Englewood Public School District
Technology
High School

Educational Technology

Overview: Over the course of the school year, students will learn important technological skills to facilitate and amplify their learning and their knowledge of 21st century skills.

Time Frame: One school year

Enduring Understandings:
Technological tools facilitate learning.
Technological skills and knowledge are important in 21st century life.

Essential Questions:
What is Netiquette?
How can we be responsible digital citizens?
How do we use technology to conduct research?

Standards	Topics and Objectives	Activities	Resources	Assessments
8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work. 8.1.12.D.2 Evaluate consequences of unauthorized electronic access (e.g., hacking) and disclosure, and on dissemination of personal information. 8.1.12.D.3 Compare and contrast policies on filtering and censorship both locally and globally.	**Topics** Netiquette Online Safety Digital Citizenship Twenty-First Century Themes and Skills include: • Informational Literacy • Media Literacy • ICT Literacy • Creativity and Innovation • Critical Thinking and Problem Solving • Communication and	Instructors can select from a large variety of PowerPoint presentations from Purdue University to address netiquette issues in high school. 1. Licking the Security Stamp 2. Information Security Boot Camp 3. Privacy Primer 4. Copyright and Turnitin 5. Viruses 6. Viruses and Firewalls 7. Web Site Evaluation 8. Site Credibility	CERIAS - Lesson Plans / Presentation Handouts, Purdue University https://www.cerias.purdue.edu/site/education/k-12/teaching_resources/lessons_presentations/ Discussion Board Netiquette https://youtu.be/DwdqQjCfWSc	Students will be evaluated on their participation and completion of the activities (Instructor will select from the following): 1. Ethics and MP3's: A WebQuest 2. Internet Hoax Scavenger Hunt 3. Copyright 4. Safe Surfing

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and present your research to peers.	Collaboration **Objectives** • Students will reflect on the positive and negative impacts of digital media on society. • Students will identify some benefits of sharing information online. • Students will reflect on the risks of sharing inappropriate information online. • Students will think critically about what to post and share online. • Students will identify the different forms of cyberbullying.	Instructors can select from a large variety of lessons plans from Purdue University to address netiquette issues in high school: 1. Ethics and MP3s: A WebQuest 2. Internet Hoax Scavenger Hunt 3. Copyright 4. Safe Surfing Students will watch a video that reviews netiquette practices. YouTube		
8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue. 8.1.12.C.1 Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community. 8.1.12.D.4 Research and understand the positive and negative impact of one's digital footprint.	**Topics** Internet Research Twenty-First Century Themes and Skills include: • Informational Literacy • Media Literacy • ICT Literacy • Creativity and Innovation • Critical Thinking and Problem Solving • Communication and Collaboration **Objectives**	Picking the Right Search Terms Students learn that words they choose to type into a search tool, such as Google, have a direct connection to the sources that are suggested and their results. Students practice taking real-world questions and topics and convert them into a set of search terms to use for developing queries. Global Digital Citizen Foundation Understanding Search Results Students read results to confirm if they asked the right questions, and then annotate a search results page to set up	15 Lesson Plans for Making Students Better Online Researchers, Global Digital Citizen Foundation https://globaldigitalcitizen.org/15-lesson-plans-for-making-students-better-online-researchers High School Research Competitions, eBird http://ebird.org/content/ybn/resources/high-school-research-projects/ 1. AMNH Young Naturalist Awards 2. Intel Science Talent Search 3. Siemens Competition in	Students will be evaluated on their participation and completion of the activities: 1. Picking the Right Search Terms 2. Understanding Search Results 3. Evaluating Credibility of Sources 4. Your Digital Footprint: Leaving a Mark 5. College Bound 6. Greedy Computer

8.1.12.D.5 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

- Students will refine searches by using advanced search options.
- Students will plan and manage activities to develop a solution or complete a project.
- Students will use multiple processes and diverse perspectives to explore alternative solutions.
- Students will conduct advanced research for English, mathematics, science, and social studies topics.
- Students will solve problems related to English, mathematics, science, and social studies.

an array of tactical and strategic decisions. Global Digital Citizen Foundation

Evaluating Credibility of Sources
Students participate in an activity where they work on a fictitious site to highlight the importance of using unbiased, reliable, and accurate information. Global Digital Citizen Foundation

