Technology Curriculum in Grades 5-8

by

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Abstract

This paper reviews the development and implementation of a technology curriculum for grades 5-8 at St. Mark's Lutheran School in Watertown, WI. The curriculum was meant to be integrated into the normal subjects (math, science, etc.) and not be a standalone course. As St. Mark's implemented this curriculum based on the International Society for Technology in Education (ISTE) standards over the 2015-2016 school year, all students had access to their own Chromebook throughout the day. Implementing this curriculum seems to indicate that students are eager to learn through technology, but learning still needs to be engaging and teachers need to direct the classroom in their excitement of using technology.

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I would like to thank all those who supported me throughout my graduate studies, including my congregation of St. Mark's. They have supported me emotionally and financially, encouraging me throughout the process. I'd also like to thank my wife, Jaymie, for giving me the motivation to strive to do my best and showing me love in difficult times. Finally, I owe it all to Jesus, who gives me strength to do all things. To God be all glory!

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Chapter I: Introduction

Purpose of the Project

The purpose of this project was to develop a curriculum in the area of computers and technology for grades 5-8. The problem was that computer skills at St. Mark's were taught in isolation, meaning that they were not tied to a specific assignment or task (e.g. learning how to format text in MS Word). Instead of teaching skills in isolation, the goal was to teach technology skills as needed within the content curriculum. This type of curriculum benefits students in two ways: 1) students learn to utilize a variety of computer applications, and 2) students immediately apply this knowledge in the content curriculum, reinforcing that learning. This means that every teacher is involved with teaching technology, not just the computer teacher. This might cause anxiety for teachers who are not as experienced with technology, so this curriculum also offers guidance on how to prepare those lessons and what tools to use.

Importance of the Project

There are many opinions on how best to integrate technology into the curriculum. As educators, we cannot expect that simply adding a SMART Board or a tablet to the classroom is going to make a big difference. As Mishra and Koehler (2006) state, "Part of the problem . . . has been a tendency to only look at the technology and not how it is used. Merely introducing technology to the educational process is not enough" (p. 1018). In other words, just putting technology into a classroom does not necessarily help the educational process. More work needs to be done so that the use of technology advances student learning and is meaningful across the curriculum. Byrom and Bingham (2001)

put it this way, “A useful plan . . . focuses on the use of technology to support teaching and learning” (p. 8).

Project Goal

The goal of the project was to develop a grade 5-8 curriculum that focused primarily on integrating the learning of computer skills as they were used in various content curricular areas. The teaching of computer skills in isolation would take place only infrequently. Students performed a myriad of activities with technology in their classes, primarily using web-based tools, throughout the school year.

Chapter II: Literature Review

Introduction

Educators need to be well-versed in currently available technology, as well as new forms as they develop. This is not an easy task, nor is it possible for educators to keep up with every new form of technology. However, it is important to teach with technology, since that is how our world is progressing. "Students will spend their adult lives in a multi-tasking, multifaceted, technology-driven, diverse, vibrant world—and they must arrive equipped to do so" (Partnership for 21st Century Skills (P21), 2003, p.4). The Partnership for 21st Century Skills continues to recognize the importance of technology, especially with its continued rapid development.

Implementation

Whereas many educators will agree that integrating technology into the classroom is important, there are many opinions on how technology should be used by students. Some researchers believe that education should be game-based. Hickey, Ingram-Goble, and Jameson (2009) support game-based learning, saying "given the amount of individual and communal learning that commercial immersive games support, the prospect of fostering such activity around inquiry into broadly valued scientific topics is quite compelling" (p. 188). Currently, there is not much research to back up the claims of game-based learning since it is an emerging field.

Another method of integrating technology is through online discussion boards. AlJeraisy, Mohammad, Fayyoumi, and Alrashideh (2015) researched the use of discussion boards in the classroom and found that "involvement in discussion boards can

boost student performance and satisfaction" (p.257). However, they also note that some use of discussion boards could cause discouragement among the students "when there are too many posts to read, particularly when posts are lengthy" (p.257).

A third example of technology integration might involve an interactive display for teaching, such as a SMART Board or an interactive projector, bringing students to the front of the class. Whereas this might generate more student involvement, it does not necessarily translate to more learning. Liu and Cheng (2015) discovered that "there was no significant difference in student achievement between teaching by interactive and general data projectors" (p. 114).

As these examples demonstrate, there are many different ideas about the best practices of integrating technology into the curriculum. Much work needs to be done to ensure the curriculum is a balanced blend of best practices to enhance learning, and that the lessons prepared by teachers are planned accordingly.

Impact

Considerable research supports integrated technology use in the classroom. Mishra and Koehler (2006) focused especially on technological, pedagogical, and content knowledge (TPACK), which includes knowledge about any sort of technology, pedagogy or the methods used for teaching, and content knowledge about the subject being taught. They state: "Our research shows that, given opportunities to thoughtfully engage in the design of educational technology, teachers showed tremendous growth in their sensitivity to the complex interactions among content, pedagogy, and technology, thus developing their TPACK" (p. 1046). In other words, integrating technology helped the teachers become better teachers, because it refocused them on what they had learned previously.

The main goal of using technology in the classroom is to enhance the learning process and increase student achievement. Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) compiled forty years of research based on student achievement using technology. The authors conducted a meta-analysis to see if there were any trends in common. In the end, they found that "the average student in a classroom where technology is used will perform 12 percentile points higher than the average student in the traditional setting that does not use technology to enhance the learning process" (p.17).

One reason for this higher performance might be a shift in the way the classroom works. Mazten and Edmunds (2007) claim, "By utilizing technology in the classroom, there is supposed to be a shift toward student-centered instruction" (p.422). The idea is to have the instructional materials cater more to the individual students, rather than teaching in a traditional manner to the middle of the class, through the use of technology. However, the difficult part is ensuring teachers are comfortable doing this. As Harvey-Woodall (2009) says, "Educators must be able to embrace the changing times, and they must be optimistic about the integration of technology into the classroom . . . Therefore, the use of technology in schools is ongoing, unstoppable, and essential" (p. 7).

Research shows that there is a strong need for technology integration in the classroom to enhance teaching and learning practical skills for life. Incorporating technology into the classroom for the intention of being practical for real life may not be as easy as it seems though. Asino (2015) says, "Proposing what the future of educational technology should look like is a daunting assignment layered with possibilities" (p. 20). As educators, it is difficult to predict the future of technology and implement it into our

curriculum, but we try our best to equip students with the tools they need to be successful in life.

Summary

Overall, this curriculum is meant to serve both students and teachers. It should be meaningful, instructive, and applicable for the students. For teachers, it should assist them in becoming even more proficient as they integrate technology into their teaching to enhance instruction and learning. It is important to keep in mind that this curriculum should not become static, but fluid and dynamic, changing as new technologies and innovations become available to enhance the educational experience of all.

Chapter III: Implementation

Introduction

This project aimed to solve a problem at St. Mark's Lutheran School, namely, the lack of a technology curriculum in grades 5-8. Since this curriculum was meant to be integrated in the regular courses, little to no time was devoted to computer class; however, there was a scheduled time for keyboarding for those needing the extra practice, and also some work in computer programming. This chapter discusses how the curriculum was developed, the content of the curriculum, and how the curriculum was received by the students and teachers. All students in grades 5-8 had their own Chromebooks to use every day and had access to a poster printer and 3D printer. A close watch was kept on lesson planning for all classes to make sure that technology curriculum plans actually were implemented. This was monitored through regular conversations with the other teachers, where we discussed what worked and what did not. At times, it was necessary to point them back to the scope and sequence for the curriculum.

Procedures

To create an integrated computer curriculum was a multi-step process. First, I needed to determine which computer skills I planned to integrate. To help with this process, I studied other schools' ideas (public, private, and parochial) to see if there were any common themes among them. I also consulted the ISTE Student Standards (Appendix C) to be sure that I incorporated skills that matched those standards. Secondly, I consulted with other teachers at my school to see what skills they currently implemented. By gathering that data, I determined which skills were already being

developed and which ones still needed further development. Thirdly, I determined the grade level at which each skill should be introduced, developed, and mastered. (See Appendix A for the curriculum specifics.) The information in Appendix A will encourage skill reinforcement throughout the grade school years, ensuring that important skills do not get overlooked. Appendix A also includes the scope and sequence of the curriculum. Fourthly, I provided specific examples for the different subjects (math, science, literature, etc.) to go with the standards.

In order to implement the curriculum, I shared all this information with the other teachers, explaining what was included in the curriculum and describing what each part meant. Then I went through an example of a lesson plan with them, to show how it worked in practice. A lesson plan template provided for the teachers is found in Appendix D. I also had an ongoing dialogue with the teachers about technology integration throughout the year. With the students, I discussed the ISTE standards and gave them examples as opportunities presented themselves during the year.

