

Technology

Grade 7

Bellmore Merrick Central High School District

Merrick Avenue and Grand Avenue Middle School

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Introduction

The purpose of this curriculum project is to update the current 7th grade computer technology curriculum to better reflect the 21st century. It is also meant to reflect the relevant skills which come from the most recent technologies that are currently available. Additionally, this curriculum is meant to maintain unity between Grand Avenue Middle School and Merrick Avenue Middle School where the course is taught.

This updated curriculum creates learning standards that allow for additional teacher customization of units and allows for much flexibility in its presentation based on teacher experience and preference. It is designed for use with a teacher website in mind. As each student throughout the course will be exploring web design and using their individual site as a portfolio, the teacher should also be utilizing this dynamic resource as an organizational and instructional tool. As should be expected with the utilization of continually growing modern technology, the curriculum allows for growth with expanding and updated district computer and information resources.

Additionally, including in this curriculum is a unit in which students briefly explore the concepts which are thoroughly discussed in Technology 8. The Introduction to Engineering unit briefly exposes 7th grade students to the concepts mentioned in the Project Lead The Way curriculum while maintaining alignment with the Introduction to Computers curriculum. Although the unit is brief, it will provide them with introductory knowledge that will help them to be more successful in Technology 8.

Finally, this curriculum project is meant to align with newly adopted evaluation standards which gauge teacher effectiveness. This is completed in part through student pre and post examinations meant to measure both student growth and achievement.

7th Grade Technology

Unit - Introduction to Computer Technology

- Class procedures
- Distribute usernames/passwords
- Navigating/how to access teacher website
- User accounts/email
 - Set up class groups/mailling lists

Unit - Computer Safety

- Acceptable Use Policy
- Internet Safety
- Cyberbullying

Unit - Web Site Development

- Introduction to Google Sites
 - Creating new sites
 - Adding/editing pages
- Themes/colors/fonts, alignment, etc.
- Inserting images/links

Unit - Internet Research

- How to properly use a search engine
- Verifying good sources
- How does computer technology affect you?
- Positives and negatives of the Internet

Unit - History of Computers

- Evolution of computers
- Creation of the Internet
- What IS technology?
- What is the Internet?

Unit - How Computers Work

- Universal Systems Model (Input, Process, Output)
- Hardware vs. Software
- Computer components/functions

Unit - Google Documents

- Creating/editing word processing documents
- Advanced word processing skills
- Creating/editing presentation documents
- How to make an effective presentation/how to be a good presenter
- Creating/editing Google Forms
- Spreadsheet basics

Unit - Introduction to Engineering

- Fantastic Contraption
- West Point Bridge Designer
- Autodesk Inventor

Unit of Instruction - Computer Safety

Big Idea: Communication

Conceptual Rationale:

Computers and the Internet are highly utilized by students for both educational and personal purposes. Students should be aware of the proper usage in order to keep their computer functioning properly, keep themselves from harm, and to prevent harm to others.

Established Goals:

NYS Learning Standards for Math, Science, and Technology
Standard 2: Information Systems
Standard 5: Technology
Standard 7: Interdisciplinary Problem Solving
NYS Learning Standards for English Language Arts
Standard 1: Language for Information and Understanding
Standard 4: Language for Social Interaction

Time Frame: Approximately 3 class periods

Essential Questions: <ul style="list-style-type: none">• What is appropriate use for a school computer?• How can you protect yourself on the Internet?• Why is cyber-bullying such a big problem?	Students will understand... <ul style="list-style-type: none">• There are things that they can and cannot do on school computers.• That the Internet is very useful but can pose many risks.• Not all people on the Internet are who they say they are and can cause harm to them.• That proper computer and Internet usage can prevent harm to their computer and themselves.
Students will know... <ul style="list-style-type: none">• What is appropriate and inappropriate when using district computers and connectivity.• What cyberbullying is, how to identify it, and how to prevent it.• How to safely use the Internet and other related resources.• That unsafe computer and Internet usage can cause harm to their computer and themselves.	Students will be able to... <ul style="list-style-type: none">• Recognize appropriate and safe computer and Internet usage.• Determine the appropriate actions if they find themselves in an unsafe situation.• Explain how cyber-bullying can be more harmful to someone than “regular” bullying.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites

- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - Computer Safety

Big Idea: Communication

Topic: Cyber-Bullying

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 1 class periods

Aim: What can you do if you are being harassed online?

Motivation:

- What is the difference between bullying and cyberbullying?
- Create a chart on the board for students to list responses:
 - Bullying- Physical, face to face, verbal
 - Cyberbullying- Texting, email, not in person
- Why do you think kids find it easier to cyber bully?
 - Talk about how it is easier to bully someone when you don't have to see them face to face.
 - Example:
 - Choose a student around the room and ask them to compare who would be a better bully Vs cyberbully?
 - Ask the kids why which one would be better?
 - How come it is easier to do it behind a computer screen as opposed to face to face with the person?

