THE EFFECTS OF AUTHENTIC BASED INSTRUCTION ON LONG TERM RETENTION AND APPLICATION, STUDENT ENGAGEMENT, AND STUDENT MOTIVATION

A Thesis by

Adam Dreher

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THE EFFECTS OF AUTHENTIC BASED INSTRUCTION ON LONG TERM RETENTION AND APPLICATION, STUDENT ENGAGEMENT, AND STUDENT MOTIVATION

The following faculty members have examined the final copy of this for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Education with a major in Curriculum and Instruction.

______________________________________
Jeri A. Carroll, Committee Chair

______________________________________
Ashlie Jack, Committee Member

______________________________________
Elaine Bernstorff, Committee Member
DEDICATION

To Gina the wife and Sutton the son, can’t wait to spend evenings with you again!
Children have to be educated, but they have also to be left to educate themselves.
ACKNOWLEDGMENTS

I would like to thank my adviser, Jeri Carroll, for her many years of thoughtful, patient guidance and support. I would also like to extend my gratitude to members of my committee, Jeri A. Carroll, Ashlie Jack, and Elaine Bernstorf, for their helpful comments and suggestions on all stages of this project and the Museum of World Treasures for their support and involvement.
This research attempted to determine if there was a benefit to authentic based instruction over traditional lecture based instruction. Two units were taught in the Social Studies curriculum area, the first using lecture based instruction and the second using authentic based instruction. Subject matter retention tests were given three weeks after each unit to determine subject matter retention as well as the student’s ability to apply the retained knowledge to new ideas and problems. Student engagement and motivation data were also collected to help determine the effects of authentic instruction on all these areas of student performance. It was determined that authentic instruction did create a positive influence on subject matter retention, student engagement, and student motivation, but did not have an effect on the student’s ability to apply the learned knowledge. It was recommended that further study be done on other specific aspects of authentic learning and the effects that can be elicited.

Keywords: authentic learning, student engagement, student motivation
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INTRODUCTION

Authentic instruction-, activities-, and environments-based education has been used for many years, yet these techniques have not caught on completely in mainstream education. Many studies have shown authentic learning (AL) and all that that encompasses, to be beneficial to students in both the short term and long term (Carmichael, King, & Newman, 2009; McKenzie, 2007, Consequences, para. 1). AL focuses on real world connections, ill formed questions, problem solving, and making work meaningful to students. It is less about fact memorization and test taking, although many studies do note that memorization and tests still maintain an important place in school (Carmichael et al., 2009). Proponents believe that AL is vital to student’s education due to its ability to prepare students for their future in the work force. Dennen (2004) indicates that “many students still fail to see the relationship between traditional school-based learning and real-world applications, and many educators who are competent practitioners fail to provide learning experiences that adequately connect the theory to practice” (p. 814).

In the real world people do not face problems that have all necessary data available, formulas to solve the problems, single disciplines to use, and only one answer to find. Students have a need to know how to use what they have learned in the past, how to create a plan of action to solve a problem, how to locate necessary information, and how to use multiple disciplines to solve a single complex problem with many possible outcomes (Lombardi, 2007, p. 2. This study examines the capability of AL to make effects on subject matter retention, student engagement, and student motivation within a fifth grade classroom in the area of social studies.
Defining Authentic Learning

Just using the word authentic leads to an on-going discussion about what that word means in education. It can be traced back to use in describing music, art, philosophy, education, assessment, writing, and environments. Newmann and Wehlage (1993) use the term authentic learning “to distinguish between achievement that is significant and meaningful and that which is trivial and useless” (p. 1). Within this definition, they more precisely label authentic with three criteria: (a) construction and production of knowledge; (b) use of disciplined inquiry to construct meaning; and (c) production of a product. McKenzie (2007, The Rationale section, para. 4) defines authenticity as: “It is meaningful, worthy, and generative – in the sense of provoking ongoing growth and development.”

Many of the definitions of AL tell of a need for relevant and real world expectations. Gulikers, Bastianes, and Martens (2004) explain how when learning authentically, students should be developing relevant abilities. Developing these abilities happens through the creation of authentic situations in which students are exposed to practices from real life, reflecting current professional standards (p. 510), i.e., authentic environments providing context to an authentic task. Carmichael et al. (2009) provide another viewpoint on AL:

Authentic is used here not to suggest that students are always unmotivated to succeed in conventional academic work, or that basic skills and factual knowledge should be devalued, but only to identify some kinds of intellectual work as more complex and socially or personally meaningful than others. Often times, authentic is used to mean only that the tasks students are assigned have meaning or connect to something in their lives now. We mean much more. Specifically, authentic intellectual work involves
original application of knowledge and skills, rather than just routine use of facts and procedures. (p. 49)

Herrington, Oliver, and Reeves (2002) reviewed extensive research in order to define critical features of AL. From this research, they identified 10 characteristics that classify learning as authentic (p. 564):

1. **Authentic activities have real-world relevance:** Tasks in authentic instruction become more authentic when mimicking task performed by professionals or adults in real life. Although Cronin (1993, p. 78) notes that authenticity exists on a continuum, and that not all activities will be able to be as “real life” as their professional counterparts.

2. **Authentic activities are ill-defined:** This is meant that not only is there possibly more than one interpretation but also that the tasks and sub-tasks involved are also ill-defined, pushing the student to interpret and identify the necessary steps to complete the major task.

3. **Authentic activities encompass complex tasks to be investigated by students over a sustained period of time:** Problems cannot be solved in a matter of hours or minutes. Authentic activities encompass tasks that require continued investigation by students over a longer period of time, requiring significant investment of time and intellectual resources.

4. **Authentic activities provide the opportunity for students to observe the task from different perspectives:** Learners are not given a pre-selected set of resources. They will be required to differentiate between relevant and irrelevant information as well as locate information from different viewpoints.
5. **Authentic activities provide the chance to collaborate:** In the real world collaboration is a vital part of authentic learning.

6. **Authentic activities provide the occasion to reflect (metacognition):** Authentic learning enables learners to reflect upon the choices that they make as individuals, team, and community. Metacognitive instruction within itself has many similarities and connections to the authentic learning process.

7. **Authentic activities provide an interdisciplinary perspective:** Authentic learning is not limited to a single domain or subject. Instead authentic tasks expect students to stretch beyond and use knowledge from other areas to apply to a complex problem and think in interdisciplinary terms.

8. **Authentic activities are integrated with assessment:** There isn’t a simple summative assessment for an authentic task but assessment is seamlessly woven into the major task to illustrate real-world evaluation processes.

9. **Authentic activities create polished products:** Conclusions are not just exercises in preparation for something else. A product is created that is valuable in its own right.

10. **Authentic activities allow opposing solutions and diversity of outcome:** Instead of yielding a single outcome or correct answer obtained by applying a specific procedure or formula, authentic activities allow for diverse interpretations and competing solutions.

These characteristics are seen throughout professional literature related to AL, although not every characteristic is always noted. All of these characteristics are the pieces that help make an activity authentic. To further provide evidence to support the ten characteristics, Herrington
et al. (2002) created a table listing each characteristic and the research from which each characteristic was derived, quoted here:

Table 1

**Authentic Activities and Supporting Authors**

<table>
<thead>
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<th><strong>Authentic Activity Characteristics</strong></th>
<th><strong>Supporting Authors, Researcher and Theorists</strong></th>
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<td>4</td>
<td>Different perspectives and resources</td>
<td>(Sternberg et al., 1993) (Bransford et al., 1990) (Young, 1993) (Cognition and Technology Group at Vanderbilt, 1990b).</td>
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<td>5</td>
<td>Opportunity to collaborate</td>
<td>(Lebow &amp; Wagner, 1994) (Young, 1993) (Gordon, 1998)</td>
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<td>6</td>
<td>Opportunity to reflect</td>
<td>(Young, 1993) (Gordon, 1998) (Myers, 1993)</td>
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<td>7</td>
<td>Interdisciplinary perspective</td>
<td>(Bransford et al., 1990) (Jonassen, 1991)</td>
</tr>
<tr>
<td>8</td>
<td>Seamlessly integrated with assessment</td>
<td>(Reeves &amp; Okey, 1996) (Herrington &amp; Herrington, 1998)</td>
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<tr>
<td>9</td>
<td>Polished products</td>
<td>(Gordon, 1998) (Barab, Squire, &amp; Dueber, 2000)</td>
</tr>
<tr>
<td>10</td>
<td>Allow competing solutions and outcomes</td>
<td>(Bransford et al., 1990) (Duchastel, 1997) (Young &amp; McNeese, 1993)</td>
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</table>
Similar to Herrington et al. (2002), Newmann and Wehlage (1993) created a list of five standards to judge the level of authenticity of an activity, lesson, or unit. The standards, quoted here, are set up on a rating scale from one to five instead of a ‘yes’ or ‘no.’

1. Higher-Order Thinking  

*lower-order thinking only 1... 2... 3... 4... 5... higher-order thinking is central*

2. Depth of Knowledge  

*knowledge is shallow 1... 2... 3... 4... 5... knowledge is deep*

3. Connectedness to the World Beyond the Classroom  

*no connection 1... 2... 3... 4... 5... connected*

4. Substantive Conversation  

*no substantive conversation 1... 2... 3... 4... 5... high-level substantive conversation*

5. Social Support for Student Achievement  

*negative social support 1... 2... 3... 4... 5... positive social support*

From these standards, we see the desire to move students from a level of simply memorizing knowledge to a much deeper level of understanding. To determine the level of understanding of students, educators commonly refer to Blooms Taxonomy (Atherton, 2011). This taxonomy covers six levels within the cognitive domain. The base level is knowledge, followed by comprehension, application, analysis, synthesis, and evaluation. It is a goal of AL to get students to the higher levels of thinking (Bloom’s Taxonomy) by using, as much as possible, these characteristics (Herrington et al, 2002), and standards (Newmann & Wehlage, 1993) of AL.

Why is AL necessary? Many reasons are given as to why AL needs to be more prevalent in schools. Some of the most discussed are student engagement and motivation, career and real
life preparation, and how AL relates to the natural way of learning. These reasons often overlap in their philosophy and implementation.

**Student Motivation and Engagement**

Student motivation and classroom engagement have long been studied. Educators continue to strive to bring these two important pieces of education into their classrooms. AL promises to help with motivation and engagement (Fredricks, Blumenfeld, & Harris, 2004).

**Motivation.** Lombardi (2007) connects motivation to AL by saying that motivation arises when students are given the chance to solve a real world problem (p. 2). Real world connections bring meaning to a task and give students a reason to perform that task. If an adult in the real world were given a task and knew that the product or activity that was given had little or no meaning beyond practice in that area, that company would see a decline in motivation to perform at a high level (Thomas, 2009). Lombardi (2007) indicates that students often show a preference for *doing* rather than *listening* (p. 6). They are motivated by moving and putting their knowledge into a product that has meaning and real-world relevance over sitting and listening to information. Others have said that for most students in most schools, the usual work demanded of them is rarely “meaningful, significant, or worthwhile” (Carmichael et al., 2009, p. 42). Work like described above will lack the motivational properties to get students actively motivated to participate (p. 43). “Participation in authentic intellectual activity is more likely to motivate and sustain in the hard work that learning requires,” (Carmichael et al., p. 48). Students tend to find authentic work more interesting than lectures, drills, and worksheets (p. 43). They are also more willing to devote serious effort and time into the learning when given the chance to express themselves and their ideas (p. 49)
Motivation isn’t just about motivating students to finish their work or to listen. It is about getting them to take an active role in their education, helping them to realize the excitement and purpose that learning and solving problems can bring them. Along with this type of motivational engagement, Lutz, Guthrie, and Davis (2010) point out that complex tasks facilitate engagement as well as academic achievement (p. 4). Simple and repeated learning can drain motivation from students; however, complex tasks will help them engage in the activity.

Engagement. Mims (2003) discusses AL not only in how it creates engagement, but how the lack of the meaning that traditional learning (TL) activities (such as lecture style teaching, worksheets, and reading from the text book) produce can cause low engagement. He also feels that the lack of meaning can hinder transfer of knowledge (p. 1). With an absence of meaning, students will not be motivated to engage themselves in the curriculum. Mims states that “the true power of authentic learning is the ability to actively involve students and touch their intrinsic motivation” (p. 1). When students make the connection between their schoolwork and how it touches their lives meaningfully, separate and isolated motivational strategies will not be needed. Students will internally engage themselves in learning. Mims concludes his thinking by asserting that “Students continue to be engaged with real-world problems and situations that motivate them to seek to understand about a wide variety of subjects” (p. 2).