At the end of the school year, I had both teachers and students complete a questionnaire (Appendix B) in order to evaluate the new curriculum. There were twenty questions for each, based on either the teacher or student ISTE standards. The questions varied between ratings and short answer.

Artifacts

After the scope and sequence were completed, I went through all the subjects and linked specific skills or activities with the teachers who teach those classes. I found that teachers were willing to try new ideas in the area of technology, but sometimes they simply did not know where to start. My hope was that by including specific examples of

how to meet the standards in certain subjects, the other teachers would feel more comfortable implementing the curriculum. The curriculum was then organized by the ISTE standards, but displayed in two ways: 1) a simple list of the standards and examples of how to meet them, and 2) a table showing the examples and the level of skill to be developed in each grade level.

In order to assess the curriculum, an online questionnaire (Appendix B) was sent to both teachers and students. This questionnaire had a variety of questions, including both opinions and facts. For example, some questions asked the students or teachers to rate their feelings about technology or their comfort level with it. Others asked the students and teachers to think of specific examples during the school year that matched a standard. The questionnaire was different for the students and the teachers, but looking for similar things. From the students, I was interested in ease of use and learning engagement. From the teachers, I was looking for ease of use and learning enhancement. After the questionnaires, I had discussions with the teachers, which led to some revision of the curriculum. As mentioned earlier, this curriculum is meant to be a fluid document that changes as warranted to further enhance student learning.

Results

Overall, the implementation of the curriculum went well. Below is a summary of each survey, first the three teachers' and then the students'. More detailed survey results can be found in Appendix E and F.

Teacher Results

First, we will look at questions 1-3 of the teacher questionnaire: How would you rate your overall ability with technology? How easy was it to understand the suggestions

for implementing technology? How would you make the suggestions easier to understand? For the first two questions, the teachers responded with twos or threes out of five, suggesting that they did not feel confident with using technology and could use more guidance. This was particularly noticeable in the responses to question three, since all of them requested further demonstrations of how to use it, or at least have written directions to guide them.

The teachers' responses to questions four and five—How often did you implement the suggested uses of technology? What made it easy or hard to implement the suggested uses of technology?—showed that they are willing to try new things, but that does not mean it was easy for them. They all implemented the technology curriculum a fair amount but admitted to it being difficult.

The teachers' responses to questions six and seven—How would you rate the students' attitude towards using technology? What steps do you think could be done to improve the students' attitude towards using technology?—revealed that they felt the students really liked using technology. However, in order to keep that excitement up the teachers needed to be confident and excited about it too.

For questions eight and nine—How would you rate the level of learning that took place with the students using technology? What steps do you think could be done to improve learning among the students using technology?—the teachers indicated that significant learning was occurring through technology. However, some noted that effort on assignments still needed to be present, regardless of whether it involved technology or not.

Lastly, I will group questions 10-20 together, as they all deal with the ISTE standards. The teachers appeared to feel weaker in this area, giving lower scores to the scale questions. The teachers were able to give only a few examples of how they were able to meet those standards in the classroom, which is why they rated themselves so low. In particular, questions eighteen and nineteen—How well do you feel that you implemented ISTE Standard 5, which states: "Engage in professional growth and leadership"? Can you give an example of how you implemented ISTE Standard 5?—were rated particularly low. The teachers recognized that they were not especially active in professional growth and leadership in the area of technology.

Student Results

First, we will look at questions 1-3 of the student questionnaire: How would you rate your overall ability with technology? How easy was it to use technology every day in class? What suggestions would you give to make learning with technology easier? In general, the students were comfortable using technology on a regular basis. Most of the suggestions had a similar theme about doing more work through technology, but several expressed struggles they had when a teacher would go too fast or not thoroughly explain how to use the technology.

Questions four and five read as follows: How would you rate your excitement for using technology so often? Did your excitement for technology change throughout the year? If so, what caused you to be more or less excited? If not, what would make you more excited about technology in the classroom? Many students enjoyed using technology and were excited by it because it made things easier for them, but others got bored doing the same thing repeatedly.

For questions six and seven—How would you rate the teachers' attitude towards using technology? Why do you think the teachers' attitude was so positive or negative?—the students rated these highly, showing that they felt the teachers were generally positive. Their comments indicated, however, that some negativity was evident from the teachers. Some students also misinterpreted the teachers' limiting what they could do with technology as a negative attitude.

For questions eight and nine—How would you rate the level of learning that took place while using technology? What steps do you think could be done to improve learning using technology?—the students indicated that a higher level of learning took place. The students who rated it lower had a common theme, namely that certain websites should not be blocked. However, most students felt there was a lot to learn using the tools that were available.

Lastly, I will again group questions 10-20 together, as they all deal with the ISTE standards. Overall, the students gave higher ratings for every category. It is worth pointing out two questions in particular: number 16 (the lowest rating) and number 20 (the highest rating). Question 16 states: How well do you feel that you met ISTE Standard 4 which says: "Critical thinking, problem solving, and decision making—Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources"? I believe the students ranked it lower because they did not fully understand the question. This is evident in their responses when asked to give an example in question 17. It also showed that the teachers could and should be pushing for more creative thinking than what is currently done through technology. Question 20 states: How well do you feel that

you met ISTE Standard 6 which says: "Technology operations and concepts—Students demonstrate a sound understanding of technology concepts, systems, and operations"? Students gave this a high rating, showing that they felt very comfortable with technology overall. Keep in mind that this was their own self-evaluation, which may have been difficult for some students to do. Overall, the core understanding and implementation of technology seems strong at St. Mark’s.

Chapter IV: Reflective Essay

Introduction

The focus of this project was to create and implement a technology curriculum for grades 5-8 at St. Mark's Lutheran School in Watertown, WI. Many hours were put into the development of this curriculum, many days were spent using the curriculum, and much data was gathered based on the use of the curriculum. This final chapter will reflect on the creation, implementation, and future use of the technology curriculum.

Conclusions

As previously stated in Chapter III, creating the curriculum was a multi-step process that was based on the ISTE standards. After the curriculum had been used for a year, a survey was sent out to the students and the three teachers of grades 5-8. Survey questions can be found in Appendix B, and survey results can be found in Appendix E and F.

The implementation of the curriculum went well, but it could have been better. This was the first school year where every student in grades 5-8 had access to a Chromebook for the entire day. Chromebooks were used every day in a variety of ways. Not everything in the curriculum was covered this first year. As with any curriculum, it is difficult to fit it all into a school year, but as teachers we strive to present the whole curriculum in a meaningful way.

Overall, the students displayed a positive outlook towards technology. Every rating question averaged over three out of five, and the short answer questions were generally insightful with some perceptive suggestions. The teachers were not as positive, but that could be for a couple of reasons. First, the teachers claimed to be less proficient

with technology, even though they are quite competent with it. Secondly, the teachers were humble servants who didn't want others to think that they were being boastful. Surveys can be found in Appendix B, and survey results in Appendix E and F.

Recommendations

Based on feedback from the surveys and practical experience, several improvements will take place in the next iteration of the curriculum. The first thing that will need to be done is to keep up with current trends in technology. Curriculum in other subjects (e.g. social studies, mathematics, etc.) does not change very rapidly. Technology, however, rapidly changes from year to year. St. Mark's cannot rest on its laurels in this area. It will be important to do our best to stay up-to-date in this field.

Another recommendation would be to offer more training for the teachers who use this curriculum, as some may feel intimidated by it. Finding opportunities for the teachers to take workshops or classes in the area of technology will help them feel more confident implementing new ideas. This may also help relieve any perceived negativity from the teachers about technology, whether that is shown consciously or subconsciously.

One final recommendation would be to implement more of the curriculum on a regular basis. This past year, some skills may have only been taught one time. For the students to fully understand the value and purpose of the skill, it might take multiple exposures. Greater use of technology in the classroom may also help the students who claim that school is boring, although there is no foolproof cure for that. I believe that implementing more of the curriculum will come with time, which is a goal we will stay focused on as we learn together by the grace of our Lord and Savior Jesus Christ.

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Appendix A: Curriculum

The curriculum aligns with the ISTE Student (2011) Standards, which are in bold font, while recommendations to meet those standards are in plain text. The recommendations also list suggested courses where the standards might be implemented. Some of the suggestions are specific, mainly to show the teachers exactly where this skill can be included in their teaching. This curriculum is likely to change over time as additional resources become available and standards are revised.

Technology Curriculum by Standard

I. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

a. Apply existing knowledge to generate new ideas, products, or processes.