Your Digital Footprint: Leaving a Mark
In a digital world and information-sharing age, it can sometimes be hard to understand where privacy ends and what the real risks are. In this lesson students will learn about the rights and responsibilities they have as digital citizens, and gain awareness of steps they can take to be safe and secure, and be empowered to make smart choices in order to remain in control of their digital reputation. Teaching Digital Citizenship

College Bound
Students learn that everything they or anyone else posts about them online becomes part of a public online presence known as a digital footprint. Using the Admissions Packet Student Handout, they view

Math, Science, and Technology
4. Junior Science and Humanities Symposia
5. Google Science Fair

Your Digital Footprint, Teaching Digital Citizenship
http://www.teachinctrl.org/lessons/yourdigitalfootprint.php

College Bound, Common Sense Education
https://www.commonsensemedia.org/educators/lesson/college-bound-9-12

Teach your students about social conscience with DoSomething.org, where every week begins with a new challenge to save the planet, feed the poor, or stop bullying. Join more than 2.5 million teens around the world, in changing the world together. www.dosomething.org

Greedy Computers, Science NetLinks
http://sciencenetlinks.com/science-news/science-updates/greedy-computers/

elements of two students' digital footprints and consider how the footprints might affect those students' admission to college. Common Sense Education

Students can select from five research competitions. eBird
1. AMNH Young Naturalist Awards
2. Intel Science Talent Search
3. Siemens Competition I Math, Science and Technology
4. Junior Science and Humanities Symposia
5. Google Science Fair

Within English, mathematics, science, or social studies courses students will produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

Using DoSomething.org, or some other online collaborative tool, students will develop an innovative solution to a real- world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.

Using DoSomething.org, or some other online collaborative tool, students will collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue.

Select digital tools or resources to use for a real-world task in English, mathematics, science, or social studies and justify the selection based on their efficiency and effectiveness.

Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.

Greedy Computer
On the surface, computers seem like an environmentalist's dream: they replace reams of wasted paper with streams of bits and bytes. But the truth is that paper consumption has skyrocketed during the computer age. And computers pose many other environmental challenges that we've barely begun to deal with. During this lesson students consider the environmental challenges posed by computers. NetLinks

| 8.1.12.A.1 Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.

8.1.12.A.2 Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review. | **Topics**

Microsoft Word

Internet-based Drives (Google Apps for Education)

Video Conferencing (Skype, ooVoo or other)

Twenty-First Century Themes and Skills include:
• Informational Literacy
• Media Literacy
• ICT Literacy
• Creativity and Innovation
• Critical Thinking and Problem Solving
• Communication and Collaboration

Objectives

• Students will know how to access and use Google Docs.
• Students will compare Google Docs and Microsoft Word (or another word processing program)
• Students will manage files and folders on a hard drive and on an Internet-based drive, such as Google drive. | Students consider the capabilities and limitations of Google Apps versus Microsoft.

Students will create a digital portfolio using a variety of digital tools and resources in English, mathematics, science, and social studies.

Students will produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review in English, mathematics, science, and social studies.

Students create an annotated bibliography in English, mathematics, science, or social studies using Microsoft word or Google Docs. | Google Apps for Education vs. Microsoft 365, Campus Suite
https://www.campussuite.com/google-apps-education-vs-microsoft-365-for-education/

Office 365 for Education vs. Google Apps for Education, CloudAlly
http://www.cloudally.com/office-365-for-education-vs-google-apps-for-education/

Google Drive:
https://tools.google.com/dlpage/drive

Getting Started with Google Drive
https://support.google.com/drive/answer/2424384?hl=en

What is Google Drive
http://www.gcflearnfree.org/googledriveanddocs/1.2

The Global Classroom Project: Collaborative Projects
http://theglobalclassroomproject.org/category/our-contributors/pernille-ripp/

Cool Ways to Use Skype in the Classroom
http://www.teachhub.com/using-skype-classroom

ooVoo – Synchronous video chat or video recording
http://www.oovoo.com/home.aspx | Students will be evaluated on their participation and completion of the activities:
1. Digital Portfolio
2. Multi-page Digital Document
3. Annotated Bibliography |

List of Internet Field Trips
http://expage.com/internetfield trips

Topics

PowerPoint

Google Slides

Twenty-First Century Themes and Skills include:
- Informational Literacy
- Media Literacy
- ICT Literacy
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Objectives

- Students will add text boxes and format slides in both PowerPoint and Google Slides.
- Students will change line and paragraph spacing in PowerPoint and Google Slides.
- Students will create multi-level bulleted and numbered lists in both PowerPoint and Google Slides.
- Students will add shapes and graphics to a slide in both PowerPoint and

Students learn how to use PowerPoint to construct presentations.