Lutz et al. (2010) present various types of teaching practices used to optimize engagement. The first is provision of real-world interactions connected to learning topics (p. 4). This use of real-world interactions continues the thought that if students connect school learning with the real world, they will find greater value in learning, which leads to engagement. The second practice is instruction using interesting information and literary texts (p. 4). Although a simple thought, it is quite possible that when teachers are instructed to use a specific district-
wide curriculum, they may not ask themselves whether or not the text in the curriculum is engaging for the students. The third practice is support for student collaboration (p. 4). Students maintain engagement when given the chance to share their ideas and hear viewpoints of others on similar topics (p. 4). The fourth and last practice described the authenticity and meaningfulness of the activities to life outside of school (p. 5). If an activity is something they choose to do outside of school, the task is more likely to be something that is meaningful to them.

Boykin and Noguera (2011) also describe the value of connecting the students with the learning. The more students are directly tied to what is being taught, the more students are discernibly engaged in the task being performed and the lesson being taught. Students generally performed best when content was personalized to them. Personalization creates authenticity of the content because of the real life connections.

**Career Preparation and Real Life Connections**

When examining school reform and how students should learn, researchers often ask what the end goal is. For what are we preparing our students? In 1992, Roth examined reports that showed a need in science and mathematics education. These reports pointed to the importance of enculturating students into the authentic practices of scientists and mathematicians (p. 314). Our students should be learning the skills and knowledge needed to help them succeed as productive citizens in the real world (AdvancED, 2011; Challenge Based Learning, 2011).

Lombardi (2007) expressed her viewpoint on the importance of preparing student for the real world by saying, “to be competitive in a global job market, today’s students must become comfortable with complexities’ of ill-defined real-world problems” (p. 10). In real-world job situations, many tasks do not match the way students perform work on problems in classrooms. The real-world problems may not have only one answer; many equally practical options to a
single question exist depending on the viewpoint and creativity of the employee or team.

Gulikers et al. (2004) mention that “companies often argue that students know a lot of ‘facts’, but are not ‘competent’” (p. 510). Students are used to seeing a problem they know will fit into a mold and into which they will be able to plug a ‘fact.’ They have learned to create an answer, rather than to solve a problem.

It is important to notice that the review of research to this point has indicated that AL reflects the way knowledge and skills will be ‘used’ in real life, but not how they will be ‘learned.’ “An authentic learning environment provides a context that reflects the way knowledge and skills will be used in real life” (Gulikers et al., 2004, p. 509). Students need to learn how to use a skill to further their ability and knowledge, not just how to apply a formula they have ‘learned.’ Skills such as critical thinking, problem solving, and collaboration can be used by students to find solutions with others, for which rote memorization will not suffice.

Newmann (1991) presents two problems in schools that stem from nationally standardized tests. The first is the most obvious, the large proportion of students, especially low-income, who do poor in school and score low on national assessments. He states the second problem by saying;

Another issue – less popular, but perhaps even more disturbing – is that even those who succeed in school and score well on conventional tests have not been educated to cope successfully with the demands of personal, vocational, and civic life in society (p. 459) AL is not just for students who struggle to meet standards. Many students go through school without ever receiving anything lower than an A, but that have not acquired the skills necessary to understand and solve a multi-disciplinary, open-ended problem.

Since students are typically not trained on how to work with real life situations, they can often run into problems. “Students rely on their knowledge of standard textbook patterns of
problem presentation. When students encounter problems that fall outside these patterns, students are often at a loss for what to do” (Collins, Brown, & Holum, 1991, p. 2). Marra (2007) indicates that students often learn to solve problems that will never happen in real life. She questions why this is, since there are already so many things in their lives that entail subjects such as math, writing, reading, and more that provide real life situations begging for solutions.

McGilly, 1995, indicates that when information is obtained through memorizing discrete facts and figures, the information remains isolated and inert. Subjects often found it hard to use what they had learned and apply it to a new situation (Marx, Blumefeld, Krajcik, & Soloway, 1997). In this same frame of mind, the authors pointed out that knowledge of a subject is not the same as doing. Knowledge is not an abstraction that can be transferred readily from how it is learned in the classroom to how it needs to be used out of school. Moreover, how students are asked to demonstrate knowledge affects what they learn (p. 351). If the students know they will be tested by a multiple choice test, they will make sure they know the information well enough to simply be able to pick it out of other facts, which is different than the ability to apply the knowledge using higher levels of understanding.

**Cognitive Apprenticeship and Scaffolding**

Collins et al. (1991) explain the importance of cognitive apprenticeships and how the technique relates to AL (p. 4). In later writings, Dennen (2004) explains cognitive apprenticeship by framing what is at the center of apprenticeship. The main idea is that a more qualified person is helping someone with less experience. This expert models skills and provides structure to help reach a goal (p. 813).

Some authors indicate that we do not pay enough attention to how experts in particular fields solve real-life problems. We do not look at the strategies they use in those real world
situations (Collins et al., 1991, p. 1). These authors points out that in ancient times, “we taught our children how to speak, grow crops, craft cabinets, or tailor clothes by showing them how and by helping them do it” (p. 1). Apprenticeship was the medium for transmitting the knowledge required to perform a task or solve a problem.

Apprenticeship is authentic because it is how we learn so often in the real world. To Collins et al. (1991), one of the most important pieces to cognitive apprenticeship is making thinking visible to the student and teacher. The following statement explains this:

In apprenticeship, learners can see the processes of work: They watch a parent sow, plant, and harvest crops and help as they are able; they assist a tradesman as he crafts a cabinet; the piece together garments under the supervision of a more experienced tailor.

Apprenticeship involves learning a physical, tangible activity. But in schooling, the “practice” of problem solving, reading comprehension, and writing is not at all obvious–it is not necessarily observable to the student. In apprenticeship, the process of the activity is visible. In schooling, the processes of thinking are often invisible to both the students and the teacher. Cognitive apprenticeship is a model of instruction that works to make thinking visible. (Collins et al., 1991, p. 1)

Collins et al. (1991), Dennen (2004), and Collins (2006) have each broken cognitive apprenticeships into several steps. To show the similarities and differences in their perspectives, Table 2 provides a listing of the separate steps to be included in an apprenticeship as identified by these three studies.
Table 2

Steps of Cognitive Apprenticeships

<table>
<thead>
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<th>Steps of Cognitive Apprenticeship</th>
<th>Sequential Nature of the Steps</th>
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<td>Model</td>
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<tr>
<td>Scaffold</td>
<td>2</td>
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<tr>
<td>Fade</td>
<td>3</td>
</tr>
<tr>
<td>Coach</td>
<td>4</td>
</tr>
<tr>
<td>Explain</td>
<td>2</td>
</tr>
<tr>
<td>Reflect</td>
<td>5</td>
</tr>
<tr>
<td>Articulate</td>
<td>6</td>
</tr>
<tr>
<td>Explore</td>
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</table>

The difference between the three sets of steps in apprenticeships is that Collins et al. (1991) focus on the teacher and how they get the students moving on the activity and then slowly step away. Collins (2006) and Dennen (2004) include strategies for the students to use, asking them to articulate what they have done or are doing, reflect upon what they have accomplished and how they can improve it, and taking what they have learned from the simple assigned goal to exploring how it can be applied to other projects and ideas.

These models of apprenticeships match traditional apprenticeships in many ways, using what we know about how we learn. Apprentice farmers would not be expected to go out and complete the whole farming processes without instruction. They would first watch a parent or supervisor sow, plant, and harvest, helping as they were able (Collins et al., 1991). The task would be scaffolded for the students, letting them do small parts at first followed by more and more responsibility.

Two main differences have been noted between cognitive and traditional apprenticeships. First, in traditional apprenticeship, tasks happen in the workplace (Collins, 2006, p. 3). What is learned does not come from pedagogical concerns or needs, but simply what is needed to
complete the next task in a work environment. In cognitive apprenticeship, the tasks are sequenced purposefully to reflect the natural sequence and the changing demands of learning. Second, traditional apprenticeship teaches skills to be used in the context of their use (Collins, 2006, p. 3). A farmer will teach his or her apprentice a specific task in order for the apprentice to perform that task in relation to the farm. In cognitive apprenticeship, knowledge is generalized. Knowledge is taught so that it may be used in many different settings. In traditional apprenticeship, workers may have only needed specific skills of their trade. In today’s world, students will need the ability to transfer both knowledge and skills to multiple areas. A farmer or engineer will need to know math and multiple science disciplines. Although there are differences, Dennen (2004), points out that using apprenticeship as a method of teaching and learning is just as relevant within the cognitive and metacognitive domains (knowledge) as it is in the psychomotor domain (skills) (p. 813).

Cognitive apprenticeship and authentic learning both use scaffolding frequently in their definitions and activities. Scaffolding is similar to cognitive apprenticeship in that the student starts with low experience and ability. Support and instruction is given to the students, and as experience is gained, they are offered larger, more central tasks to complete (Dennen, 2004, p. 814).

The relationship between scaffolding in education and the scaffolding used to build structures has been drawn many times. As the building nears completion, the scaffolding is removed bit by bit. Although some find this metaphor to be sufficient, others find it “unfortunate” because “it suggests a guiding and teaching of the learner toward some well-defined (structural) end” and is teacher centered” (Duffy & Cunningham, 1996, p. 183). Larkin (2001) suggests that scaffolding provides students with the support they need and allows them to complete a task with
assistance as they learn to be able to complete it independently. Larkin shows that through scaffolding students accept more responsibility for their learning and become more independent learners, not always relying on the teacher for direction (p. 30). Scaffolding is a means to get students to be able to use a skill or strategy, not a method of teaching facts or figures. Through this, the goal of scaffolding is supporting the student until the student can apply the skills and strategies themselves. Similar to how an apprentice learns a trade, so must students learn how to use cognitive skills appropriately across curriculum and in open-ended questions such as those provided in authentic learning.

Common Core State Standards

One of the most powerful influences in education today is the implementation of the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) that have been adopted in 45 states. These mark not only a new set of standards students will be required to meet but also a new way of teaching. Teachers are required to focus more on critical thinking and problem solving, not just on rote memorization. One specific example quoted from the CCSS of what students will be required to do no later than when they leave high school, but extending down into the lower grades, is to have “The ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence is a cornerstone of the writing standards, with opinion writing—a basic form of argument—extending down into the earliest grades” (para. 1, 2010). Another example of the differences in how teachers will need to view instruction is taken directly from the key points in mathematics section, where it states the following:

The standards stress not only procedural skill but also conceptual understanding, to make sure students are learning and absorbing the critical information they need to succeed at
higher levels - rather than the current practices by which many students learn enough to get by on the next test, but forget it shortly thereafter, only to review again the following year. (para. 4, 2010)

AL appears to be a good match to the processes required of students in achieving these new standards. Authentic activities strive to be relevant, real-world oriented, deeper thinking, and many times open ended. The following piece of the mission statement of the CCSS’s initiative shows the purpose of the new standards and their attempt to be more authentic.

The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy. (National Governors Association Center for Best Practices & Council of Chief State School Officers, para. 1, 2010)

One of the key components of the CCSS is the Depth of Knowledge levels (DOK). Norman L. Webb (2002) developed four DOK levels: one – recall; two – skills and concept; three – short term strategic thinking; and four – extended learning. The goal is for the teacher to reach the third and fourth levels as much as possible in teaching and activities (p. 3). Levels three and four focus on moving the students past simple skill practice and concept mastery to using the information strategically and extending learning beyond the task of simple completion. The requirements to be met at levels three and four often align directly to authentic learning tasks. A few parts of these tasks that Lombardi (2007) mentions are their complexity, multidisciplinary, sustained investigation, polished products, and open ended (p. 8). Similarly, Webb (2002) listed many of the same examples of AL that would meet these levels: apply multiple concepts, connect to other disciplines, create, investigate reasoning, and use concepts to solve non-routine
problems (p. 1). Webb (2002), Mims (2003), and Lombardi (2007) all indicate the need of extended periods of work time for the authentic and higher level tasks.