Essential Questions: <ul style="list-style-type: none">• How would you describe cyberbullying?• What do you do if you are being cyberbullied?• How can you protect yourself online?	Students will understand... <ul style="list-style-type: none">• The difference between bullying and cyberbullying.• What they should do if they are being harassed online• How to deal with a cyberbully• That not everyone on the Internet is there to be your "friend"• There are severe consequences when bullying someone in person or online.
Students will know... <ul style="list-style-type: none">• How do identify if they or someone they know is being cyberbullied.• What do if they are being harassed online.	Students will be able to... <ul style="list-style-type: none">• Identify the difference between bullying and cyberbullying.• Understand the steps that they should take if they are being cyberbullied.• Differentiate from cyberbullying and

	traditional bullying.
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Misunderstandings:

- Students may not know that certain types of threats are illegal.
- Students may not know that some of the things that they are doing online are actually bullying.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Internet video with question prompts
- Application of Common Core Standards including reading and writing

Learning Experiences:

Procedure:

Show the video on www.nsteens.org

Terrible Text 1

- Watch the video with the students and discuss?
- What could the character do differently?
- How can you protect yourself?
- What would you do?
- What can you do with the things that people send you?
- *Point out about saving the texts, printing emails, etc.*

Student Activity:

Students will be broken into groups 3-4 based on location

Students will be grouped by their typing ability, reading abilities and readiness at the computer.

Students will have one person read the scenario out loud to the rest of the group.

Each group will be given a scenario that involves some form of cyberbullying

As a group they will open up the "Cyber Bullying Worksheet" from the shared drive and complete the questions that are on the worksheet

(See worksheet for details)

Students should be given about 10-12 minutes to complete the task and save to the shared drive.

Circulate during activity to ask follow up questions with the groups to check for understanding.

Summary/Wrap-up:

Once all of the groups have saved to appropriate place ask 2-3 groups to come up and share their stories.

Students should give an overview of their story and share what they found while reading their scenarios.

Any student who has not completed the activity during the class period or is absent will be required to complete activity at home or on their own time. All materials and information can be found on the class website.

Homework:

Have students think about an answer the following questions to be discussed during the next class:

What was your reaction to these scenarios?

What would you do now in a case of Cyber bullying?

How can you help to prevent things like this happening our school?

Assessment:

- Satisfactory completion of assigned tasks
- Successful application of newly acquired skills and prior knowledge

Cyberbullying Sample Scenarios:

Kylie was in eighth grade when two of her classmates started a website called "Kill Kylie Incorporated." On this website, the cyberbullies posted degrading comments and made threats of physical harm. Another cyberbully also created an IM screen name very similar to Kylie's and sent people messages that made Kylie look bad. Kylie was devastated; she told her parents and the police. After an investigation, the police filed charges against the cyberbullies for the death threats. In the end, Kylie transferred to another school.

Joanne was a freshman in high school when she had a fight with one of her friends at a sleepover. After that, she received e-mails that threatened her life. The cyberbully also constantly left rude and threatening messages on her blog. This cyberbullying lasted for three months. Joanne hated going on her computer and feared what she might find when logging on to the Internet. She told her parents and her school about the cyberbullying. The cyberbully finally stopped after the school got involved.

Lauren was a sophomore in high school when she was attacked by a cyberbully. An anonymous poster started a thread on a message board making fun of Lauren. The cyberbully teased Lauren about her weight, calling her "fat" and a "cow." The cyberbully also made horrible comments about Lauren's multiple sclerosis and pushed for Lauren's boyfriend to break up with her. However, the bullying didn't stop there. Someone egged Lauren's car, vandalized her house, and even threw a bottle of acid at her front door. Her mother had minor acid burns from that incident. Lauren's friends began posting on the thread to defend her; Lauren started her own thread called "This ends now," asking for people with any information about the identity of the cyberbully to come forward. The cyberbully who started the thread has never been caught; neither has the person who attacked her house.

Amanda was the new girl in an eighth grade class. One day, a group of girls stole her pencil case filled with makeup. Amanda told on them, and she came home to constant IMs calling her a tattletale and a liar. Amanda was upset and sent an IM back telling them "You stole my stuff!" The cyberbullies kept sending IMs calling Amanda awful names. Later that night when Amanda left the house, she received 50 IMs on her cell phone from the cyberbullies. Amanda never spoke to the girls again and they were never punished for their cyberbullying.