Students create their own Adventure Story using PowerPoint or Google Slides. Because slides can contain hyperlinks to other slides, students could build a whole story where the reader chooses different options at key points in the story, leading them down completely different paths.

Students create a PowerPoint or Google Slides tutorial for a topic in English, mathematics, science, or social studies and add features such as video and animation.

Instructors can create a Google presentation and then create a slide for every student in the class. Students can use it as a quick "do now" activity, as an exit ticket or other type of formative assessment. When finished, let them scroll through other students' slides (and add comments!) or display on a projector.

YouTube PowerPoint Lesson 1, YouTube
https://youtu.be/DEHUdiXdyv0

Microsoft PowerPoint Lessons, Utah State University
http://ocw.usu.edu/instructional-technology-learning-sciences/computer-applications-for-instruction-and-training/Microsoft_PowerPoint_-_Lesson_1.html

Getting Started with Google Slides, Ten Google Slides Activities to Add Awesome to Classes, Ditch that textbook
http://ditchthattextbook.com/2015/02/02/10-google-slides-activities-to-add-awesome-to-classes/

Getting Started with Google Slides, Applied Education Systems
http://www.aeseducation.com/blog/2016/02/google-slides-fundamentals

Students will be evaluated on their participation and completion of the activities:
1. Adventure Story
2. Subject Area Tutorial
3. Subject Area Vocabulary

	Google Slides. • Students will insert table and chart slides in both PowerPoint and Google Slides. • Students will apply slide transitions between slides in both PowerPoint and Google Slides.	Students make their own vocabulary presentations by using PowerPoint or Google Slides to illustrate pertinent vocabulary in English, mathematics, science, and social studies courses.	
8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results. 8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results.	**Topics** Excel Google Forms Twenty-First Century Themes and Skills include: • Informational Literacy • ICT Literacy • Critical Thinking and Problem Solving • Communication and Collaboration **Objectives** • Students will enter and edit cell content. • Students will insert data by using AutoFill. • Students will sort and filter lists. • Students will insert and modify formulas. • Students will use date and time, financial, and logical functions.	Students conduct a peer survey and display the data using Microsoft Excel or Google Forms. Students consider their social media use by asking other students to complete an anonymous survey and then graph the results using Excel or Google Forms. In English, mathematics, science, or social studies, students combine the use of mobile devices, QR Codes, and Google Forms to create a learning expedition. Student teams locate QR codes using the student-created directions and access content/videos and then submit a response using Google Forms.	Excel Lessons, Kutztown University http://faculty.kutztown.edu/schaeffe/Excel/Excel.html Microsoft Excel, Kenston High School: 1. Gradebook Assignment 2. Gradebook Rubric 3. Candy Spreadsheet http://www.kenston.k12.oh.us/khs/academics/computer-apps/computer-app-web.php Teaching with Excel, Chichester High School www.txkisd.net/curriculum/.../Excel/Teaching%20with%20Excel.doc Lesson Plans-Chichester High School http://forum.swarthmore.edu/workshops/chichester/lessons.html Analyzing Data Using Excel http://www.microsoft.com/education/tutorial/online/excel.asp	Students will be evaluated on their participation and completion of the activities: 1. Peer Survey 2. Anonymous Survey 3. QR Codes

Microsoft-Graphing
http://www.microsoft.com/education/tutorial/classroom/off97/graph.asp

Microsoft-Mail Merge
http://www.microsoft.com/education/tutorial/classroom/off97/merge.asp

Microsoft: Hands on Exercises
http://www.microsoft.com/education/tutorial/classroom/off97/exlab1.asp

Microsoft - Excel Lesson Plans
http://www.beavton.k12.or.us/vince/micapp.html

Excel in the Classroom (COOL!)
http://www.esc20.k12.tx.us/techserv/workshops/msoffice/excel/default.html