With the combination of all the research compiled in support of the effectiveness of AL and the current push for reform that aligns with AL, it is important to determine whether or not AL is more effective TL in an elementary classroom. The researcher posed three questions to be studied:

1. Is AL more effective than TL in retaining subject matter and providing students with the ability to apply that knowledge?
2. Is AL more effective than TL in increasing student engagement during lessons?
3. Is AL more effective than TL in increasing motivation in a unit of study?
METHODOLOGY

Participants

This study was conducted during the 2012-2013 school year. The teacher-researcher taught in a K-5 elementary school in a small midwestern town located adjacent to a large metropolitan area. There were five classrooms for each grade in the building. The school provided services for students with special needs: Interrelated Special Education (IR), English for Speakers of Other Languages (ESOL), adaptive Physical Education (P.E.), Occupational Therapist (OT) and Physical Therapy (PT), Gifted Talented Creative (GTC), and Structured Learning (SL) services for students with autism. The school had 863 students; the district had 6,922. The school had 12.89% free and reduced lunches; the district had 16.63%. The researcher was teaching fifth grade during this time and had been teaching at that level for six years.

The research took place in a class of twenty-three fifth grade students defined in Table 3.

Table 3

Participant: Descriptive Statistics

<table>
<thead>
<tr>
<th>Class</th>
<th>Number</th>
<th>Gender</th>
<th>Race</th>
<th>Free/Red Lunch</th>
<th>IR</th>
<th>GTC</th>
<th>Speech IEP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td>(Female)</td>
</tr>
<tr>
<td>1</td>
<td>23</td>
<td>11</td>
<td>12</td>
<td>N/A</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The class consisted of 11 males and 12 female students. Two of the students were African American with the rest being Caucasian. The class contained no students serviced by IR. There was one student identified as gifted who left twice a day to attend gifted reading courses and math enrichment. This absence did not interfere with the research since the activities related
to the study took place primarily during social studies instructional time, a time when the student was in the classroom. One student had an Individualized Education Plan IEP for speech only, attending speech twice a week for 20 minutes, once on Monday and Wednesday right before lunch. This absence also did not interfere with the research instructional time.

Two variables were used when leveling students: (1) Northwest Evaluation Association (NWEA) results and (2) Dynamic Indicators of Basic Early Literacy Skills (DIBELS). These two tests were used in combination to determine the placement and percentile ranges for the research school’s Multi-Tier System of Support (MTSS) placements. The NWEA test is given to students at the beginning and end of each school year. It is a computer based multiple-choice test. Students take one test for reading and one test for math. Each test focused general comprehension. The student percentages for this test are based off of the scores from the district in each grade level. The DIBELS test is given to students three times a year; beginning, middle, and end. Students read three different passages for one minute each. Students then have one minute to give a summary of the passage they just read. The teacher records the total number of words read and words missed to determine fluency and accuracy. Using a rubric (scale from 1-4) the teacher rates the student’s ability to retell the story as a measure of comprehension. Both the NWEA and DIBELS were given to the students at the beginning of the 2012-2013 school year. Scores are combined for the tests and presented at three proficiency levels using percentile ranges (see Tables 4, 5, and 6).
Table 4

*Student’s Percentile Leveling from NWEA and DIBLES / MTSS Scores (Fall 2012)*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Intensive 10% - 50%</th>
<th>Benchmark low 51% - 80%</th>
<th>Benchmark High 81% - 97%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

Data in Table 4 showed that when the scores of the tests were combined 34% of students in the study scored at the 50th percentile or below, 82% scored in the range between 51st and 80th percentile, and 18% of students scored in the range between 91st and 97th percentile. Of the students at or below the 80th percentile, 57% of them were female, with 55% of the “intensive” group being female. The girls in the study had a slightly lower overall reading ability than the males.

Table 5 shows the Fall 2012 NWEA scores in math for those students in the study.

Table 5

*NWEA Math Scores (Fall 2012)*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Intensive 10% - 50%</th>
<th>Benchmark low 51% - 80%</th>
<th>Benchmark High 81% - 97%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5 shows similar results to those in Table 4, illustrating that females scored lower in mathematics. Of the 23 students who took the test, 78% were at or below 80%; 55% of those students were female. An even more evident divergence in scores was that of the 35% of the students who scored at or below the 50th percentile, 87% were female. In similarity to the NWEA reading tests, females in this study scored lower in math compared to their male
counterparts. Although the results from this study will not be directly compared to students NWEA math scores, these scores are provided to gain an additional understanding of the level of academic performance of the female population.

Every grade level in the school spent 30 minutes daily separated into leveled reading groups throughout the building. These groups covered the following levels: intensive, strategic, benchmark low (BM Low), benchmark mid (BM Mid), and benchmark high (BM High). Table 6 shows the individual levels of participants as determined by the MTSS program.

Table 6

| MTSS Class Grouping Based on DIBLES Scores in Reading |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|
| Gender                          | Intensive | Strategic | BM Low | BM Mid | BM High |
| Male                            | 1         | 1         | 2      | 4      | 3      |
| Female                          | 1         | 5         | 4      | 0      | 2      |

Data in Table 6 continues the trend seen in the previous tests. The overall distribution of students indicated that the males scored higher than the females. Although equal numbers of female and male students attended the “intensive” group, of the 23 students, 35% were in the “intensive” or “strategic” groups; of those, 75% were female. The benchmark groups contained 65% of the students; of those, 60% were males.

**Procedures**

In order to determine the answer to Research Question One, whether or not AL is more effective than TL in creating retention of subject matter and the ability to apply that knowledge, the following was implemented.

The study was split into two main learning units, both of which were in the social studies curriculum area. All 23 fifth-grade students in this class participated in the activities of both units. The TL and AL units took approximately three weeks each. The units were back to back
with about a week between the two.

**Traditional learning.** The first unit was taught and assessed in a TL mode, i.e., lecture style lessons, movies or videos pertaining to the subject matter, worksheets, questions from the textbook, and single day lesson activities. All lessons were contained within a single day’s activities and were approximately 45-60 minutes. The first unit covered the Thirteen Colonies. The basic lesson setup was drawn from the district’s social studies curriculum (Houghton Mifflin *Build Our Nation*, 1997). The lessons, chapter titles and summaries, and assignments appear in Appendix A.

In the Thirteen Colonies unit, the teacher was in the role of the lecturer. All material was presented to the students by the teacher through direct instruction using the TL methods above. The entire three week unit was spent by students learning the general knowledge about the Thirteen Colonies.

**Authentic learning.** The second unit of research covered the Revolutionary War. This unit was planned and taught to reflect AL methods. The researcher judged the authenticity of the unit by determining that seven of the ten characteristics of authentic learning were used (Herrington et al., 2002; Lombardi, 2007; Newmann, 1991) (see Appendix B). The researcher also used Newmann and Wehlage’s (1993) five standards to determine the authenticity of the AL unit. The researcher determined that every standard from Newmann and Wehlage was met with at least a four or five on the scale (see Appendix C). Similar to many AL units examined, this unit used a project format that culminated with a refined product (Herrington et al., 2002; Lombardi, 2007; McKenzie, 2007; Mims, 2003; Newmann & Wehlage, 1993).

The final project for the AL unit was a student created Revolutionary War museum. Students were placed in partners by randomly drawing two popsicle sticks with student names on
them. Students were responsible for covering a given topic based on the district’s curriculum and the Kansas State Department of Education (KSDE) standards for social studies. A list of the main events and influential people that were assigned to partners appears in Appendix D.

**End goal of the unit.** The end goal of the unit was that each pair of students would create a panel of information focused on one aspect of the Revolutionary War, and create artifacts from that era. The panels and artifacts were to be set up as a museum. Each student was trained as a tour guide whose purpose was to provide tours of the museum, describe the events on each display, and tell the importance of each of the accompanying artifacts.

**Process**

**Field trip.** A field trip to a local Museum of World Treasures was the kick off event, and was schedule for a day when there was no school. The class was made aware of the reasons for the trip. Each student’s role while at the museum was to follow another tour class from a different school, and take notes about how the tour was being given, what the tour guide focused on, how the tour guide interacted with guests, and the artifact location and placement in the displays. The focus was on the process of the tour, not the content of the artifacts of the museum.

After the tour, the class had a chance to sit with three employees of the museum: (1) the museum education director, (2) the curator of exhibits and research, and (3) the curator of collections, for a question and answer time about how the museum operates. Based on their need to design their own museum exhibits, students asked about where artifacts came from, how curators decided which artifacts to use, who wrote and created the museum panels, and other questions pertaining to how the exhibits were generated. The curators also described the role of a tour guide including such things as being able to answer questions from guests and knowing about each artifact.
The museum students toured did not have a specific focus on either topic covered in the TL (Thirteen Colonies) or AL (Revolutionary War) unit, although there were a few random artifacts or displays pertaining to the historical time periods. The focus of the museum visit was to gain general knowledge of exhibit organization and how to be an effective tour guide, and not the content of the exhibits.

**Informational panels and artifacts.** The next step in the AL unit took place at school. Students reviewed examples of museum information panels (see Appendix E) and located examples of artifacts that reside in military museums by browsing museum websites as a class and individually. Students then were led through the steps of researching a topic and creating a panel. The teacher led the discussion using a PowerPoint presentation. Once this instruction had taken place, the students were split into pairs. Each pair chose a topic about the Revolutionary War. During the students topic research time, they also had to decide on an artifact to create that pertained to the topic they had identified.

Hand-made artifacts were created at home by students with help of parents using whatever resources were available to them. The researcher showed the students a number of techniques used to make something look old. Examples include taking a normal piece of printer paper, crumpling it, and un-crumpling it forty to fifty times. After this, the paper was buried and rubbed in a pile of dirt. Lastly, a heat lamp bulb was used to darken the edges of the paper. Students used these techniques and others to create their self-selected artifacts which included a copy of the Declaration of Independence, a tea pot from the time period of the Thirteen Colonies, and even a belt said to be worn by one of the Patriots.

The final information panels were made using large foam board pieces that were provided for the students. The panels contained information pertaining to the main events and
people in the student’s Revolutionary War topic. To create the panels, students typed sheets of information on computers, printed them, and glued the sheets onto the panel. Pictures of people, places, and objects were also printed and glued onto the panel. When on display, student-made artifacts were on the table in front of the panel.

No direct instruction from the teacher was given pertaining to content to be learned about the Revolutionary War. The only direct instruction that did occur was aimed at teaching the skills needed in creating an informational panel and artifact, rather than the knowledge of the war.

**Tools.** At school, the students had access to tools such as computers with Internet connections, encyclopedias, and atlases to do their research about the Revolutionary War and appropriate artifacts. The teacher took the place of a research advisor after the original walk-through of panel and artifact creation. No direct instruction was given to the students pertaining to their portion of the Revolutionary War.

**Support.** Extra support was provided for students who needed it through the use of scaffolding, support and instruction given to the students until experience is gained and they are able to take on more tasks by themselves (Dennen, 2004, p. 814). This support included creation of artifacts, information panel, or information researching. One example of this was when one pair of students was having trouble getting their Word document formatted correctly. The researcher performed the task for them, explaining the process as it was done. The students were then asked to create another document and do the formatting themselves as the researcher observed. This was an example of a small authentic learning opportunity.

**Acquisition of general Revolutionary War knowledge.** Most of the student time during the AL unit was spent researching and creating their information panel and artifact (their exhibit). During this time each pair of students had to create a “main idea sheet” pertaining to their
specific topic from the Revolutionary War. This sheet was a basic outline of the most important events from their exhibit and the sheet was typed in bulleted format. Each main idea sheet had to be checked by the teacher researcher for accuracy before being printed.

These main idea sheets were then copied by the researcher and distributed to all other students. Doing this gave every student a set of main idea sheets from each exhibit from the student museum, and therefore, key points from the Revolutionary War. Students were given the last four days of the unit to study these sheets in preparation for leading a tour of the entire Revolutionary War museum. During the days in which the students were studying their main idea sheets and the sheets of others, they also used their time to talk with the creators of other exhibits to help clarify or understand each exhibits main ideas.

