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Virtual field trips as an educational and motivational strategy to teach Iowa history

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by

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ABSTRACT

There is a lack of research surrounding the use of virtual field trips (VFT) in education, specifically social studies education. This study seeks to examine the VFT as a possible instructional tool that will motivate students, increase understanding and promote deeper learning. The research focuses on three specific questions: In what ways do virtual field trips motivate students to learn about social studies and history? What is the nature of learning in a virtual field trip? How is student achievement impacted as measured by student achievement improve as measured by traditional assessments (multiple choice exams or written tests) after participating in a virtual field trip?

Through the use of a mixed methods study, using both quantitative and qualitative data, the study found that while there was an increase in success on traditional assessments, greater understanding was shown by students through the use of the presentation assessment. It was also highlighted that students with already high motivation and success levels performed well during the intervention and students with already documented low motivation and achievement levels did not show greater academic gains as a result of the intervention.

The study found that, while the VFT appears to be a successful and innovative use of technology in the classroom, there is not significant evidence that the VFT was the direct cause of academic improvement. The study suggests the need for further research on the use of VFTs in the social studies classroom and the need to design a variety of pedagogical approaches to use these VFTs with students of varying motivation and academic achievement levels.

CHAPTER I. INTRODUCTION

In this chapter, background and rationale for the current study are provided. The chapter begins with a look at current teaching and motivational strategies being used in social studies classrooms. It seeks to examine the use of field trips as motivational strategies. The chapter concludes with a suggestion that virtual fieldtrips are a plausible alternative to achieve success similar to field trip experiences in social studies classrooms. The problem, purpose and research questions for the study are then presented.

Introduction

School budgets continue to decrease. The traditional school field trip is an easy target for budget conscious districts. Schools need to look toward alternatives to bussing students to locations around the city or State. As the proliferation of technology in the classroom continues, one possible alternative is the virtual field trip; where the museum, author, park, or monument is brought to the student.

Social studies education has traditionally taken place in a classroom setting, where the desks are in rows, with the students facing the whiteboard taking notes and the teacher lecturing from the front of the classroom. The stereotypical history class includes four or five activities; lecture, bookwork, discussion, handouts and occasionally a video. Topics are covered in much the same manner from class to class and from unit to unit (Hootstein, 1995).

Students are taught in a sequential manner, moving along chronologically from point A to point B, hitting on important dates and facts in the order they occurred. Each

unit is then concluded with a summative assessment that allows the teacher to determine if the students have "learned" any of the facts that have been covered. These facts are sometimes tied to standards and benchmarks set up by the district but are most often chosen by the instructor based on his/her biases or the textbook. The next topic, in sequence, is then started and concluded with a summative assessment, and the process continues until the year is over. The next year the process starts again, picking up where the students left off the year before. For example, three weeks could be spent on the Lewis and Clark expedition followed by a summative assessment to conclude the unit, then the teacher moves on to westward expansion and the California gold rush.

Motivation and Social Studies

This approach to social studies education is a traditional didactic model that current educational psychologists and educators are beginning to question. This model is being brought under scrutiny because this teaching strategy is not motivating students to learn or engage in learning about social studies or history (Slekar, 1998). Students need to be motivated and inspired to learn and understand the topics and ideas from history, as they are key to a functioning democracy (Slekar, 1998). Students are more interested in a "hands-on" approach to education, where they can see, interact and engage with material presented. Students desire to know *why* or *where* things happened, not just *when* they happened. Students also feel that social studies, specifically history, does not pertain to them and their current lives (Shayghnessy & Haladyna, 1985). It is this current state of social studies education that leads educators and researchers to consider other models and activities to enhance student motivation and achievement, like field trips and the use of a constructivist-learning model.

Constructivism has emerged as an effective educational strategy for these contemporary learners who have a desire to learn through doing, and through experiences. The constructivist paradigm focuses on the learner as meaning maker, as the key to acquiring and retaining the information. Bransford and his colleagues (2000) state, "In the most general sense, the contemporary view of learning is that people construct new knowledge and understandings based on what they already know and believe" (p. 10). Students are coming into classrooms with thoughts, feelings, ideas, presumptions, and interests, all at differing levels. These differences are being unaccounted for under the current didactic learning model, and until these differences are addressed students will continue to be unsuccessful and unmotivated in their social studies class work. One way to address these issues is to increase students' interest level in the subject area.

Current theories in motivation are highly useful for demonstrating how to create an atmosphere of learning, by asking questions and setting goals, but little has been done to help teachers design interesting tasks for classroom use (Bergin, 1999). Interest is a key factor in enhancing learning and understanding, if an educator can increase a student's interest level it is then possible to increase the student's motivation level and by increasing motivation an increase in academic success can be realized (Dembo & Eaton, 1997). The relationship between learning and interest is complex and this makes it difficult for teachers to implement interest-gaining strategies and still enhance learning. It is possible for the strategy to get in the way and hinder the learning (Bergin, 1999). Bergin uses computer games and simulations as a key example of this idea. There are many games that allow students to achieve "success" without accomplishing instructional

goals. A student can develop a strategy for winning without truly learning anything other than the strategy and then the desire to "win" supersedes the desire to experiment with different strategies.

There are numerous factors that influence a student's desire to learn about a given topic and some that can be controlled and some that cannot. Two factors that do influence student interests are the introduction of hands-on and novel activities, both of which can be controlled by the teacher (Bergin, 1999). Novel activities are activities that do not *occur in the normal classroom routine, like group games, videos, or field trips*.

Field Trips in Social Studies

One way teachers of social studies have been trying to pique student interest is through the use of field trips because this one activity addresses both hands-on and novelty activities, as well as many others (Bellan, 1998). Field trips allow the students to be removed from the classroom setting and be immersed in the subject matter to a degree that cannot be reached within the confines of a textbook or classroom (Xanthoudaki, 1998). When on a field trip students can see and interact with the subject matter at hand. Students can fully visualize a concept or idea by observing Indian homes, or battlefields, or listening to a docent explain the life of a frontier child while sitting in a grassy field next to a log cabin. It is this interactive nature of fieldtrips that allows the students to create their own meaning of the information presented.

Field trips have long been an important part of social studies education due to their ability to create an authentic experience for the students (Xanthoudaki, 1998). Currently field trips play a key role in generating interest in social studies and history education. According to Bellan and Scheurman (1998) " The very mention of a field trip

often makes the most reticent students excited. Field trips can provide that rare instance when history or government comes close to being 'real' for students" (p. 35). With proper implementation, a field trip enables students' ability to interact and make connections to their prior knowledge from class, the readings and with what they experience on the field trip.

However, field trips have numerous limitations. Proximity, or location, is one such limitation. Students from the Midwest cannot visit Washington D.C. as easily as students on the East coast. Another limitation of the traditional field trip is history's situation within a specific time. History, of course, is in the past. It is impossible for a student to visit the camps of the Ioway Indians, or the active battlefields of Gettysburg, because they occurred in the past and cannot be re-experienced without the use of an historical recreation. Another limitation is cost; getting a field trip funded, is a great undertaking in most school districts. Schools have to provide chaperones, substitute teachers, supplies, and transportation, all of which can be very cost prohibitive. Technology provides new opportunities for educators to engage students in social studies through the use of virtual field trips.

Virtual Reality Field Trips

Briken outlines the role Virtual Reality can play as a new opportunity in education with the following quote:

VR [VFT] offers teachers and students unique experiences that are consistent with successful instructional strategies: hands-on learning, group projects and discussions, field trips, simulations, and concept visualization. Within the limits of system functionality, we can create anything imaginable and then become a

part of it. The virtual reality learning environment is experimental and intuitive; it is a shared information context that offers unique interactivity and can be configured for individual learning and performance styles. (Briken as quoted in McLellan, 1994, p. 41)

Recently students have had access to numerous virtual environments that will help immerse them in a simulated historical context. For example, *The Oregon Trail*, now in its fifth edition, has long been used as an introduction to the Westward expansion and provides an early example of how virtual field trips might work. This simulation places the students in the role of a frontier traveler. As the students travel along the trail they are able to see and interact with things that the settlers of the time experienced. Many other simulations have emerged including: *The Amazon Trail, Earth Trails: The Mississippi River, Alliance, Westward Ho, and Golden 20's*. Currently, with the tablets and computing devices increasing in the educational environment there has been a large increase in VFTs available to students, Examples include *Musée du Louvre, MoMA, American Museum of Natural History and Gettysburg*. This rise in popularity of VFT software can be tied to the notions that technology integration created a better learning environment for the students, and that it provided a change from the regular activities (Shaffer & Resnick, 1999). Although new technologies exist to help social studies teachers motivate their students, little research has been done to determine the technologies value as a motivational strategy (Spicer, 2001). Students have been exposed to more simulations and computerized activities than any students in history (Shaffer & Resnick, 1999). Students are learning and being immersed in simulated environments when they go home and use their computers, or video game machines as entertainment

(IPTV Evaluation Report, 2000). By including something that students already engage in at home for entertainment in the social studies curriculum the teachers can possibly better engage the students with the information they wish to convey.

Limited research has been conducted on VFTs in education, but the research that has been done leads to many promising suggestions about the ability of VFTs to motivate and inspire learners to participate, engage and continue to learn about a specific curricular area, like social studies (Caliskan, 2011; Johnson, Roussos, Leigh, Vasilakis, Barnes, & Moher, 1998; Mikropoulos, Chalkidis, Katsikis, & Photini, 1997; Stoddard, 2009; Tuthill & Klemm, 2002).

Statement of the Problem

Students are not motivated to learn social studies, because they are unable to find a connection between their lives and the facts they are learning (Shayghnessy, 1985). A need to instill a desire to learn is beginning to emerge and these new ideas and technologies, specifically virtual reality can help bring these changes about by increasing student interest and creating "authentic learning environments" for the students. The problem is, however, that there is a need for research to help understand how and why these environments might enhance student learning.

Purpose

The purpose of this exploratory research is to examine how virtual field trips may contribute to increased student motivation and learning in a Social Studies classroom.

Research Questions

The following research questions will be addressed in this study:

1) In what ways do virtual field trips motivate students to learn about social studies and history?

2) What is the nature of learning in a virtual field trip?

3) How is student achievement impacted when measured by traditional assessments (multiple choice exams or written tests) after participating in a virtual field trip?

Summary

The use of field trips has long been a successful part of social studies education, although obtaining resources for these trips has been a continual challenge. Current learning theories provide further indication of the importance of these trips for student motivation. The advent of virtual field trips provides a means for social studies teachers to provide field trip experiences for students. This study seeks to examine virtual fields as a possible avenue to increase student motivation and learning in a social studies classroom.