1. English - Create their own documents using Google Docs for research, narrative, persuasive writing, and the like.
2. Math - Create bar graphs, line graphs, and pie charts using Google Sheets.
3. Social Studies - Create a survey in Google Forms to gather opinions about historical or current events.
4. Literature - Create a book cover in order to draw a reader to a book. A template can be found at readwritethink.com.
5. Science - Create a presentation in Google Slides based on a lesson.
6. Music - Create your own song by performing and recording it, or by using synthesized sounds through AudioSauna.com.
7. Art - Create any type of drawing through Google Draw.

b. Create original works as a means of personal or group expression.

1. English - Write a personal narrative in Google Docs and share that narrative with the class through Google Drive.
2. Math - Survey the class about a favorite item (e.g. food, music, sport, etc.) and create a class-wide chart in Google Sheets.
3. Social Studies - Create a travel brochure through Lucidpress.com about a location in the world.
4. Literature - Create a newsletter through Lucidpress based on the time period of the story in class.
5. Science - Record a class discussion about healthy habits using TwistedWave.com and share the result with parents.
6. Art - Design a website using Google Sites, using good properties of design.
7. Music - Record a "jam session" with Boomwhackers using TwistedWave.com and share the results.

c. Use models and simulations to explore complex systems and issues.

1. Science - Study stars and constellations using neave.com/planetarium/.
2. Science - Study the human body using BioDigital.com.

3. Math - Study geometric shapes using Geogebra.com.
4. Social Studies - Tour many museums and locations online using virtualfreesites.com

d. Identify trends and forecast possibilities.

1. Religion - discuss and use tools to help spread God's Word in our age of technology using bible.com.
2. Social Studies - Record an interview with someone who works in the computer field using TwistedWave.com.

II. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.

1. English - Use peer-editing by collaborating and sharing documents through Google Docs.
2. Math - Interview an engineer using video streaming software, like hangouts.google.com.
3. Social Studies - Create an invitation using Lucidpress to invite the class to a historical event.
4. Literature - Discuss on edublogs.org famous novels, especially themes, setting, characters, etc.
5. Science - Create a poster using Lucidpress to display information about a particular animal.

b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

1. English - Record a persuasive speech using TwistedWave.com and share it with classmates and family.
2. Social Studies - Create a S.S.fair display and report, display it for an open house, take pictures, and upload it for others to see.
3. Literature - Share a retelling of a story by turning it into a comic on readwritethink.org.
4. Science - Create a science fair display and report, display it for an open house, take pictures, and upload it for others to see.

c. Develop cultural understanding and global awareness by engaging with learners of other cultures.

1. Social Studies - Contact pen pals by email using ePals.com.

d. Contribute to project teams to produce original works or solve problems.

1. General - Use Google Classroom and cloud computing to complete assignments given by teachers

2. General - Use Google Classroom cloud computing to collaboratively complete a group project

III. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.

a. Plan strategies to guide inquiry.

1. English - Create an organizer using Lucidchart to help students structure a written paper.
2. Literature - Identify key parts of a play to better understand its meaning using readwritethink.org.
3. Science - Research the elements by using the periodic table at ptable.com/.

b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.

1. General - Use the Internet and other electronic resources for research and digital media retrieval.
2. General - Access, print, save, and retrieve resources using the network and Google Drive.
3. Math - Use KhanAcademy.org and watch videos to guide and use information.

c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.

1. General - Evaluate and critique the quality and credibility of electronic information.
2. Social Studies - Create a timeline using Dipity.com.

d. Process data and report results

1. General - Read and answer questions based on digital charts
2. General - Create digital charts based on data received using Lucidchart and Google Sheets

IV. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

a. Identify and define authentic problems and significant questions for investigation.

1. Literature - Use a literary elements map to help identify character, setting, conflict, resolution, etc with readwritethink.org.
2. Science - Use an animal inquiry chart to help develop facts about specific animals with readwritethink.org.
3. Social Studies - Use a hero's journey chart to tell the story of a famous person in history with readwritethink.org.

b. Plan and manage activities to develop a solution or complete a project.

1. English - Complete a Persuasion Map to help develop the contents of a persuasive paper with readwritethink.org.
2. Literature - Complete a KWL chart over the course of a story with readwritethink.org.
3. Science - Complete a science fair project with a report and poster board
4. Social Studies - Complete a social studies fair project with a report and poster board
5. Art - Create a "Design an Ad" advertisement for a local business through Google Drawing and provided images.

c. Collect and analyze data to identify solutions and/or make informed decisions.

1. General - Use a variety of research to find different perspectives on topics, including Google Research and Google Scholar
2. Science - Conduct scientific experiments to find a conclusion to your hypothesis, and analyze collected data in Google Drive
3. Social Studies - Survey local politicians using TwistedWave.com or Google Forms to find out where they stand on certain topics

d. Use multiple processes and diverse perspectives to explore alternative solutions.

1. General - Make appropriate technology resource choices according to learning purposes and outcomes
2. Science - Create 3D models to display designs or models

V. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

a. Advocate and practice safe, legal, and responsible use of information and technology.

1. General - Apply the basic workings of the copyright law
2. General - Apply the appropriate use of materials, including citing resources
3. Social Studies - Create a Google Doc discussing what if George Washington, or some other historical figure, had Twitter

b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.

1. General - Demonstrate appropriate behavior for technology use
2. General - Show respect for technology equipment
3. General - Work in conjunction, not opposition, with partners for projects

c. Demonstrate personal responsibility for lifelong learning.

1. General - Explain the relationship that technology has to career opportunities
2. General - Describe the relationship that technology has to today's and the future's society

3. General - Develop a plan for how you think you'll use technology in high school and beyond

d. Exhibit leadership for digital citizenship.

1. General - Apply and advocate the St. Mark's Evangelical Lutheran Acceptable Use Policy (AUP)
2. General - Be polite and courteous when posting online
3. General - Follow copyright laws for text, images, videos, etc.

VI. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.

a. Understand and use technology systems.

1. General - Use a variety of input and output devices (keyboards, scanners, cameras, projectors, etc.)
2. General - Demonstrate an understanding of terminology related to technology

b. Select and use applications effectively and productively.

1. General - Use and create files in all facets of Google Drive
2. General - Integrate two or more applications of Google Drive together
3. General - Use electronic resources to practice skills and remediate deficits
4. Computing - Work with coding and programing through KhanAcademy.org

c. Troubleshoot systems and applications.

1. General - Use basic operating system features (e.g. help menus and control panels)
2. General - Solve basics problems without help when problems arise (e.g. Why can't I login?)

d. Transfer current knowledge to learning of new technologies.

1. General - Be introduced to emerging technologies as they develop
2. General - Be encouraged to find new technologies not found at school

Scope and Sequence

The purpose of the Scope and Sequence is to give a general idea of how proficient students should be by the end of each grade level: introduced, reinforced, or mastered. To be clear, "mastered" means that the students can easily meet the standard with little to no guidance from the teacher. "Reinforced" means that the students can meet the standard with guidance from the teacher. "Introduced" means that the teacher is starting the standard with them at a very basic level, with much guidance and instruction. This curriculum focuses on 5-8 grade, however, some teaching of technology has been done in the lower grades, even though it is not reflected here. The measurement of the student standards is based primarily on the skill being developed, not necessarily the topic suggested to go along with it.

					Student Standards by Grade Level. I = Introduced, R = Reinforced, M = Mastered			
					5	6	7	8
I. Creativity and Innovation								
	a. Apply existing knowledge to generate new ideas, products, or processes.							
		1. English - Create their own documents using Google Docs for research, narrative, persuasive writing, and the like.			R	U	U	M
		2. Math - Create bar graphs, line graphs, and pie charts using Google Sheets.			I	I	R	R
		3. Social Studies - Create a survey in Google Forms to gather opinions about historical or current events.			I	I	R	M
		4. Literature - Create a book cover in order to draw a reader to a book. A template can be found at readwritethink.			I	I	I	M
		5. Science - Create a presentation in Google Slides based on a lesson.			I	I	M	M
		6. Music - Create your own song by performing and recording it, or by using synthesized sounds through AudioSauna.			I	I	M	M
		7. Art - Create any type of drawing through Google Draw.			I	U	R	R
	b. Create original works as a means of personal or group expression.							
		1. English - Write a personal narrative in Google Docs and share that narrative with the class through Google Drive.			I	R	M	M
		2. Math - Survey the class about a favorite item (e.g. food, music, sport, etc.) and create a class-wide chart in Google Sheets.			I	R	R	M
		3. Social Studies - Create a travel brochure through Lucidpress about a location in the world.			I	I	R	R
		4. Literature - Create a newsletter through Lucidpress based on the time period of the story in class.			I	I	R	R
		5. Science - Record a class discussion about healthy habits using Twisted Wave and share the result with parents			I	I	R	R
		6. Art - Design a website using Google Sites, using good properties of design.			I	I	R	R