Fifteen year-old Ghyslain was cyberbullied by millions of people when his home movie was posted on the Internet. Ghyslain was a Star Wars fan; he videotaped himself using a golf ball retriever as a light saber and making his own sound effects. Some of his classmates found the video at school and posted it online to make fun of him. Millions of people downloaded the video and Ghyslain became known as "The Star Wars Kid." His video was even shown on several television shows. Ghyslain was so humiliated by the video that he had to have counseling; he also transferred to another school. Ghyslain's parents filed a lawsuit against his classmates and Ghyslain received \$351,000 in damages.

Teenager Julianne was bullied in school by a group of girls in her class. She thought of her bedroom as a refuge from the bullies, until they started taunting her online. The girls found her profile on a social networking site and began posting hurtful messages. They called her names and threatened her. Later, they found out what her IM screen name was and started talking to her. Julianne thought it was one of her friends, until they started calling her names. They told her that they were going to hurt her at school the next day. Julianne was frightened, so she printed the conversation and showed it to her father. Together, they went to the police and filed harassment orders to help keep Julianne safe.

Unit of Instruction - Website Development

Big Idea: Communication

Conceptual Rationale:

Websites are useful for presenting and organizing information and students should have the basic skills needed to utilize this medium. Through the use of a student website portfolio, all student work will be organized and maintained in one central location.

Established Goals:

NYS Learning Standards for Math, Science, and Technology
Standard 2: Information Systems
Standard 5: Technology
Standard 7: Interdisciplinary Problem Solving
NYS Learning Standards for English Language Arts
Standard 1: Language for Information and Understanding
Standard 4: Language for Social Interaction

Time Frame: Approximately 6 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• Why are there so many websites on the Internet?• How can using a website be helpful?• How can you create a website that is organized and informative?	<p>Students will understand...</p> <ul style="list-style-type: none">• How each of the basic site editing tools can be used to enhance their website.• There are many tools that can be used to create websites, but Google Sites is free and simple.• That using a website is an effective way to organize and present information.• The purpose of having a public website compared to a private website.• It is important to control who has access to the information contained on their website and why.
<p>Students will know...</p> <ul style="list-style-type: none">• How to access the editing tools to modify their site.• How to access other student websites.• That Google is not the only website creation tool.	<p>Students will be able to...</p> <ul style="list-style-type: none">• Create a basic Google Site.• Add and modify content on the individual pages including text, images, and links.• Modify the sharing and permissions of their sites to allow only the appropriate people to view them.• Explain how websites can be used in beneficial ways.• Access other student websites.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites

- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - Website Development

Big Idea: Communication

Topic: Creating your first Google Site

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 1 class period

Aim(s):

- Create a basic Google Site.
- Determine what basic tools are available.
- Add content on your site.
- Add an additional page to your Google Site.

Motivation:

- Why do you think there are so many websites on the Internet?
- What are some of the tools that can be used to create websites?
- What are the advantages of using Google Sites to make a website?

Essential Questions: <ul style="list-style-type: none">• Why are there so many websites on the Internet?• How are websites made?	Students will understand... <ul style="list-style-type: none">• Google Sites is an easy tool for creating simple websites.• The advantages and disadvantages of using Google Sites to create a website.• What the basic site editing tools are and how to use them to create content on their website.
Students will know... <ul style="list-style-type: none">• How to access Google Sites.• Why Google Sites is so helpful.• The procedure for creating a new website with Google Sites.• The procedure for editing text on their site pages.• The procedure for adding new pages on their web site.	Students will be able to... <ul style="list-style-type: none">• Log in to their BMCHSD Google account and access Google Sites.• Explain the benefits and drawbacks of Google Sites.• Create a basic website using Google Sites.• Use Google Sites editing tools to add text to individual web pages and edit page text.• Use Google Sites editing tools to add new pages to their web site.

Misunderstandings:

- Students will be required to log in to their BMCHSD Google account. Students may be unaware that their login information is the same as their school login information.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Learning Experiences:***Procedure***

1. Students will complete the motivational Do Now questions.
2. Teacher will give a brief introduction demonstration on how to access Google Sites utilizing Smart Board.
3. Teacher will demonstrate how to choose the correct options to create a new Google Site.
4. Teacher will demonstrate how to add text to the site homepage by using the "Edit Page" tool.
5. Teacher will explain what text editing tools are available on the editing toolbar.
6. Teacher will demonstrate how to create new pages for the newly created site using the "Add Page" tool.
7. Before students create their own site, the teacher will quickly explain the procedure for the class period.
8. This basic website will function as each students' portfolio for the course and additional tools will be discussed, and additional site content will be added with each subsequent topic/lesson.