The researcher did not provide direct instruction of any aspect of the Revolutionary War content during the AL unit. The students spent approximately two thirds of the AL unit researching and creating their exhibit, learning about their one area of expertise. Approximately one third of the time, the last week of the unit, was spent learning the subject matter for the rest of the topics in the unit through the use of the student-generated main idea sheets.

*Museum tour day.* Students were given a final due date by which the museum was to be ready for presentation to parents and other classes. Additionally, the thesis chair of the teacher researcher was invited to the presentation and took a student-guided tour. Each student had an opportunity to take the role of a tour guide on museum day, leading groups of people through the museum. Each student spent a minimum of two minutes at each exhibit, explaining the main events pertaining to that exhibit as they learned from the main event sheets the students studied. Tour participants also got the chance to ask the student tour guides questions about any exhibit, to which students were expected to provide answers or know where to find the answer on the
information panels.

A curator from a local museum attended to help judge the realistic and authentic qualities of the student’s museum related to what she expects to see within here museum. She did this by taking informal notes about each exhibit that were returned to the researcher. The Curators results and notes were shared with students but were not used in the data collected. Her presence and scoring information served to strengthen the connection to the real world.

Assessments

Three types of assessment were used in both units to determine subject matter retention and application ability, student engagement, and student motivation.

Assessment of subject matter retention and application. Three main knowledge level assessments were given to answer research question one, the effectiveness of AL in creating subject matter retention and application. The students received a pretest at the beginning of each unit to record their base knowledge of the subject. The TL unit pretest can be seen in Appendix F. The AL unit pretest can be seen in Appendix G. These tests were primarily at the knowledge levels as described in Bloom’s Taxonomy.

A posttest was given directly after each unit. The TL posttest can be seen in Appendix H and the AL posttest can be seen in Appendix I. Posttest results served as baseline data for comparison to the retention test to be given three weeks later.

The only difference between the pretest and the posttest was that the posttest included the additional assessment of knowledge application. This was assessed using essay questions that required the students to apply the historic knowledge in each unit to a current situation. An example of knowledge application was to determine if students could associate the boycotting used by the colonists as still being an effective way to show disapproval for a product or
company. In the essay question, students were asked how they might show their disapproval for a company “in a peaceful way” in the hope that the students would respond saying that they could boycott the company. The essay questions were an extra measure to examine the knowledge application on the posttest (not part of the scoring for posttest to retention test comparisons). The essay questions were graded based off the teacher’s judgment on the ability of the students to connect and apply the historic information learned from each unit to the current day situations in the essay questions.

Three weeks after the posttest was given, the retention test was administered to judge subject matter retention. The TL subject matter retention test can be seen in Appendix J and the AL subject matter retention test can be seen in Appendix K.

**Assessment of engagement.** In order to answer Research Question Two regarding the effectiveness of AL in creating better student engagement, the following was implemented. Engagement of students during both units was assessed by the students, the researcher, and a third observer, which in this case was the vice principal of the school. He had been a principal for seven years, and taught third and fourth grade before becoming an administrator. Engagement data were taken three times throughout both AL and TL units, roughly towards the beginning of the unit, middle of the unit, and end of each unit.

Before either research unit was started students were instructed on how to assess their engagement. Students were provided with engagement questionnaire sheets (see Appendix L). Students would keep a number of these sheets in their desk for easy access. The researcher discussed the scale on their questionnaire and how the students could determine their engagement level. Students also practiced rating their engagement a few times before the research units started. On the days when the research data were taken, students would be asked at
random points of the activities to rate their engagement. Students would get their engagement
questionnaire out of their desks, complete it, and turn it in on the teacher’s desk. This process
for students took no longer than thirty seconds. Shortly after the students rated their own
engagement, the researcher and third party observer rated the students. This was done
simultaneously by both the researcher and the third party observer by using an engagement
recording sheet (see Appendix M).

The whole process of engagement data collection, from student recording to researcher
and third party observation, took an average five minutes. This short time frame was used in
order to generate the most accurate data possible.

Assessment of motivation. Research Question Three, pertaining to the ability of AL to
increase student motivation when compared to TL, was assessed by using student surveys.
Students were asked to fill out a motivation survey three times during each unit: before the unit
began, during the unit, and towards the end of the unit. These surveys were used to determine
what aspects of the units were affecting the motivation of the students to learn. Data collected
about motivation were not used to change the instruction plans. Appendix N includes the three
motivational surveys for the traditional unit, one each for before, during, and after the unit.
Appendix O has similar surveys for the authentic unit.

Timeline. Table 7 outlines the timetable during which the two units took place.
Table 7

*Research Timetable*

<table>
<thead>
<tr>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 7</td>
<td>Thirteen Colonies traditional unit pretest</td>
</tr>
<tr>
<td>January 7-25</td>
<td>Thirteen Colonies traditional unit taught</td>
</tr>
<tr>
<td>January 28</td>
<td>Thirteen Colonies posttest given</td>
</tr>
<tr>
<td>February 8</td>
<td>Field trip to Museum of World Treasures in preparation for</td>
</tr>
<tr>
<td></td>
<td>authentic based unit</td>
</tr>
<tr>
<td>February 11</td>
<td>Revolutionary War authentic unit pretest</td>
</tr>
<tr>
<td>February 11-35</td>
<td>Revolutionary War authentic unit researched by students</td>
</tr>
<tr>
<td>February 18</td>
<td>Thirteen Colonies three week retention test</td>
</tr>
<tr>
<td>March 6</td>
<td>Revolutionary War Museum presented to parents and</td>
</tr>
<tr>
<td></td>
<td>family, invited guests, and other classes from the school</td>
</tr>
<tr>
<td>March 27</td>
<td>Revolutionary War three-week retention test</td>
</tr>
</tbody>
</table>
RESULTS

This study focused on determining the effectiveness of Authentic Learning (AL) strategies compared to the use of Traditional Learning (TL) strategies. The first section of results refers to data aimed at answering Research Question One, whether AL is more effective than TL at creating subject matter retention and application.

Subject Matter Retention and Application

The primary source of academic data was the retention and application of subject matter. The researcher focused on retention and application scores for the whole class and gender groups for this set of data. Given the differences in male and female previous performance on the recorded NWEA and DIBELS tests, the researcher wanted to find out if an AL unit not only could help all students but if it would accommodate the low performing female students of research class.

The posttest also tested students’ abilities to apply knowledge learned to current or different situations. The different instructional methods were evaluated to note whether or not there was a difference in students’ abilities to connect what they learned in the unit to the real world. This was tested through essay questions on their test. Answers were analyzed to determine whether or not each student had made the connection between the historical knowledge learned and application to a more current event or relevant situation.

**Pretest, posttest/application, and retention test.** Figure 1 shows the results of the whole class on the three identical subject matter tests given during the TL unit covering the Thirteen Colonies. Student’s tests were not returned to them once graded in order that additional learning would not occur from the study of the test results.
Scores in Figure 1 are provided in percentages.

![Bar chart showing pretest, posttest, and retention test scores.]

**Figure 1.** TL subject matter test percentages for the Thirteen Colonies unit.

In the Thirteen Colonies TL unit, students scored an average of 17% on their pretest. The average score on posttest for the TL unit was 63%. The subject matter retention test average score was 68% showing a slight increase in subject matter retention between the posttest and the retention test.

Figure 2 shows the test percentages for all three tests for the whole class during the Revolutionary War AL unit. Again, student’s tests were not returned to them once graded in order that additional learning would not occur from the study of the test results.
In the AL Revolutionary War unit, students scored an average of 23% on their pretest. Students scored an average of 69% on their posttest. The retention test scores for the AL unit averaged 67% showing a slight decrease in subject matter retention.

Each posttest also contained a subject matter application piece. On the TL unit students scored an average of 52% on their knowledge application questions. The AL unit knowledge application average scores were 50%.

**AL student expertise area.** Due to how the AL unit was taught, student pairs had an extended amount of time to focus on one specific piece of the Revolutionary War. Because of this, not only were overall test scores examined, but also the scores on the questions that pertained to his or her specific topic for the Revolutionary War exhibit were considered. An analysis of the posttest and subject matter retention scores from the AL unit test based on the specific test questions related to their area of expertise was conducted. Appendix P shows these
data in raw score form. Figure 3 shows the percentages of the pretest, posttest, and retention test for the AL unit, TL unit, and AL student expertise area.

![Graph showing pretest, posttest, and retention test percentages for TL, AL, and student expertise area](image)

**Figure 3.** TL, AL and student expertise area pretest, posttest, and retention test percentages

When both the posttest and retention test were examined for each student to look at questions related to the student’s specific area of expertise, all students scored 100%. This was especially noteworthy since students represented all levels of performance as determined by the NWEA/DIBELS scores. No matter what the NWEA/DIBELS results were on these assessments, subject matter retention was 100% for their area of expertise.

**Gender.** As mentioned previously, the female students in the classes generally had performed lower on standardized tests. Although not a primary area of the study, an examination of the results based on the gender of the students was undertaken. While the girls in the class had shown lower scores than the boys on the district’s NWEA test and DIBELS tests, gender differences were not noted for either type of instruction. Figure 4 displays the outcomes for the TL subject matter test percentages separated into gender groups.
Both gender groups in the class scored an average of 17% on the pretest for the TL unit. On the posttest the females scored 63% on average and the males scored an average of 64%. The retention test mimicked the pretest results showing that both females and males averaged the same ending with a 70%. It should again be noted, that there was higher percentage of lower functioning females than males on both the NWEA and DIBLES. This is not evidenced on the unit tests over the traditionally taught unit.
Figure 5 represents the subject matter test percentages given during the AL unit separated into gender groups.

![Figure 5. AL unit test percentages by gender.](image)

Similar in results to the TL unit, both genders averaged the same on the AL based unit pretest with 23%. The posttest had a one percent difference with the females averaging 69% and males averaging 70% on their posttest. The retention test for both genders averaged 67%. Again, the identification of the female students as lower functioning on both the NWEA and DIBLES tests was not evidenced on the unit tests related the unit taught using authentic learning.

**Engagement**

To determine the effectiveness of AL in creating a higher level of student engagement when compared to TL, Research Question Two, student engagement was measured three ways: a student engagement questionnaire, teacher observations, and third party (vice principal) observations. This process occurred three times in each unit towards the beginning, middle, and end. The data across the three scores were averaged. Engagement was based on a three-point
scale; one being the most engaged with three being the least engaged. For ease of interpretation, the scores were reversed so that the higher score (3) showed higher engagement.

Table 8 shows the engagement data collected from both the TL and AL units as rated by the students themselves, the teacher researcher, and the assistant principal who served as the outside observer. Change scores for engagement are provided, as well as the percent change between the two.

Table 8

*Engagement Questionnaire Means and Percentage Change*

<table>
<thead>
<tr>
<th></th>
<th>Thirteen Colonies Traditional Learning</th>
<th>Revolutionary War Authentic Learning</th>
<th>Change in Engagement from TL and AL Units</th>
<th>Percent Change Between TL and AL Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student recorded engagement mean</td>
<td>2.31</td>
<td>2.72</td>
<td>+.41</td>
<td>+13.66</td>
</tr>
<tr>
<td>Researcher classroom engagement mean</td>
<td>2.54</td>
<td>2.92</td>
<td>+.38</td>
<td>+12.66</td>
</tr>
<tr>
<td>Third observer classroom engagement mean</td>
<td>2.85</td>
<td>2.92</td>
<td>+.07</td>
<td>+2.33</td>
</tr>
<tr>
<td>Total engagement mean</td>
<td>2.57</td>
<td>2.86</td>
<td>+.29</td>
<td>+9.6</td>
</tr>
</tbody>
</table>

Percent change in engagement was found by first averaging all students, researcher, and third party observer’s data to get a single engagement score for each data source. The percent of change between the TL and AL unit was then calculated for each source. The difference was divided by the highest score possible. Example: \((2.72-2.31)/3 = 13.66\). Every data source of the engagement piece showed a rise in engagement between the TL unit and the AL unit. The students rated themselves slightly higher than the teacher researcher rated them; the students and the teacher researcher rated them higher than the vice principal. When all of the percentage
scores were averaged between the students, teacher researcher, and third observer, a slightly over nine percent gain in engagement was shown.