		7. Music - Record a "jam session" with Boomwhackers using Twisted Wave and share the results.	I	R	R	M
	c. Use models and simulations to explore complex systems and issues.					
		1. Science - Study stars and constellations using Planetarium	I	R	M	M
		2. Science - Study the human body using BioDigital Human	I	R	M	M
		3. Math - Study geometric shapes using Geogebra	I	R	M	M
		4. Social Studies - Tour many museums and locations online using virtual tours.	I	R	M	M
	d. Identify trends and forecast possibilities.					
		1. Religion - discuss and use tools to help spread God's Word in our age of technology.	R	U	M	M
		2. Social Studies - Record an interview with someone who works in the computer field using Twisted Wave.	I	R	R	M
II. Communication and Collaboration						
	a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.					
		1. English - Use peer-editing by collaborating and sharing documents through Google Docs.	R	R	M	M
		2. Math - Interview an engineer using video streaming software, like Google Hangouts.	I	I	R	R
		3. Social Studies - Create an invitation using Lucidpress to invite the class to a historical event.	I	I	R	R
		4. Literature - Discuss on blogs famous novels, especially themes, setting, characters, etc.	I	R	R	M
		5. Science - Create a poster using Lucidpress to display information about a particular animal.	I	I	R	R

	b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.				
	1. English - Record a persuasive speech using Twisted Wave and share it with classmates and family.	I	R	R	M
	2. Social Studies - Create a S.S.fair display and report, display it for an open house, take pictures, and upload it for others to see.	I	NA	R	NA
	3. Literature - Share a retelling of a story by turning it into a comic.	I	I	R	R
	4. Science - Create a science fair display and report, display it for an open house, take pictures, and upload it for others to see.	NA	I	NA	R
	c. Develop cultural understanding and global awareness by engaging with learners of other cultures.				
	1. Social Studies - Contact pen pals by email using ePals.	I	I	R	R
	d. Contribute to project teams to produce original works or solve problems.				
	1. General - Use Google Classroom and cloud computing to complete assignments given by teachers	I	R	R	M
	2.General - Use Google Classroom and cloud computing to collaboratively complete a group project	I	R	R	M
III. Research and Information Fluency					
	a. Plan strategies to guide inquiry.				
	1. English - Create an organizer using Lucidchart to help students structure a written paper.	I	R	R	M
	2. Literature - Identify key parts of a play to better understand its meaning.	I	I	R	R
	3. Science - Research the elements by using this periodic table.	I	R	R	M
	b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.				
		R	M	M	M

	1. General - Use the Internet and other electronic resources for research and digital media retrieval.				
	2. General - Access, print, save, and retrieve resources using the network and Google Drive.	R	M	M	M
	3. Math - Use Khan Academy and watch videos to guide and use information.	I	R	R	M
c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.					
	1. General - Evaluate and critique the quality and credibility of electronic information	I	R	R	M
	2. Social Studies - Create a timeline using Dipity.	I	I	R	R
d. Process data and report results					
	1. General - Read and answer questions based on digital charts	R	M	M	M
	2. General - Create digital charts based on data received using Lucidchart and Google Sheets	I	R	R	M
IV. Critical Thinking, Problem Solving, and Decision Making					
a. Identify and define authentic problems and significant questions for investigation.					
	1. Literature - Use a literary elements map to help identify character, setting, conflict, resolution, etc.	I	I	R	R
	2. Science - Use an animal inquiry chart to help develop facts about specific animals.	I	I	R	R
	3. Social Studies - Use a hero's journey chart to tell the story of a famous person in history.	I	I	R	R
b. Plan and manage activities to develop a solution or complete a project.					
	1. English - Complete a Persuasion Map to help develop the contents of a persuasive paper.	I	R	R	M
		I	R	R	M

		2. Literature - Complete a KWL chart over the course of a story.				
		3. Science - Complete a science fair project with a report and poster board	N/A	I	N/A	R
		4. Social Studies - Complete a social studies fair project with a report and poster board	I	N/A	R	N/A
		5. Art - Create a “Design an Ad” advertisement for a local business through Google Drawing and provided images.	R	R	M	M
	c. Collect and analyze data to identify solutions and/or make informed decisions.					
		1. General - Use a variety of research to find different perspectives on topics, including Google Research and Google Scholar	I	R	R	M
		2. Science - Conduct scientific experiments to find a conclusion to your hypothesis, and analyze collected data in Google Drive	I	I	R	R
		3. Social Studies - Survey local politicians using Twisted Wave or Google Forms to find out where they stand on certain topics	I	I	I	R
	d. Use multiple processes and diverse perspectives to explore alternative solutions.					
		1. General - Make appropriate technology resource choices according to learning purposes and outcomes	I	R	R	M
		2. Science - Create 3D models to display designs or models	I	I	R	R
V. Digital Citizenship						
	a. Advocate and practice safe, legal, and responsible use of information and technology.					
		1. General - Apply the basic workings of the copyright law	R	R	M	M
			R	R	M	M

	2. General - Apply the appropriate use of materials, including citing resources				
	3. Social Studies - Create a Google Doc discussing what if George Washington, or some other historical figure, had Twitter	I	I	R	R
b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.					
	1. General - Demonstrate appropriate behavior for technology use	R	M	M	M
	2. General - Show respect for technology equipment	R	M	M	M
	3. General - Work in conjunction, not opposition, with partners for projects	R	M	M	M
c. Demonstrate personal responsibility for lifelong learning.					
	1. General - Explain the relationship that technology has to career opportunities	I	R	R	R
	2. General - Describe the relationship that technology has to today's and the future's society	I	R	R	R
	3. General - Develop a plan for how you think you'll use technology in high school and beyond	N/A	N/A	I	R
d. Exhibit leadership for digital citizenship.					
	1. General - Apply and advocate the St. Mark's Evangelical Lutheran Acceptable Use Policy (AUP)	R	M	M	M
	2. General - Be polite and courteous when posting online	R	M	M	M
	3. General - Follow copyright laws for text, images, videos, etc.	R	M	M	M
VI. Technology Operations and Concepts					
a. Understand and use technology systems.					
		R	R	M	M

		1. General - Use a variety of input and output devices (keyboards, scanners, cameras, projectors, etc.)				
		2. General - Demonstrate an understanding of terminology related to technology	R	M	M	M
	b. Select and use applications effectively and productively.					
		1. General - Use and create files in all facets of Google Drive	R	R	M	M
		2. General - Integrate two or more applications of Google Drive together	I	R	R	M
		3. General - Use electronic resources to practice skills and remediate deficits	R	M	M	M
		4. Computing - Work with coding and programing through Khan Academy	I	I	R	R
	c. Troubleshoot systems and applications.					
		1. General - Use basic operating system features (e.g. help menus and control panels)	R	R	R	M
		2. General - Solve basics problems without help when problems arise (e.g. Why can't I login?)	I	I	R	R
	d. Transfer current knowledge to learning of new technologies.					
		1.General - Be introduced to emerging technologies as they develop	I	I	I	I
		2. General - Be encouraged to find new technologies not found at school	I	I	I	I

Appendix B: Assessment Instruments

Teachers and students answered the following questions through a survey at the end of the school year. When rating 1-5, 1 is very low, 2 is low, 3 is average, 4 is high, 5 is very high. A summary of the results is found in Appendices E and F.

Teacher Questionnaire

1. How would you rate your overall ability with technology? (Scale 1-5)
2. How easy was it to understand the suggestions for implementing technology? (Scale 1-5)
3. How would you make the suggestions easier to understand? (Paragraph)
4. How often did you implement the suggested uses of technology? (Scale 1-5)
5. What made it easy or hard to implement the suggested uses of technology? (Paragraph)
6. How would you rate the students' attitude towards using technology? (Scale 1-5)
7. What steps do you think could be done to improve the students' attitude towards using technology? (Paragraph)
8. How would you rate the level of learning that took place with the students using technology? (Scale 1-5)
9. What steps do you think could be done to improve learning among the students using technology? (Paragraph)
10. How well do you feel that you implemented ISTE Standard 1, which states: "Facilitate and inspire student learning and creativity"? (Scale 1-5)
11. Can you give an example of how you implemented ISTE Standard 1? (Paragraph)
12. How well do you feel that you implemented ISTE Standard 2, which states: "Design and develop digital age learning experiences and assessments"? (Scale 1-5)
13. Can you give an example of how you implemented ISTE Standard 2? (Paragraph)
14. How well do you feel that you implemented ISTE Standard 3, which states: "Model digital age work and learning"? (Scale 1-5)
15. Can you give an example of how you implemented ISTE Standard 3? (Paragraph)
16. How well do you feel that you implemented ISTE Standard 4, which states: "Promote and model digital citizenship and responsibility"? (Scale 1-5)
17. Can you give an example of how you implemented ISTE Standard 4? (Paragraph)
18. How well do you feel that you implemented ISTE Standard 5, which states: "Engage in professional growth and leadership"? (Scale 1-5)
19. Can you give an example of how you implemented ISTE Standard 5? (Paragraph)
20. What do you think would help you implement the standards more regularly? (Paragraph)

