



CLASSROOMS in ACTION

Your First Stop for K-12 Resources
www.ilclassroomsinaction.org



TECHNOLOGY WITHIN ILLINOIS LEARNING STANDARDS - ENGLISH LANGUAGE ARTS, FINE ARTS, MATHEMATICS, SCIENCE, PHYSICAL DEVELOPMENT/HEALTH AND SOCIAL SCIENCE Compiled by ISBE Content Specialists

6th Grade –
12th Grade

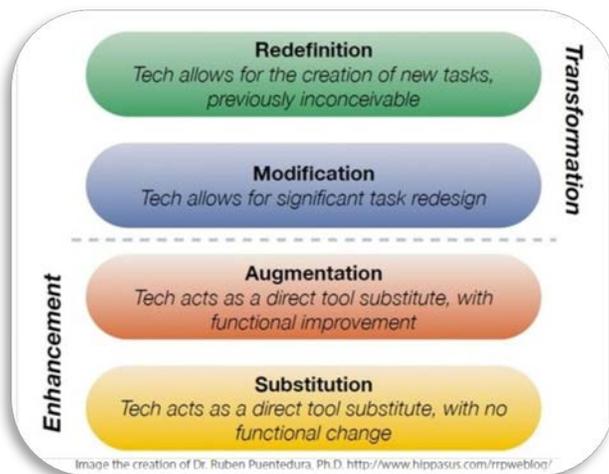


A key component of the *Every Student Succeeds Act* in Illinois is the effective use of technology to improve the academic and digital literacy of all students. Technology can be incorporated into all lessons and activities, but sometimes it is hard to find a starting point. This resource can be used as a guide to give educators some ideas and starting points to connect technology with the standards they are currently using in the classroom.

Many of the Illinois Learning Standards have technology directly written in the standards, English Language Arts has the greatest occurrences. Since all educators teach the English standards, it makes sense those would have more references than others. In this resource, we have included standards from all content areas, choosing standards that didn't directly mention technology, however would best benefit from being supported with technology integration.

Also within the resource are many boxes that show strategies and connections to the Illinois Social Emotional Learning Standards that could be included for the previous technology integration ideas.

STRATEGIES WHEN INTEGRATING TECHNOLOGY



ISTE Standards for Students 2016

Empowered Learner
Digital Citizen
Knowledge Constructor
Innovative Designer
Computational Thinker
Creative Communicator
Global Collaborator

*International Society for Technology in Education

One way of integrating technology into lessons can be accomplished on four levels, called SAMR – Substitution, Augmentation, Modification and Redefinition. The goal is to “jump the line” to modification to increase and change the learning. Most teachers move from all four levels throughout the year.

The technology tools shown within this resource are current as of the publication date. However, since technology is always evolving some tools may no longer be available or could have changed services. To help educators keep up-to-date with the latest resources in a user-friendly environment, we have created an online resource:

www.ilclassroomtech.weebly.com

The screenshot shows the homepage of the 'IL Classrooms in Action Tech for Teachers' website. It features a blue navigation menu on the left with categories like Home, Assessment, Audio/Video, Classroom/Teacher Resources, Computer Science, Content Areas, Digital Portfolios, Digital/Print Creation, Google Integration, Interactive Whiteboard, Learning to Code, LMS Platforms, Makers/3D Projects, Microsoft, Mobile APPS, Open Educational Resources, Presentation/Visual Arts, Research Tools, Social Emotional Learning, and Social Needs. The main content area includes a search bar, a 'NEW Facebook Page' section with a welcome message, and a 'Welcome!' section with a brief description of the site's purpose.

ENGLISH LANGUAGE ARTS

The College and Career Readiness Anchor Standards form the backbone of the ELA/literacy standards by articulating core knowledge and skills, while grade-specific standards provide additional specificity. Each section uses the same CCR anchor standards but also includes grade-specific standards tuned to the literacy requirements. Each CCR anchor standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR READING

Integration of Knowledge and Ideas

CCR.R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.