CHAPTER II. REVIEW OF THE LITERATURE

This chapter will examine the literature and research focused on social studies education.   Major topics in this chapter include:

1. Overview of Need

2. Field Trips as a Motivational Strategy

3. Current Social Studies Teacher Education

4. Technology as a Motivational Strategy

5. VFT as a VR Simulation

6. VFT as a motivational Strategy

7. Earth Trails: The Mississippi River as a VFT

Overview of need

We are currently in the middle of a paradigm shift in educational thought. Students have long been viewed as "empty vessels" that need to be filled with knowledge and the educator was there to fill students with knowledge. Students are now being allowed to explore and create their own knowledge; this is constructivist educational thought (Brown, 1999; Scheurman, 1998). There is a good deal of evidence that learning is enhanced when teaching is linked to the knowledge and beliefs the learners bring to class, and there is a new realization of the importance of controlling your own learning (Bransford, 2000).

Students at all grade levels from elementary to high school have rated social studies as one of the least-liked subjects in the school curriculum (Shayghnessy & Haladyna, 1985). This is especially true for middle level students, those in grade six through eight, since negative attitudes intensify as students progress through these grades

(Hootstein, 1995). Therefore it is important to identify and create motivational strategies for teaching middle level social studies courses.

Being able to experience something first-hand, especially history, makes it stand out in our memory more than the typical lecture or readings done in today's classrooms (Hootstein, 1995). Gaining and maintaining student interest in social studies is a challenge many teachers face when preparing units and lesson plans for their classes. Social studies teachers are particularly concerned with students' levels of motivation (Hootstein, 1995).

Generating student interest is an important factor for increasing intrinsic motivation. "Interest refers to a person's interaction with a specific class of tasks, objects, events, or ideas" (Bergin, 1999, p. 87). This definition of interest is specific to one or two things, for example insects or stamp collecting, and it is this specificity that separates it (interest) from intrinsic motivation, attention, arousal, and curiosity. Intrinsic motivation: "Is an activity where there is no apparent external reward associated with it. In other words, the reward is said to be the activity itself" (Deci & Porac, 1978, p. 150). This dichotomy in definitions can be explained further by looking at Bandura (1986) and his work in social cognitive theory where he states "there is a major difference between a motive, which is an inner drive to action, and an interest, which is a fascination with something"(Bandura, 1986, p. 243). By increasing and focusing on students' interests and by increasing students' intrinsic motivation, teachers can increase students' motivation to learn about social studies and history.

Current theories in motivation are highly useful for demonstrating how to create an atmosphere of learning (Rice & Wilson, 1999). These theories are also useful for

telling the teachers how or what to say, and they are also helpful for setting goals, but little is done to help teachers design interesting tasks for classroom use (Bergin, 1999). It is this divide between theory and practice that needs to be addressed and examined. Teachers need to be able to move beyond the theoretical and immerse themselves in the realistic activities and goal achievement of the everyday classroom. The question remains, how does a teacher motivate their students to learn? One motivational strategy used by social studies teachers has always been the field trip.

Field Trips as a Motivational Strategy

As a way for teachers to motivate and pique the interests of their students many have used the curriculum-based field trips to relevant locations (like battle fields, historical villages, state/federal monuments or museums). These activities help students see artifacts that tie into the topics being discussed and learned in the classroom. By tying the field trip into the curriculum the students are able to make connections to prior knowledge and gain a personal understanding of the material, a main point in constructivist learning. Some teachers use fieldtrips to reinforce the bits and pieces of information acquired through many weeks of study, others see a field trip as a way to give students a concrete experience with difficult concepts (this is done frequently with science classes going to a location where they can interact with scientific principles they would not be able to experience in a classroom), further, some put the field trip at the beginning of a lesson to allow students to have a direct experience with the topic prior to a lesson or learning activity. Regardless of when the field trip is implemented, it is used to provide students with a real-life setting and concrete examples of what the students are learning (Sesow and McGowan, 1984). Many studies have been done on field trips and

their effect on student achievement, and all have come up to the same conclusion, providing an authentic, or real, learning environment for the students can lead to increased retention and academic success (Falk & Balling, 1982; Orion & Hofstein, 1991, Orion & Hofstein, 1994; Xanthoudaki, 1998).

The idea of a "real" or authentic learning environment is not a new one. Much research and study has been conducted on the possibility of teachers creating learning tasks and activities that tie into practical everyday occurrences (Shaffer & Resnick, 1999). Students need opportunities to apply knowledge, to generate and construct meaning, and encourage the kind of cognition that combines declarative and procedural knowledge (Wasserstein, 1995). If teachers focus on authentic learning for their students, it is possible for the students to increase their motivation for the subject being covered. Students desire hands-on, experiential learning to pique their interests (Wasserstein, 1995), and field trips potentially can provide this. While the field trip appears to be a tried and true motivational strategy, training pre-service teachers in innovative classroom instruction seems to be lacking.

Current Social Studies Teacher Education

Many teachers portray history as a body of objective facts, with a heavy reliance on memorization and recollection of facts, but recently history curriculum is trying to move away from the didactic, rote memorization model to a more interpretive one (Slekar, 1998).

Many students learn to teach in the way they were taught and this pattern is further ingrained by modeling from mentor teachers, which perpetuates the didactic teaching style even though many may desire to teach in a more interpretive style (Slekar,

1998). "Veteran" teachers in social studies and history have long taught in this manner, with a reliance on objective facts (Slekar, 1998). According to Hootstein (1995) teachers need to be given more than the theoretical ideals of teaching a specific curriculum idea, and be given specific techniques to teach students and motivate them to learn about any given topic, especially ones that seems to arouse negative emotions, like history.

Newer work in the area of technology and human learning suggests that teachers need to develop a type of knowledge called Technological Pedagogical Content knowledge (TPACK). Researchers suggest that preservice teachers need to learn more than information about technology. Using the TPACK conceptual model, teachers need to understand the connections between technology, pedagogy and content and learn to create technology applications that expand and enhance pedagogical approaches and content knowledge. This approach discourages an emphasis on technology as a separate topic in teacher education. Even though pre-service social studies teacher modeling is slow to change there are some significant changes occurring in the classroom through the innovative use of technology as motivational and instructional strategy.

Technology as a Motivational Strategy

Teachers have been looking for ways to motivate and increase students' achievement for centuries (Shayghnessy, 1985). The integration of technology may be what the teachers are looking for to increase student motivation. Technology as a piece within a constructivist classroom may allow for teachers to better motivate their students (Scheurman, 1998). There are many activities and technology tools, which can be implemented to promote constructivist learning (Rice and Wilson, 1999).

Technology, if implemented properly within the constructivist model, is a key motivational strategy because it "develops high-order thinking skills, including defining problems, judging information, solving problems, and drawing appropriate conclusions" (Laney, 1990). A list of technology tools that could be implemented in this paradigm would be: games, simulations, Internet resources, video, multimedia/hypermedia, and telecommunications. Through the use of these tools teachers help immerse the students within an environment where they are free to make connections to their prior knowledge and develop a personal understanding of the curriculum, thereby increasing their interest levels in the topic being discussed (Rice and Wilson, 1999).

Teachers need to allow students to develop their own knowledge on a topic and allow them to interact with the information on a level that connects with their prior knowledge and understanding.

Brown (1999) states:

One does not learn to process data from data already processed, such as that found in textbooks. Students who use cooperative inquiry and sources beyond the textbook come to understand the importance of up-to-date data, the value of replication, and the relative sophistication of sources. (p. 329)

Students can actively process the information gathered from a technology enhanced activity and make meaning of the new information and make connections to previously learned information, and it is those connections that will lead to an increase in achievement and success (Brown, 1999). It is also clear that the technology alone will not improve student learning. As suggested by the TPACK framework, it is the combination of technology, pedagogy and content that will ultimately improve student learning

(Mishra & Koehler, 2006). One type of technology application that appears promising in education is Virtual Reality.

VFT as VR and Simulation

There are two types of Virtual Reality or VFT: immersive and desktop. Immersive VR is completely involved 3-dimensional environment with head-tracked displays, gloves, body suits or the use of the CAVE environment. It results in the complete removal from reality (Allison, 2000). However, this is far too expensive, and not feasible for a K-12 school with limited resources. And a CAVE VFT is not necessary for a school environment.

Desktop VR is an application on personal computers that allow users to walk through simulated environments created via readily available commercial software (Johnson, Roussos, Leigh, Vasilakis, Barnes, & Moher, 1998). In this study the focus will be on desktop VR, specifically Iowa Public Television's *Earth Trails: Mississippi River*.

The VFT allows for a non-immersive, yet truly interactive connection between the student and the environment. The students can look at different items and interact with individuals but are still limited to a 2-dimential-screen space. This is very similar to the older simulations listed earlier. Also, this environment is one that students are familiar with, in that they are playing games in an environment similar to the VFT when at home. *Sim Farm*, *Oregon Trail*, *Tomb Raider 2*, *Driver 3*, *Gameday 2000*, *Deer Hunter*, are all simulations that students are exposed to in their free time, things they choose to participate in (IPTV Report, 2000). If students are using the these types of simulations at home, it is logical to assume that they enjoy and feel comfortable is these environments,

so introducing a simulation, or VFT, with a similar interface would be met with some success.

Virtual Field trips as a Motivational Strategy

"Educationalists are great optimists. They are for ever seeking their Holy Grail: a tool which, at one and the same time, will make teachers' lives easier while better presenting a picture of the world to their pupils" (Sherman & Judkins, 1992, p. 88). There have been many technologies over the years that have promised this: radio, television, computer labs, laser discs, and film, but they have not delivered as promised (Pantelidis, 1993; Shaffer & Resnick, 1999). One exception to this is the Internet as a research tool; educators and students have integrated the use of the Internet into almost every curricular area (Shaffer & Resnick, 1999).

The idea of simulations and virtual reality in education has been around since the late 1980's. Educators have been slow to adopt the VFT as a useful classroom activity for many reasons; costs, time to implement a new strategy, and little to no research has been conducted that looks at the educational effectiveness of VFTs (Spicer, 2001).

VFTs provide experiences with new technologies through actual use. VFTs require interaction on the part of the learner (encourages active participation rather than passivity). Lastly, the cost for the classroom routine is limited, because VFTs use existing technology (Mikropolous et al., 1997). All these characteristics tie into the VFTs ability to motivate students through immersion, problem solving, and engagement. These characteristics are key to increasing student interests through the perception of loss of time and place. Everyone is familiar with the colloquialism "Time flies when you are having fun" and the VFT can be an example of this. By immersing the students within an

environment, given a task that provides authentic interaction and feedback, the students should have a sense of increased interest in the topic at hand (Shaffer& Resnick, 1999).