Spreadsheet Lesson Plans - Grades 4-12
http://canadateachers.about.com/cs/spreadshtlessons/index.htm?once=true&iam=dpile&terms=+Excel++spreadsheet++classroom

A+ Educational Software Lessons
http://canadateachers.about.com/cs/softwarelessons/index.htm?once=true&iam=dpile&terms=+Excel++spread

sheet++classroom

Lesson: Spreading
Christmas Cheer Using
Spreadsheets
http://kidsmath.about.com/
gi/dynamic/offsite.htm?site
=http%3A%2F%2Fwww.ta
mu-
commerce.edu%2Fcoe%2F
shed%2Fespinoza%2Fs%2
Ftschoerner-h-lp1.html

Lesson: Class Picnic
Budget
http://www.dpi.state.nc.us/
Curriculum/Computer.skill
s/lssnplns/SSlesson.G6.2.3.
1.html

Computer Applications
(Look under Spreadsheets
Section)
http://www.angelfire.com/k
s/tonyaskinner/computer.ht
ml

Graphing Projects
http://www.hellgate.k12.mt
.us/bldg2/first/bessette/exce
l.htm

16 Ideas for Student Projects
Using Google Docs, Slides
and Forms, Cult of Pedagogy
http://www.cultofpedagogy.co
m/google-student-projects/

The NEW Google Forms: 9
Classroom Uses, Ditch that
Textbook
http://ditchthattextbook.com/2

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue. 8.1.12.B.2 Apply previous content knowledge by creating and piloting a digital learning game or tutorial.	**Topics** Digital Tools Twenty-First Century Themes and Skills include: • Informational Literacy • Media Literacy • ICT Literacy • Creativity and Innovation • Critical Thinking and Problem Solving • Communication and Collaboration **Objectives** • Students will collaborate in online courses or networks to solve a community problem. • Students will use digital learning games.	In English, mathematics, science, and social studies courses, students will evaluate or refine a technological solution to reduce the impact of humans on natural systems. In English, mathematics, science, and social studies courses students will use multiple sources and sustained research to present and identify the issue, and prior attempts to solve it. In English, mathematics, science, and social studies courses, students will collaborate online to further research other perspectives on the issue(s), previous solutions and their impact(s). In English, mathematics, science, and social studies courses, students will pose a self-generated question to prepare a report to increase knowledge and awareness regarding the issues. In English, mathematics, science, and social studies courses, students will demonstrate understanding by recommending strategies to decrease or resolve the issue.	Community Lessons: Integrating Service-Learning Into K-12 Curriculum, The Massachusetts Department of Education www.doe.mass.edu/csl/comlesson.pdf Tell Your Story on Digital Learning Day, Edutopia https://www.edutopia.org/digital-learning-technology-resources Use of Technology in Teaching and Learning, US Department of Education https://www.ed.gov/oii-news/use-technology-teaching-and-learning Website for Digital Learning Games and Interactive, National Education Association http://www.nea.org/tools/lessons/56481.htm 1. Eduweb: Portfolio contains digital learning games and interactives suitable for grades K-12. Resources are grouped under featured, subject, grade, client, and those for mobile. Subjects represented are history,	Students will be evaluated on their participation and completion of the activities: 1. Technological Solution 2. Issue Research, Collaboration, Report, and Strategies

earth & space science, engineering & technology, natural history, the arts, geography & economics, health, and reading. Eduweb develops activities for museums, zoos, and other educational organizations. Some activities will be on client websites.

2. Be a Spacecraft Engineer introduces students to elements of spacecraft design using the STARDUST spacecraft and the International Space Station as examples.

3. Shedd Educational Adventures (SEA) features six aquatic science interactives covering grades K-12. Two Build-a-Fish and Squish the Fish) are in available in Spanish as well as English. Lesson plans and fact sheets are provided.

4. Where in the World and What in the World is Money? takes players to different times and places. As they get home, players learn about forms of exchange have been used as money.

Modifications:
- New Jersey Department of Education – Instructional Supports and Scaffolds
- Suggested Strategies for English Language Learners
- The educational technology curricula provides enrichment activities that allow for greater personalized learning to meet the needs of all learners including students with gifts and talents.

Vocabulary:

Application software - A program that performs a specific function.

Bit: A fundamental unit of information having just two possible values, either 0 or 1.

Boot Sector Virus - A virus that infects the start-up files.