Student Questionnaire

1. How would you rate your overall ability with technology? (Scale 1-5)
2. How easy was it to use technology every day in class? (Scale 1-5)
3. What suggestions would you give to make learning with technology easier? (Paragraph)
4. How would you rate your excitement for using technology so often? (Scale 1-5)

5. Did your excitement for technology change throughout the year? If so, what caused you to be more or less excited? If not, what would make you more excited about technology in the classroom? (Paragraph)
6. How would you rate the teachers' attitude towards using technology? (Scale 1-5)
7. Why do you think the teachers' attitude was so positive or negative? (Paragraph)
8. How would you rate the level of learning that took place while using technology? (Scale 1-5)
9. What steps do you think could be done to improve learning using technology? (Paragraph)
10. How well do you feel that you met ISTE Standard 1 which says: "Creativity and innovation - Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology"? (Scale 1-5)
11. Can you provide an example of how you met ISTE Standard 1? (Paragraph)
12. How well do you feel that you met ISTE Standard 2 which says: "Communication and collaboration - Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others"? (Scale 1-5)
13. Can you provide an example of how you met ISTE Standard 2? (Paragraph)
14. How well do you feel that you met ISTE Standard 3 which says: "Research and information fluency - Students apply digital tools to gather, evaluate, and use information"? (Scale 1-5)
15. Can you provide an example of how you met ISTE Standard 3? (Paragraph)
16. How well do you feel that you met ISTE Standard 4 which says: "Critical thinking, problem solving, and decision making - Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources"? (Scale 1-5)
17. Can you provide an example of how you met ISTE Standard 4? (Paragraph)
18. How well do you feel that you met ISTE Standard 5 which says: "Digital citizenship - Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior"? (Scale 1-5)
19. Can you provide an example of how you met ISTE Standard 5? (Paragraph)
20. How well do you feel that you met ISTE Standard 6 which says: "Technology operations and concepts - Students demonstrate a sound understanding of technology concepts, systems, and operations"? (Scale 1-5)

Appendix C: ISTE Standards

ISTE Teacher Standards 2008

1. Facilitate and Inspire Student Learning and Creativity
    a. Promote, support, and model creative and innovative thinking and inventiveness
    b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources.
    c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes.
    d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.
2. Design and Develop Digital-Age Learning Experiences and Assessments
    a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity.
    b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.
    c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources.
    d. Provide students with multiple ad varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching.
3. Model Digital-Age Work and Learning Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society.
    a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.
    b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.
    c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats.
    d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support resources and learning.
4. Promote and Model Digital Citizenship and Responsibility
    a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.
    b. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources.

   c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.
   d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools
5. Engage in Professional Growth and Leadership
   a. Participate in local and global learning communities to explore creative applications of technology to improve student learning.
   b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others.
   c. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning.
   d. Contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community.

ISTE Student Standards 2007

1. Creativity and innovation - Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
   a. Apply existing knowledge to generate new ideas, products, or processes
   b. Create original works as a means of personal or group expression
   c. Use models and simulations to explore complex systems and issues
   d. Identify trends and forecast possibilities
2. Communication and collaboration - Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   c. Develop cultural understanding and global awareness by engaging with learners of other cultures
   d. Contribute to project teams to produce original works or solve problems
3. Research and information fluency - Students apply digital tools to gather, evaluate, and use information.
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
   c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
   d. Process data and report results
4. Critical thinking, problem solving, and decision making - Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

    a. Identify and define authentic problems and significant questions for investigation
    b. Plan and manage activities to develop a solution or complete a project
    c. Collect and analyze data to identify solutions and/or make informed decisions
    d. Use multiple processes and diverse perspectives to explore alternative solutions
5. Digital citizenship - Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
    a. Advocate and practice safe, legal, and responsible use of information and technology
    b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
    c. Demonstrate personal responsibility for lifelong learning
    d. Exhibit leadership for digital citizenship
6. Technology operations and concepts - Students demonstrate a sound understanding of technology concepts, systems, and operations.
    a. Understand and use technology systems
    b. Select and use applications effectively and productively
    c. Troubleshoot systems and applications
    d. Transfer current knowledge to learning of new technologies

Appendix D: Teacher Lesson Plan Template

Lesson Plan Template use with permission and modified from EDT5001 *Enhancing the Curriculum with Technology*, 2014, Dr. James Grunwald, Martin Luther College

Name: **Date:**

Lesson Title:	
Subject/Topic:	
Brief Description:	
Objectives:	
Standards:	*ISTE-S Standards*
Grade Levels:	
Time Frame:	
Technology Used:	
Other resources:	
Preparation Prior to Class:	
Developing Background:	
Detailed Lesson Procedure:	It is very important that this section is very specific and clearly sequenced. Anyone reading this section of your lesson plan should have a very clear idea of what you plan on doing.
URL List:	List any URL's that the instructor or students will need to access for this lesson.
Assessment:	

Charts or images: (if applicable)

Appendix E: Teacher Survey Results

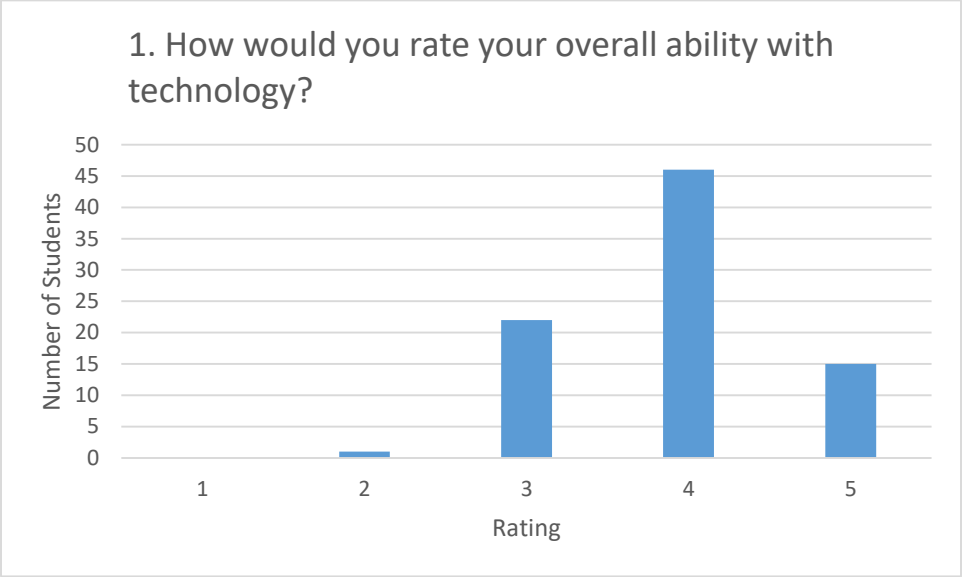
When rating 1-5, 1 is very low, 2 is low, 3 is average, 4 is high, 5 is very high.