Current research suggests that VFTs could be a powerful tool for education (Pantelidis, 1993: Winn, 1993). Virtual environments and VFTs can create an authentic learning environment for the learner. There are many types of VFTs the students can experience. For example, the Louvre in Paris France has a virtual tour where students can go explore famous works of art. Students can even tour Ellis Island. Some simulated VFT, for example, would be *The Oregon Trail*, or one of the numerous simulated trips to the ocean floor. Students can experience these places and activities without leaving the classroom. Every simulated tour allows the students to interact with the location and environment and allows the students to build upon things they already know. It allows the students to make connections in ways that they learn best, not in the way the teacher or docent feels is best. VFTs entail a mixture of delivering (i.e., students are given information in dynamic and active ways) and prompting (i.e., students are encouraged to dig deeper and think critically about places and events in history), and making (i.e., students are asked to apply what the knowledge they have produced in different forms). (Stoddard, 2009). The strongest argument for VFTs in the classroom lies in situated or authentic learning, and how the students' lives connect with learning.

> There are four identifiable "kinds" of authentic learning; (a) learning that is personally meaningful for the learner, (b) learning that relates to the real-world outside of school, (c) learning that provides an opportunity to think in the modes of a particular discipline, and (d) learning where the means of assessment reflect the learning process (Shaffer & Resnick, 1999, p195).

For example, within a VFT, a student controls where to go and what to see, so it becomes very personal for them and they can learn in away that fits them. The VFT can be experienced outside the classroom setting. With nearly ubiquitous internet enabled devices students can use VFTs in their own home or while waiting at a bus stop. All good VFTs provide students with an opportunity to think in a different way. In the case of *The Oregon Trail* the students are asked to think like a settler heading west. This allows the students to conjecture and make decisions based on the information found and learned.

VFT learning environments can provide students with personal connections to their work. The students are given a task and are then asked to create a presentation for their peers from the information they collect within the VFT. This connection to the real-word gives the students a sense of pride and a sense of authorship to what they have created. It also gives the students an outlet or a way to communicate their ideas that encourages an externalization of their understanding (Papert, 1980; Shaffer & Resnick,

In Shaffer and Resnick's work on "Thick Authenticity" they outlined that new media (VFTs are included in this) has a profound opportunity to transform the classroom but only if done in a truly authentic manner. An adaption of their "Aspects of Authenticity framework is included (See Figure 1).

		Personal	Real-World	Assessment
Aspects of Computational Media	Connectivity	-Learners can take pride in authorship for a wide audience	-Connectivity provides an audience beyond Peers and teachers -Gives access to real-world tools	- The need to communicate ideas encourages externalization of understanding
	Modeling	-Learners construct expressive representations of experience	-Learners can investigate complex systems	External computational models reflect internal mental models
	Representational Pluralism	-VFT supports multiple learning styles -Learners can make connections to more subjects	- Learners can use the same tools as professionals - Learners can work on more complex problems	-Computational media and VFT allows for multiple ways to express understanding.

Figure 1. VFTs and authentic learning – aspects of authenticity (Adapted from Shaffer& Resnick, 1999)

The table looks at three main aspects of computational media; connectivity, modeling, and representational pluralism and how those connect personal, real-world and assessment authenticity.

1) Connectivity, is there a personal stake in the learning? Are students being connected to authentic audiences and like-minded learners?

2) Modeling, VFTs allow students to experience learning in ways not available in a traditional sense. Only with a VFT can a student truly be "at" Gettysburg during the battle. In the science classroom there are some activities too dangerous to attempt without the aid of a VFT environment.

3) Pluralism, VFTs allow for students to use authentic tools and solving problems in many ways depending on learning style.

While the creators of this table did not specifically design it to be used as an evaluation tool for a VFT, it can easily be used. Shaffer and Resnick strongly believed that while "authentic" learning has become something of a buzzword being applied to all educational interventions with inconsistency. They suggested that all new media be analyzed through this table looking at how authentic a tool, idea or strategy may be. (Resnick & Shaffer, 1999)

Earth Trails: The Mississippi River as a Virtual Field Trip

A VFT allows a user to interact within a simulated environment. The students are allowed to travel within the environment and examine, manipulate and control the surroundings. For example, the students can pick up an artifact and examine closely, or stop and read a sign along a path. A VFT also ties directly to the curriculum or topic it is situated in, just like a real field trip should. In this case the VFT also allows the students to solve problems given to them as reporters for the production company. The VFT must also allow for a realistic amount of exploration. The students can go and do as they please within the framework of the VFT, but it cannot be so constrained that it is completely linear.

This software was chosen because it is a good example of a simulated VFT due to its interactivity and in-depth development and ties to National Education Standards and Benchmarks as well as the constructivist-learning model. "The Mississippi River Heritage Project is a multidisciplinary multimedia learning experience designed to reveal the scientific, social, and cultural histories of the Mississippi River region" (IPTV

Evaluation Report, 2000, p. 1). The U.S. Department of Education Star Schools grant and the Roy J. Carver Charitable Trust provided funding for the development and research of the software. As part of this grant Iowa Public Television (IPTV) had to maintain accuracy in developing this software, so connections to standards can be assumed to be accurate (B. Bauer, personal communication, February 24, 2004).

A personal interview was conducted with one of the lead Instructional System Designers, Bryan Bauer, from IPTV, to look at the development and assessment on the VFT. The software was developed over a period of time starting with Iowa Communication Networks (ICN) classes in 1996-1997. The entire time the activity was being developed the writers and researchers were focusing on situating within the constructivist-learning model (B.B, Personal communication, February 24, 2004).

The designers worked to create a realist environment that provided a framework for the students to learn from. The goal of the project was to create an immersive environment that was conducive to learning through experience. The designers created a role for the students to fill and provided a problem that they needed to solve (that of an assistant producer). By creating a situation that is realistic and experiential for the students they worked within the constructivist paradigm.

By focusing on this learning model from the beginning all facets of the development could be arranged so as to meet their ultimate goal of "Developing a standards-based interdisciplinary multimedia instructional materials which exhibit best practices in all subject areas" (IPTV Evaluation Report, 2000, p. 1). A sub goal of this project was also to "develop reality-based, exploratory multimedia CD-ROM incorporating a problem-based learning approach with content matching national

standards in math, science, language arts, and social studies" (IPTV Evaluation Report, p1, 2000). Bauer likened the activity to a "Myst-like game environment in an educational setting". The focus on creating an educational setting that allowed the students to interact and manipulate the software and connect with their prior knowledge was paramount for the developers and writers of the curriculum (B.B. Personal communication, February 24, 2004).

Summary

For decades students have disliked social studies education (Shaughnessy and Haladyna, 1985). Students in the middles school levels lose even more interest as they progress through school, and by the time they reach high school, rate social studies as the least-liked of all curricular areas (Hootstein, 1995). It is important then for teachers of social studies to develop and integrate teaching methods and activities that will reverse this trend.

The field trip is one way that teachers of social studies have used to motivate students, and this has been met with some success but the field trip is not always successful and has numerous drawbacks (Xanthoudaki, 1998). This is where the VFT can aid the social studies teacher.

The VFT allows the teacher to take students on field trips while staying in the classroom. The VFT can even be experienced from home. Neither of these characteristics can be matched by the real fieldtrip. The VFT allows the teacher to motivate students by creating a new way of thinking for the students. The students are no longer asked to memorize facts and timelines, but instead focus on the importance and influences of historical events. The VFT also allows the students to think in an historical

manner, something that didactic learning strategies leave behind. It is this focus on

student centered learning that allows the VFT to be considered as a possible new method

in motivating students to learn in a social studies classroom. . As technology is emerging

and new tools and resources are made available, the impact on social studies education

could be great and this study looks to begin the process of delving into the impact of

VFTs on the social studies classroom.

CHAPTER III. METHODOLOGY

In this chapter the subjects, methods and instrumentation used to answer the research questions are described:

1) In what ways do virtual field trips motivate students to learn about social studies and history?

2) What is the nature of learning in a virtual field trip?

3) How is student achievement impacted when measured by traditional assessments (multiple choice exams or written tests) after participating in a virtual field trip?

Due to the nature of the research questions, a mixed methodology was used for this research. The first research question: "In what ways do virtual field trips motivate students to learn about social studies and history?" The tools used to answer this question can be found in Appendix C: Survey Instrument, and Appendix D: Student Interview Framework. The next questions:

2 What is the nature of learning in a virtual field trip?

and

3 How is student achievement impacted when measured by traditional assessments (multiple choice exams) after participating in a virtual field trip?

Both questions can be addressed through quantitative methods using a pre- and post-test (Appendix A: Pre-Post Test), and presentations as well as collection of student GPAs and previous Social Studies grades. Tools used during this research phase can be found in Appendix B: Observational Protocol, Appendix C: Survey Instrument, Appendix D: Student Interview Framework, and Appendix G: Presentation Rubric. Collecting and analyzing multiple types of data can achieve a richer understanding of the data achieved

through triangulation. The researcher using best practice for assessment and rubric creation created all the tools used in this study.

Context

This research looks at a case of using Virtual Field Trips in an Iowa History classroom in a small midwestern middle school. In this case there are several pieces that are integral to the description and analysis of the case, as described in the context in Chapter 2. Since these players are relevant to the understanding of the case, the groups and the teacher, as well as the setting, will be described here. In addition, as this case uses a specific VFT, Earth Trails: The Mississippi River, an in-depth description and understanding are also needed and will be included.

The context for this case was an Iowa history course in a school system consisting of seventh grade students. Iowa history is a required course for 7th grade students in the district, taken during the quarter of the student's choosing. The course lasts one quarter, or about 9 weeks, and covers information from the discovery and subsequent settling of Iowa to current issues in the State. The role of the Mississippi River and its cultures are covered extensively as a part of the curriculum.

Subjects

Subjects used were 7th grade students enrolled in an Iowa history course. IRB approval was given for this research. The reason for choosing the Iowa history class was twofold; first the class was in the curricular area to be examined, and the chosen VFT fit into the curriculum being used in the district. By fitting the field trip with the curriculum the field trip has a greater effect on the students and is not out of place (Xanthoudaki, 1998).

In Lee's look at applying TPACK to Social Studies education he states that technology allows teachers to take "purposeful pedagogical actions to enable meaningful and authentic uses of technology" (Lee, 2008, p.142f). By infusing this project using the TPACK framework as a model, the study removes the aspect of the technology piece as being out of place.

Further, as indicated in the literature review, seventh grade students experience a decrease in motivation and expectations during middle school years (Bergin, 1999). Therefore that was the grade level examined.

Subjects were living in a suburban, middle class school district in a midwestern state. The school chosen was in a small city (population of less than 7,000). The school has a total of 509 students K-12, of which 110 were in the seventh grade. The district is predominantly white (95%), with 2% Hispanic, 2% African American and 1% Asian students. With 21% of students on the free and reduced lunch program, the district is lower than the state average of 30% on this measure of socioeconomic scale.

