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Blake A. Wieking

Northwestern College - Orange City

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Technology Integration and Student Learning Motivation

Blake A. Wieking

Northwestern College

Abstract

The purpose of this action research project was to determine if there is a correlation between the use of technology in the seventh grade social studies classroom and the motivation for learning. A combination of technology enriched lessons and traditional textbook and pencil lessons were used over a period of nearly two months. Data was collected through quantitative surveys and qualitative observations and responses from students. Analysis of the data collected suggests that student motivation and joy of learning increases as technology is used in the classroom. Traditional methods of instruction were not recorded as memorable or motivational for most students.

Keywords: technology, motivation, learning

Technology Integration and Student Learning Motivation

Technology assumes a larger role in student learning as more and more K-12 institutions identify technology integration as a school initiative to prepare students to be globally engaged, civically responsible, and an active learner in the 21st century. State standards, like the Iowa Core Standards, make deliberate room for integrating technology teaching as a resource for learning (Iowa Core, n.d.). MOC-Floyd Valley has intentionally included technology as a district goal to deepen learning and empower students to “engage effectively in a world saturated with technology” (MOC-FV District Goal, 2015-2016). Determining the effectiveness of using technology in the classroom has usually been an assumed position. While teachers may get positive feedback from students about how they “had fun” with a particular lesson, little empirical evidence has been gathered to point towards an increase in motivation for learning while using technology based instruction.

MOC-Floyd Valley has been committed to meeting district technology goals by supplying all students in grades 6-12 with either a Dell Chromebook or a Dell laptop. Teachers have been encouraged and supported by both building principals and the district superintendent to integrate technology into existing lessons and newly designed lessons. Support has been provided to teachers through various levels of professional development, learning communities, and other processes like Specific, Measurable, Attainable, Realistic, Timely (SMART) goals, and individual professional development plans. Through the incorporation of the Iowa Teacher Leadership and Compensation System new positions were created to aid in technology integration. Building technology leaders and a district Technology Integrationist serve to provide support to staff members in technology integration.

Currently, in seventh grade geography, students experience a mix between traditional instructional based lessons and technology based learning. Expectations to integrate technology into daily teaching practices continues to be an ongoing district focus. However, using technology for the sake of technology is not the purpose or expectation. Instead, technology integration is predicated on the belief that technology can enhance learning for students. The focus of this research is to determine if the technology integration being used in seventh grade geography actually does aid and support learning as a positive motivational tool. The driving question behind the research project is: “How does technology impact student motivation in the classroom?”

Literature Review

Identifying factors that increase student motivation for learning is an ongoing process explored by researchers, educators, and other stakeholders in the educational setting. As technology, web based learning, and digital tools become more readily available, research is beginning to surface about student motivation for learning as its relationship to technology.

Technology in the classroom can take different forms based on the definition of technology. Hew and Brush (2006) define technology as any computing device, handheld computer, software, or Internet used for learning purposes. This definition identifies Web 2.0 tools, digital devices other than laptops, and various programs as tools commonly used in school districts. Hew and Brush’s research identified primary barriers technology integration. The barriers identified were resources, knowledge and skills, institutions, attitudes and beliefs, assessment, and culture. Despite apparent barriers, strategies should still be employed to integrate technology in a useful and productive manner (Hew & Brush, 2006). Hew and Brush’s (2006) definition of technology opens the door for additional research into the impact of

technology on student motivation for learning. Oigara and Keengwe (2013) shared that students who used clickers for class participation believed the clickers empowered them to learn and motivated them to engage in class. While traditional methods were used in the classroom setting, the students enjoyed the clickers more because they were fun, encouraged participation, and provided immediate feedback. Oigara and Keenwe (2013) found when the clickers were used in class students felt more engaged to the topic and there was an increase in active student learning.

