about equal)

18. About how much did Singapore's GDP per capita increase from 1965 to 1985?  
A. $3,000  
B. $6,000  
C. $8,000  
D. $10,000
19. About what was the Philippines' GDP per capita in 1965?
   A. $100
   B. $1,000
   C. $2,000
   D. $5,000

20. In 1985, about how much higher was the GDP per capita in the United States than the GDP per capita in Singapore?
   A. $1,000
   B. $5,000
   C. $8,000
   D. $10,000
APPENDIX E

ORAL ASSENT STATEMENT
STUDY OF WEB-BASED INTERACTIVE REVIEW INSTRUMENT IN STUDENT PREPARATION FOR TESTS

ORAL ASSENT STATEMENT

The study in which you are being asked to play a part is designed to look into the benefit of using an interactive website in reviewing for a test. I am trying to improve your tests scores and also complete my MA.

In this study, you will be asked to use the interactive review website to help you prepare for normal in-class tests. The review instrument should take approximately 30 minutes to complete and maybe repeated at any time. You will have access to the website during normal class time. All of your test results will be held private by myself. All test scores will be reported in group form only.

Your participation in this study is voluntary. You are free to withdraw at any time during this study without penalty to your class grade. In order to ensure the strengths of the study, we ask you not to discuss this study with other students.

If you have any questions or concerns about this study or would like to receive the results of the study, please fell free to contact Mr. Eric Viebach or Professor Brian Newberry, PhD at (909) 537-7630.

CALIFORNIA STATE UNIVERSITY SAN BERNARDINO
INSTITUTIONAL REVIEW BOARD COMMITTEE
APPROVED 5/31/2000

Joseph Jones
APPENDIX F

CHAPTER 20 PRE / POST-TEST
Chapter 20
Write the letter of the best answer.
1. NASA and the European space agency cooperated in the launch of
   A. the space station Mir
   B. the Hubble Space Telescope.
   C. the first manned space flight.
   D. the first spacecraft with an international crew.

2. The Internet was originally developed for use in
   A. spying.
   B. missile control.
   C. space exploration.
   D. scientific research.

3. The term "genetic engineering" refers to
   A. using extremely precise surgical techniques.
   B. selective breeding to emphasize certain traits.
   C. modifying the hereditary units in an organism.
   D. creating machines that can do the work of humans.

4. The successful cloning of an organism would, by definition, result in a new organism that was
   A. unable to reproduce itself.
   B. genetically identical to the original.
   C. superior in at least one trait to the original.
   D. larger, stronger, and healthier than the original.

5. A developed nation is usually LOWER than a developing nation in the area of its
   A. literacy rate.
   B. life expectancy.
   C. standard of living.
   D. likelihood of political instability.

6. In the Gulf War, 39 allied nations fought against the nation of
   A. Iran.
   B. Iraq.
   C. Kuwait.
   D. Saudi Arabia.

7. The term "global economy" refers to financial interactions that
   A. crosses international borders.
   B. occurs anywhere in the world.
C. decrease one nation's dependence on another.
D. are controlled or overseen by the United Nations.

8. The major cause of damage to the atmosphere's ozone layer is caused by
   A. acid rain.
   B. global warming.
   C. chlorofluorocarbons.
   D. the sun's ultraviolet rays.

9. A nation that opposed the principles of free trade would
   A. establishes import taxes.
   B. import more products than it exports.
   C. refuses to trade with a particular nation.
   D. increases the price of an exported product.

10. A multinational corporation is one that
    A. produces products for export.
    B. operates in a number of countries.
    C. has stockholders from many nations.
    D. depends on the import of raw materials.

11. The purpose of the Nuclear Non-Proliferation Treaty can be found in its
    name, in which proliferation refers to the
    A. use of something.
    B. spread of something.
    C. prohibition of something.
    D. elimination of something.

12. The Taliban movement in Afghanistan is an example of how politics and
government can be controlled by
    A. wealth.
    B. industry.
    C. nationalism.
    D. fundamentalism.

13. In the 1950s and 1960s, the civil rights movement's struggle against
    segregation focused on the type of segregation that was
    A. imposed by law.
    B. the result of habit.
    C. hidden from public view.
    D. illegal but widely practiced.
14. The most instrumental event in prompting the UN to issue the Universal Declaration of Human Rights was
   A. apartheid in South Africa.
   B. the Holocaust in Europe.
   C. the Cultural Revolution in China.
   D. the civil rights movement in the United States.

15. One similarity among Dr. Martin Luther King, Jr., Rigoberta Menchú, and Mother Teresa is that all three
   A. worked at one time for the UN.
   B. was born in the United States.
   C. was awarded the Nobel Peace Prize.
   D. organized marches, protests, and sit-ins to achieve their goals.

16. The cultural trait LEAST likely to be significantly affected by popular culture is
   A. fads.
   B. slang.
   C. musical styles.
   D. religious beliefs.

17. The product most likely to be found in an American household is
   A. a telephone.
   B. a television.
   C. a personal computer.
   D. a videocassette recorder.

18. English is referred to as the "premier international language" because
   A. it is the most widespread of any language.
   B. it is the most scientifically precise language.
   C. more people speak English than any other language.
   D. languages all over the world contain some English words.

19. The definition of materialism, as the word is used in this chapter, is the
   A. "idea that everything consists of matter."
   B. "tendency to rely on physical proof rather than theory."
   C. "idea that matter, or the content, of something is more important than its form."
   D. "mindset of placing a high value on acquiring material possessions."

20. The word accommodation, as it is used in this chapter, has to do with the level of a culture's
   A. standard of living.
B. concern for fairness.
C. acceptance of foreign ideas.
D. ability to live harmoniously.
APPENDIX G

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APPENDIX H

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