Student Activity

1. After the teacher demonstrates the two new skills with Google Sites, students will log in to their BMCHSD Google account and follow the discussed procedure to create their own Google Site.
2. Students should access the activity procedure on the teacher website.
3. Students will create their basic site as discussed, naming their site with an appropriate technology related title and using the appropriate web address. The teacher should come up with an organized scheme for student site URL's for easy access to student sites (Ex. - first name, last initial OR student ID number)
4. Each student should complete the content that the teacher required for them to include on the homepage and then add at least one new page.
5. Students should be encouraged to customize their sites how they like but should also be reminded that this site is their portfolio for the entire class and proper spelling, punctuation and grammar should be used.

Summary/Wrap-up

1. With a few minutes remaining in the class period, students should be asked to stop working and save whatever work has been completed and log off their account.
2. Teacher should give a brief summary of the skills taught and randomly ask a few questions to students to reinforce the information taught - How do you create a new page? How do you add text to your website? Etc.
3. Any students who have not completed the activity for the class period will be required to complete the website creation activity for homework or during extra help.

Assessment:

- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks

- Successful application of newly acquired skills and prior knowledge

Unit of Instruction - Internet Research

Big Idea: Information

Conceptual Rationale:

The Internet is overloaded with information on practically any imaginable topic. Students should have the skills necessary to find the information they need and determine whether or not the source of the information is reliable.

Established Goals:

NYS Learning Standards for Math, Science, and Technology
Standard 2: Information Systems
Standard 5: Technology
Standard 7: Interdisciplinary Problem Solving
NYS Learning Standards for English Language Arts
Standard 1: Language for Information and Understanding
Standard 4: Language for Social Interaction

Time Frame: Approximately 3 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• How can you verify a source is “good”?• How has computer technology affected the way we do research?• Is the Internet the best source for information?• Why are there so many websites on the Internet?	<p>Students will understand...</p> <ul style="list-style-type: none">• That the Internet is not always the best source for information.• How a search engine locates websites related to their terms and returns results.• The number of websites on the Internet is constantly growing.• How to effectively determine a source is “good”?• which search engines and databases are most effective for finding the information they are looking for.• the difference between a search engine and a database.
<p>Students will know...</p> <ul style="list-style-type: none">• The approximate number of websites on the Internet.• What a search engine is.• What a database is.	<p>Students will be able to...</p> <ul style="list-style-type: none">• Use search engines effectively to locate the information they would like to find.• Determine a reliable source from an unreliable source.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website

- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - Internet Research

Big Idea: Research

Topic: Using a search engine effectively

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 2 class periods

Aim(s):

- Discuss what a search engine is
- Discuss searching tips
- Test search engine tips by searching for facts
- Verify other students' search queries are effective

Motivation:

- What is the best way to find information?
- What do *you* do to find information on the Internet?
- What *is* a search engine?
- How many websites do you think are on the Internet?

Essential Questions: <ul style="list-style-type: none">• How can information on a topic be found?• Why are there so many websites on the Internet?• What search engine the best?	Students will understand... <ul style="list-style-type: none">• That there are effective and ineffective ways to enter search terms in a search engine.• There are many different search engines and each one functions slightly different.
Students will know... <ul style="list-style-type: none">• What a search engine is.• How a search engine works.• The few ways to enter search terms and return more effective results that relate to what is being searched for.• How to access more than one search engine.	Students will be able to... <ul style="list-style-type: none">• Explain what a search engine is and how one works.• Use effective search queries with various search engines to find information on the Internet.• Recognize an effective search query from an ineffective search query.

Misunderstandings:

- Students may use different search engines that function slightly differently and yield different results.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Learning Experience:

1. Students will answer the motivation Do Now question to begin thinking about the topic of the lesson.
2. Teacher will quickly explain what a search engine is and how they work.
3. Teacher will explain the different skills needed to use a search engine effectively including: using simple terms that describe the topic being searched in as few words as possible, avoiding unnecessary words such as “like”, “as”, “and”, “if”, “why”, “how”, etc., using quotation marks to group words together as phrases.
4. Teacher will demonstrate how to utilize the discussed skills and demonstrate how using effective and ineffective search terms leads to either good or poor search results.
5. Teacher will demonstrate how even though all search engines work in the same manner, using the same search terms will return different results.
6. Students will individually complete the activity task. Each student will be given a list of random facts to find the answer to on the Internet using the effective searching techniques discussed and indicate the answer to the fact and the *exact* search terms that they used to find the answer.
7. Once all students have completed the individual activity, they will switch answers with another student. Using the exact search terms that their partner used, each student will determine whether or not the search terms that their partner used were effective and indicate so.
8. After all student activities are done with whatever time remains, each student will make a new page on their website. On the new page should be links to their favorite search engines, a list of a few searching tips everyone should use when using search engines, and a few examples of “good” search queries and “poor” search queries.
9. At the end of the class period, students will be asked to stop working and a brief discussion will be held to review the information discussed in the lesson to check for student understanding.
10. Students will be given a brief quiz which covers the information discussed in the lesson.
11. At the conclusion of the lesson, students will be reminded that the discussed information in the lesson applies to all topics and the search techniques will help them find whatever information they need to find for any purpose; school, entertainment, etc.
12. Any student who did not complete the activity will be required to complete the assignment for homework by accessing the procedure on the teacher website.