Research conducted in technology rich classroom environments has suggested that students who learn through technology are more engaged and invested in their learning. Technology generates an environment that supports synergy, collaboration, and dynamic, hands on learning. Compared to classrooms where traditional instructional methods were used, technology rich classrooms supported student sharing and developed an awareness of self-motivated learning (Li, Pow, Wong, & Fung, 2010). Schools who have integrated 1:1 laptop initiatives have also experienced the benefits of increased student learning motivation through technology integration. Keengwe, Schnellert, and Mills (2012) report that schools who have integrated 1:1 laptop programs experience an increase in student learning, motivation, and self-directed work. Keengwe et. al (2012) shared that students from who are labeled as traditional, at-risk, or high-achieving, all experienced positive learning experiences because of technology. Their research suggested that schools need to develop and prepare policies and practices that will help teachers seamlessly integrate technology while minimizing the detracting components of technology use in the classroom. Ciampa (2014) conducted a comprehensive research that addressed learning in a mobile age and student motivation. His research identified intrinsic motivations for learning like challenge, curiosity, and control. The research also identified extrinsic motivators for learning like cooperation, competition, and recognition. The

encompassing research found technology, carefully and selectively included into the lesson plans, positively impacts the intrinsic and extrinsic motivators for learning. Ciampa's conclusion identified a distinct connection between technology and motivation for student learning. The study correctly determines that tasks assigned to students must be meaningful, take into account student interest, emphasize mastery, and focus on learning. These factors will help to motivate learners (Ciampa, 2014).

Technology in the classroom can be used to motivate learners in all content categories and grade levels. Hew and Brush's (2006) research was directed at K-12 instruction while Oigara and Keengwe's (2013) clickers research was aimed at students participating in college level courses. Li et al. (2009) research was focused on literacy, Keengwe et al. (2011) research was across all curriculum in grades 10-12. Ciambi's (2014) work focused on grade six students and all their curriculum. Heafner (2004) conducted research using technology in a social studies classroom. Heafner's findings indicated other researchers also discovered. Students who learn in technology rich classrooms are excited about learning, they are focused and on task, and they were engaged in their work. Heafner's research provided substantial evidence that technology engaged students and enabled them to demonstrate their learning through a medium they were skilled and competent in using. While the technology drew them in, it also camouflaged the content and motivated the students to learn (2004).

Not all research conducted has yielded the same results in regards to technology and learning motivation. Granito and Chernobilsky (2012) shared results from their research in a seventh grade social studies classroom. Their findings indicated that not all students are motivated to learn using technology, and students who chose to complete projects using technology scored better than students who were forced to use technology. Again, this identifies

a significant factor in technology integration. Technology used for technology's sake will not necessarily motivate students to learn or encourage them to be actively involved in the learning process. Technology integration must be carefully planned and the digital tools skillfully integrated.

Methods

Data collection

This action research project was conducted in a seventh grade general social studies classroom. The social studies class has a particular focus in geography, but meets many of the identified Iowa Core Social Studies Standards. There are five sections of geography taught throughout the day and the number of students in each class varies between 19 and 20. Of the students in the seventh grade, all but one attends the general social studies classroom. The one exception is a student in special education who receives his instruction in a pull-out classroom. The student demographics in the classroom reveal a class that is predominately white and above the low socio-economic status. Of the 100 students in the class, seven receive special education services, and seven receive English language support or monitoring. This class of seventh grade students is included in the 10% of Iowa Schools that received a High-Performing School according to the 2015 Iowa School Report Card (Iowa Department of Education, 2015). The school information data discloses that this particular grade of students demonstrates a strong desire and ability to do well in an academic setting. This data also reveals a school that is supportive of student learning at all levels, from the general education classroom, English language learner (ELL) support system, and the special education classroom.

The focus of the action research project was to determine how students' motivation for learning was impacted by the careful integrated use of technology in the classroom. A variety of

data collection methods were employed to help answer the driving question of how technology impacts student motivation. Formal and informal questions were posed to the entire classroom of students, surveys were distributed to all students, brief informal interviews were conducted, and qualitative observational data was collected on a weekly basis. The approach to the research sought to integrate both qualitative and quantitative methods. The surveys that were distributed to students helped to establish quantitative data while the interviews, observations, and the formal and informal questioning all helped to provide a qualitative component to the data collection.

The reason behind using both qualitative and quantitative data was based on a few different factors. Since there was a considerable amount of researcher bias going into the action research, the quantitative data helped to eliminate some of the bias that is associated a completely qualitative methodology. A mixed-method was also chosen to provide some flexibility and a hands-off approach to gathering data. The purpose of the research was to determine what changes, or interventions, in regards to technology, had on students' motivation for learning. Qualitative data collection allowed for an observation, an intervention, more observation, and reflection. This process needed flexibility that is allowed through qualitative data collection. Finally, a mixed-method was deemed the most valuable because that methodology allows for a deeper understanding to the data that was collected. The quantitative surveys provided insight into the number of students who thought or believed a certain idea, the qualitative observations garnered insight into *how* or *why* students believed certain ideas.