Of the 110 seventh graders, 40 were currently enrolled in Iowa History and were the subjects of the study. Students were divided into two sections based on their registration at the beginning of the academic year. Section one met Monday, Wednesday and alternating Fridays for 50 minutes. This section had 18 students (all white; 11 males, and 7 females). Section two met Tuesday, Thursday and alternating Fridays for 50 minutes. This section had 22 students (99% white, 1% African American; 13 males and 9 females).

Within the sections, the students were divided into groups of four or five, with one of the groups consisting of only high motivated students, one group consisting of

only low motivated students and the remaining groups having a mixture of low and high–motivated students. Students were assigned to groups based on the instructor's input. By using student's prior performance in social studies and other core classes (science, language arts, and math), as well as perceived motivational level, the teacher, with the input of an aide and other teachers within the 7th grade faculty, was able to create a relatively accurate grouping. The groupings where later confirmed through GPA comparisons.

The groupings used during the study were specifically chosen to look for the differences that ability and motivation may have on the study. There was a bias on the part of the researcher who believed that highly motivated and high achieving students would be successful and motivated by any educational activity. In order to account for this, two high ability/highly motivated groups were created and two low ability/low motivation groups were created with the assistance of GPAs/Class Grades and instructor input. The remaining students were randomly placed into mixed groups.

The instructor of the course was also a subject. The instructor is a licensed teacher with a Masters degree in Education and had been teaching for 31 years with 28 years in the district. During this time he had taught US History and had taught Iowa History for 10 years.

Participant as a Researcher

The role of researcher was multi-faceted; the first role was of researcher, the second was of technology support/development, and third, as instructor. As a researcher I collected data through observation and interviews, as well as administering tests. The role of researcher was straightforward within the development and implementation of the

research. The role of technology support was needed to help with technical problems that developed during the usage of the VFT. Since the researcher was familiar with the software, the computers and the instructor, it was necessary for this role to be filled by the researcher. The role of instructor was a role that provided for some biases to be brought into the research. The researcher is a licensed social studies teacher that had previous teaching experience in this district, and with this topic (taught US and Iowa History in this district for 12 weeks while student teaching).

The researcher spent considerable time and thought on the implementation of a VFT within a real classroom environment. Time was spent looking for a suitable VFT that fit within the constructs developed in the literature review. Upon conclusion of this preliminary research, *Earth Trails: Mississippi River* was chosen, due to its connection with the curriculum and fit as a true VFT based on the criterion given in the literature review. The VFT placed the students within a real environment, given a situation that allowed the students to interact and create meaning of the material presented. With the software chosen, development of a unit and inclusion into classroom activities was undertaken. The researcher's background in social studies education was imperative for developing and planning the unit for the classroom. Input from the software manufacturers, the teacher and district were all taken into consideration during this stage.

Technology support and explanation was the most crucial piece of this research. The unit was introduced and directed by the researcher (with the regular teacher of the course setting up the activity through previous work on cultures of the Mississippi River). Throughout the activity the researcher provided technology support for the laptops and video cameras being used during the research. As the treatment progressed, the researcher

provided instructional support, by responding to participants' questions and concerns about the activity, helping with navigation and interaction with the VFT.

The role of participant for the researcher is imperative to include as the background in social studies education and technology brought certain biases into the research. The researcher was familiar with the curriculum and where certain answers lie within the VFT.   So extra care was given to not divulging superfluous information to the participants. For example, students asked for explicit help locating information with in the VFT, the researcher gave no assistance locating the information to avoid influencing the students' true experience with the VFT. During observation and data collection some commonalities between the researcher's experiences and the participants' experiences arose, such as navigation and usability. Throughout the activity, the researcher tried to remain neutral and view the information with an unbiased lens. While the researcher believes that an unbiased instruction was achieved, it was impossible to remain entirely neutral during the instruction and implementation of the treatment.

Some biases that developed during the research were that the researcher wished for the project to succeed, so extra help may have been given to aid the students in navigation and locating needed information. Another bias that came to light was the researcher's thoughts on the VFT. The researcher believed the VFT to be a very good and useful tool, but it had drawbacks in navigation and direction. This may have caused the questioning during the interview process to focus heavily on this.

Materials and Data Sources

VFT software

Earth Trails: The Mississippi River was the VFT used in this research. The software comes in an instructional kit that includes lesson plans and activities. The VFT is a problem based software component that places the students in the role of a reporter for a production company and the students travel the Mississippi River collecting movies, pictures, sounds and interviews to create a multimedia presentation, an assignment given by the production manager.

As an assistant producer/reporter for the Earth Trails Production Company the students are given assignments to complete and are given a tool that allows them to collect information using video, sound and notes. Students create their multimedia presentations, using a tool called the Amadeus Multimedia Composer that is included within the software.

Students progress through the environment by clicking the direction they wish to move. By clicking on active areas (areas that can be clicked) the students can read signs, move through doors, speak with people, and examine artifacts. The students travel from location to location by using a map within the Amadeus, it is a simple point and click interface.

A good description of the VFT can be found contained within the *Iowa Public Television Mississippi River Heritage Project Evaluation* Report (2000).

Earth Trails: The Mississippi River *is a multimedia CD-ROM program and accompanying curriculum. The program allows students to explore the Mississippi River region from the headwaters in Lake Itasca, Minnesota, to the*

mouth of the River in the Gulf of Mexico. Through authentic interaction, students

research the regional differences, past and present commercial industries, cultural

artifacts, geological and biological characteristics that make the river an important

part of our lives. Students manipulate on-line tools to take notes, record media,

and compose their own multimedia presentations based on problems and issues

presented within the program. The content and issues were selected to match

national standards in math, science, social studies, and language arts. (p 1-2)

The software went through extensive Beta testing with students from around the

state, as well as with practicing educators in a staff development setting. Professors and

local content experts were used for resources during the writing and development and

were brought in during the Beta testing stage of the software (Brian, Personal

communication; IPTV Evaluation Report, p. 1). Some formative and summative

evaluations were conducted and some data from that research was used during this

research.

Instrumentation Used

Pre- and post-test

A pre- and post-test were given to address research question two of this study.

The tests were ten question, multiple-choice tests. The pre-test was used to establish a

baseline for students' prior knowledge about the Mississippi River, specifically the

Native American Culture along the river. The post-test was the same as the pre-test, but

questions were rearranged. The test was created by the researcher and looked for specific

details and informational items that the students should have learned while interacting

with the VFT. This test was used to collect data on how much information the students

gained from using the VFT (See Appendices A1-A2).

Student presentations

The students were asked (as part of their fictional assignment) to create a

multimedia presentation that they would give to the class. They were asked to include

information that they had learned from the activity. Connections to their everyday life

and comparisons to current society were also required. Students where also asked to

include a minimum number of graphics and multimedia pieces to add another level of

interest to the presentations. This presentation was assessed based on a rubric system to

look for non-factual, and connected insight that the pre/post tests would not assess. A

comparative analysis was done on these scores to look for differences between the two

types of assessment.

Attitudinal questionnaire

A likert scale survey of ten questions was administered at the time the pre-test

was given to gauge student thoughts and feeling about the VFT and the current history

course (See Appendix C). The researcher using similar surveys found during the review

of the literature developed the survey. These questions were designed to determine the

students' levels of interest in learning and social studies. This attitudinal data were used

to confirm the groups, and provide a basis for comparison with the information gathered

during the interviews.

Interview protocols

Four groups, two from each section, were selected (based on observed activities

during the treatment) from the original nine groups to participate in interviews. Interview

questions were designed to understand the thoughts, impressions and feelings of the students. Focus group interviews were conducted upon completion of the treatment. Students were interviewed in a focus group setting and asked open-ended questions to help students discuss with each other (See Appendix D).

Observational protocols

While the students interacted with the VFT, observational data were collected during the activity. Observational protocols were adapted from a prior research study (Orion, 1994). The observations were based on a rubric with seven columns; workstation number, general description of students' learning performance, description of students social behavior, impression of the extent of interest and enthusiasm shown by the students, impression of the extent of understanding shown by the students, distribution of time spent in individual vs. group learning, and general comments (Orion, 1994). To collect these data, a video camera was set up at each workstation to record actions and dialogue. This same observational protocol was used to analyze the video data collected (See Appendix B).

Procedures

Days 1-2

The first meeting between the researcher and the subjects was used to administer the pre-test and to introduce the subjects to the VFT. The research was introduced and the project was described at length as a review from the informational meeting held two weeks prior. The likert scale surveys were handed out and collected, followed by the pre-test. The VFT was then demonstrated for the students, to get them introduced and adjusted to the simulated environment and situation.

Days 3-4

In the next meeting the students participated in a scavenger hunt to locate items along the Mississippi River. The purpose of this introductory activity was to allow the subjects to become acquainted with the VFT, and decrease the impact of technical or navigational problems when working through the prepared unit later in the research.

Students were divided into groups of four or five and assigned to a numbered workstation in the classroom. The groups were kept small enough so that each student had an opportunity to participate as well as interact with their classmates. In order for each student to have the opportunity to participate, the activity was structured in a way that each member had a specific job and this job rotated on a daily basis throughout the activity. Roles included a navigator (use the provided map to plot out where to visit and keep the group from getting lost), a recorder (take notes and record observations made by the group that corresponded with the assigned task), a time keeper (keep the group on task and on track to completing the activity), and a computer user (follow the instructions of the group and the navigator to find information on the assigned topic. This person would control the computer and take the videos, pictures and sound bites). If the group had more than four members there were two navigators.

Days 5-9

During treatment sessions, the students began a unit on the Mississippi River. This unit involved creating one multimedia presentation per group that was presented to the class. The researcher and the teacher observed two groups during this activity using the observational protocols for all four days. Further observation took place by viewing the video taped activity. In order to maintain reliability across the observations the

researcher gave the teacher a list of items to choose from and explained the observational protocols prior to the treatment.

Days 10-11

Upon conclusion of the unit a post-test was administered that was identical to the pre-test, except the questions were rearranged.

Days 12-14

At the end of the treatment sessions focus group interviews were conducted with the students to determine student thoughts and opinions on the VFT, as well as their levels of interest about social studies and history, and any increase in enthusiasm that may have occurred by using the VFT.

A final interview took place with the instructor upon completion of the treatment session. Questions were open-ended and were consistent with the student interviews. Questions about technology integration, classroom management, background, perceived student enthusiasm, and the place for fieldtrips in the Social Studies classroom were all covered during the concluding interview.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15
Introduction	X														
Pre-Test	X	X													
Scavenger Hunt		X	X												
Observational Data Collection			X	X	X										
Group Work - Presentation					X	X		X							
VFT Unit			X		X		X		X						
Post-Test										X	X				
Focus Group												X	X	X	
Instuctor Interview															X

(Figure 2) Timeline of instructional intervention and research activities

Data analysis procedures:

The data collected from the observational table and the videotapes were used to look for common themes and activities that occurred during the interaction with the VFT.