Motivation

To determine the effectiveness of AL in better motivating students when compared to TL, as asked in Research Question Three, motivation was assessed through the use of student surveys (TL survey can be found in Appendix N, AL survey can be found in Appendix O). Each student filled out a survey three times during both the TL unit and the AL unit. Survey questions were based on a three point scale (three representing a positive response, a two representing neutral response, and a one representing a negative response). Individual question responses were drawn upon to determine effectiveness of AL instruction on motivation. For this research excitement and enjoyment were terms used in the student survey as interchangeable terms to judge motivation. The use of these words was determined by Rabideau (2005) as part of what helps to create motivation within a student.

Table 9 shows the motivation data collected from student motivation questions on motivation survey for both the TL and AL.
Table 9

Motivation Survey Means and Percentage Changes

<table>
<thead>
<tr>
<th></th>
<th>How Excited Are You to Learn About the Next Topic?</th>
<th>How Much Do You Enjoy Social Studies?</th>
<th>Percent of Students That Picked ‘D’ as a Reason for Working Hard (I enjoy the activities)</th>
<th>Percent of Students That Picked ‘E’ as a Reason for Working Hard (I enjoy the topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before unit</td>
<td>+ 20% in favor of AL</td>
<td>1% difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid unit survey</td>
<td></td>
<td>+ 8% difference in favor of AL</td>
<td>TL – 69%</td>
<td>TL – 57%</td>
</tr>
<tr>
<td>End of unit</td>
<td></td>
<td>+ 8% difference maintained</td>
<td>TL – 65%</td>
<td>TL – 61%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AL – 91%</td>
<td>AL – 58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AL – 95%</td>
<td>AL – 63%</td>
</tr>
</tbody>
</table>

Before each unit started, students were asked how excited they were about learning the next topic (Thirteen Colonies or Revolutionary War). Students were on average 20% more excited to start the AL based unit than the TL based unit. It should be noted, however, that the students did know prior to starting the authentic unit that they would be using a student created museum format.

Students also were asked how much they enjoyed social studies. When asked this question before each unit was taught, there was only a one percent difference between TL and AL based units in favor of an AL unit. When asked during the mid-unit survey how much they enjoyed social studies, there was an eight percent difference between AL and TL (in favor of the AL unit). When asked at the end of each unit, the eight percent average difference was maintained in favor of the AL unit. (Note: This represented a gain increase of four percent for the AL unit with a three percent decrease in enjoyment of social studies for the TL unit.)
On the last question of each unit on the mid-point and post surveys, but not on the pre-unit survey, students were asked to circle any (they could select more than one) of the following reasons why they were currently working hard in Social Studies:

a. I want a good grade  
b. To push myself  
c. To please my teacher  
d. I enjoy our activities  
e. I enjoy the topics  
f. I’m not working hard, I don’t enjoy this

The researcher focused on the percentage of students who chose letter D on the list as an indicator of whether their motivation was being affected by the specific type of teaching. During the TL unit 69% of the students selected D as one of their reasons for working hard. This dropped to 65% on the end of unit survey. On the AL unit survey 91% of students chose D as a piece of what is motivating them towards the middle of the unit and that percent went up to 95% on the end of unit survey. Also to be noted is that on all four surveys, option E (I enjoy the topics) was chosen almost equally with at most a two percent variance in the number of students who chose it.
DISCUSSION

In this study, the effectiveness of Authentic Learning (AL) was compared to Traditional Learning (TL) using three different areas of student performance (subject matter retention/application, engagement, and motivation). With regard to Research Question One, (Is AL more effective than TL in retaining subject matter and providing students with the ability to apply that knowledge?), subject matter is first discussed in terms of retention and application of the two social studies units (the Thirteen Colonies and the Revolutionary War).

Subject Matter Retention and Application

Pretest/posttest. Pretests showed that students had comparable levels of knowledge about each of the two subjects before the units were started. Posttests were both in the 60% range, with students scoring slightly higher on the TL unit’s posttest.

Retention and application test: Overall. The retention test scores showed that test scores for the TL unit on average actually rose by five percent from the posttest, showing that after three weeks of no teacher initiated discussion within the class about the Thirteen Colonies, students scored higher, appearing to show a gain. One explanation for this could be that the tests given were almost identical and students were able to answer more questions correctly based on their previous experience with the test. However, in an attempt to limit this, students did not get a chance to review their first test after they were submitted. Tests were graded by the teacher, so students did not get the chance to see the correct answers. Tests were not given back to the students for review until after the retention test was given. If this were the reason for the gain in subject matter knowledge between posttest and retention test, one would expect to see the same results from the AL unit covering the Revolutionary War, since the same testing sequence was used. However, student scores decreased by two percent between posttest results and subject
matter retention results in the AL unit. It is possible that students continued to see information about the Thirteen Colonies as they were researching the Revolutionary War, but in any case, the use of the AL format did not seem to hamper retention of information.

It appeared that the questions for the AL unit were slightly harder due to their format, short answer as opposed to fill in the blank, which could have affected the AL results. Students also had to do more writing on the AL unit test, and after having had to perform that writing on two identical tests already, they may have not been as motivated to do their best on the retention test.

The TL unit retention scores represented students’ general knowledge of the Thirteen Colonies. The strategy to assess this unit was similar to how most units taught in the TL format had been assessed. During the TL unit, students received an overview of all topics in that unit. The researcher presented the same amount of information about the same topics with the same details. This did not happen in the AL unit. During the AL unit partners spent most of their time focusing on creating a portion of the museum related to a specific part of the Revolutionary War. Because of this, students basically became an “expert” about a piece of the unit, but were then given a chance to learn general knowledge about the rest of the Revolutionary War before giving their tours on the museum day. Due to their “expert” qualifications, a closer examination of the scores related to each student’s area of expertise was undertaken. For example, for the student who created the exhibit about the British surrender at Yorktown, all data from questions pertaining to the surrender of Yorktown were individually compiled. All students scored 100% on all questions related to their area of expertise. These results indicate that while their overall general knowledge of the subject matter was not better than the TL unit, students did have a topic from the AL unit where they had become experts.
It also was noted that, although students’ subject matter retention was similar in both AL and TL as based on the posttest results, students did not receive an equal amount of time to learn the general knowledge in the two units. Students in the TL group spent all three weeks learning the overall knowledge; however, students in the AL had two weeks of research and construction of the displays, with only one week devoted to the overall knowledge for the unit. Students in the AL group spent the first two weeks focused on the research related to their specific exhibit for the unit, followed by only one week learning about the rest of the topics from the Revolutionary War unit, using main idea sheets rather than teacher lecture. This showed that students were able to learn a comparable amount of general knowledge in the AL unit in topic study with an additional one week of self study across all topics in the unit as students learned in the TL unit taught by the teacher in three weeks.

The student’s ability to apply the knowledge they learned was examined to determine if either instructional method proved to be more effective than the other. With only the two percent difference between the knowledge application test scores on the AL and TL methods, neither showed clear evidence to help students connect content from historical situations to present day social studies issues.

**Retention and application test: Gender.** The knowledge retention results were also examined by gender. Due to the overall lower academic performing female population of the research group, the researcher questioned if the different format of the AL unit would better suit the females than the males. The female population did not show a disadvantage with the AL unit as they had on the NWEA and DIBELS results, but neither was a disadvantage seen with the TL. This shows that it is possible that both units were capable of creating better female success, while neither proved a superior format over the other. A possible explanation for females who
scored lower NWEA and DIBELS tests than males is that for this study, the majority of instruction for both units was not reading for information, but verbal, lecture (listening) and/or locating information and interaction (discovery, listening, and interaction) in working with partners.

Another reason for the close results between the gender groups could be that the NWEA and DIBELS tests used to gage ability were both administered towards the beginning of the school year. Both units in this study took place past the half-way point in the school year, possibly having given the female students time to strengthen their abilities, especially given the MTSS setup in the school, in which the lower performing students get 30 minutes a day of strategic reading instruction.

**Subject matter retention and application limitations.** The largest limitation to knowledge retention was the length of time in which students had between posttest and retention test. It was believed that due to the students increased motivation, engagement, and the AL format, their memory of the events from the AL unit would help to create better retention of the subject matter. Halpern and Hakel (2003) first indicate that “What learners do determines what and how much is learned, how well it will be remembered, and the conditions under which it will be recalled” (p. 41). The researcher believed that the AL unit would create the needed conditions for recall of material because students would be reflecting upon the unit in conjunction with the museum and the product and presentations the students created. Halpern and Hakel (2003) quote an old psychology saying that states “the head remembers what it does.” The second principle from their article states, “Learning is generally enhanced when learners are required to take information that is presented in one format and re-represent it in an alternative format” (p. 39). This current study required students to ‘do’ something to learn by taking the information they
researched and putting it into an alternate authentic format, presumably to give the students the possibility of remembering the subject matter given a longer time between tests. True retention might better be shown by giving an even longer time between the event and the tests, or their ability to apply it to new situations, which may have occurred during the Revolutionary War unit when information related to the Thirteen Colonies was mentioned.

Another limitation to this area is the format of the tests. The format could have created inequalities within the test that had nothing to do with how the unit was taught. The TL unit test contained fill-in-the-blank, multiple choice, short answer, and true and false questions. The AL unit test contained fill-in-the-blank, true and false, and short answer which required students to write in complete sentences. Having more fill-in-the-blank or multiple choice questions as compared to short-answer questions where students had to construct and write a longer response could cause the TL test to be less focus intensive. This could have been a limitation to the accuracy in the study.

One limitation of the unit test was a matter of whether or not the study was testing knowledge application correctly. Although there was not much of a difference in test results on the subject matter retention section, part of the benefit to students in the AL situation was the skills and experience they gained, not just the knowledge. The test given was limited to testing their ability to apply historic knowledge to a current situation. The test did not give students the chance to apply the skills they had learned during the project (researching, organizing, collaborating, creating) or apply their experiences, such as giving a tour of a museum or helping others learn about a topic.
**Engagement**

Research Question Two asked whether or not AL was more effective than TL in increasing student engagement during lessons. AL showed an increase in student engagement over TL, with an average of 9.6% greater engagement, as seen in the right hand column on table 8. Lutz et al. (2010) states that student collaboration and connectedness to life outside of school could both influence student engagement. Mims (2003) also suggests that student engagement through the use of AL will be increased.

For most engagement data taken during the TL unit, students were either reading along with the class or reading to themselves. With the amount of material to be covered, reading in a high-level textbook format for 30-35 minutes seemed to be a long time for students to stay engaged.

During the AL unit, most data were collected during work time on their exhibits, which filled most of the time in general. Student questionnaire data and observations showed that students were more focused and engaged on what they were doing during the AL unit than when they were working on the TL unit. They had a job to complete, a task to work on, and a method to get there. Additionally, they were working and interacting with a partner.

The Student Questionnaire data shows that the authentic unit was more engaging for the students. An aspect that could explain this was that instead of primarily having the subject matter given to them to read independently or read to them, students were finding the information and doing the work themselves. As Lombardi (2007) points out, students are more engaged when doing rather than listening. What students were doing during the AL unit was a more complex series of interesting tasks that facilitate engagement (Lutz et al., 2010), not just following along in the reading or listening to a lecture.
Although the AL unit did show a higher level of engagement, it should be pointed out that the work the students did during the TL unit may not necessarily be considered low engagement. With the results ranging from one (least engaged) to three (most engaged), the fact that the TL unit’s average remained above two on a scale of three, three being the highest shows that the students were, on average, mostly engaged. The 9.6% increase in engagement during the AL unit shows that it might be considered that the engagement was an increase from moderate engagement (TL) to high engagement (AL), as opposed to it being considered a rise from low engagement (TL) to high engagement (AL).

**Engagement limitations.** The engagement data collection was a simple process. Before students ever got the chance to rate their own engagement, they were instructed on how and for what to look. Even so, when the researcher is also the teacher, it could have been hard for some students to be willing to rate themselves openly as not being engaged. Having the students remain anonymous on the engagement questionnaires could have eliminated this potential bias.