Pobble 365

www.pobble365.com

- Visual Story Starters to allow students to create stories and ideas from diverse visual media
- Includes Sentence Challenges and Question Time prompts to help students evaluate the photos



CK-12 Digital FlexBooks

<http://www.ck12.org/>

- Digital interactive “flexbook” textbooks for science, math, geography subjects
- Educators can use chapters or create a custom “book” for use online, tablet or downloadable PDF with interactive links to media.

Watch, Know, Learn

<http://www.watchknowlearn.org/>



- Educational Videos -ELA, Math, Fine Arts, Health, PE
- Monthly student contests topics available for middle and high schools that open up great conversations
- Videos created by students as well as professionals to give many perspectives and formats for students to view and evaluate

Integration of Knowledge and Ideas

- RL.6.7 Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they “see” and “hear” when reading the text to what they perceive when they listen or watch.
- RL.7.7 Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
- RL.11-12.7 Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)

Poetry Out Loud

<http://www.poetryoutloud.org/poems-and-performance/listen-to-poetry>



- Website holds a contest for schools in the fall/winter for students on poetry, however the recordings are the bonus in the website to “hear” the poetry
- This audio guide contains distinguished actors and poets reading and speaking about poetry.
- Listen to these tracks to help you or your students master the art of recitation.

Learn Out Loud

<http://www.learnoutloud.com/Free-Audio-Video/Literature>



- There are audio books from classic literature to contemporary, medieval, drama, and short stories
- Some are read by actors and some by the authors themselves
- Educator resources are also available online

Integration and Knowledge and Ideas

- RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- RI.7.7 Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).
- RI.8.7 Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
- RI.9-10.7 Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.

- RI.5.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.



InstakGrok

<https://www.instagrok.com/>

- Innovative, interactive search engine with multimedia components
- Searches “branch out” like a mind map as words are selected within the search
- Results include websites for more information, videos, pictures, definitions and much more.



NBC Learn

<https://www.nbclearn.com/portal/site/learn/resources>

- Great stories, historic news reports, original video content, and current events coverage to engage, inspire and educate K-12 and Higher Ed students.

Supporting SEL standards – **Goal 1-** Incorporate conversations around the emotions of the characters within the stories the students have created. **Goal 2-** Discuss how each student may see a different story within the picture or sentence starter and why each story can be different or the same. **Goal 3-** Discover the community and career connections in the videos/research with the students’ personal neighborhoods or family careers.

COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR WRITING

Production and Distribution of Writing

- CCR.W.6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.



Edublog Website

<http://edublogs.org/>

- Classroom blogging website with teacher controls
- Can include feedback from website visitors reviewing student's writing (monitored by teacher)



Write About

<https://www.writeabout.com/>

- Connect students to a community of writers and an authentic audience to develop growth through the entire writing process
- Create a closed group and partner with another class around the world for feedback
- The free account has some limitation on the number of posts, (enough for a unit or lesson)

Production and Distribution of Writing

- W.6.6 Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.
- W.7.6 Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
- W.8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.
- W.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- W.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.



My Ebookmaker

<http://www.myebookmaker.com/>

- Creates Ebooks with this simple platform that allows users to upload a picture for the book cover, enter a Title and Author(s), organize chapters, enter or copy text into a standard text editor or templates.
- Accounts are free and files can be downloaded into an Epub format that can be transferred directly to e-readers, phones or tablets



Typing.com

<http://www.typing.com/>

- Educators can setup classes to monitor students’ progress.
- Typing games are available on the website that can be managed by educators



Google Docs

<https://gsuite.google.com/learning-center/products/docs/get-started/>

- Student created documents can be edited in real time to collaborate for feedback
- Documents can be shared between student drives and updated by each student (previous versions can be restored if needed)

Supporting SEL standards – **Goal 1-** Recognize personal qualities by creating stories about a special skill or talent students have and share online. **Goal 2-** Build social skills by collaborating with a partner to create a digital book. **Goal 3-** Contribute to the well-being of the class by helping others persevere when learning to type becomes frustrating.