The entire data collection process took place over a nearly two-month span from September to early November, 2016. The start of the school year saw the entire middle school student population receive either a Dell Chromebook or a Dell laptop. Students in sixth and

seventh grade received a Chromebook while students in eighth grade received a laptop. Early excitement for the devices was evident and observable. Since the Chromebooks operated completely on web-based programs, many of the teachers and the students needed to learn new programs, like Google Docs, Google Slides, and Google Forms, in an effort to make the devices educational and helpful. Despite having to learn a new way of computing and using the devices, students exposed their excitement for having technology and information at their fingertips. Other early observational data was identified as students were responding to a bell-ringer question. The purpose of a bell-ringer is to engage students in the class, or the content, that is intended to be studied for the day. The first bell-ringer of the year was a simple question, “What is geography? Provide examples of people using geography in everyday life.” Since our school is a G Suite for Education (formerly Google Apps for Education), a Google Classroom had been set up for each section of social studies that was taught throughout the day. Google Classroom enables digital questions and conversations to occur through the classroom Stream – the never-ending flow of questions, assignments, and comments that make up the digital classroom. The digital conversations that flowed from the question were unprompted and unsolicited.

Throughout the data collection period other observational data collected included observing students’ reactions to using technology to complete assignments, observing how on task students stayed when using technology to complete work or assignments, and observation students’ general, daily use of technology throughout the day. General questions were asked to groups of students like “Do you prefer to do your work on computers or on paper? Why?” and “Do you prefer to do your bell-ringers on paper or on the computers?” These brief, and often informal questions, provided insight into how students viewed and valued technology as a part of their learning process.

Four surveys were administered during the data collection period. The purpose of the surveys was to gather quantitative data that could support the qualitative observations, provide additional knowledge, and uncover other valuable information that could help during the intervention and data collection period of the research project. All surveys were administered via Google Forms and were answered by the students who were present in school for the day.

The first survey was designed to gather baseline data into the initial motivation level for students and to determine various factor that could motivate students to do well in school. Included in the first survey were two open-ended questions designed to identify what strategies student enjoy to learn new things and how different strategies can impact students' ability to learn new things. The initial survey, titled Motivation Survey, consisted of eight multiple choice questions. Students could choose Strongly Agree, Agree, Disagree, and Strongly Disagree. The survey also consisted of two short answer response questions asking students to identify strategies teachers use that engage them in the learning process and to determine how different strategies effect their ability to learn new things. Multiple choice statements asked in the survey included:

- I enjoy learning new things in class.
- I like to participate in this class.
- I have a desire to do well in this class.
- Ideas and skills learned in this class will be helpful for me in the future.
- Learning in this class is fun and engaging.
- Technology can help me learn new ideas.
- It is important for me to be creative on my assignments.
- Sharing my work with others motivates me to do my best.

Short answer questions asked in the survey included:

- What strategies can teachers use to engage you in learning new things?
- Does how a teacher teach new ideas effect your ability to learn?

Other surveys given to the students throughout the intervention period included an evaluation and feedback survey for two different units covered. The primary purpose for each survey was to identify what students enjoyed most about their learning in each unit. Each evaluation survey included the question “What did you enjoy the most from this unit?”

The final survey given during the data collection period consisted of the same motivation survey that was given a month-and-a-half earlier. All of the multiple choice questions were the same but the short answer questions were different. There was only one short answer question and it asked students “What have you enjoyed the most about geography class?”

The surveys, observations, and the formal and informal questions all helped to provide insight into how technology motivated students for learning. The mixed-method methodology enabled multiple forms of valuable data to be collected and compared. The value of the data collection method was revealed in the data analysis. Throughout the data collection and intervention period a combination of technology based lessons and more traditional textbook and paper lessons were used. A technology based lesson included anything within the lesson that involved using a computer. Examples included digital bell-ringers, videos, websites, digital worksheets, or having students design digital presentations. Traditional methods consisted of either reading from the textbook and answering reading comprehension questions or reading from the textbook and recording guided reading notes on paper graphic organizers.