Using triangulation of three different student engagement sources (researcher, student, and third observer) aided in the accuracy of the data; however, limitations were evident in each individual piece. It was hard for the researcher not to let previous knowledge and relationships with the students affect the judgment about engagement. The third observer recorded higher overall engagement than the teacher or the students themselves. This seemed to be because of the observer’s lack of familiarity with these students. To an outside person, a student that is looking at the book while others are reading may have appeared to be engaged. Yet the researcher / teacher may recognize by the look in the students’ eyes or how they are postured that they are just staring at the book, without comprehending or truly reading. This made it difficult for the researcher or observer to actually know if students were engaged while reading. In future
research, clear parameters for noting engagement among multiple raters should be both described and practiced to gain inter-rater reliability.

Another limitation to the student engagement data is that it only focused on overall student engagement. Because of the anonymous responses by the students, the engagement data could not be disaggregated to compare individual student results.

**Motivation**

Research Question Three asked if AL could create greater student motivation. AL did show an ability to improve student motivation before and during a unit. Student motivation data was gathered through use of student surveys. These surveys asked students to rate their enjoyment and excitement about the current topic and activities (Appendixes N and O). For this research, excitement and enjoyment were terms used in the student survey as interchangeable terms to judge motivation (Rabideau, 2005).

The first section of motivational data reviewed was pertaining to the question, “How excited are you to learn about the Thirteen Colonies” (and the Revolutionary War respectively). Data showed greater motivation for the AL unit than for the TL unit. Results also showed that motivation increased during the Authentic Learning unit activities while it decreased across the time-span of the Traditional Learning unit, as noted by the researcher.

To keep students informed about the whole study, it was determined before data were collected that students should know the format of the each unit before they were questioned about their motivation levels in respect to that particular unit. Had students not known about the different unit formats to be used they might have based their motivation for learning scores on whether or not they thought they would enjoy the Thirteen Colonies information over the Revolutionary War instead of thinking about the types of activities they would be doing. It
should be noted that students did not know about the AL unit activities until the TL unit was completed, minimizing the possibility that they were getting excited for the AL unit before the TL unit was over. When the students were presented with either traditional lecture style (TL) or authentic learning (AL) formats, the students’ rise in motivation to begin a unit favored the AL format. By the time the two units ended, it was noted that the overall motivation for the traditional unit had reduced while the excitement level for the AL unit increased as the museum day drew closer.

Another aspect of the data noted was that the overall “enjoyment of social studies” decreased throughout the TL unit, but rose throughout the AL unit, based off motivation survey results. This data matches what the researcher noted through observations during class time in both units, including hearing comments concerning student’s excitement to get to work and discussions about their project outside of social studies work time. Lombardi (2007) had noted that students would be motivated by putting their efforts into a product.

The last question presented in the results section pertained specifically to which options students selected from a list as why they were working hard (what was motivating them). The letter E (‘because I enjoy the topics’) only varied by two percent between the two units on the midpoint and final unit surveys, indicating that student motivation was not influenced much by the topics. The choice of the letter D (‘because I enjoy the activity’) revealed a more direct connection to the type of instruction being used and how it was influencing the students. With a larger difference in the choice of the letter D option, from 65% on the TL unit to 91% on the AL unit (see Table 9), it was apparent that students were being more motivated by AL.

Another motivating factor for students was creating the museum displays, recreating an authentic aspect of museums, and the involvement of real museum curators. Also, the knowledge
that a curator from a museum where students visited before the AL unit began added excitement to the final presentation day for students. We see this direct connection with the real world as an effective motivator for students similar to what Lutz et al. (2010) discussed. Students made numerous comments and asked many questions about how many curators were coming and who would give them a tour.

The addition of the principals, peers, and parents being given tours through their museum also added to the motivation, as observed by the researcher. Students were not just focused on getting a good grade on a test, but also focused on presenting a well-planned, well-executed final product, mirroring real world situations and giving students a view of what it was like for their work to be seen by others. Overall, the AL unit provided greater motivation for student learning and success. Students were more excited towards learning and social studies during the authentic learning experiences.

**Motivation survey limitations.** Students can be motivated by many different aspects of a unit at the same time. To determine if the motivation was from the TL or AL formats and not due to the student’s interest in a specific topic can be challenging. Students also worked with partners for the AL unit; that also could have influenced their motivation. Students could have become more motivated by their partner and the student’s personal drive to help or impress the partner. Students could also have become less motivated if their partner was not putting much effort into the project causing them to have an increased workload.

Unlike the data collected for student engagement, the motivation data came from students only. Students remained anonymous to help ensure they felt less apprehensive about answering in a way that their teacher might or might not like.
**Overall Comparison**

To decide if the Authentic Learning teaching format had an overall higher impact on student learning, data were collected on subject matter retention and application, engagement, and motivation. It was determined that AL increased student engagement and motivation. Even with some of the limitations in researching engagement and motivation, the conclusions from the results match the research supported by the literature review (Carmichael et al., 2009; Fredricks, Blumenfeld, & Harris, 2004; Lombardi, 2007; Mims, 2003) which supports Authentic Learning as a productive teaching format.

Based on the overall retention test scores, the AL format did not demonstrate better retention for general knowledge compared to TL. When topic specific learning was examined, however, a different type of actual retention was apparent. The students demonstrated expertise on a specific topic (100% correct scores on their individual topics) while retaining a comparable general knowledge score to the TL unit. A question to be asked then is what is preferred: general knowledge of a topic (what the data from the TL unit represented) or a general knowledge of a topic in combination with an “expertise” in a specific area (what the AL unit represented). The results of this study tend to support the latter to be a better determination of knowledge retention. McKenzie (2007) indicates that with AL, students emerge with a greater understanding and a stronger grip of key concepts, confirmed in this current study. Each student had a solid grasp of a specific topic from the Revolutionary war as well as a general knowledge of it. Overall, Authentic Learning activities promoted greater student retention, engagement, and motivation when compared to the Traditional Learning unit. In addition, the students experienced cooperative learning, public speaking, research skills using technology, and creative expression
of knowledge. In addition, the students demonstrated social skills through community sharing and support.

**Future Considerations**

It appears that more research on specific areas of focus would be beneficial to further determine the effectiveness of AL. First to be considered in future studies would be a longer time frame for which to study the long-term retention. Although not shown in this study, the researcher believes that due to the increased motivation, engagement, and experiences created through the authentic unit, students would retain more information for a longer period of time. It was thought that the Authentic Learning experiences could be the bridge that created a connection to the information. This is seen by comments made from students pertaining to the study. They were exceptionally positive about their museum experiences (going to a museum; creating their museum; and presenting to their peers, the curator, and their parents). Numerous comments were made about their pride in what they created and the things that were said to them about the museum.

Second to be considered is to broaden the focus of the study to include other aspects that Authentic Learning instruction provides. The knowledge level tests that students took did not allow an investigation of these additional concepts, e.g., the value the students gained from working cooperatively with others for the entirety of the unit, the responsibility put upon them to produce a final product that would be seen and enjoyed by more than them, the creativity needed to conceptualize something from scratch, and the technological skills learned and practiced that could be used in future assignments and jobs. Future research would be needed to determine if these pieces of AL are more effective than TL in creating student academic success or their desire to learn and preferences in ways to do that.
The possible need to focus on other benefits of this specific AL experience can be seen in a specific example from this research. After the museum curator had finished scoring the student’s museum exhibits and going through a tour, she commented numerous times at how impressed she was with the outcome of the project. She even pointed out that the students’ exhibits seemed equal to or better than a similar junior high and high school competition which she had recently judged. A few days after the research was over, the teacher/researcher was contacted by the museum requesting any lesson plans pertaining to the AL unit. The museum staff members were so impressed with the outcomes of the project, that a weeklong summer camp was created based on the framework of the AL unit. The capability of these students’ work to influence the community is an aspect of Authentic Learning that has yet to be fully examined.
REFERENCES


APPENDICES
## APPENDIX A

### Unit 1: The Thirteen Colonies

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Chapter title</th>
<th>Summary</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 1</td>
<td>Colonists on the land</td>
<td>Geography and resources of the New England Colonies.</td>
<td>Lesson Review questions 1-4</td>
</tr>
<tr>
<td>Lesson 4</td>
<td>People living on the land</td>
<td>Middle colonies resources and geography.</td>
<td>Lesson 4 Social Studies work book page</td>
</tr>
<tr>
<td>Lesson 5</td>
<td>A mixture of many cultures</td>
<td>A focus on middle colonies and its diversity of cultures and religion. New York, New Jersey, Pennsylvania, Delaware, and Penn’s Holy Experiment.</td>
<td>Lesson review questions 1-5</td>
</tr>
<tr>
<td>Lesson 6</td>
<td>Farm and city life</td>
<td>Differences between the productive farm life and the centers of commerce in the middle colonies.</td>
<td>Southern colonies atlas page</td>
</tr>
<tr>
<td>Lesson 7</td>
<td>Geography of the south</td>
<td>Geography of the south and how it became wealthy due to its ability to grow and sell crops.</td>
<td>Lesson 7 Social Studies work book page</td>
</tr>
<tr>
<td>Lesson 8</td>
<td>Expansion of the colonies</td>
<td>The southern colonies expanded because of increased immigration</td>
<td>Coastline map activity</td>
</tr>
</tbody>
</table>
and the colonists’ desire for more farm land.

<table>
<thead>
<tr>
<th>Lesson 9</th>
<th>Agriculture and society</th>
<th>How the dependence on agriculture shaped the way people lived.</th>
<th>Southern colonies atlas page</th>
</tr>
</thead>
</table>