Research to Build and Present Knowledge

CCR.W.8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.



Google Scholar Search

<https://scholar.google.com/>

- Simple way to broadly search for scholarly literature.
- Users can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites.



PlagTracker

<http://www.plagtracker.com/>

- Students can type or paste text into the text box and submit for verification
- The website will review and search for passages within minutes and return locations that match

Supporting SEL standards – **Goal 1-** Support self-awareness skills within the community by researching community resources students enjoy. (Parks, Sports, Landmarks...etc.) **Goal 2-** Recognize individual and group similarities and differences by researching cultural traditions. **Goal 3-** Apply decision making skills to academic success based on choices.

Research to Build and Present Knowledge



- W.6.8 Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
- W.7.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- W.8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- W.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- W.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and over-reliance on any one source and following a standard format for citation.



Internet Public Library 2

<http://www.ipl.org/>

- Specific sections for Kids, Teens, Newspapers, Special Collections. Can search by subject
- An online library curated by over 20 universities for the last 20 years (Currently no active “librarian” to ask questions.)



Microsoft OneNote Notebook online

<https://www.onenote.com/hrd>

- Educators can create a “class” notebook for students to share space for a particular project or students can have their own notebook to manage notes for each class subject.
- Items can be “clipped” from web searches and automatically include cited notations linked within the notebook for listing sources.



EasyBib Educational

<http://info.easybib.com/easybib-edu>

- Citation and bibliography creation tool that is available online, Chromebook extension and an app for iOS and Android. (All devices can connect to the same account.)
- Multiple projects can be within one account and a complete bibliography will be generated.

Supporting SEL standards – **Goal 1** Demonstrate skills to achieve personal and academic goals using a note taking tool to create long and short term goals. **Goal 2** – Cite resources when recognizing the feelings and perspectives of others when students are learning to paraphrase. **Goal 3-** Demonstrate decision making skills using a shared notebook to create classroom rules.

COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR SPEAKING AND LISTENING

Comprehension and Collaboration

CCR.SL.2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.



Lino <https://answergarden.ch/>

- A sticky note bulletin board interface for collaboration.
- The free account allows for a collaborative session of posts on several boards in real-time.



Popplet Website

<http://popplet.com/>

- Mind mapping resource that uses graphics to make connections (iPad app available)
- Students can present information from many media resources on one platform for the class to evaluate



Comprehension and Collaboration

- SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.
- SL.8.2 Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.
- SL.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.



Mircrosoft SWAY

<https://sway.com/>

- Educators can upload photos, templates, PowerPoint slides to create presentation videos that can be viewed on any platform by students independently
- Many tutorials available to learn how to use this resource



Animoto

<https://animoto.com/>

- Simple video platform to import pictures, add music. There are built in layouts and transitions.
- Educators can get the full version for free by selecting “apply” for an upgrade.



EdPuzzle

<https://edpuzzle.com/>

- Video platform where educators can import videos from the web or upload their own and add questions throughout to check for understanding
- Questions can be I several formats from multiple choice to short answer
- Educators can create class accounts and see student responses

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying emotions and behaviors in videos and texts. **Goal 2** – Practice interpersonal skills by choosing texts and videos that have characters facing situations like not sharing, not apologizing or making false accusations. Have students create videos on how to respond in those situations. **Goal 3-** Demonstrate how to follow class rules by students making PSA (public service announcements) videos of new students.

Presentation of Knowledge and Ideas

- CCR.SL.5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.



easelly Website

<https://www.easel.ly/>

- Infographics creation with simple to use templates and instructions
- Students can make a graphic poster to show such as - Agriculture of Illinois, Population of Chicago...etc.