Each recording was watched and the observational protocol (Appendix B) was used to thoroughly examine each student's interactions with the VFT, classmates and environment. While watching the students; time on the computer, time spent off task, time interacting with the camera and time spent interacting with group mates were all recorded. One theme emerged early on was that in many groups the roles did not change and one student became the major user of the computer.

The data collected from the surveys and test instruments were analyzed with a statistical package, to look for significant correlations between the pre- and post-tests as well as connections between the factual tests and the alternative assessment, presentations. The presentations were assessed using a rubric developed by the researcher to connect to content standards and benchmarks (see Appendix G). The Likert surveys were split into two sections: learning attitude and social studies attitude, and used to look for common themes among the students. It was important to develop the two sections to account for differences based on content areas.

For the qualitative data set open coding was used. This is a process in which the raw data, in this case the transcripts from the interviews and the observational data were systematically categorized. From these categories, themes emerged and were developed for final analysis. The themes that emerged were tied with the quantitative information to create a strong research base from which the conclusions were drawn.

Summary

This chapter includes descriptions of the subjects, instruments, data collection procedures and data analysis procedures used in this study, The next chapter will highlight the research execution and findings.

CHAPTER IV. FINDINGS AND DISCUSSION

In this chapter, the results pertinent to each of the study research questions are

presented. The following table provides a summary of data sources for each of the

research questions:

Research Question:	Data Sources:
1) In what ways do virtual field trips motivate students to learn about social studies and history?	Appendix C: Survey Instrument, and Appendix D: Student Interview Framework
2) What is the nature of learning in a Virtual field trip?	Appendix A: Pre-and Post-Test, Appendix B: Observational Protocol, and Appendix G: Presentation Rubric
3) How is student achievement impacted as measured by traditional assessments (multiple choice exams or written tests) after participating in a virtual field trip?	Appendix B: Observational Protocol, Appendix C: Survey Instrument, Appendix D: Student Interview Framework, and Appendix G: Presentation Rubric

Research Question 1:

In what ways do virtual field trips motivate students to learn about social studies

and history?

The results on classroom environment, instructor background and group observed

interactions are included when looking at motivation as each piece highlights the

motivation levels of the all participants - students and instructor.

The Iowa History Class Environment

The two classes are designed to meet every other day with alternating Fridays so

that each class meets a total of five times, or 260 minutes, every two weeks. This

provides an interesting dilemma for the teacher and the students who are taking this class,

as it does not meet on a consistent basis as a core (language arts, history, science) class

may. A quote from the focus group interviews from Mathew,[1] "Since we have classes on

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[1] Pseudonyms used for all names

every other day it's hard to remember where we left off" (Mathew, personal communication, March 2004) shows that this timing is not conducive to his learning patterns and many in his group agreed.

Thomas, the instructor, developed the Iowa History course in 1992 when he was asked to take over the teaching of the curriculum. The course is scheduled to cover: topography, Native American tribes in Iowa, immigration groups, famous peoples, and what makes Iowans important to the greater society. Thomas best describes the course breakdown in this way, "We begin with a diorama . . . Where they, through their own choice of materials, build a diorama approximately 2 feet by 3 feet of Iowa." Once the topography of the state is finished the students "incorporate major cities, lakes, and rivers to give them an idea of location and what we do have here. The last thing they add on to it is nationality groupings." After completing the topography map and location of ethnic and nationality groupings, the students complete a famous people search. Thomas notes,

> They do 100 famous Iowans, with some connection, either born here and moved away or moved here, some connection with Iowa that they list in groups of 5: inventors, scientists, whatever grouping they want to make, they name the person and tell me something that they are noted for. If they are an author name a book they wrote. If they are a movie star like John Wayne, name a movie they were in. So it's not just a listing of names, famous politicians, whatever, they have to tell me something they are famous for. (Thomas, personal communication, March 2004)

Thomas goes on to say that this allows for the students to make connections to everyday personalities and the role they may have played in the history of Iowa.

Upon completion of these two activities, the students move on to learning about the tribes and cultures of Iowa that lived here before the settlers arrived. These sections and units are taught in a formal or didactic manner than the rest of the course.

Thomas explains that the Iowa history course in this district is a unique one in that "We started Iowa history in 5th or 6th grade when we tried to add the keyboarding skills that were necessary to go with computer technology, to open a spot for it at the 5th and 6th grade level, we bumped Iowa History up to 8th grade." The school is currently in the process of pushing the course back to the 5th and 6th grade level to maintain continuity with other districts around the state. Thomas continues, " We are trying to move it back into the level is normally taught at. It's a bit easier to reach kids doing it at a younger age too, they are excited by ideas and concepts that, as they get older, lose their appeal" (Thomas, personal communication, March 2003).

Yet another unique factor of the Iowa history environment is that there is no set curriculum. Teachers are free to cover a curriculum that is without standards and benchmarks and may not be tied to any other Iowa history class in the state. Thomas explains that in other states like Mississippi, "They are very proud of their history, and have updated Mississippi history books with a set curriculum." Thomas believes that Mississippians are very proud of their roles during the development of the country and that Iowans lack that same enthusiasm. Thomas blames this lack of direction and interest on the fact that; "We do not have a very exciting history" and "We are ignorant to what we DO have, that being a strong culture of hard workers."

The course as an environment is different from most as the students are working in groups and are allowed to create their own projects and develop their learning in such a

way that it ties into their experiences and lives as citizens in the state of Iowa. This course

has a mixed environment that allowed for both a flexible and fluid learning environment

as well as a didactic (traditional) learning environment.

The Subjects: An In-Depth Look

Thomas

Thomas teaches in a classroom that is organized and planned. The desks are in

rows and kept neat and orderly. The walls are adorned with pictures of outstanding track

stars from his time as girls track coach. He keeps them there as inspiration to his

students. He is not one for bulletin boards with kitschy borders or postings, but instead

posts inspirational posters and collegiate sports team memorabilia.

Thomas uses his computer for sending email and doing some limited research, but

never in the classroom. His normal class uses the overhead projector, with the occasional

group work assignment. Thomas rarely uses videos in his classes and does not use a

textbook. Thomas has a more traditional approach to teaching social studies, which made

him a great fit for this study.

Thomas was excited for the opportunity to participate in the study. He knew the

researcher from previous classroom work and liked the idea of something new brought to

the Iowa history class, which he did not want to teach. Thomas often made comments

about teaching Iowa history such as, "being forced to teach", and "roped into" that

showed he did not enjoy teaching the course for one reason or another. He had no

problem giving up control of the course for a few days, just so he did not have to teach it.

As outlined in chapter three, the target was to create one highly motivated/high achievement group, one low motivation/low achievement group and three mixed ability groups in each of the two sections.

Group 1

This group of four students (2 males, 2 females) was a group of students with a range of achievement and motivational levels. The group seemed to be a group of three friends and one student who would not choose to be with this group. This one student, "Ashley" was quiet and reserved and chose to observe and take notes rather than interact or discuss with the rest of the group.

Group 2

This group of five students (3 males, 2 females) was a very loud and interesting group. Group two was a low achieving/low motivated group. Two of the students had IEPs (Individual Education Plans) that had rules and changes teachers needed to follow during assessment and during the class day. These two students also had a full time teacher's aide that worked with them during Iowa history. This group was sitting on the floor, sprawled in the corner, working on the activity. Sometimes they were kept on task by the activity, sometimes by the teacher's aide, but mostly they were off task and easily distracted. The group was energetic and needed more supervision and structure than the activity provided.

Group 3

If a group had to be classified as the "cool" kids this would be the group (constantly making jokes and talking to everyone). This group of four students (four males) was in a mixed group (high and low motivated grouping). Two of the members

were obviously friends and the other two were obviously friends. As the activity progressed the guys talked mostly with their respective friend but the two groups quickly began to work together and worked well in this situation.

Group 4

Group four was a group of five (2 males, 3 females) high achieving and highly motivated students. This group of students worked well together. They spent time discussing the topic and worked as a group. The group did split along gender lines at times, but seemed to come together when needed.

Group 5

This group of four students (1 male, 3 females) was easily distracted by the cameras, and seemed more willing to talk with each other the entire class period rather than work together. They would leave the group and talk with members in other groups, distracting not only themselves but also members in the other groups. Only one student in the group focused on the activity, and she took notes while the only male in the group controlled the computer. This was a mixed ability group.

Group 6

Group six had four members (2 males, and 2 females). This group was a mixed achievement and motivation group. The group was led by one of the female students. This group was very relaxed, talking with each other and enjoying just working in a group. The group had trouble focusing at times but was able to stay on task when needed.

Group 7

This mixed ability group had four members (1 male, 3 females). This group was led by the one male and was actually a group of friends that happened to be grouped

together. The group seemed to enjoy working together on the activity, but spent a large

amount of time off topic.

Group 8

Group eight was the second of the high motivated/high achieving groups. This

group had five members (3 males, and 2 females). This group was a friendly group. They

interacted with each other and where obviously friends. It was easy for this group to get

off topic due to their friendships, but it was equally easy for them to get back on task, as

they were all highly motivated students. This group seemed to find a mix of fun and

education as they showed high levels of understanding, yet were discussing off topic

items for a large amount of time each day.

Group 9

This group of five students (5 males) was the second of the low achieving/low

motivated students. These students did not interact with each other. They chose to work

separately while sitting in the same area. Each member was taking their own notes and

making their own conclusions (when they were paying attention at all). One member

controlled the computer the majority of the time and did not allow the others to use the

computer. This control by one person kept the others from focusing on the task, and they

stopped working. Some students slept, some worked on other activities, and some talked

with other students. Once the members of this group were off task they rarely returned to

the VFT. Upon conclusion of the study, some strong results can be seen with regards to

the ability of the VFT to increase student achievement and student interest and

motivation. In this following section, where quantitative methods are used, research

questions two and three are looked at simultaneously. When data address a specific

question it is noted.

Research Question 2:

   What is the nature of learning in a virtual field trip?

Research Question 3:

   How is student achievement impacted as measured by traditional assessments

(multiple choice exams or written tests) after participating in a virtual field trip?

   Of the 40 students participating in the study, 50% increased their scores from the

pre-intervention test to the post-intervention test. Of the remaining students, 25%

remained the same and 25% decreased. The students who increased their scores or

remained the same on the post-test changed the mean score to 4.30 (out of 10) from a

previous 3.45, giving a significant change of .028. The distribution of the sample size

increased from the pre-test to the post-test. Since this occurred, the standard deviation for

the group increased from 1.239 to 1.884. Based on this information, it can be said the

intervention was successful at increasing student achievement across the sample (See

Table 1).