Findings

Data Analysis

A significant amount of researcher bias was included during the data collection and intervention stage of the research. The district goals of the school district, the building level goals, and the support from school administrators all point to an unwavering belief that technology helps students learn and supports student motivation for learning. The support from school administration, as well as their prompting through building and district goal initiatives, weighed heavily on the interventions and the researcher's perception of technology. The researcher's positive attitude towards technology integration, the support from the building principal, and the unmeasured hypothesis that technology does improve student motivation for learning played a significant role in the lessons that were planned and the consistent and careful integrated use of technology into the classroom.

Despite the strong level of researcher bias in the research project, certain measures were instituted to provide quantitative and unbiased data. The combination of qualitative and quantitative data collection provided meaningful insight and knowledge into the value of technology integration and student motivation.

Quantitative data analysis. The quantitative data collected through four different surveys provided insight into the students' initial motivation levels and various factors that influence their ability, and desire, to learn. Students could respond to statements by choosing Strongly Agree, Agree, Disagree, or Strongly Disagree. By choosing Strongly Agree or Disagree it was determined that the student thinks positively of the statement.

The initial Motivation Survey revealed that of the 99 students surveyed 92% enjoy learning new things. Sixty-six chose Agree while 25 chose Strongly Agree to the statement, "I

enjoy learning new things in this class.” This number indicates that the motivation for student learning is already high. This number could be high for several reasons. As indicated in the 2015 Iowa School Report Card grade of High-Performing, students may genuinely enjoy learning no matter how much technology is involved. Perhaps home life and parent support encourages and supports learning. Or maybe the quality of teachers in the school district naturally makes learning an enjoyable process (see Appendix A).

Other noticeable data collected from the initial Motivation Survey revealed 91.9% (91 students) of the students have a desire to do well in the geography class. Again, this high percentage identifies a group of students who want to do well before meaningful technology integration has taken place. This indicates that motivation for learning is already high (see Appendix B).

The final two statements with insightful data came from the questions “Learning in this class is fun and engaging.” and “Technology can help me learn new ideas.” Eighty-four of the 99 students surveyed agreed or strongly agreed that learning was fun and engaging in the class. Fifteen students disagreed with the statement, but no students strongly disagreed. 98% of the students surveyed believed technology could help them learn new ideas, while the remaining 2% strongly disagreed with the statement. This overwhelming majority of students identifies a belief that technology is a valued component of their education (see Appendix C).

The short answer portion of the survey asked students to identify strategies teachers could use that would engage them in learning new things. The question was purposefully left open-ended to allow for a variety of responses instead of choosing from a predetermined list. The responses were gathered and then put into different groups that included technology/games/projects (all items that involve technology), class participation strategies like

group work, teacher support, the “fun factor” which included prizes and hands-on activities, the final category were responses that made no sense or did not seem to answer the question.

Results from this portion of the survey identified about half of the students 46 of the 99 surveyed, want teachers to use teaching strategies that involve technology. Twenty-five students wanted the “fun factor,” 15 wanted teachers to use more teacher support to help them learn, seven students thought teachers should use groups or participation practices more, and six students had responses that made no sense. Sample responses can be seen in Appendix D.

The most significant data analysis from the initial Motivation Survey revealed that students already had a high level for motivation and they valued technology in their learning experience. Despite the various categories that the open ended questions were put into, a common theme between many of the categories could also include technology. For example, if a student said they wished that classroom learning was more fun and engaging, technology could be a reasonable response to make class more fun. If a student responded that they wanted more activities, a logical solution could be to integrate activities that involved technology. This open-endedness of the questions allowed for the researcher to make decisions that typically involved integrate technology to meet the various requests of students.

The two other surveys employed during the data collection and intervention period were designed to identify what aspects of the unit or chapter the students enjoyed the most. The results from the survey were used to determine if technology played a role in generating a motivation to do well, participate in learning, or generate a desire to learn using technology. One of the units, Iowa Map Skills, involved students primarily learning how to use a paper map for the state of Iowa. Map reading skills and parts of a map were taught and assessed. There were two summative assessments for the unit. One was a summative test that assessed their map

reading and interpreting skills. Another summative assessment was a project titled Iowa Top Five. Students were allowed to choose a topic to research and create their own Google map using Google My Maps. Four days of class time was spent researching, gathering pictures, and creating a map with various driving layers in Google My Maps. In the end of the unit survey 57 of the 97 students who took the survey identified using technology as one of the things they enjoyed the most about the unit.