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Unit of Instruction - History of Computers

Big Idea: Information

Conceptual Rationale:

The use of computers and the Internet has become an integral part of our daily lives. Going back and discussing how the computers and the Internet have evolved into what they are today will show students how technology has evolved to shape our society and how it will continue to do so. All technologies have both positive and negative aspects and it is important for students to understand that technology is not a panacea but rather, a tool that can be useful when used appropriately.

Established Goals:

NYS Learning Standards for Math, Science, and Technology

Standard 2: Information Systems

Standard 5: Technology

Standard 7: Interdisciplinary Problem Solving

NYS Learning Standards for English Language Arts

Standard 1: Language for Information and Understanding

Standard 4: Language for Social Interaction

Time Frame: Approximately 3 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• Is technology always a good thing?• Why is it important to study the history of technology?• How has the evolution of the computer and the Internet influenced other technologies?• Has the computer and the Internet changed society positively or negatively?• How does technology affect people in general positively or negatively?• What would life be like without computers or the Internet?	<p>Students will understand...</p> <ul style="list-style-type: none">• How technology can affect their daily lives.• How the computer has changed the way we interact with the world around us.• That computers and the Internet have both positive and negative effects on society.• That the invention of the computer and the Internet was a gradual process that took place over many years.• The importance of studying older technologies that have influenced the design of new ones.
<p>Students will know...</p> <ul style="list-style-type: none">• How the computer evolved into what we know it as today.• How the Internet evolved into what we know it as today.• That computers, the Internet, and all technologies have both positive and negative aspects.	<p>Students will be able to...</p> <ul style="list-style-type: none">• Identify ways in which computers and the Internet have changed our society.• Describe how the Internet has evolved into a global communication network.• Discuss the positive and negative effects of technology on our society.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - History of Computers

Big Idea: Research

Topic: Internet Evolution

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 2-3 class periods

Aim:

- What is the Internet?

Motivation:

- Begin class with asking students what type of sites they go?
- Why do they go to them?
- What information do those sites ask from you?

Essential Questions: <ul style="list-style-type: none">• Why do we have the Internet?• How has the Internet changed the way we communicate?• why do websites want to know information about you?• What is the purpose of the Internet?	Students will understand... <ul style="list-style-type: none">• How the Internet has evolved.• That the Internet is made up many computers sharing information.• Why websites want to collect information from them.• The difference between different website endings.•
Students will know... <ul style="list-style-type: none">• Why the Internet was first created.• What the different types of websites are and how you can get a certain type.• Why websites want to learn as much about you as possible.• How computers connect and share information.	Students will be able to... <ul style="list-style-type: none">• Describe how search engines return results.• Discuss how the Internet has evolved over the short period of time.• Describe how the world wide web works.• Differentiate between different types of websites and their purpose.

Misunderstandings:

- Students don't realize the Internet is constantly evolving.
- Students don't realize the Internet does not have one central location, but is comprised of a worldwide connection of computers.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Learning Experiences:

Procedure:

1. After talking with students about the sites that they go on, begin to break it down more.
 - a. Why do you go there?
 - b. What types of things does the website ask you for?
 - c. Why do they ask for these things?
2. Go onto the Internet and Google search the word "Cheese"
 - a. Point out the amount of websites found and how many there are.
 - b. How come there are so many?
 - c. Where are those sites?
3. Talk with the students about how certain websites are able to be on top or be in the advertising section.
4. Talk about how all of the websites are located around the world and are sharing that information for others to access.
5. Define the Internet: A worldwide network of computers that can be accessed from any device with an Internet connection.
 - a. That network allows devices to connect and search through public information on the Internet.
 - b. The information can be put up, altered and removed by many different users.
 - i. WWW- World Wide Web
 - ii. HTTP- Hyper Text Transfer Protocol
 - c. Website endings.
 - i. .org, .com, .net, .gov, .edu, . tv, .us

Student Activity

1. Group students into groups of 3-4 in a group.
2. Have students read the Surfing the Net Safely Assignment.
 - a. Once they have read the project, they may begin with their group members the research using the www.getnetwise.org website.
 - b. Students should follow the instructions on the assignment to create their mini presentation.

Summary Wrap-up

1. What are some things that you will do differently when going on websites now?
2. How can you try to identify that a site is a good one for you or not?
3. Why is it important for you to think about the things that you do on the computer just as you would anywhere else?