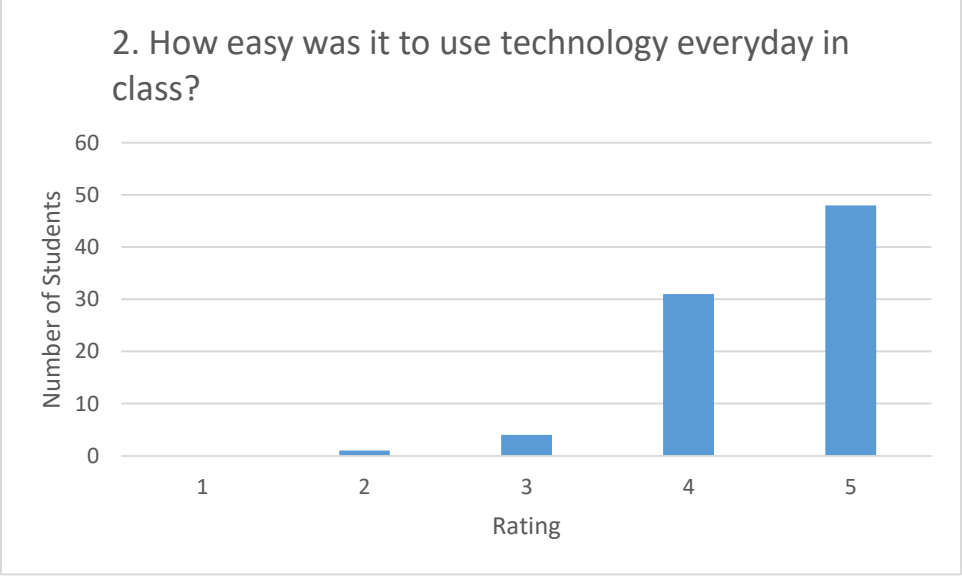
	Teacher 1	Teacher 2	Teacher 3
1. How would you rate your overall ability with technology?	2	3	2
2. How easy was it to understand the suggestions for implementing technology?	2	3	3
3. How would you make the suggestions easier to understand?	have someone slowly show me.	At times things need to be demonstrated while people are at machines so they can practice and receive guidance as needed.	Written directions
4. How often did you implement the suggested uses of technology?	4	4	3
5. What made it easy or hard to implement the suggested uses of technology?	I just had to try on y own or ask for help at my age	Some trial and error was used. Over time things became more natural as troubleshooting / personal assistance was received.	Hard, as my knowledge of how to use technology is weak.
6. How would you rate the students' attitude towards using technology?	5	4	4
7. What steps do you think could be done to improve the students' attitude towards using technology?	Most of the students seem to really like and enjoy the tech stuff'.	I think students need to learn a balance. Too much screen time can be a disadvantage. The key is students still need to understand that success is measurable by the effort one puts forth with or without technology.	Become more proficient myself.
8. How would you rate the level of learning that took place with the students using technology?	4	3	4
9. What steps do you think could be done to improve learning among the students using technology?	I found in English writing they write more fluently when they used a pencil as opposed to using the chrome book. They seemed to concentrate more on the words when writing with pencil than when typing rapidly on the chrome books. Plus the chrome books helped them with grammatical and spelling errors which is a quick fix, but they need to learn to spell and punctuate correctly.	My response is just like other learning. Those students who put forth effort were generally successful while those waiting for things to be done for them had more challenges and difficulties.	Specific tasks using the technology.
10. How well do you feel that you implemented ISTE	3	3	2

Standard 1, which states: "Facilitate and inspire student learning and creativity"?			
11. Can you give an example of how you implemented ISTE Standard 1?	through the students various writing assignments which involve creativity and learning. i.e. term papers, short stories, writing contests etc.	Students researched instead of reading of in a text.	Students create music presentations on composers.
12. How well do you feel that you implemented ISTE Standard 2, which states: "Design and develop digital age learning experiences and assessments"?	2	3	2
13. Can you give an example of how you implemented ISTE Standard 2?	through their writing assignments.	Students were exposed to some, but not a large scale due to teacher learning and experimentation needed.	Use of "Trading Card Creator" to show student assessment of character traits in a story
14. How well do you feel that you implemented ISTE Standard 3, which states: "Model digital age work and learning"?	1	3	3
15. Can you give an example of how you implemented ISTE Standard 3?	through the chrome books researching data for various papesr.	I used some, but would plan to develop a greater variety.	Use of Smartboard for presentation of Math and Catechism lessons
16. How well do you feel that you implemented ISTE Standard 4, which states: "Promote and model digital citizenship and responsibility"?	2	4	4
17. Can you give an example of how you implemented ISTE Standard 4?	through the aforementioned writing assignments	Students were monitored. Students were held accountable for appropriate use of technology.	Students are monitored for responsible use of their Chromebooks and Internet use.
18. How well do you feel that you implemented ISTE Standard 5, which states: "Engage in professional growth and leadership"?	2	2	1
19. Can you give an example of how you implemented ISTE Standard 5?	none	There are many opportunities that during the school year are held back by time. It would be good to have some times set aside for learning, experimenting with possible uses of technology that others use.	I haven't.
20. What do you think would help you implement the standards more regularly?	none	Commitment and time	I need to learn how to use all the facets of the technology we have.

Appendix F: Student Survey Results

The results of the quantitative questions are represented in graphs, showing the number of students that gave each rating. When rating 1-5, 1 is very low, 2 is low, 3 is average, 4 is high, 5 is very high. The qualitative questions include a sampling of responses that are representative of all 84 responses.

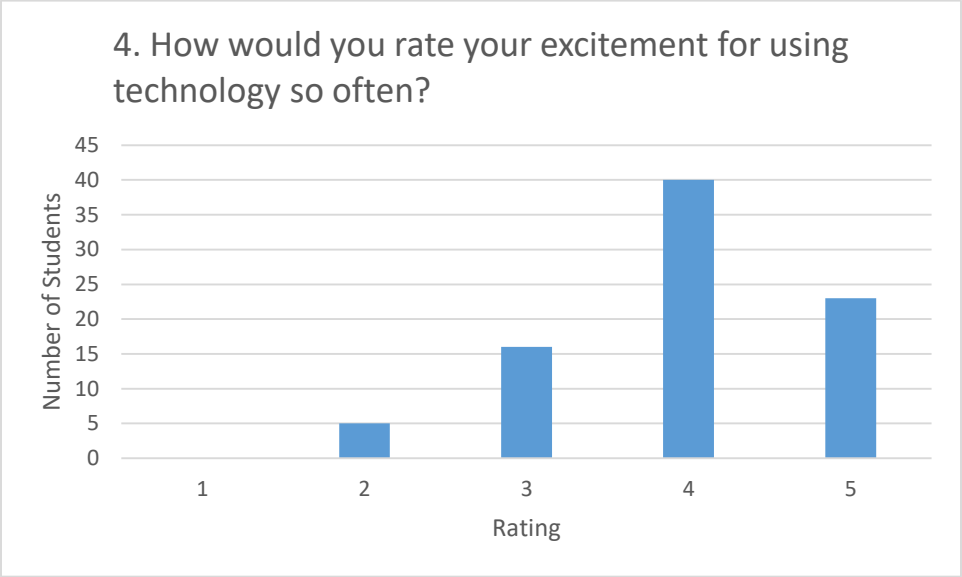




3. What suggestions would you give to make learning with technology easier?

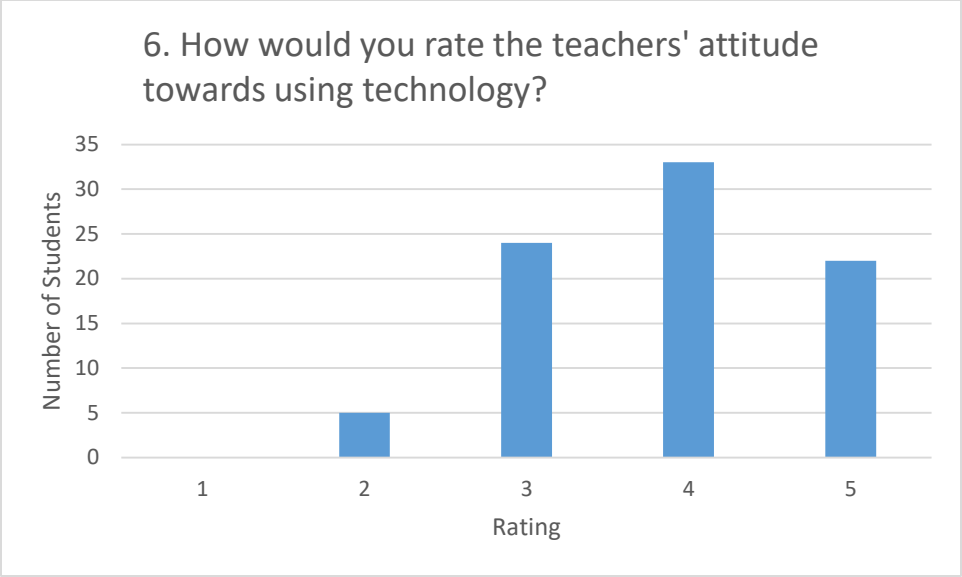
- A guide to guide you through or a website that teaches you what to do.
- Anything that we learn would probably be easier with videos.

- I would have more educational apps available to all the students whether it's dealing with math or science or language. I find that even though they are educational, we all kind of get into it and have fun while we are learning.