Table 1

Pre-test and post-test scores for intervention test

	N	Mean Scores	Standard Deviation	Correlation	Significance
Pretest & Posttest	40	Pre-Test – 3.45 Post-test – 4.30	Pre-Test – 1.239 Posttest – 1.884	.347	.028*

* $p < .05$

By next looking at the students' prior work in both Social Studies courses and other courses, it can be seen that the ability of the VFT to increase student achievement may be lessened and may not be any better than any other activity that has the same learning objectives. There is a strong correlation between the students' test scores and Social Studies grades and cumulative GPA scores (4.0 scale) (See Table 2).

Table 2

Student test scores compared to cumulative GPA

		Posttest	Cum GPA	Social Studies Grade
Posttest	Pearson Correlation	1	.435**	.491**
	Sig. (2 Tailed)		.005	.001
Cum GPA	Pearson Correlation	.435**	1	.937**
	Sig. (2 Tailed)	.005	.	<.001
Soc Grade	Pearson Correlation	.491**	.937**	1
	Sig. (2 Tailed)	.001	<.001	.

** Correlation is significant at the 0.01 level (2-tailed)

It can be seen from Table 2 that by looking at the students' prior performance in Social Studies and other curricular classes, the students would score well on the post-test simply because they are students who are doing well in other courses.

Since the groups were organized purposefully in highly motivated/high achieving, mixed and low motivation/low achievement groups as outlined in Chapter 3, it can be determined from Table 3 that students who had a higher motivation and achievement level scored better on the post-test.

Table 3

Correlation level of high motivation/high ability group

	Correlation	Significance
Post-test of students with high achievement/ high motivation	.564	.010*

* $p < .05$

Some possible explanations for why students scored as they did will follow in an in-depth look at each group and how they scored and worked across the intervention.

Group Analysis

Low motivated/low achieving groups

Groups two and nine consisted of low achieving and low motivated students. Group two had five students. This group had two students that had Individualized Education Plans (IEPs) that stated that these students would not receive letter grades for their course work assessment. Two students from this group improved their scores from pre-post test. The student "Kathy" increased her score by 20%, and was in control of the computer for more than 60% of the time. The other student who increased his score was one of the students with the IEP, "Seth".

Seth, after the first day of working with the VFT, returned to class with three books covering the history and culture of the Mississippi River that he had checked out from the school library. He came into class that morning very excited telling his aide and teacher about the "cool" books and other "stuff" he had found. Later during a conversation Seth mentioned numerous things that he had found in the book that connected to information that was being covered in the VFT. Seth was able to make connections to his prior knowledge and new knowledge, both from the VFT and the

books, which is a major tenant in the constructivist learning theory (Bransford, 2003;

Brown, 1999). Seth increased his score by 20%. During the activity his group tended to

be off track and not engaged with the materials, but when the computer user Kathy

allowed the group to view the monitor, Seth was able to stay on task as well as the other

group members.

Keeping the entire group interested and participating in the activity was difficult

as described in the observational data. These observational notes included, "Students

spent time talking with each other about current happenings in the school (i.e. other

classes, personal issues). Little time was spent engaging the materials, students would be

randomly clicking through the VFT with little direction or connection to the activity"

(Observational Data Group 2, March 2004).

The presentation for this group was under two minutes (1:55) and included

numerous facts from the VFT and from the extra resources provided by Seth. This group

did a thorough job of communicating the importance of the mounds to the Mississippi

River cultures, discussing them as places for community activities and worship, as well

as burial uses. The group did not include any information comparing the culture of the

time to their current culture. This group showed they understood and learned more than

the test appeared to show.

Group nine was a group of five students. Of the five students in this group none

increased their scores from pre- to post-test. This group was continually distracted by the

software and each other. During the activity the computer user would ignore the

navigator and travel aimlessly in the VFT. The members found information they felt was

interesting to them. The group traveled to New Orleans and spent an entire class period

walking in the cemetery and along the streets of the city, even though the groups were specifically told to travel only to the effigy and Cahokia mounds regions of the Mississippi River. Certain things caught the attention of the group, like the singing of a Native American woman, or the screeching of an eagle, but the group failed to stop and read the signs or take in the scenery. They seemed content to roam around. This group also spent a great amount of time just sitting and not talking to each other, or napping.

The presentation for group nine showed no grasp of the information. Few facts were included and no discussion of the topics was included. This group of students was unable to compare and contrast the cultures, due to the lack of understanding of the topic. Only one student spoke during the presentation and he was not the student who controlled the computer, nor paid attention during the activity. This group showed little increase in knowledge based on the test scores, or the presentation.

Mixed groups

Groups one, three, five, six, and seven consisted of both high and low motivated students and high and low achieving students. Group one consisted of four average achieving and motivated students. In this group only one student increased his/her score from pre- to post-test. This student increased their score by 30%. From observational data collected on this group the group spent much of their time, nearly 40%, engaged in activities other than those assigned by the instructor and the written instructions. The cameras used to collect the observational data also distracted this group frequently. One member of the group "Eric" spent five to ten minutes each class period staring at and trying to avoid the camera. Eric seemed shy and would try to hide from the camera,

moving out of the way, or hiding behind the computer screen. These antics by one student seemed to distract the rest of the group.

Eric was the leader of the group and was in control of the computer more than 80% of the time. The instructions were read to the group and were written down for the group stating that each group member was to take a turn controlling the computer and participating in the other assigned roles; recorder, navigator, or time-keeper (for further information of these roles please see Chapter 3). This group did not rotate between roles and some of the other members were "left out" and did not feel that they were included (Ashley, personal communication, March 2004).

The student who did increase her score in this group was the recorder for every day they worked with the VFT. She would watch over the Eric's shoulder and write down notes and facts to be used for the student presentations at the end of the activity. This student also had the highest GPA in the group with a 3.00.

This group had some technical difficulties with their VFT during the activity that caused the computer to crash. The group had to restart roughly halfway through the first day. It could easily be seen that this caused the students to be distracted and put off early in the activity and could have been a cause of the group not achieving well on the activity.

Technical difficulties were only a small problem for some of the groups, but it seemed that this group had a difficulty returning to the task at hand after the problems with the computer.

The group's presentation was short (< 1 minute). The group did include numerous facts about the culture they found important. The students failed to draw any conclusions

or connections between their lives and the lives of children their age who lived during the times covered in the VFT, and only briefly discussed the importance of the mounds to the Mississippi river culture. Upon conclusion of the activity, the group did learn some factual information, which may not have been covered in the post-test, but information was given in the presentation, and no deep understanding could be seen based on the information given in the presentation.

In group three every student showed improvement from pre-test to post-test. In this group the time on task was very high, every student worked on their assigned task for a majority of the class time. They, like the other groups, did not switch roles as assigned but all were able to increase their factual knowledge on the topic.

The presentation for group three included numerous facts that were not tested in the post-test. These students also discussed the similarities and differences between their culture and the Mississippian cultures at length, showing a deep understanding of the two cultures. This group failed to discuss the importance of trade or economy during their presentation, but the presentation showed a much deeper understanding and grasp of the information than the tests did.

Group five spent most of the class time distracted and off topic. Only one student in the group showed an improvement from pre- to post-test. In this group, the student who controlled the computer for more than 80% of the time showed a decrease in scores from pre- to post-test. This student also spent five to ten minutes of each class interacting with the video cameras present to record observational data. This student "Jordan" even spoke to the camera using obscenities and gesturing to the camera, which seemed to entertain the rest of the group and keep them off topic. The one student who increased her

score was taking notes and observed over the shoulder of the computer user and did not seem to be distracted by the actions of the rest of the group.

The presentation for group five was barely over one minute (1:15). It glossed over the information that was required and showed no discussion, or deep understanding of the topic, beyond a number of facts that were not tested on in the pre- or post-tests. This group was unable to make any connections or conclusions about the Mississippi River cultures.

Group six was a group of four students. In this group only one student showed improvement from pre- to post-test. The one student that improved was the computer user for more than 75% of the time. This group did not switch roles during the activity. This group had some technical difficulties to get started but once they got going the activity progressed well for them. The group did complain and commented about the poor navigation and direction within the VFT. One student "Sally" said that "it was kinda [sic] confusing, 'cause like you couldn't like we didn't really know where to go and stuff until like halfway through the thing" (Sally, personal communication, March 2004).

The group six presentation showed a deep understanding of the mounds in the Mississippi River cultures. They discussed the uses of the mounds and even compared the mounds of the Cahokians to churches of our times. These students included a number of facts that were not tested on showing that more was learned than was tested on. In this group only one student increased her score, but it was apparent that more was learned and understood than the test found.

Group seven was a group of four students. In this group three out of the four students showed an improvement from pre- to post-test. The student that showed the

greatest increase in scores was the computer user for the majority of the time, 65%. This group was on task for the majority of the class time. They were focused on the activity and took notes and collected information for their presentation while spending little time off topic. Throughout the activity, the group was making comments about information that was interesting or previously unknown to them. This group was huddled around the computer discussing the presentation for more than 60% of the class time, more than most groups.

The presentation for this group of students was full of facts and information that were not covered on the ten-point post-test. The students showed a deep understanding of the cultures by connecting information they gathered to their culture and lives today. The students compared and contrasted the daily life of the Cahokians to themselves today. This group covered the importance of the mounds thoroughly and completely as well as discussing the role of trade and natural resources to the cultures of the Mississippi River.

High Motivated/High Achieving Groups

Groups four and eight consisted entirely of highly motivated and high achieving students. Group four was a highly motivated/ high achieving group. Four out of the five students showed an increase in factual knowledge. This group also rotated assigned roles, but the same student controlled the computer more than 60% of the time. This group spent most of the class time on task and was able to maintain a focus with all members providing input on the project at hand.

This group of students showed an increase in factual knowledge from pre- to post-test, and the presentation confirmed the increase in knowledge, and also showed an increase in understanding of the topic. Group four discussed at length the daily life of the

Mississippi River cultures, drawing comparisons to their lives today. They also discussed the importance of the mounds to the cultures and how the mounds were used during the time of the Native Americans. After completing this activity, specifically the presentation, it was obvious that the students had a much greater understanding of the topic than the tests alluded to, even though the scores increased.