Byte - A sequence of adjacent bits, usually eight, operated on as a unit by a computer.

CD-R - Compact disc on which you can write only once and thereafter is read-only.

CD-ROM - A compact disk that functions as read-only memory.

CD-RW - Compact disk-rewritable.

Circuits - (a) A closed path followed or capable of being followed by an electric current. (b) A configuration of electrically or electro magnetically connected components or devises.

Computer Virus - Programming code created as a prank or as a malicious action that secretly affects other programs and causes unwanted consequences.

CPU - Central processing unit. The "brains" of the computer. The CPU is housed on a tiny silicon chip that contains millions of switches and pathways that help your computer interpret and execute instructions.

Digital Audiotape: A format for storing music on magnetic tape.

DVD-ROM - Digital video disk, better capabilities.

File server - A computer that is dedicated to running applications and storing data, which can be shared with other workstations.

File virus - A file that infects the files and programs that are on the hard drive.

Folder - A way to organize files into logical and manageable groups.

Format - Prepares a disk for use on a specific type of drive by imprinting the disk with the information it needs to work in that particular kind of drive. Also the ability to control the appearance and layout of data in a file.

Gigabyte - A unit of computer memory or data storage capacity equal to 1,024 megabytes.

GUI (Graphical User Interface) - A computer interface that enables a user to control the computer and launch commands by pointing and clicking at graphical objects such as windows, icons, and menu items.

Hard Disk - A rigid magnetic disk mounted permanently in a drive unit.

Icons - An image that represents an executable file.

Input devices - Any device used to input data into the computer (keyboard, mouse, scanner, etc.).

IP Address - A unique address assigned to a computer so it may be located across the web.

Kilobyte - A unit of computer memory or data storage capacity equal to 1,024 bytes.

LAN Intranetwork - Local Area Network. A method by which multiple computers and other devices such as printers or scanners are connected within a confined space such as an office building.

Laser - High quality and faster. Uses the same technology as copier machines.

Magnetic storage - Storage device where data is saved (before disks). Much like a reel to reel.

Megabyte - A unit of computer memory or data storage capacity equal to 1,024 kilobytes.

Menus - A list or table of executable options.

MHz - Millions of cycles per second, a unit used to measure clock speed in computers.

Multitasking - The ability of an operating system to run more than one software program at a time.

Operating System software - A type of software that provides an interface between the user or application software and the computer hardware.

Optical Storage - Use of laser technology to read and write data on silver platters.

Output Devices - Device used when reading/looking at output—printer, screen.

Pentium - The name given to Intel's P5 chip, the successor to the 80486. The name was chosen because of difficulties Intel had in trade marking a number. It suggests the number five (implying 586) while (according to Intel) conveying a meaning of strength "like titanium."

Peripheral devices - Devices connected by cable to the CPU of a computer; disk drives and printers are important peripherals.

Pixels - The basic unit of the composition of an image on a television screen, computer monitor, or similar display.

Platform - Compatible computers from one or more manufacturers; the two popular platforms for personal computers are PCs and Macintoshes.

Program - A series of commands and executable files that produce an expected result.

RAM - Random Access Memory. It is the main memory and stores data and programs while the computer is running. When the computer is turned off anything in main memory disappears. Computer can read from and write to this memory.

Resolution - Amount of pixels on the screen. More pixels the better resolution.

ROM – Read Only Memory. A computer chip that stores specific instructions to manage the computer's operation. Unlike main memory, this type of memory is non-volatile—the instructions remain permanently on the chip and cannot be changed.

Silicon chip - a small crystal of silicon semiconductor fabricated to carry out a number of electronic functions in an integrated circuit.

Storage devices - A hardware device, such as a hard disk or floppy disk, used to record and store data.

Terabyte - A unit of computer memory or data storage capacity equal to 1,024 gigabytes.

Time Bomb - Computer virus that does not cause its damage until a certain date or until the system has been booted a certain number of times.

Trojan Horse - A virus that can sneak inside of another file that can be executed at a specific time, or under specific circumstances.

WAN Internetwork - Wide Area Network by which computers over larger geographical areas can be connected.

Worm - A computer virus that makes many copies of itself resulting in the consumption of system resources, thus slowing down or actually halting tasks.

Write-protected -To modify (a file or disk) so that its data cannot be edited or erased.