It was expected that a higher number would identify using technology as the most enjoyable aspect of the unit, but many other students identified other components as most enjoyable. Notable among many students was using the papers travel maps of Iowa as the most enjoyable component. Even though many more students identified technology as an enjoyable component, the novelty of using a paper map, was fun, enjoyable, and challenging for many students. Sample comments can be seen in Appendix E.

The third survey administered was similar to the second. The main objective was to determine what motivated students throughout the chapter. Again, there was a mix between traditional and technology based lessons used throughout the chapter. The results from the survey were similar to the previous survey. Fifty-four of the 98 students surveyed identified technology as something that they valued the most from the first chapter from the textbook.

Looking at the two surveys that were administered after a unit and after a chapter, it was evident technology played a significant role in more than half of the students in regards to their learning experience. If follow up questions were administered to the students or individual interviews were established to ask clarifying questions, some open-ended responses were exactly that, open-ended, the case could be argued for an even greater percentage of students who valued technology in their learning.

The final survey administered was nearly identical to the first. The purpose of the second Motivation Survey was to see if any of the interventions had an impact on students' motivation for the class. After comparing the results of the same survey, a month and a half apart, suggested that the interventions and use of technology played a significant role in changing the motivation perceptions of many students. One of the key components to carefully integrating technology into the classroom is providing opportunities for students to share and collaborate on their work. A statement that appeared on both surveys stated "Sharing my work with others motivates me to do my best." The initial response from the first Motivation Survey showed that 66.7% of the students strongly agreed or agreed with this statement. In the section Motivation Survey 78.6% of students strongly agreed or agreed with this statement. Other statements also showed a strong increase in the number of students whose motivation levels had changed over the course of the intervention period. Ninety-one percent of students agreed or strongly agreed with the statement "I have a desire to do well in this class" on the initial survey, while on the second survey 96.9% of students responded with strongly agree or agree. In fact, nearly all the statements on the initial survey saw an increase in strongly agree or agree answers from the students in the second survey. The statements that remained unchanged were "I like to participate in class" and "Technology can help me learn new ideas." In the initial survey "Technology can help me learn new ideas" had a positive response of 98%, in the second survey the same questions had a positive response of 97.9%. "I like to participate in class" also remained unchanged at 88.8%. However, there was an increase of 18.5% of students who strongly agreed with the statement.

Perhaps one of the strongest indicators of technology having a positive impact on student motivation for learning came in response to the first statement on both motivation surveys. The

statement, “I enjoy learning new things” went from already high percentage of students 92%, to 100% of the students following the intervention period. See Appendix F.

While many factors may have ultimately had a role to play in the increasing percentages of students strongly agreeing or agreeing with the motivation statements, it is reasonable to conclude that technology was an identifiable factor. The quantitative data suggest that *something* factored into the positive change in students’ responses, corroborating qualitative data suggests technology was one of those factors.

Qualitative data analysis. Qualitative data was observed nearly daily throughout the intervention period. Qualitative data was primarily observed, however, informal conversations with students and groups of students also provided valuable data into how technology motivates students.

What was most evident to see with the observable data was how positively students responded to taking out their computers to answer questions, view websites, gather information, or complete an assessment. Since technology in the classroom was always used for educational purposes students were always learning, designing, or collaborating to construct knowledge. While audible groans or sighs could be heard when students were asked to take out textbooks or pencils, excitement and positive energy was evident when students were instructed to open their Chromebooks.

One of the strongest examples of motivation for learning increasing through the use of technology was when students were able to answer their bell-ringer questions using their computers in Google Classroom. Students rarely, if ever, forgot their laptops, but they routinely would forget books, pencils, or notebooks to class. Without some of these items students would not be able to record their answers to their bell-ringer. Since students rarely forgot their laptop,

the change was made to put the bell-ringer in Google Classroom so all students would be able to answer and discuss the topic. What happened next also highlighted the power that technology had on student learning. The question was posed and students were provided time to answer. Normally, if students answer the bell-ringer early they would tend to talk, whisper, or try to do other late assignments. However, with the introduction of digital bell-ringers something new happened. Students started to respond and comment to their peers. Without being asked to do this, students naturally took to the comment section and began to either compliment their peers, ask questions, or seek clarifying information. Soon the entire class was engaged with each other, including the teacher. Now students were beginning to see the power of technology to construct knowledge. The engagement, conversation, and motivation to actively participate in learning was observable. Appendix G represents a digital conversation that took place among students. These conversations encouraged students to be mindful of their responses, helpful in the comments, and constructive in their feedback. This, ultimately, led to productive conversations that happened outside of the computer screen as well.