Presentation of Knowledge and Ideas

- SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
- SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.
- SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
- SL.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
- SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.



Adobe Spark

<https://spark.adobe.com/>

- A resource for creating videos, pages and audio. It is unique because users can start in the online platform, then continue an iPad, then switch to using a Chromebook, etc.
- Adobe also hosts or stores all the files for easy access from any location, so students can work from home.



Animoto

<https://animoto.com/>

- Design video slide shows with powerful features including music and built-in video styles.
- Many of the layout and creation tools are taken care of by the program so it is only necessary to drag and drop of the photos.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying and managing one’s own behaviors by having students create digital projects about what is challenging about school or what their family like to do together. **Goal 2 –** Demonstrate an ability to prevent, manage, and resolve interpersonal conflicts in constructive ways. Have students create multimedia projects that identify bullying behavior and how it affects people, or describe ways to stop rumors. **Goal 3-** Demonstrate responsible behaviors in a community context by creating a community project media project.

WRITING STANDARDS

Text Types and Purposes

- W.6.2, Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content
- W.7.2, W.8.2
- W.6.2.a Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- W.7.2.a
- W.8.2.a Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- W.9-10.2, Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.11-12.2
- W.9-10.2.a Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- W.11-12.2.a Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.



Google Slides (or PowerPoint)

<http://google.com>

- Presentation creation that allows for text formatting and multimedia embedding
- Both platforms have iOS, online and Chromebook versions



Big Huge Labs

<http://bighugelabs.com/>

- Students can create many graphics using built-in templates and saved to be imported to other documents
- Educators are offered a free account with verified school ID (see login info on website)



Plotly

<https://chrome.google.com/webstore/detail/plotly/khajkhinhlhaenlhpodnblkmpdgcne>

- Chrome App that allows students to create graphs and charts easily without an account
- Import information from Google Drive, share online and in presentations

Supporting SEL standards – **Goal 1-** Increase self-awareness and self-management by creating projects showing positive strategies for handling conflicts and strategies for upsetting situations. **Goal 2 –** Increase social awareness by creating projects that recognize individual and group similarities and differences, or recognize the different social groups in school. **Goal 3-** Students can create texts that help others avoid dangerous situations (e.g., unsupervised sports, walking in areas where you feel unsafe, biking without a helmet, hanging around with peers who use drugs).

LANGUAGE STANDARDS

Vocabulary Acquisition And Use

- L.6.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
- L.6.4.c Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
- L.7.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies.
- L.7.4.c Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.

- L.8.4 Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.
- L.8.4.c Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
- L.9-10.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.
- L.9-10.4.c Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.
- L.11-12.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies.
- L.11-12.4.c Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage



Vocabulary.com

<https://www.vocabulary.com/>

- Smart dictionary with an adaptive learning game
- Educators can create a classes and specific lists



Wordflex Touch Dictionary <https://itunes.apple.com/us/app/wordflex-touch-dictionary/id488540344?mt=8>

- The app “branches” out when a word is typed to show pronunciations, meanings, root words, origins...etc.
- Users can email a poster of the word tree or save it.

Memidex

<http://www.memidex.com/>



- online dictionary/thesaurus and more.... It has a simple interface when the page loads.
- Typing in a word and selecting go will return a page that has definitions from over 5 different online dictionaries.
- Upper grades can utilize the comparison factors of multiple texts definitions and many different pronunciations. (There are several dialects to choose from further down the page.)

Supporting SEL standards – **Goal 1-** Develop self-awareness and self-management skills by identifying and defining emotion and feeling words. Students can discover synonymous, antonyms, roots words, origins and even create projects around the words. **Goal 2** – Increase social awareness by playing games in pairs or groups using word lists about emotions, feelings, rules, talents, goals or good decision strategies. **Goal 3-** Students can demonstrate decision-making skills by creating a list of safety strategy words for situations at school.