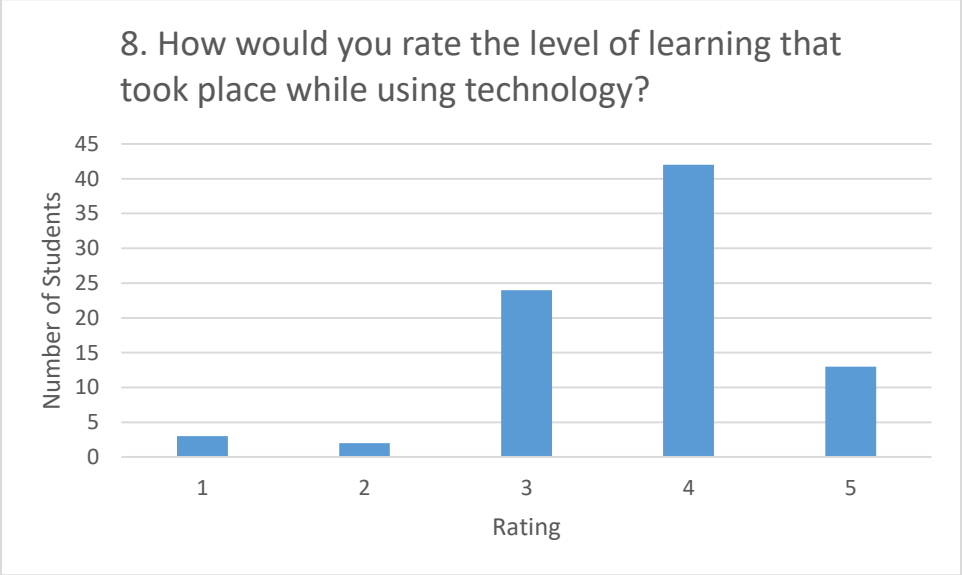
5. Did your excitement for technology change throughout the year? If so, what caused you to be more or less excited? If not, what would make you more excited about technology in the classroom?

- My excitement was very high at the beginning of the year because I had never experienced being able to do stuff like this with a computer at school, but towards the end of the year it started to disappear. It would be better if we could take our Chromebooks home with us and have more of a free will to do stuff on it.
- Yes, we were able to do different activities and learn how to do something new often.
- It went down because I got used to using it every day and it just became a normal thing.



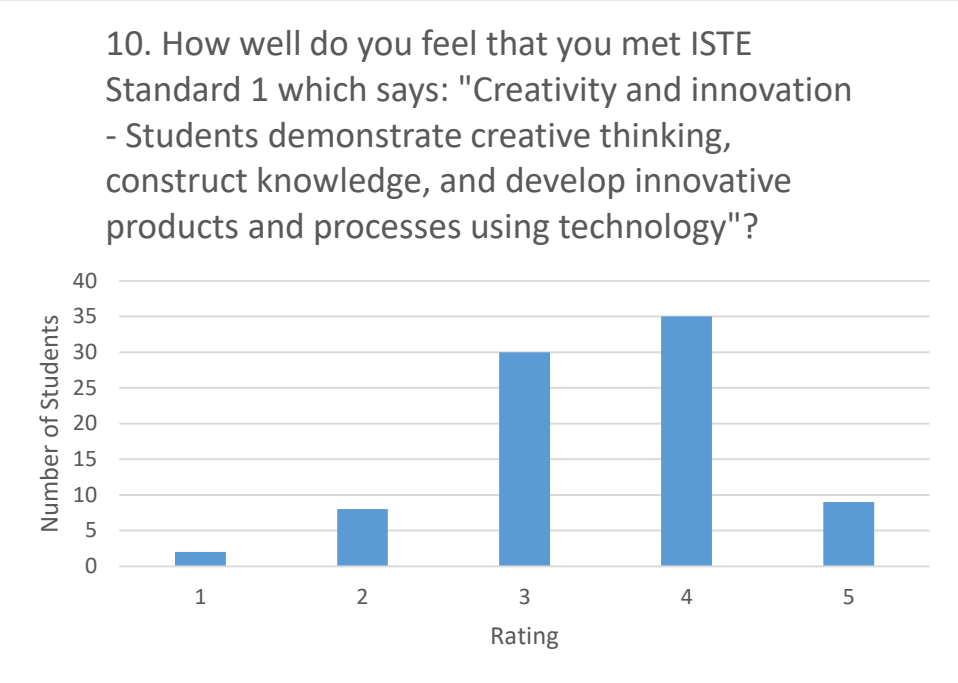
7. Why do you think the teachers' attitude was so positive or negative?

- I think that most of the teachers understood when a computer was being slow or didn't work so they didn't yell at the student or anything, and I think they had a positive attitude in even letting us use the computers.
- It makes teaching the kids a bit easier than letting them write it out on pieces of paper that could get lost.
- When they see students messing around on their Chromebooks and not doing their homework when they have some, they get concerned about what they are doing and that is a very good thing, because students should be working on homework when they have it. If they don't have homework, they shouldn't be messing around but they should be able to do a little bit more and have more freedom.



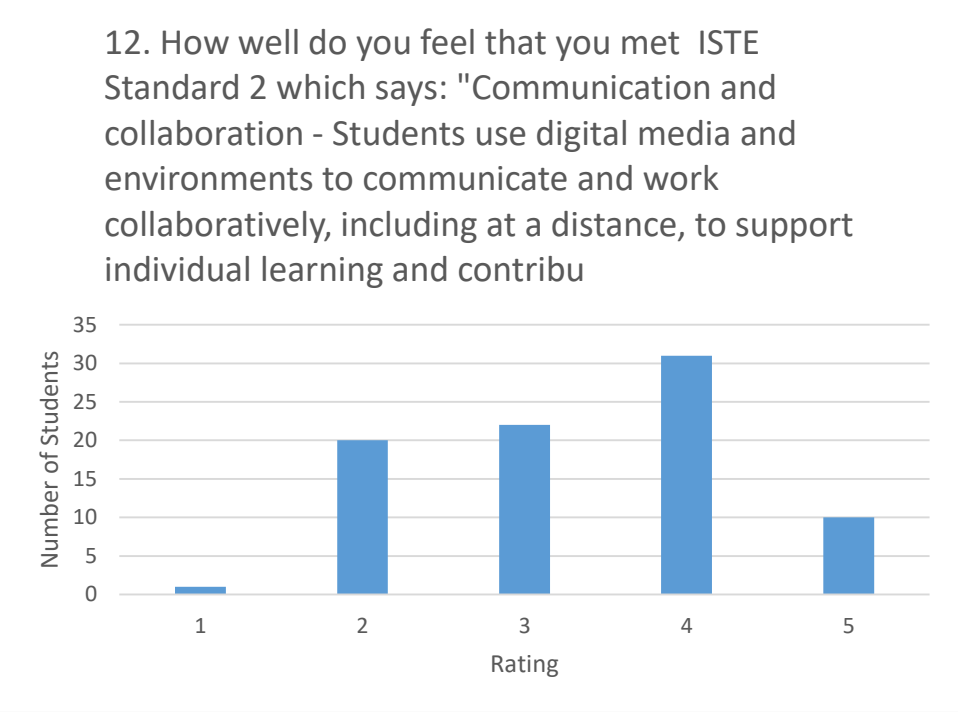
9. What steps do you think could be done to improve learning using technology?

- We could have special help for people who aren't as good with technology, like partnering up someone who is good with it with someone who isn't so they can help the less good person.
- If the younger students started learning earlier, they would be better prepared when they got to the upper grades.
- Maybe add something like a tutorial.



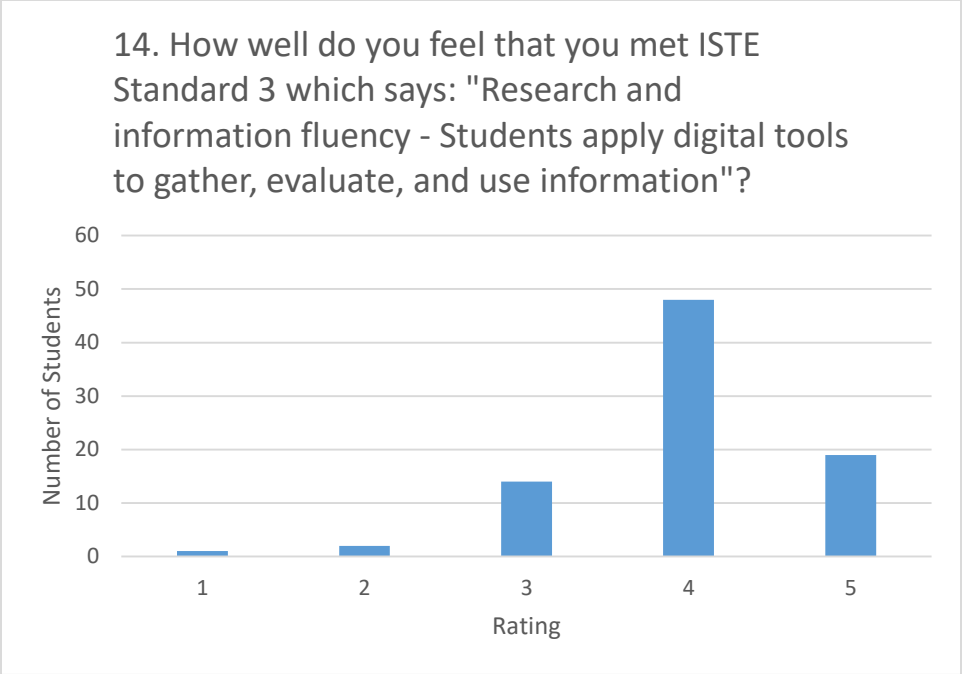
11. Can you provide an example of how you met ISTE Standard 1?