Informal interviews often happened with students throughout the intervention period as well. These conversations were usually short and consisted mostly of the questions what did you like about the assignment? Or, do you prefer to do your work on the computer or on paper. Answers varied, of course, but the majority of students were outspoken about using computers to do their work or complete their assignments. Follow up questions usually consisted of “Why?” At times students had a difficult time putting into words what they appreciated about using their computers, but they were able to come up with responses like “I can work faster.” “I don’t have to worry about my handwriting.” Or “It is just more enjoyable to work on a computer.” Some

students preferred to not do their daily assignments on the computer, but still appreciated the fact they were given a choice about whether they wanted to use computers or not.

Throughout the intervention period the idea of a Let Me Google That For You (LMGTFY) wall was developed out of the observations and conversations with students about all of their questions. The wall actually took a few weeks to design, and the students consistently asked about designing and getting a board established because they had many questions they wished to research and answer. The purpose of the board was actually designed so students could ask questions without taking away from valuable class time. The idea was to ask a question on a notecard, stick it to the board, and answer the questions on Friday of each week for about 10 minutes during class. The response to this idea and the follow through on the part of the students highlighted just how much students valued using their computers to ask questions and find answers. When a test was given on a Friday, students were given the option to do other school work or research questions when they were finished with their test. Nearly all students chose to find a question and research their answer. Again, without being asked, students began to share answers with their classmates, ask follow up questions, and conduct additional research.

The open-ended questions attached to the end of the Motivation Surveys also served to provide qualitative data. The question sought to determine the reason behind student enjoyment and engagement in class. Despite the various reasons why students enjoyed the class, an overarching theme that developed was the frequency to which students used technology in class. Students' responses included a plethora of technology related reasons why they enjoyed the class. Responses included, playing review quizzes on Kahoot!, watching current events on CNN, working in groups creating a presentation using Google Slides, designing and creating their own map using Google My Maps, studying for tests using Quizlet, and being able to have

conversations with their classmates using their computers. These diverse responses not only provided insight into how students like to learn, but the value individual students place on different uses and integration of technology.

Even seemingly stressful and academically important assessments that were administered using technology were well received by nearly all students. During the course of the intervention period a portion of a test was administered to students. Pleasant and delightful responses were shared by many students as they opened their computers to take a test. When asked why they enjoyed taking a test on a computer, they did not have a great response, but simply stated that they just enjoyed being able to use their computers. Their joy in using computers to take a test reveals that students value technology even when they are required to complete academically challenging and stressful work.

The combination of qualitative and quantitative data, and their analysis, provided measureable and noticeable changes in students' motivation for learning within the general social studies classroom. The data, especially when viewed in its entirety, revealed that while they may be a variety of factors that can influence student motivation for learning, technology plays a strong and significant role.

Discussion

Challenges With Data

Efforts were made to ensure that the data collected proved to be reliable and valid. In an attempt to ensure that the research was valid and reliable, multiple methods of data collection were used. The validity of the quantitative surveys could be called into question because other factors besides technology could be assessed to the positive increase in students' responses to the statements. However, due to multiple measures of data, including qualitative observation, the

validity of the claims can still be justified. Through meaningful observation it was evident that the students valued technology and embraced technology as a tool to drive learning. They enhanced their own learning experience through the use of technology without being asked or required. Since some of the students did this on their own, changes to other classes were instituted that encouraged digital dialogue and discussion. The observations determined this was a positive change that not only enhanced learning, but increased the students' willingness to participate and engage in a topic or concept.

The reliability of some of the survey questions could also be called into questions, especially the open-ended questions that simply asked students what they like about a unit or chapter, or questions that asked about teaching strategies to help them learn. The ever-changing state of mind of a seventh grade student could cause them to change their answer based on whatever it was they did last in class. Additionally, students' varied interpretation of the questions may change the results of the survey if given again.