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge.

Surfing the Net Safely

[Get Net Wise](#)

As we spend more and more time on the internet you come to realize that are many things out there that are not good for you to see or be a part of. Using the [Get Net Wise](#) link, find a partner and pick one of the following topics to explore.

Keeping Your Information Private Protecting Your Computer Stopping Unwanted email or SPAM Keeping Children Safe Online	Online Safety Guide Reporting Trouble Tools for Families Privacy
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After you and your partner choose one of the topics go to the [Get Net Wise](#) website and try to compile some information about the topic. You should organize some of the information using Microsoft Word. You and your partner will then present some of the key points that you found to the class, so we can all learn some of the ways to be safe online.

Unit of Instruction - How Computers Work

Big Idea: Systems

Conceptual Rationale:

Computer hardware and software are integral parts of everyday life and are likely to become more prevalent. It is important for students to have a basic understanding of the various components that make computers function and how hardware and software interact. It is also important for students to understand the Universal Systems Model, as this can be used to explain not only how computers function, but all systems in general.

Established Goals:

NYS Learning Standards for Math, Science, and Technology

Standard 2: Information Systems

Standard 5: Technology

Standard 7: Interdisciplinary Problem Solving

NYS Learning Standards for English Language Arts

Standard 1: Language for Information and Understanding

Standard 4: Language for Social Interaction

Time Frame: Approximately 6 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• What do computers do?• Why is it important to know how computers work?• How are all computers the same?• How are all computers different?	<p>Students will understand...</p> <ul style="list-style-type: none">• The purpose of the Universal Systems Model.• The difference between hardware and software and their purpose for proper functionality of a computer.• That computers are becoming more advanced and the components are constantly changing.• That each component of a computer has a function for proper functionality.• All computers are typically made up of the same components, but not every computer is the same.• That there are various steps and precautions that need to be taken in order to install and remove computer components.
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<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • That computers are made up of many different parts that work together to execute processes. • The name and function of each part of a computer. • How to open up and access the internal components of a computer. • How to install and remove different computer components. 	<p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> • Explain the Universal Systems Model and give examples. • Describe the purpose of software and how it controls the activities within the computer. • Identify various hardware components and explain the purpose/functions of each. • Determine how to open up a computer and safely remove or install hardware. • Determine which components are essential and which are peripheral.
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Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - How Computers Work

Big Idea: Systems

Topic: Basic Computer Hardware Components

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 2 class periods

Aim:

- Determine what your individual hardware component is and what its purpose is.
- Present your findings to the class.
- Record the information about the other various computer components.

Motivation:

- What are some computer parts that you know?
- What is a component?
- Do all computers use the same parts?

Essential Questions: <ul style="list-style-type: none">• Why is it important to know how a computer works?• How are all computers the same?• How are all computers different?	Students will understand... <ul style="list-style-type: none">• All computers function in the same basic manner.• Not all computers contain exactly the same components.• Certain components are absolutely necessary for the computer to function.• Other components are not necessary for the computer to function but are rather peripheral or extra.
Students will know... <ul style="list-style-type: none">• What the basic computer components are.• The basic functions of each computer component.• The meaning of the term peripheral.	Students will be able to... <ul style="list-style-type: none">• Identify basic computer hardware components.• Describe the basic function(s) of various computer components.

Misunderstandings:

- Students who have some experience with computers may have heard of different computer components previously but had a prior misunderstanding about their function that may confuse them.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Learning Experiences:***Procedure:***

1. The teacher will distribute various computer components to each student.
2. Each student will individually research the answers to several questions about their component.
3. After being given an appropriate amount of time to find the answers about their individual component, students with the same component will group together and compare findings.
4. Students with like computer components should add any additional information about their component that the other did not find before sharing the information with the rest of the class.
5. Student groups will share their findings with the class.

Student Activity

1. Students will use the Internet during class to research the answers to several questions given about their topic.
2. Students should create a new Google Document to record their answers.
3. Once the allowed time has passed, each student with the same component will compare their findings and trade any information that the other did not find.
4. After all students have completed researching the necessary information about their computer component, they will share their findings with the class.
5. All other students should write a brief one or two sentence summary about each component as the other groups present their findings.

Summary Wrap-up

1. The teacher will discuss any additional information that was not mentioned about each computer component by the student groups as well as provide tangible examples for students to examine.
2. After reviewing the computer components, students will be required to create a webpage to act as a study guide on the various computer components.
3. Students should create a new web page on their Google Site and write a brief one or two sentence description of the component as well as include an image of the component.
4. Students will be asked to study their study pages, notes, and any additional teacher information before being given a short matching quiz on the functions of the computer components.