Group eight was a group of five students. Only two out of the five students showed an improvement from pre-test to post-test. The student controlling the computer for the majority of the time was the student who showed the greatest increase in scores. The group was easily distracted during the activity by each other. One student in particular, "Paige", spent little time working with the VFT. She sat on the backside of the computer every day and looked at the screen only on rare occasions. This student did, however, interact with the VFT when the group traveled to the headwaters of the Mississippi River and viewed a location where she had been, "It looked exactly like that, like the pictures, it freaked me out, cause I remember the stepping-stones" and "I was telling you guys where to go" (Paige, personal communication, March 2004). The members of the group, when paying attention, took notes and interacted with the computer user, but did not switch roles as assigned.

Group eight had the most complete presentation of any group in this study. They included numerous facts and pieces of information about the Mississippi River cultures, as well as discussed the cultures of the time, comparing and contrasting them to the current culture they live in. This group spent time discussing the roles of the mounds in the daily lives of the Native Americans and discussing the roles of trade and the environment.

The students, as a whole, showed a slight improvement from pre-test to post-test but many of the presentations showed an obvious grasp of the topic and information. However when the students were interviewed, they commented that they did not learn anything, "I thought I knew, I thought I learned stuff and then I got the test and felt like I didn't know anything more" (Mathew, personal communication, March 2004). It is apparent from this quote that this student still judges his learning from test scores, and it is equally apparent that he did learn, but just was not tested over the information he acquired during the VFT. This gap was shown in many of the students, where their understanding of the concepts were highlighted during the presentation assessment but did not show up as clearly in the multiple choice assessment.

One to One Computer Interaction

Of the nine groups participating in this case, all nine had one student rise to the role of computer user for the duration of the activity. In the instructions and explanation of the activity the students were asked to switch roles so every student would have the opportunity to use the computer. Since the groups were large, four-five, the students would need to change roles to maintain a level of interest in the VFT. By watching the interactions with the VFT and computer, it was noted that students who spent more than 60% of the time as the main computer user scored better than the others in their group, with only two exceptions. It was further observed that students who were the main computer users showed improvements of up to 50% on the post-test.

These students also emerged as the speakers during the presentation; only in one case was the main computer user not the main speaker during the presentation. It is fair to conclude that in this instance, when working with the VFT, students working directly

with the software will learn more than students who observe someone using the VFT. This conclusion may not hold true in instances where the number of devices is much higher.

Conclusions

The results suggest that the fact based, multiple-choice test did not reveal the depth of student learning. Using an alternative form of assessment (the presentation), the teacher was able to obtain a broader view of student learning in this project.

Students who were normally highly motivated and successful in their other courses did well in the VFT. Those students who are normally under achieving and have a low level of motivation only did nominally better, if at all, using the VFT.

During the interviews and observations, it became obvious that the students were responding to the novelty (differences in situation) that the VFT provided, but it does not, in this case, seem to be enough to provide concrete evidence that the VFT would be the best way to teach this information in this Iowa history course.

Summary

This study provides interesting findings: students increased scores on the multiple choice tests, students appeared to enjoy the VFT and students did appear to demonstrate a greater knowledge of the topic through the group presentation. It is not possible, however, to show that the VFT was the direct cause of any of these findings. What appeared to be most clearly evident during the research was that students with high motivation and high achievement levels in their courses already did well during the activity. This research was only the beginning of what should be a continued look at VFTs in education but also a continued look at technology innovation as a whole.

CHAPTER V. SUMMARY AND RECOMMENDATIONS

The concluding chapter highlights the findings of the study and discusses the implications for future research.

Summary of Findings

This study looked to answer questions related to virtual field trips in a social studies classroom. Motivation, academic performance and the nature of learning were all studied. During the study, through interviews, tests and observation it was found that students who were already high achieving and motivated students did well, and those that were not as high achieving or motivated were mostly, unaffected by the introduction of the VFT.

Another theme that emerged was that many of the students showed a deeper understanding of the content then was shown through the multiple choice assessment (pre- and post-test). Some of the implications of this finding are beyond the scope of this study, but I do believe it bears further study. There are some current beliefs that students should be allowed to show their learning in multiple ways and this finding seems to support that hypothesis. The study suggested that the possibilities of the VFT are not a silver bullet to guarantee success in any classroom. However, there is enough in the findings to indicate that VFTs along with appropriate pedagogy and content in the classroom setting could have a significant impact on student learning.

Discussion of Findings

Even though the technology caused some problems during the research study and there are some unresolved issues with the VFT, there is much that can be learned from this case by looking at the *Earth Trails: The Mississippi River* as a VFT and the roles that

a VFT could play in a social studies classroom as a tool for motivating and increasing student interest and deepening content knowledge.

VFT as a Learning and Motivational Strategy

The three research questions from this study were:

1) In what ways do virtual field trips motivate students to learn about social studies and history?

2) What is the nature of learning in a virtual field trip?

3) Howe is student achievement impacted as measured by traditional assessments (multiple choice exams or written tests) after participating in a virtual field trip?

The first question can best be answered by comparing the stories of Seth and Jordan.

After the first day working with the VFT Seth returned to the classroom with three books on the Mississippi river that he had checked out of the library. These books were checked out during his free time and he had read through them prior to the second meeting of the class. It is important to note here that Seth is a student who is classified as a low achieving and low motivated student. He does not work well in groups and does not perform well in activities that require a great deal of attention. Seth was obviously greatly intrigued by the VFT. He was continually asking questions and would get visibly upset when he could not see the screen or was not allowed to participate during the group discussions. Seth was an active member of the group when he was not pushed to the side.

After speaking with the teacher's aide that works daily with Seth, it was apparent that Seth truly enjoyed working with the VFT. She (the aide) said that he was constantly talking about the activity and the things he was learning about the Mississippi River and

the cultures. According to the aide Seth was truly enjoying the activity and would love to do more activities like it. But Seth's story was not the same as every student who participated in the study.

Jordan's story was much different than Seth's. Jordan was in a group of four with three other females. Jordan was pushed into a role of leader, which he easily accepted. Jordan was distracted by the novelty on the VFT. He also had trouble with the cameras used by the researcher to collect observational data. Jordan continually complained about the difficulty of navigation and the unclear nature of the instructions. Jordan found the activity boring and unimportant to his grade or his life as a seventh grade student. If a student does not see a potential link, or usefulness, the student is unmotivated to learn social studies (Hootstein, 1995). This is a case of exactly that; Jordan was unable to find a link between what he was doing and anything going on in his life, and because of this lack of perceived importance, Jordan was unmotivated to learn anything about the topic being presented.

Seth's story is much like those of his peers. Many of the other students found the VFT very interesting and exciting to use. While observing the students working, it was easy to see that the students were working hard. The students were leaning into the computers and discussing what should go into the presentation and what was important. "Go there" and "Cool" or "Check this out" could be heard numerous times while watching the students work. During the interview with Thomas he commented on how hard the students were working and how great it was to see them getting interested in this topic, one that he said was of little interest to any of his previous students.

The stories of Seth and Jordan are quite opposite, but these two stories demonstrate two very important truths. First, that VFTs can increase student interest and motivation levels, and second, not every student will be motivated or will respond to an activity in the same manner. TPACK provides an ideal conceptual frame for addressing some of the issues emerging from this study. The differential effectiveness of the VFT for students of differing ability and motivation levels suggests the need for trying new pedagogical approaches using VFTs. Clearly, the approach for using the VRT used in this study was effective for top students, but, just as clearly, different methods of using the VFT need to be developed and tested with students of different abilities and interests. The approach used in this study was the same for all students and results suggest the need to individualize and vary this approach. The TPACK frame makes it clear that the most effective uses of the VFT involve careful choice of content and pedagogy. Results suggest the need to develop alternative ways of using the VRT in classrooms and then testing the effectiveness of these approaches with a variety of students.

To help determine the benefits of the VFT as a motivational strategy one can also compare the VFT to these four key beliefs on motivation in a social studies classroom:

1. Provide activities that help students (a) to perceive realistic representations of historical events and realistic portrayals of historical figures and (b) to visualize clear images and descriptive details of historical events.

2. Provide opportunities for active student participation that include social interaction, hands-on experiences with finished products, and physical movement.

3. Provide opportunities that allow students to perceive a sense of control in their learning activities.

4. Make learning relevant by relating the content to the students' needs, goals,

interests, values, and experiences (Hootstein, 1995, p 26).

The VFT allows for all of these beliefs to be enacted. The students are able to see realistic examples of the Mississippi river cultures, and are given descriptive and in depth information about the topics being covered. The VFT experience allows students to interact with each other and create multimedia presentations based on the new information that they have acquired. It gives students a realistic look and hands-on experience with history. The students are in complete control of their learning and allowed to navigate to any destination they choose to visit. Finally the students are able to relate the information to their lives by comparing the information to information they may already know or information they think they already know.

The Nature of Learning in A VFT

"I remember that! Go left and you will see the path across the river" (Paige, personal communication, March 2004). This is just one example of how a few of the students reacted when they came upon a location in the VFT that they had been to before in real life. A good VFT is one that allows the users to immerse themselves in a believable setting that provides an authentic environment for the students to interact with. The authentic nature of a VFT is more than a realistic recreation of a location or environment. The authenticity lies in the structure of the VFT. If the instructor allows the students to roam aimlessly with in the VFT the students will learn little, if anything. By creating a story or situation that places the students within the VFT, the students are then immersed not only in the world of the VFT, but also the information the VFT provides.

In this case the students were assistant producers asked to create a journalistic multimedia presentation about, the cultures of the Mississippi river, and then present it to the class. By having the students move beyond the multiple choice, fact recall assessments, the students can create an outward expression of their knowledge and this can become a cornerstone of authentic learning and assessment (Shaffer & Resnick, 1999).

The second and third questions that this study looked to examine was the nature of learning in a virtual field trip, and whether this environment lends itself to a traditional assessment model. The study showed that the VFT allowed students to collect a large amount of information and allowed them to control their learning though out the activity.

The students can collect information within the VFT in many ways. Students can read signs and listen to people talking as they walk around and interact with the VFT. Students can also learn from numerous electronic books placed through out the VFT as well as pictures and dioramas. This type of overt knowledge is easily assessed through the use of multiple choice, or fact checking exams. But there is more knowledge available to these students within the VFT, knowledge that is not as easily assessed. Knowledge of connections between everyday life and the lives of those being studied, or comparisons among different cultures is not easily assessed through traditional means. By adding a multimedia presentation the students were able to illustrate more of what they learned and the connections they made to their prior knowledge and the knowledge they acquired as a result of working with the VFT. The creation of tangible products can be a useful means for aligning higher level learning with evaluation (Sprague, 1993).

By looking back and comparing the student scores on the post-test and the presentations it is easy to see, in most cases, the students showed a much deeper grasp of the information than the fact checking tests allowed. The VFT allows the students to develop a deep understanding of the information and it allows them to proceed at their own pace and make connections to new and old information as they are creating the multimedia presentation.