The qualitative reliability of the research remains strong, however. The methods and techniques used to collect the qualitative data would likely reveal consistent data if used over a longer period of time. The qualitative methods of observation and informal discussions were conducted in such a way that the similar data could be consistently gathered by other groups of people or individuals over a period of time.

Conclusion

The findings gathered from the collected data suggest that careful and consistent integration of technology into the classroom can have a positive impact on student motivation for learning. Both the quantitative data and the qualitative data suggest technology is meaningful and valuable to student learning.

It is suggested that in an effort to engage students in learning and to build up their motivation for learning, technology should be integrated on a weekly basis. When students were asked to write about the things they enjoyed most about class it was rarely the worksheets or reading out of the book. Students instead chose to write about classroom activities, projects, presentations, and conversations that took place in a digital world. Integrating technology on a consistent basis establishes the excited expectation that technology will be used to drive and assist learning. Overuse can lead to complacency of technology and boredom. Meaningful integration of technology transcends frequency, however, and instead highlights the value technology can bring to learning. The meaningfulness of technology, combined with anticipation, seems to generate motivation for learning.

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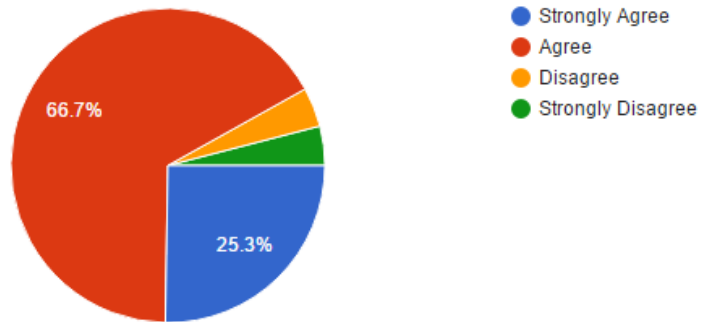
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Appendix A

Students' Initial Response to Learning New Things in Class

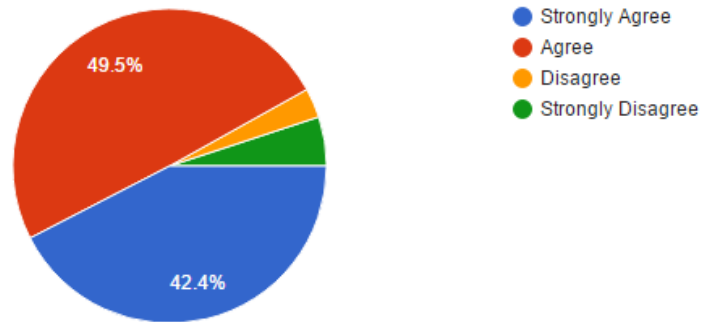
I enjoy learning new things in this class. (99 responses)



Appendix B

Students' Initial Response to Desire to do Well in Class

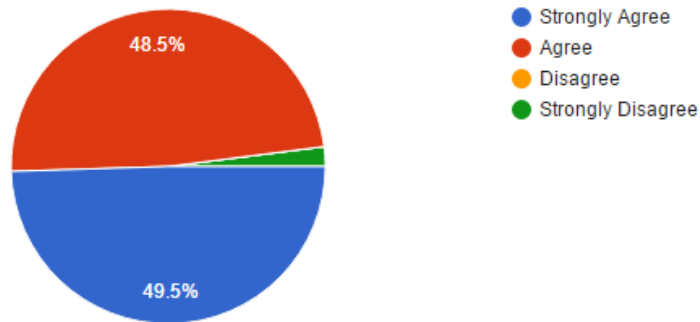
I have a desire to do well in this class. (99 responses)



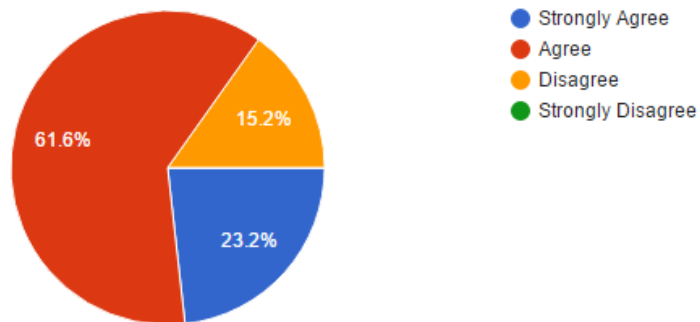
Appendix C

Students' Initial Responses to Technology can Help me learn & Learning is fun and Engaging