- I would look up a similar picture or painting and use it in a different way so that it's not copying that certain artist.
- We had a graduation booklet we made and we used pictures to express ourselves.
- On Khan Academy I enjoyed doing computer programming and I learned a lot from it and have been able to do many awesome things.



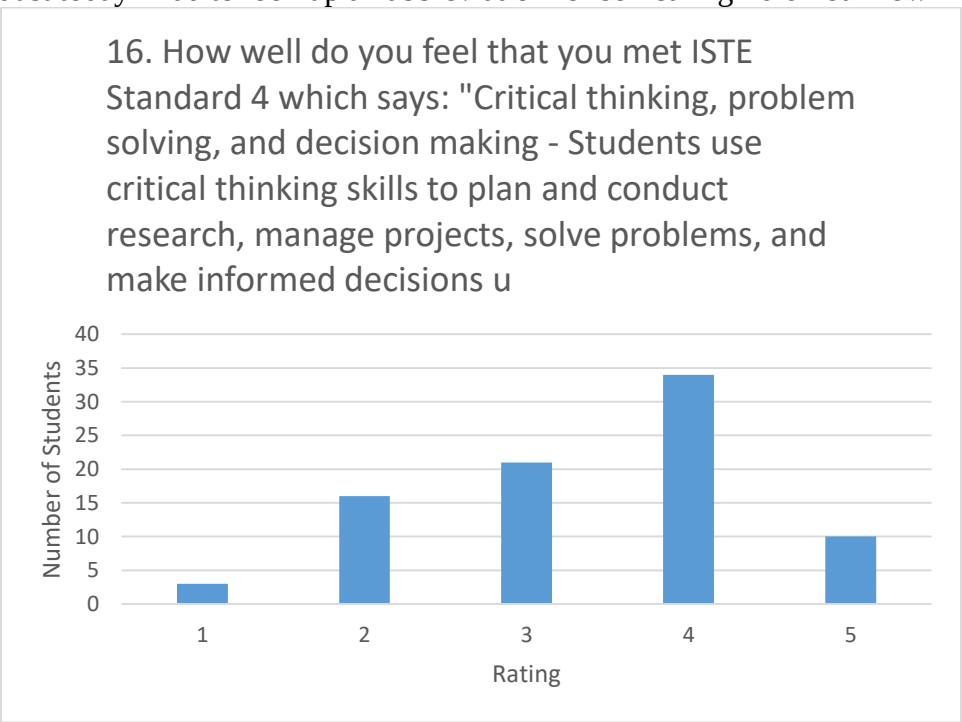
13. Can you provide an example of how you met ISTE Standard 2?

- When we have a project due we can have the filed share and you can comment on the project letting your partner to see what you have commented and the partner would be able to comment back.
- When we had to do group projects and we needed to use the Chromebooks it actually made it easier so that everybody would pitch in. Since we all had different computers we were all able to do something different to help.
- Studying for the test as we did power points together we learned better with partner work.



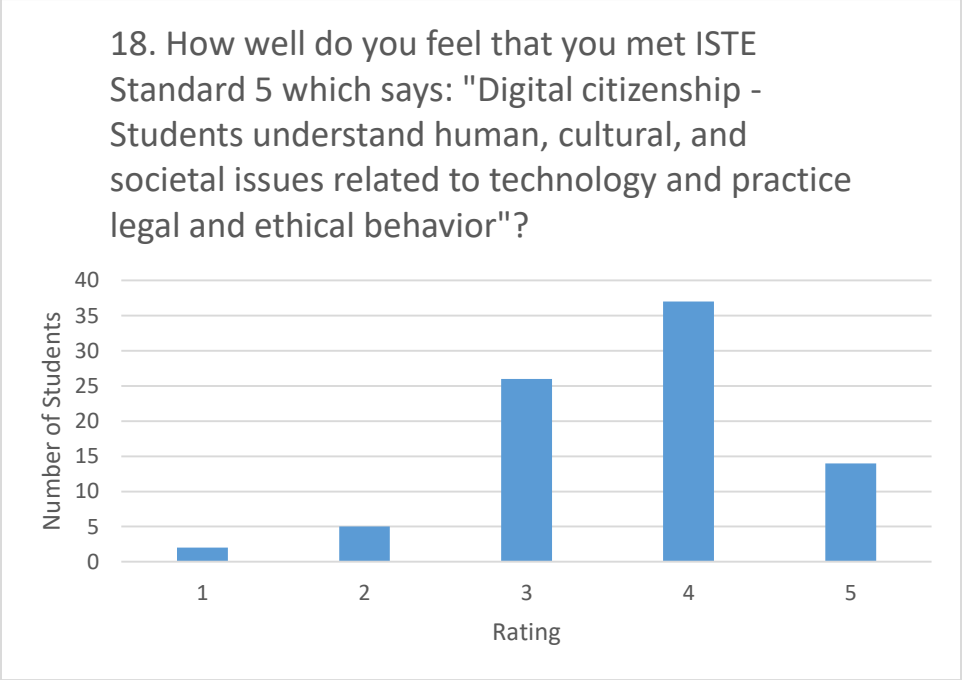
15. Can you provide an example of how you met ISTE Standard 3?

- When I looked up the definitions of some words and when I researched my science fair project.
- I use research for my papers to help me find sources. It makes it easier to look it up than just to read a lot in a book, but don't get me wrong, books are great too.
- Just today I had to look up an abbreviation for something I did not know



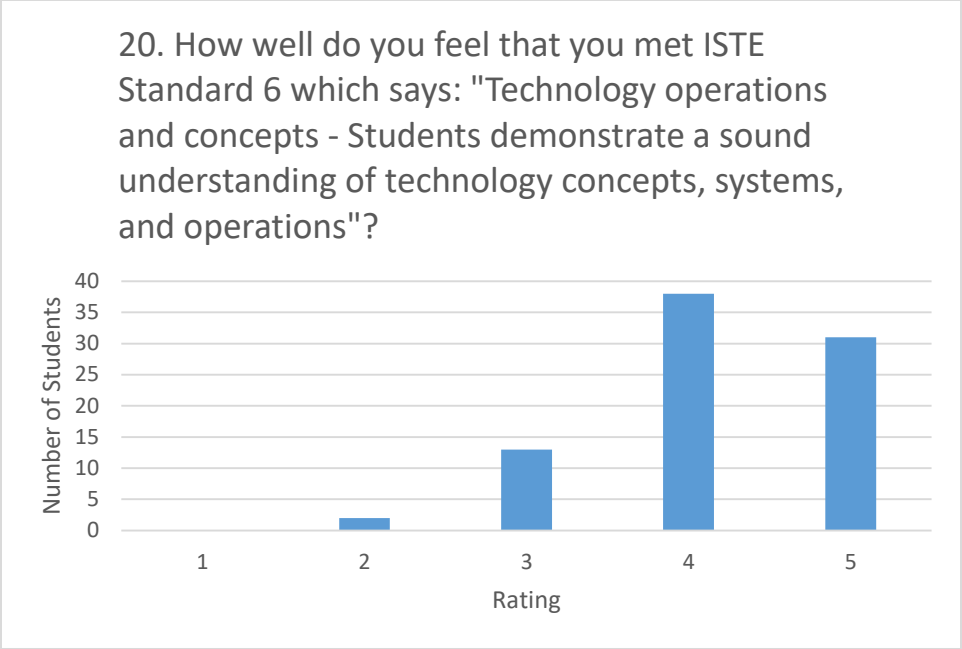
17. Can you provide an example of how you met ISTE Standard 4?

- I read about the New York Newsies in the Social studies fair and put some the things about them in my own words.
- I used Banzai to give myself an even better understanding for my economical future.
- For a geography project we were given clues about a place and we had to use Chromebooks to put the clues together.



19. Can you provide an example of how you met ISTE Standard 5?

- For our certain history and science projects I gave credit where credit was due.
- I am polite and as nice as can be on social media like Google +
- I didn't post anything I shouldn't, I don’t add anyone I don't know, and practice godly behavior online.


20. How well do you feel that you met ISTE Standard 6 which says: "Technology operations and concepts - Students demonstrate a sound understanding of technology concepts, systems, and operations"?
Number of Students
40
35
30
25
20
15
10
5
0
1
2
3
4
5
Rating