Constructivism in the Social Studies Classroom

The interviews and the survey scores show that the students participating in the study are not unique in their dislike for social studies. Students do not like the way social studies is currently taught and new ways to increase their motivation are needed (Wasserstein, 1995). The VFT helped accomplish this. The VFT placed the students in situations that allowed them to control their own learning and make connections to previous knowledge. The VFT was learner centered and allowed the students complete control over their own knowledge construction. As several students commented, "I liked the hands-on stuff", "I liked being able to talk with the people", and "I liked being able to go from one place to another very fast." All of these quotes came from students during the focus group interviews and the quotes show the ability of most students to control interactions, and it showed a true desire to interact with the VFT and learn about the topics.

Almost every school district in the United States has developed or adopted core curriculum standards and benchmarks that they feel every student should meet prior to their graduation. If one were to look at an example of some of those standards and benchmarks for social studies, one would see broad, theoretical tenants that the teachers

wish to meet. For example " The student understands the impact of new social movements and ideologies on 19th-century Europe" (NCHS, 2004) and "The student understands how the North and South differed and how politics and ideologies led to the Civil War" (NCHS, 2004). These standards that social studies teachers are trying to meet are very broad and focus on students' understanding of the topic being presented, yet the assessments and activities remain largely the same: read from the text, take notes, summative exam at the end of the unit. Until a change in pedagogy is made students may never truly become interested and motivated to learn social studies.

Implications of Findings

Social studies teachers are sitting on the cusp of a great breakthrough in education in their field. Every teacher in every subject area has been trying to find ways to reach their students on a level that will allow students to connect with the topics being taught. Through the use of technology and authentic assessments teachers can very well accomplish this feet. This research looked to examine the ability of a VFT to increase student motivation and interest in social studies classes, as well understand the nature of learning in a VFT.

The VFT, just as a real field trip, cannot be useful when used alone. Implementation of the VFT within a unit can, in some cases, be very beneficial in increasing students motivation and achievement levels. Based on this research alone one cannot draw any broad-based conclusions or apply the findings to other settings and achieve the same results. In this case the VFT did provide some level of increase in interest and motivation and it did allow the students to make deeper connections with the material than any post-test was able to determine.

The implementation of the VFT in this study was far from perfect and could use some enhancements: fewer members in a group, more computers, and no cameras video taping the students. Results also suggest the need for differing pedagogical approaches to using the VFT. This study does provide, however, a strong indication that a VFT could be effective in an Iowa History setting.

This study provides a window into VFT usage in a seventh grade social studies classroom. There is need for more research into VFTs as a way to increase student interest and achievement in social studies classes. As technology advances more and more VFTs will be developed and implemented in the classroom, and this study provides some base knowledge on how, when, where and why these VFT's can best be used.

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APPENDIX A: PRE/POST-TEST

Iowa History Test

Name:_____   Section:_____

The mounds in North Eastern Iowa were built by the _____Tribe

The effigy mounds are pictures of:

A totem is:

The Effigy mounds were used for:

For the Cahokians a deer was used for:

The native population of Cahokia was:

How do we know about the Cahokian culture?

Effigy Mounds can be found:

This food was the primary ingredient in the Cahokian diet.

Why did the Cahokians abandon their homes near Monks Mound?

APPENDIX B: OBSERVATIONAL PROTOCOLS

Student Name	General Description of students' learning performance	Description of students' social behavior	Impression of the extent of interest and enthusiasm shown by the student	Impression of the extent of understanding shown by the student	Distribution of time spent in individual vs. group learning	General comments
				Student seemed confused Student showed understanding	100% w/ group 75% w/ group 50% w/ group 25% w/ group	
				Student seemed confused Student showed understanding	100% w/ group 75% w/ group 50% w/ group 25% w/ group	
				Student seemed confused Student showed understanding	100% w/ group 75% w/ group 50% w/ group 25% w/ group	
				Student seemed confused Student showed understanding	100% w/ group 75% w/ group 50% w/ group 25% w/ group	
				Student seemed confused Student showed understanding	100% w/ group 75% w/ group 50% w/ group 25% w/ group	

General Description of student learning performance: Students made comments about learning something new, Students vocalized connections to prior knowledge, Student seemed lost or confused.

Description of Students' Social Behavior: Students were talking about off-topic items, students were quarreling, students were interacting with each other about the topic, students were being helpful to other classmates.

Impressions of the extent of interest and enthusiasm shown by the students: Students were leaning in toward the computer, Students were working with each other to make their presentation, students were providing help to their classmates, students were distracted and not on topic, students were working on the project but seemed reluctant.

General Comments: Please take note of important quotes or ideas that came out during the session.

APPENDIX C: SURVEY INSTRUMENT

Survey Instrument

Name:_____   Section:_____

Please complete this questionnaire by rating your answers to the questions using these possible choices: 1 = Strongly agree, 2 = Agree, 3 = Neutral, 4 = Disagree and 5 = Strongly disagree.

1) I enjoy social studies classes (ie, Iowa History, History)	1	2	3	4	5
2) I enjoy going on educational fieldtrips	1	2	3	4	5
3) I spend an over an hour out side of class reading about materials covered in class.	1	2	3	4	5
4) I find Iowa History to be a waste of my class time	1	2	3	4	5
5) I learn best from hands-on Projects	1	2	3	4	5

For this section of the survey please use these possible choices: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

1) I feel that I learn best from experiencing a topic. (ie: visiting the capitol to learn about politics, visiting a factory to learn about a career choice)	1	2	3	4	5
2) I find myself easily distracted in Iowa History and my other Social Studies courses.	1	2	3	4	5
3) I **do not** like using a computer at home or at school.	1	2	3	4	5
4) I think we should use computers more in my classes.	1	2	3	4	5
5) I **do not** feel challenged in my social studies courses	1	2	3	4	5

APPENDIX D: STUDENT INTERVIEW FRAMEWORK

These are the focus group questions, in no particular order. Due to the nature of

qualitative research these questions will be used as a framework for the interviews, not all

questions were addressed and the researcher was not bound to them when a better line of

questioning arose from the interviews.

Have you gone on a field trip before?

What was it like?

What did you like about it?

Do you remember anything that you learned on the field trip?

Was the virtual field trip was a good use of class time? Why?

What are some things you learned from the field trip?

Would you like to do more field trips like this in the future? Why?

This field trip helped clarify some of the things discussed in class? Why?

Do you like history? Why?

Do you read about history or school related topics at home? Why?

Do you find it difficult to concentrate in history class? Why?

Do you think that if you had the opportunity to go on more VFTs it would help

you in your schoolwork? Why?

After using the VFT do you have a stronger desire to learn more about anything

from the VFT?

APPENDIX E: SCAVENGER HUNT ACTIVITY

Getting Started. Enter the Earth Trails Production House speak with the receptionist, next meet with the production manager in the room to the right, after meeting with her go and find your Amadeus and learn how to use it by viewing videos on the TV and by speaking with the man there. After doing these tasks start the hunt.

PART A: Answer on your Amadeus Notepad

1. You've got trail mail!
Check your MAIL from the home office, then find one of those two posters in the Production house. What are its main points?

2. Ahoy matey!
TRAVEL to the Shipping Terminal and find the ship's captain.
What does he say about shipping?

3. Sing along
TRAVEL to Lake Itasca and find the TV monitor in the log cabin.
What is the moral of the song featured here?

4. Full speed ahead
TRAVEL to the St. Louis Visitors Center.
Look through the steamboat book, then watch the steamboat MOVIE.
Name one of the pitfalls associated with steamboats.

5. The key to the lock
TRAVEL to the Lock and Dam. Look at the MAP.
Where is the arrow when you arrive?

6. Red hot jazz
TRAVEL to the French Quarter. Go to Preservation Hall and find the band.
What color socks is the trombone player wearing?

PART B: Collect on your Amadeus Media Composer

1. Travel to Cahokia Mounds.
Record VIDEO on top of Monks Mound.

2. Travel to the Twin Cities Visitors Center.
Use your CAMERA to take a picture of St. Anthony Falls.

3. Travel to Mark Twain Cave.
Meet Melissa your tour guide. Take the audio tour and RECORD a segment.

APPENDIX F: CULTURE ACTIVITY

Mississippi River Cultures
Group Members
      _____

      _____

      _____

      _____

      _____

Group Member Roles:
Timekeeper: This person keeps the group on task and informs the group when there is 3 minutes left in the class to be able to put everything away before the class is over.
Navigator: This person helps the group find out where to go, by using the map and helping the computer user.
Computer User: This person using the computer.
Recorder: This person takes notes of topics and ideas that need to be included in the presentation.

Topic: Archaeology is an organized recovery and study of material evidence, such as graves, buildings, tools, and pottery, remaining from the past human life and culture. Along the Mississippi River, some of this evidence is in the form of impressive and mysterious mounds and hills rising from the landscape. Our client is a preservation group whose mission is to promote awareness of the great pre-historic Indian cultures of the Americas.

Information: Archaeologists refer to the culture that existed approximately from 800 AD to 1400 AD in the central and southeastern U.S. as the Mississippian Culture. Based on what they left behind, we can infer much about the Mississippians and how they lived and died. For example, the mounds that they left behind indicate that the builders had a high level of mathematical sophistication.

Requirements: We want you to visit to Mississippian sites, Cahokia Mounds and Effigy Mounds, and create a presentation that explains what the daily life of a person from the Mississippian culture would have been like. In what ways was the river important to the Mississippian daily life? How were the mounds used? What are the differences and similarities between their lives and ours?
      Make conclusions about archaeological findings.
      Include information on the impact of trade.
      Explain how trade contributed to the economy and culture.
      Include AT LEAST one still picture, and one video with your presentation
      Presentation must be 5 minutes

APPENDIX G: PRESENTATION RUBRIC

Item	Exemplary (5)	Satisfactory (3)	Below Expectations (1)
Explanation of Daily life	Included 4+ facts about daily live	Included 2-3 facts about daily live	Included 1fact about daily live
Trade	Explained fully the importance of trade and natural resources	Briefly touched on the importance of trade and natural resources	Did not discuss the importance of trade or natural resources.
Importance of the Mounds	Discussed the importance of the mounds to the cultures, including: life, death, safety, and culture	Only briefly discussed the importance of the mounds to the Mississippi River culture	Did not discuss the importance of the mounds
Comparison	Discussed the differences between our life and their life fully	Touched on a comparison only briefly	Did not discuss differences
Graphical Design	Contained 1 still Picture AND 1 Video	Contained either 1 still OR 1 Video	Contained no Graphics
Time Limit	> 4:45	< 4:44 but > 2;00	< 1:59

Group Names: _____   Score:____/30
          _____
          _____
          _____
          _____

Time:_____

ACKNOWLEDGEMENTS