Technology can help me learn new ideas. (99 responses)



Learning in this class is fun and engaging. (99 responses)



Appendix D

Students' Response to how Teachers can Help them Learn Best

use videos and technology to learn
to get us involved more
Make sure that students are participating
I like how they have us watch videos
Make it fun and active in what we are learning.
Using groups to work on homework or work on notes or a study guide.
Make the class funny and engage us allot.
Technology
Technology
Doing fun/new things on the computer
charts diagrams
they can help me work on homework or help me if im stuggling
Make learning into a game. Create the unit or lesson into a game we might play at home.
working in groups, because then if you dont know something, maybe your classmates will.
showing more videos in the computer
make it into a game
have games with learning
new ways of doing it instead of just reading and filling out a study guide.

Appendix E

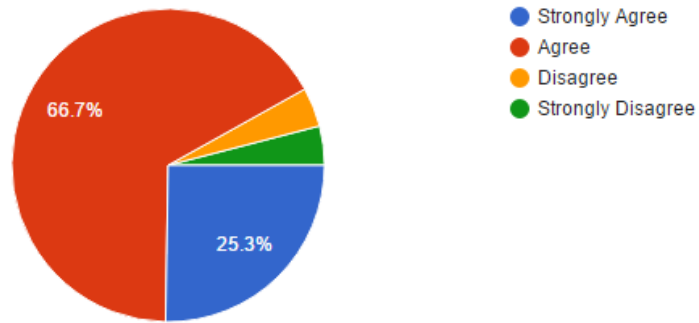
Students' Comments on what they Enjoyed the most from Iowa Unit

Getting to know how far each town is from a different town and finding out where other cities are.
I liked that we got to study and get to know our state.
The part were we got to make our own maps onlive and make driving /biking directions there.
Learning how to do new things on Google Maps
Teh maps because you can see where different things are that you didnt know were there.
finding the distance on the back chart
Learning about the state of Iowa and finding new places.
I enjoyed finding cool places and finding how far it was from one place to the other place.
Getting to be on the computers because we aren't on them that much.
I enjoyed using the maps because they are really cool to use and learn about. I also learned how to find mileage and I really enjoyed that part.
Maps because they are fun.
Using the maps because are funny.
i think the maps we just made because know i cans find where i am going.and i can figure out where i am and where i need to go it makes it easier.
I enjoyed the history part of Iowa and learning about how Iowa was the 29th state.
finding the places
learning to find mileage because now i can find how long it'll take to get to places.
I enjoyed making a map of my top 5 things.

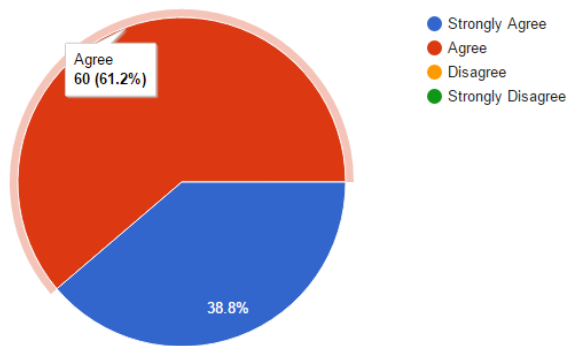
Appendix F

Students' Initial Response and Second Response

I enjoy learning new things in this class. (99 responses)



I enjoy learning new things in this class. (98 responses)



Appendix G

Student conversations



[Redacted]
Donovan Schuiteman Oct 21

it is a energy source that heats up our world. the sun can give light to plants.

2 replies



[Redacted]
Donovan Schuiteman Oct 21

it gives off direct rays and indirect rays



[Redacted]
Carter Aalbers Oct 21

it also creates our seasons like winter and summer.



[Redacted]

Something that gets rid of most humidity. They are formed from mountains in a line. They make the land really dry.

3 replies



[Redacted]
How do they get rid of humidity?



[Redacted]
did not know that it was formed by mountains



[Redacted]
The air gets cold and gets rid of humidity or MAGIC

Reply