APPENDIX A (continued)
## APPENDIX B

Characteristics of Authentic Learning Used in the Authentic Unit

<table>
<thead>
<tr>
<th>Characteristic of Authentic Learning</th>
<th>Did the research study meet this characteristic and how?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Authentic activities have real-world relevance:</em> Tasks in authentic instruction become more authentic when mimicking task performed by professionals or adults in real life. Although Cronin (1993, p. 78) notes that authenticity exists on a continuum, and that not all activities will be able to be as “real life” as their professional counterparts.</td>
<td>Yes. Students took an artifact and built a museum around it, researching that time period and the events surrounding it. Students assumed the role of a curator or museum staff that is responsible for learning about an artifact and the events it is connected to.</td>
</tr>
<tr>
<td>2. <em>Authentic activities are ill-defined:</em> This is meant that not only is there possibly more than one interpretation but also that the tasks and sub-tasks involved are also ill-defined, pushing the student to interpret and identify the necessary steps to complete the major task.</td>
<td>No. Students had to create a specific type of museum panel, for an artifact, for a given event. Although they had some choices of how to present it and what artifact to choose, this project did not maintain many ill-defined pieces.</td>
</tr>
<tr>
<td>3. <em>Authentic activities encompass complex tasks to be investigated by students over a sustained period of time:</em> Problems cannot be solved in a matter of hours or minutes. Authentic activities encompass tasks that require continued investigation by students over a longer period of time, requiring significant investment of time and intellectual resources.</td>
<td>Yes. The students spent the entire three weeks on their museum project, with the last few days focusing on the museum as a whole.</td>
</tr>
<tr>
<td>4. <em>Authentic activities provide the opportunity for students to observe the task from different perspectives:</em> Learners are not given a pre-selected set of resources. They will be required to</td>
<td>Yes. Students spend a lot of time in the text books and online. They discovered very different viewpoints of their specific event based off of what their website or book was focused on.</td>
</tr>
<tr>
<td>Characteristic of Authentic Learning</td>
<td>Did the research study meet this characteristic and how?</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Characteristic of Authentic Learning</td>
<td>Did the research study meet this characteristic and how?</td>
</tr>
<tr>
<td>Herrington et al. (2002)</td>
<td></td>
</tr>
<tr>
<td>differentiate between relevant and</td>
<td></td>
</tr>
<tr>
<td>irrelevant information as well as</td>
<td></td>
</tr>
<tr>
<td>locate information from different</td>
<td></td>
</tr>
<tr>
<td>viewpoints.</td>
<td></td>
</tr>
<tr>
<td>5. Authentic activities provide the</td>
<td>Yes. Students collaborated with partner on their</td>
</tr>
<tr>
<td>chance to collaborate: Such as in</td>
<td>specific project, other sets of partners on how to tie</td>
</tr>
<tr>
<td>the real world collaboration is a</td>
<td>their exhibits together, with every classmate when</td>
</tr>
<tr>
<td>vital part of authentic learning.</td>
<td>learning about each exhibit, and with their tour guide</td>
</tr>
<tr>
<td></td>
<td>partner on presentation day.</td>
</tr>
<tr>
<td>6. Authentic activities provide the</td>
<td>No. Students in this study were not provided with</td>
</tr>
<tr>
<td>occasion to reflect (metacognition):</td>
<td>specific reflection time, although it would be an easy</td>
</tr>
<tr>
<td>Authentic learning enables learners</td>
<td>piece to incorporate.</td>
</tr>
<tr>
<td>reflect upon the choices that they</td>
<td></td>
</tr>
<tr>
<td>make as an individual, team, and</td>
<td></td>
</tr>
<tr>
<td>community. Metacognitive instruction</td>
<td></td>
</tr>
<tr>
<td>has many similarities and connections</td>
<td></td>
</tr>
<tr>
<td>to the authentic learning process.</td>
<td></td>
</tr>
<tr>
<td>7. Authentic activities provide an</td>
<td>Yes. Students created their project within a Social</td>
</tr>
<tr>
<td>interdisciplinary perspective:</td>
<td>Studies area but had to use skills and process</td>
</tr>
<tr>
<td>Authentic is not limited to a single</td>
<td>from other curriculum areas such as: reading, English,</td>
</tr>
<tr>
<td>domain or subject. Instead authentic</td>
<td>art, technology, and public speaking.</td>
</tr>
<tr>
<td>tasks expect students to stretch</td>
<td></td>
</tr>
<tr>
<td>beyond and use knowledge from other</td>
<td></td>
</tr>
<tr>
<td>areas to apply to a complex problem</td>
<td></td>
</tr>
<tr>
<td>and think in interdisciplinary terms.</td>
<td></td>
</tr>
<tr>
<td>8. Authentic activities are</td>
<td>Yes. Students were observed daily on their progress and</td>
</tr>
<tr>
<td>integrated with assessment:</td>
<td>how well they worked with their partners.</td>
</tr>
<tr>
<td>There isn’t a simple summative</td>
<td></td>
</tr>
<tr>
<td>assessment for an authentic task</td>
<td></td>
</tr>
<tr>
<td>but assessment is seamlessly woven</td>
<td></td>
</tr>
<tr>
<td>into the major task such as in real-</td>
<td></td>
</tr>
<tr>
<td>world evaluation processes.</td>
<td></td>
</tr>
<tr>
<td>9. Authentic activities create</td>
<td>Yes. Students created an artifact and a museum panel to</td>
</tr>
<tr>
<td>polished products: Conclusions are</td>
<td>be presented to parents, student, teachers, and museum</td>
</tr>
<tr>
<td>not just exercises in preparation</td>
<td>curators.</td>
</tr>
<tr>
<td>for something else. A product is</td>
<td></td>
</tr>
<tr>
<td>created that is valuable in its own right.</td>
<td></td>
</tr>
<tr>
<td>Characteristic of Authentic Learning Herrington et al. (2002)</td>
<td>Did the research study meet this characteristic and how?</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>10. <em>Authentic activities allow opposing solutions and diversity of outcome:</em> Instead of yielding a single outcome or correct answer obtained by applying a specific procedure or formula, authentic activities allow for diverse interpretations and competing solutions.</td>
<td>No. All students created similarly designed exhibits discussing different events. There were no competing solutions although this project’s topic might be part of the cause for this.</td>
</tr>
</tbody>
</table>
APPENDIX C

Five Standards of Authentic Learning

1. Higher-Order Thinking

*lower-order thinking only 1... 2... 3... 4... 5... higher-order thinking is central*

**Research specific notes:** The researcher felt that this AL unit maintained a 4 or above on Higher-Order thinking due to the students need to combine the facts and ideas that were obtained and generalize and explain these events in an easy to understand museum presentation.

2. Depth of Knowledge

*knowledge is shallow 1... 2... 3... 4... 5... knowledge is deep*

**Research specific notes:** The researcher felt that this AL unit maintained a 4 on Depth of Knowledge because of the formatting of the activities that required students to construct explanations, covering fewer topics, and making clear distinctions about their piece of the unit. It is not believed that a 5 was reached due to the fact that on the other pieces of the museum the students received less depth of understanding.

3. Connectedness to the World Beyond the Classroom

*no connection 1... 2... 3... 4... 5... connected*

**Research specific notes:** The researcher felt that this AL unit maintained a 5 in connectedness to the world because of the interaction and involvement of the local museum. This provided real world public problems to solve and connect to.

4. Substantive Conversation

*no substantive conversation 1... 2... 3... 4... 5... high-level substantive conversation*
APPENDIX C (continued)

**Research specific notes:** The researcher felt that this AL unit maintained a 5 on substantive conversation. This was seen during the entire unit when students would interact with each other about their topics. Each student was responsible for helping the others understand the information and importance of their part of the museum. Constant conversations were occurring between students about their artifacts and topics, none of which was scripted or controlled by the researcher.

5. **Social Support for Student Achievement**

*negative social support 1... 2... 3... 4... 5... positive social support*

**Research specific notes:** The researcher felt that this AL unit maintained a 4 or above in reference to social support and student achievement. Student knew from the beginning of the unit that they would be creating a product that would be seen and examined by peers, parents, and museum professionals. The support and respect between students was naturally created by their focus on a specific piece of the unit. Students respected each other’s expertise on their subject which also improved the feeling of importance to the lower performing students.
APPENDIX D

Key Points and People of the Revolutionary War

<table>
<thead>
<tr>
<th>Events</th>
<th>People</th>
<th>Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre war:</td>
<td>1. John Adams</td>
<td>Daily assessments will be made through:</td>
</tr>
<tr>
<td>- Stamp act</td>
<td>2. Samuel Adams</td>
<td>1. Participation</td>
</tr>
<tr>
<td>- Townshend act</td>
<td>3. Crispus Attucks</td>
<td>2. Project progression</td>
</tr>
<tr>
<td>- Boston Massacre</td>
<td>4. Benjamin Franklin</td>
<td>based off of previous day.</td>
</tr>
<tr>
<td>- Tea party</td>
<td>5. John Hancock</td>
<td></td>
</tr>
<tr>
<td>- Intolerable acts</td>
<td>6. Thomas Jefferson</td>
<td></td>
</tr>
<tr>
<td>- Colonists response to</td>
<td>7. Paul Revere</td>
<td></td>
</tr>
<tr>
<td>2. Lexington and Concord</td>
<td>9. Charles Cornwallis</td>
<td></td>
</tr>
<tr>
<td>3. Bunker / Breeds Hill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Declaration of Independence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Trenton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Saratoga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Valley Forge</td>
<td></td>
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<tr>
<td>8. Yorktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Impact of the Revolution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

Museum Information Panels
Attempts to Discredit

The Bible claims the universe had a beginning. Philosophers and scientists rejected that claim for over two thousand years. Now astronomers believe the universe had to have had a beginning.

The Bible claims that all humans are "one blood." Some nineteenth-century biologists argued that different races descended from lower animals. Today, genetics has verified that there is only one human race.

The Bible claims that God created animals "after their kind." Nineteenth-century biologists argued that animals evolved from other, very different animals. Today, biology confirms that creatures reproduce within their own kind.

The Bible claims that God destroyed the earth in a worldwide Flood. Nineteenth-century geologists argued that rocks were formed slowly. Today geology confirms that many rock layers were deposited catastrophically.

The Bible implies that most fossils were buried quickly as a result of the worldwide Flood. Nineteenth-century paleontologists argued that fossils were buried slowly. Today, paleontology confirms that fossils were buried rapidly.

The Bible claims that God created a number of human languages at the Tower of Babel "according to their families." Nineteenth-century linguists argued that languages evolved slowly, one by one. Today, linguists recognize languages fall into distinct "families" of recent origin.
APPENDIX F

Thirteen Colonies Pretest

Name: ______________________

1. New England land was:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

2. Middle colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

3. Southern colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

4. T  F  New England colonists tried to be self-sufficient.

5. T  F  The first New England colonies were started for religious reasons.

6. After a number of people got banished from the Massachusetts Bay colonies for not following the rules, they started Connecticut and Rhode Island in hopes of having __________.

7. Twenty people were killed and a whole community turned against each other in the ________ witch trials.

8. List two of the major industries of the New England colonies:
   a. __________
   b. __________

9. In the middle colonies there were a lot of hunters who made their money by trading __________.

10. Many of the first colonists in the middle colonies cleared the land for __________.
APPENDIX F (continued)

11. Farmers and trappers relied on what for transportation:
   a. Horses
   b. Wagons
   c. Rivers

12. The middle colonies were known for their (circle all that apply):
   a. farming
   b. religious tolerance
   c. cash crops
   d. diversity
   e. trade


14. T F Quakers believed in war to help further their beliefs.

15. Middle colonies became known as the _____________, because of how much grain they grew.

16. Two of the middle colonies biggest centers of commerce were Philadelphia and __________.

17. What is the main industry in the Southern colonies? __________

18. The southern colonies were very:
   a. dry
   b. wet
   c. small

19. A product that you make and sell to another country is called a __________.

20. Name one of the southern colonies main crops. __________.

21. What was special about the founding of Georgia.
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

22. The south had huge farms called ________________.

23. The large farms were able to run thanks to the work of ________________.
APPENDIX G

Revolutionary War Pre-Test

Name: ________________________

True and False

1. The Tea act meant that all the colonies had to pay taxes on tea that was imported from England. ________
2. A Militia is a volunteer army made up of farmers and workers. ________
3. Benjamin Franklin wrote the Declaration of Independence. ________
4. After the British got pushed out of Boston they regrouped in Canada. ________
5. The treaty of Paris officially ended the war. ________
6. The patriots lost about 1/3 of their army at Valley Forge. ________

Fill in the blank

1. When there is an organized refusal to buy goods it is called a ___________.
2. Volunteer soldiers that could be ready to fight quickly were called ________________.
3. A privately owned shipped used in war is called a ___________.
4. ________________ is a paid soldier that will fight for any country.
5. Washington's army spent the winter at _______________.
6. _____________ was a turning point in the war.
7. A person that goes to another country to represent their country is called a ________________.
8. The blockade around Boston Harbor was a part of the _________________.
9. The first battles of the war were _____________ and _____________.
12. ____________ won the battle of Bunker Hill.

Short Answer
Must be in complete sentences

1. What was the stamp act?

2. What was the Townshend acts?

3. Describe the Boston Massacre.

4. Describe the Boston Tea Party.
5. What were the two main reactions to all of the acts?

6. What did the Declaration of Independence mean for the patriots?

7. What were the other two countries that fought with the patriots and who joined them first?

8. Why was it so hard for the British to fight in the Colonies?

9. Where did the British surrender at?

10. What was the saying that became popular for the colonists to say before the war that showed how they felt about the British taxes?
APPENDIX H

Thirteen Colonies Posttest

Name: ______________________

1. New England land was:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

2. Middle colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

3. Southern colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

4. T  F  New England colonists tried to be self-sufficient.
5. T  F  The first New England colonies were started for religious reasons.

6. After a number of people got banished from the Massachusetts Bay colonies for not following the rules, they started Connecticut and Rhode Island in hopes of having ____________.

7. Twenty people were killed and a whole community turned against each other in the ________ witch trials.

8. List two of the major industries of the New England colonies:
   a. ____________
   b. ____________

9. In the middle colonies there were a lot of hunters who made their money by trading ________.

10. Many of the first colonists in the middle colonies cleared the land for ____________.
11. Farmers and trappers relied on what for transportation:
   a. Horses
   b. Wagons
   c. Rivers

12. The middle colonies were known for their (circle all that apply):
   a. farming
   b. religious tolerance
   c. cash crops
   d. diversity
   e. trade


14. T    F  Quakers believed in war to help further their beliefs.

15. Middle colonies became known as the ____________, because of how much grain they grew.

16. Two of the middle colonies biggest centers of commerce were Philadelphia and ____________.

17. What is the main industry in the Southern colonies? ____________

18. The southern colonies were very:
   a. dry
   b. wet
   c. small

19. A product that you make and sell to another country is called a ____________.

20. Name one of the southern colonies main crops. ____________.

21. What was special about the founding of Georgia.

22. The south had huge farms called ____________.

23. The large farms were able to run thanks to the work of ____________.
APPENDIX H (continued)

Essay questions

Use complete sentences.