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Unit of Instruction - Google Documents

Big Idea: Productivity

Conceptual Rationale:

Google Documents is a free cloud based suite of software that allows students to create documents over the Internet and collaborate with other users simultaneously. Using this software students will have an opportunity to create documents similar to Microsoft Office and learn similar skills. Cloud computing is becoming more prevalent and Google Documents gives students practical hands-on experience with this new productivity software.

Established Goals:

NYS Learning Standards for Math, Science, and Technology
Standard 2: Information Systems
Standard 5: Technology
Standard 7: Interdisciplinary Problem Solving
NYS Learning Standards for English Language Arts
Standard 1: Language for Information and Understanding
Standard 4: Language for Social Interaction

Time Frame: Approximately 15 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• Is it better to use Google Documents or Microsoft Office?• Is collaborating with a group more effective than working alone?• What qualities of software make it more effective than another?• Is cloud computing a better way to store and access documents?	<p>Students will understand...</p> <ul style="list-style-type: none">• As with all technologies, Google Documents has both positive and negative aspects.• Google Documents allows users to create documents similar to Microsoft Office.• That documents created with Google Documents and Microsoft Office are somewhat compatible.• Google Documents allows users to share files and collaborate over the Internet.• The tools they are using in Google Docs are similar to those in Google Sites.
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<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • How to log in and access Google Documents. • The purpose of the different Google Document types. • The procedure for creating different documents and editing sharing and permissions. 	<p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> • Create word processing documents using Google Docs. • Create effective slideshows using Google Presentations. • Create fillable forms using Google Forms and use the data that users submit. • Create spreadsheet documents using Google Spreadsheets. • Incorporate the functions of Google Sites and Google Documents.
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Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - Google Documents

Big Idea: Productivity

Topic: What is Google Documents?

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 1 class period

Aim:

- Discuss what is Google Documents
- Discuss what kinds of documents can be created
- Discuss the advantages/disadvantages of using Google Documents
- Access Google Documents
- Explore the available options and tools that will be used throughout the class

Motivation:

- Are there any disadvantages of using Microsoft Office?
- If you are working on a project with another student, how can you continue to work if they are absent?
- What is collaboration and why is it important?

Essential Questions: <ul style="list-style-type: none">• Which is more effective, Google Documents or Microsoft Office?	Students will understand... <ul style="list-style-type: none">• Google Documents is an effective tool to create documents and collaborate.• Google Documents and Microsoft Office are relatively similar.• Both Google Documents and Microsoft Office have advantages and disadvantages.
Students will know... <ul style="list-style-type: none">• How to access Google Documents using their BMCHSD Google account.• What types of documents can be created using Google Documents.• The different sharing and permissions options that are available.	Students will be able to... <ul style="list-style-type: none">• Access Google Documents.• Create a new word processing document, a slideshow, a spreadsheet, and a form.• Add or modify permissions to allow other people to access their documents or collaborate.

Misunderstandings:

- Students may be unaware at the early part of this class that their Google login information is the same as their school network login information.

- Students may not be aware of what Microsoft Office programs are meant for which documents types.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Learning Experiences:

1. Students will begin by answering the motivation Do Now question to begin thinking about the lesson for the class period.
2. Teacher will discuss the connection between Google Documents and Microsoft Office and ask students what the different Microsoft Office programs are used for.
3. Teacher will demonstrate to the class how to access Google Documents.
4. Teacher will demonstrate to the class how to create various document types and explain which Microsoft Office program could have been used to create it instead.
5. Teacher will demonstrate how to add “Can View” and “Can Edit” permissions to documents.
6. Students will individually create a sample document to explore the functions of Google Documents and write their name and class period in the document. They may change the font, size, and color however they like to acquaint themselves with how to use the document editing tools. Each student will then add the teacher to the Sharing and Permissions menu with “Can Edit” rights.
7. The teacher will check each student document as they appear and within each document, indicate that the student may proceed to the next step of the activity.
8. Students will write 3 questions in their sample document and then add three other students to the sharing and permissions menu.
9. Each student will answer a question in another students document.
10. If any time remains and all individual/cooperative activities are completed, the student will be asked to create a Google Site page with a link to Google Documents and explain the advantages/disadvantages of using both Google Documents and Microsoft Office.
11. At the end of the class period, students will be asked to stop working and the teacher will review the information discussed, asking students questions to check for understanding.

Assessment:

- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Unit of Instruction - Introduction to Engineering

Big Idea: Problem Solving

Conceptual Rationale:

Problem solving is an invaluable skill that is utilized in nearly all subject areas therefore it is important for students to have an introductory understanding of how to use problem solving and engineering skills. This unit also serves as a brief introduction to Project Lead The Way which is the focus of Technology 8 as well as an introduction to the other ways that computers can be used other than for educational or entertainment purposes.