24. If you were to start a new community today, how could you use some of the same ideas the creators of the middle colonies used to help your employees feel comfortable?

25. You are a business owner from overseas and you would like to start a new business here in America. How would your choice of location be driven by what your business sells? Give an example by creating a business name, product, where you would start it, and why you picked that location.

26. Make two conclusions about the type of people that owned slaves. Give two reasons how slavery could be beneficial.
APPENDIX I

Revolutionary War Posttest

Revolutionary War Test

Name: ________________________

True and False

7. The Tea act meant that all the colonies had to pay taxes on tea that was imported from England. _______
8. A Militia is a volunteer army made up of farmers and workers. _______
9. Benjamin Franklin wrote the Declaration of Independence. _______
10. After the British got pushed out of Boston they regrouped in Canada. _______
11. The treaty of Paris officially ended the war. _______
12. The patriots lost about 1/3 of their army at Valley Forge. _______

Fill in the blank

10. When there is an organized refusal to buy goods it is called a ____________.
11. Volunteer soldiers that could be ready to fight quickly were called ________________.
12. A privately owned shipped used in war is called a ____________.
13. _______________ is a paid soldier that will fight for any country.
14. Washington’s army spent the winter at ________________.
15. _______________ was a turning point in the war.
16. A person that goes to another country to represent their country is called a ________________.
17. The blockade around Boston Harbor was a part of the ________________.
18. The first battles of the war were ____________ and ____________.
12. _______________ won the battle of Bunker Hill.
Short Answer
Must be in complete sentences

11. What was the stamp act?

12. What was the Townshend acts?

13. Describe the Boston Massacre.


15. What were the two main reactions to all of the acts?

16. What did the Declaration of Independence mean for the patriots?

17. What were the other two countries that fought with the patriots and who joined them first?

18. Why was it so hard for the British to fight in the Colonies?

19. Where did the British surrender at?

20. What was the saying that became popular for the colonists to say before the war that showed how they felt about the British taxes?

Essay questions: Answer in complete sentences.
APPENDIX I (continued)

1. If there was business in your community that were doing things you didn't like, what is a peaceful way you could show that you don't like what they are doing?

2. If you were about to lose your house and you needed to raise money, who would have a better chance of succeeding, you or your friend from school? Why?

3. What would be the benefit of having lots of friends if you ever got into a sticky situation against someone bigger and stronger than you?
APPENDIX J

Thirteen Colonies Subject Matter Retention Test

Name: ______________________

1. New England land was:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

2. Middle colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

3. Southern colonies were:
   a. Wooded, rocky, rich in natural resources
   b. Tide water land great for growing cash crops
   c. Fertile soil, wooded, large rivers, furs

4. T  F New England colonists tried to be self-sufficient.

5. T  F The first New England colonies were started for religious reasons.

6. After a number of people got banished from the Massachusetts Bay colonies for not following the rules, they started Connecticut and Rhode Island in hopes of having ________________.

7. Twenty people were killed and a whole community turned against each other in the __________ witch trials.

8. List two of the major industries of the New England colonies:
   a. ________________
   b. ________________

9. In the middle colonies there were a lot of hunters who made their money by trading __________.

10. Many of the first colonists in the middle colonies cleared the land for __________.
11. Farmers and trappers relied on what for transportation:
   a. Horses
   b. Wagons
   c. Rivers

12. The middle colonies were known for their (circle all that apply):
   a. farming
   b. religious tolerance
   c. cash crops
   d. diversity
   e. trade


14. T   F  Quakers believed in war to help further their beliefs.

15. Middle colonies became known as the ____________, because of how much grain they grew.

16. Two of the middle colonies biggest centers of commerce were Philadelphia and __________.

17. What is the main industry in the Southern colonies? ____________

18. The southern colonies were very:
   a. dry
   b. wet
   c. small

19. A product that you make and sell to another country is called a ____________.

20. Name one of the southern colonies main crops. ____________.

21. What was special about the founding of Georgia.
   ____________________________________________________________________________________
   ____________________________________________________________________________________
   ____________________________________________________________________________________

22. The south had huge farms called ____________.

23. The large farms were able to run thanks to the work of ____________.
APPENDIX K

Revolutionary War Subject Matter Retention Test

Revolutionary War Test

Name: __________________________

True and False

13. The Tea act meant that all the colonies had to pay taxes on tea that was imported from England. _______
14. A Militia is a volunteer army made up of farmers and workers. _______
15. Benjamin Franklin wrote the Declaration of Independence. _______
16. After the British got pushed out of Boston they regrouped in Canada. _______
17. The treaty of Paris officially ended the war. _______
18. The patriots lost about 1/3 of their army at Valley Forge. _______

Fill in the blank

19. When there is an organized refusal to buy goods it is called a ____________.
20. Volunteer soldiers that could be ready to fight quickly were called ________________.
21. A privately owned shipped used in war is called a ____________.
22. _______________ is a paid soldier that will fight for any country.
23. Washington's army spent the winter at ________________.
24. _______________ was a turning point in the war.
25. A person that goes to another country to represent their country is called a ________________.
26. The blockade around Boston Harbor was a part of the ________________.
27. The first battles of the war were _____________ and _____________.
12. _______________ won the battle of Bunker Hill.

Short Answer
Must be in complete sentences

21. What was the stamp act?

22. What was the Townshend acts?

23. Describe the Boston Massacre.

24. Describe the Boston Tea Party.
25. What were the two main reactions to all of the acts?

26. What did the Declaration of Independence mean for the patriots?

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28. Why was it so hard for the British to fight in the Colonies?

29. Where did the British surrender at?

30. What was the saying that became popular for the colonists to say before the war that showed how they felt about the British taxes?
APPENDIX L

Student Engagement Self-Evaluation

<table>
<thead>
<tr>
<th>Name: ______________________</th>
<th>Date: _______ Activity: ________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>How engaged are you?</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I’m totally into this, want to</td>
<td>I am into this, but could stop</td>
</tr>
<tr>
<td>keep working on it.</td>
<td>keep working on it.</td>
</tr>
</tbody>
</table>

Name: ______________________
Date: _______ Activity: ________________

How engaged are you?

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m totally into this, want to</td>
<td>I am into this, but could stop</td>
<td>I’m ready to stop, I’m not into this.</td>
</tr>
<tr>
<td>keep working on it.</td>
<td>keep working on it.</td>
<td></td>
</tr>
</tbody>
</table>

Name: ______________________
Date: _______ Activity: ________________

How engaged are you?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>I’m totally into this, want to</td>
<td>I am into this, but could stop</td>
<td>I’m ready to stop, I’m not into this.</td>
</tr>
<tr>
<td>keep working on it.</td>
<td>keep working on it.</td>
<td></td>
</tr>
</tbody>
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Name: ______________________
Date: _______ Activity: ________________

How engaged are you?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m totally into this, want to</td>
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</tr>
<tr>
<td>keep working on it.</td>
<td>keep working on it.</td>
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APPENDIX M

Student Engagement Monitoring

<table>
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<tr>
<th>Student</th>
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<td>3.</td>
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<td>4.</td>
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<td>5.</td>
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<td>6.</td>
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<td>7.</td>
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<td>10.</td>
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<tr>
<td>11.</td>
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<tr>
<td>12.</td>
<td></td>
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<tr>
<td>13.</td>
<td></td>
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<tr>
<td>14.</td>
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</table>

Engagement scale:
1 – Completely engaged in activity
2 – Somewhat engaged in activity
3 – Not engaged in activity
APPENDIX N

Thirteen Colonies Motivation Surveys

Name:____________
13 colonies pre

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the 13 colonies?
   - Basically nothing - 1  2  3 - I know a lot about it

2. How excited are you to learn about the 13 colonies
   - Not excited - 1  2  3 - Ready to go!

3. How much do you enjoy coming to school?
   - I have to - 1  2  3 - I love it!

4. How much do you enjoy Social Studies?
   - I have to do it - 1  2  3 - I love it!

5. How much do you like Social Studies this year compared to last year?
   - Like it less - 1  2  3 - I like it more
APPENDIX N (continued)

Name:_______________________
13 colonies mid

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the 13 colonies?
   
   Basically nothing - 1 2 3 - I know a lot about it

2. How excited are you to keep learning about the 13 colonies
   
   Not excited - 1 2 3 - Ready to go!

3. How much do you enjoy coming to school?
   
   I have to - 1 2 3 - I love it!

4. How much do you enjoy Social Studies?
   
   I have to do it - 1 2 3 - I love it!

5. How much do you like Social Studies this year compared to last year?
   
   Like it less - 1 2 3 - I like it more

6. Circle the reasons that are currently making you work hard in Social Studies
   
   a. I want a good grade
   b. To push myself
   c. To please my teacher
   d. I enjoy our activities
   e. I enjoy the topics
   f. I'm not working hard, I don't enjoy this
Name:_______________________
13 colonies posttest

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the 13 colonies?
   
   Basically nothing - 1 2 3 - I know a lot about it

2. If you had a choice to move on or to keep learning about the 13 colonies in class, would you?
   
   No, let’s move on - 1 2 3 - Ya, let’s keep learning about them!

3. How much do you enjoy coming to school?
   
   I have to - 1 2 3 - I love it!

4. How much do you enjoy Social Studies?
   
   I have to do it - 1 2 3 - I love it!

5. Based off of how the last unit was taught, how excited are you for the next unit?
   
   eh - 1 2 3 - Ready to learn more about Social Studies!

6. Circle the reasons that are currently making you work hard in Social Studies
   a. I want a good grade
   b. To push myself
   c. To please my teacher
   d. I enjoy our activities
   e. I enjoy the topics
   f. I’m not working hard, I don’t enjoy this
APPENDIX O

Revolutionary War Motivational Surveys

Name: ________________

Revolutionary War Pretest Motivational Survey

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the Revolutionary War?
   - Basically nothing - 1
   - I know a lot about it - 3

2. How excited are you to learn about the Revolutionary war?
   - Not excited - 1
   - Ready to go! - 3

3. How much do you enjoy coming to school?
   - I have to - 1
   - I love it! - 3

4. How much do you enjoy Social Studies?
   - I have to do it - 1
   - I love it! - 3

5. How excited are you to start the Revolutionary War unit compared to the 13 colonies unit?
   - Less excited - 1
   - More excited - 3

6. Circle the reasons that are currently making you work hard in Social Studies
   - I want a good grade
   - To push myself
   - To please my teacher
   - I enjoy our activities
   - I enjoy the topics
   - I'm not working hard, I don't enjoy this
APPENDIX O (continued)

Name: ___________________
Revolutionary War Mid-test

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the Revolutionary War?
   - Basically nothing - 1  2  3 - I know a lot about it

2. How excited are you to keep learning about the Revolutionary war?
   - Not excited - 1  2  3 - Ready to go!

3. How much do you enjoy coming to school?
   - I have to - 1  2  3 - I love it!

4. How much do you enjoy Social Studies?
   - I have to do it - 1  2  3 - I love it!

5. Would you like to do another unit if this format?
   - NO - 1  2  3 – YES

6. Circle the reasons that are currently making you work hard in Social Studies
   - I want a good grade
   - To push myself
   - To please my teacher
   - I enjoy our activities
   - I enjoy the topics
   - I’m not working hard, I don’t enjoy this
Name: _____________________
Revolutionary War Posttest

Circle then number on the scale that best represents your knowledge or ability.

1. How much do you know about the Revolutionary War?
   
   Basically nothing - 1 2 3 - I know a lot about it

2. Would you want to keep learning about this war?
   
   No thanks - 1 2 3 - Yes!

3. How much do you enjoy coming to school?
   
   I have to - 1 2 3 - I love it!

4. How much do you enjoy Social Studies?
   
   I have to do it - 1 2 3 - I love it!

5. Would you like to do another unit if this format?
   
   NO - 1 2 3 – YES
APPENDIX P

Student Expertise Area Question Scores

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<th>Student</th>
<th>Overall Retention Test Score Percentage</th>
<th>Expertise Area Question from Retention Test</th>
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<td>5, 13, 25</td>
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