Established Goals:

NYS Learning Standards for Math, Science, and Technology
Standard 2: Information Systems
Standard 5: Technology
Standard 7: Interdisciplinary Problem Solving
NYS Learning Standards for English Language Arts
Standard 1: Language for Information and Understanding
Standard 4: Language for Social Interaction

Time Frame: Approximately 4 class periods

<p>Essential Questions:</p> <ul style="list-style-type: none">• Can you have more than one solution to a problem?• How do <i>you</i> solve problems that you know the solution to?• How can you find a solution to a problem that you don't know the solution to?• Why is there a design process?	<p>Students will understand...</p> <ul style="list-style-type: none">• That not every problem has one single solution.• Problems can be solved more effectively when using a systematic approach.• The first solution to a problem is often not the best one.• The process of engineering involves analyzing results and determining if the solution is effective.
<p>Students will know...</p> <ul style="list-style-type: none">• How to use the basic functions of West Point Bridge Designer.• How to use the basic functions of Autodesk Inventor.• How to access and use Fantastic Contraption which is available online.	<p>Students will be able to...</p> <ul style="list-style-type: none">• Design and build a functioning bridge using West Point Bridge Designer.• Design an object using tools in Autodesk Inventor.• Solve the different puzzles using creative problem solving skills.• Examine results of tests and improve their solution to different problems.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of student created websites
- Utilization of teacher website
- Application of Common Core Standards including reading and writing

Assessment:

- Quizzes and tests
- Satisfactory completion of assigned tasks
- Satisfactory completion of website portfolio tasks
- Successful application of newly acquired skills and prior knowledge

Sample Lesson Plan - Introduction to Engineering

Big Idea: Problem Solving

Topic: West Point Bridge Designer

Established Goals:

- NYS Learning Standards for Math, Science, and Technology
 - Standard 2: Information Systems
 - Standard 5: Technology
 - Standard 7: Interdisciplinary Problem Solving
- NYS Learning Standards for English Language Arts
 - Standard 1: Language for Information and Understanding
 - Standard 4: Language for Social Interaction

Time Frame: Approximately 2 class periods

Aim:

- How can you design a bridge thinking about both form and function?

Motivation:

- Show a picture of the Tacoma Narrow Bridge, and ask to compare to the Brooklyn Bridge E.R. - They look similar, one is thinner than the other, both suspension bridges
- Show the video of the Tacoma Narrows Bridge Collapse
 - Have the students think about in groups what might have caused the collapse

Essential Questions: <ul style="list-style-type: none">Why is there a design process?How come things look the way they do?Where else do you think that form and function would play a role in design?	Students will understand... <ul style="list-style-type: none">What an object's form is.What an object's function is.How the form of an object affects the function of it.That there is a systematic process when designing something.
Students will know... <ul style="list-style-type: none">The difference between the form and function of an object.How changing the form of an object can affect its function.There is design process involved in creating anything.	Students will be able to... <ul style="list-style-type: none">Define what form isDefine what function is.Discuss how the form of an object can affect the function of it.Learn from their previous design to improve on the next.

Misunderstandings:

- Students never think about the process that went into a finished product, they just assume it worked on the first try.
- Students may never think about the shape of the bridges and why they have so many of them around them in our area.

Student Orientation / Teaching Strategies:

- Teacher directed instruction and demonstration
- Hands on individual involvement
- Cooperative learning and sharing
- Utilization of teacher website

- Application of Common Core Standards including reading and writing

Learning Experiences:

Procedure:

Define **Form** and **Function**

Form: external appearance of a clearly defined area

Function: the purpose for which something is designed or exists

Have students turn and talk with their neighbor

Which one do you think is more important?

E.R: function, because it is why it is made

Form, because it has to look good

What does art have to do with bridge design?

E.R.: things should look pretty, people have to like it

How can we tell if the bridge is functional?

E.R: Test it!

Lead into the West Point Bridge Builder program

Student Activity

Have students open up the program and load in a sample bridge design

Choose the *Suspension Bridge* (40 Meter Span)

Then click on OK to load in the bridge

Have students turn and talk to their other neighbor

Compare the look of the bridge to the designs that they have seen

Is it a similar design to the others?

How can we test the way that this bridge works?

(Show how to Load Test the bridge)

Talk about what the colors mean (Blue, red, white)

Show the students the basic tools and then begin tweaking their bridge

Let the students use the design program for 7-10 minutes and change their bridge xxx

Summary Wrap-up

Have some of the students share their bridge design

Ask them to talk about the form of the bridge as well as the function

What made their bridge stronger or weaker when you changed things?

What worked best?

How does the form of the bridge affect its function?

Assessment:

- Satisfactory completion of assigned tasks
- Successful application of newly acquired skills and prior knowledge