READING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES 6-8

Integration of Knowledge and Ideas

- RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- RH.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

Read Like A Historian

<https://sheg.stanford.edu/rlh>



- This curriculum teaches students how to investigate historical questions by employing reading strategies such as sourcing, contextualizing, corroborating, and close reading.
- Instead of memorizing historical facts, students evaluate the trustworthiness of multiple perspectives on historical issues.

READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-8

Integration of Knowledge and Ideas

- RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

NIU STEM Read

<http://www.stemread.com/>



- Northern Illinois University (NIU) has carefully selected books rooted in science, technology, engineering, and math (STEM) topics and explore the science behind the fiction.
- A selection of activities to go along with each one, lesson plans and videos to support the books.

CTE Online Educator Resources<https://www.cteonline.org/>

- California resource devoted to connecting educators and leaders within the unique field of Career and Technical Education to quality curriculum models, shared communities of practice, and professional development tools
- Lesson plans on many science and technical fields with texts for middle and high school level students

Integration of Knowledge and Ideas

- RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

**DiRT – Digital Research Tools**<http://dirtdirectory.org/>

- a registry of digital research tools for scholarly use.
- DiRT makes it easy for digital humanists and others conducting digital research to find and compare resources ranging from content management systems to music OCR, statistical analysis packages to mind mapping software.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-8**Text Types and Purposes**

- WHST.6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
- WHST.9-10.2
- WHST.11-12.2
- WHST.6-8.2.a Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- WHST.9-10.2.a Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- WHST.11-12.2.a Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

**Google Drawing**<https://drawings.google.com/>

- Create simple drawings to include in documents
- Integrates with Google Classroom and will work on an interactive white board so the activity could be presented as a whole class process first

**Google Sheets**<https://gsuite.google.com/learning-center/products/sheets/get-started/>

- Google sheets will help students collect and organize data then transform into graphs for visual interpretations
 - An example of a lesson for graphing (for Excel, but works in Sheets)

<http://askatechteacher.com/2010/09/27/71-beginning-graphs-in-ms-excel/>

Production and Distribution of Writing

- WHST.6-8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
- WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
- WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

**My Ebook Maker**<http://www.myebookmaker.com/>

- Students create chapters, book covers, enter within a standard text editor or a template.
- Formatting options include graphics, tables, flash videos and iFrame web coding.

**Weebly for Education**<http://education.weebly.com/>

- Educational accounts allow for multiple student websites or educators can have one class website and assign a page to each student as an editor.
- Students can be contributors to select pages or individual websites



Research to Build and Present Knowledge

- WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and over-reliance on any one source and following a standard format for citation.



Cite lighter

<https://www.citelighter.com/>

- Toolbar extension that can be added to users browser that will allow the user to highlight text or pictures from any webpage and place them into an "outline" format on the users account within the platform.
- Users will need to create an account to use this service.
- There are both free and paid accounts within this platform.



Smithsonian Learning Lab

<https://learninglab.si.edu/>

- Educators create personal collections using the Smithsonian's vast resources and add classroom resources or those from other sources.
- Add notes, develop quizzes or create complete lessons or artistic collections, and build upon each for more personal and memorable learning.

Supporting SEL standards – **Goal 1-** Develop self-management skills by dividing the sequences into manageable steps. **Goal 2 –** Increase social awareness by collaborating with everyone on the changes desired. **Goal 3-** Students can demonstrate decision-making skills by listening and participating in group decisions.

FINE ARTS

DANCE

CREATING

Revise- Anchor Standard 3: Revise, refine, and complete artistic work.

- DA:Cr3.1.6 b. Explore or invent a system to record a dance sequence through writing, symbols, or a form of media technology.
- DA:Cr3.1.8 b. Experiment with aspects of a recognized system to document a section of a dance by using words, symbols, or media technologies.
- DA:Cr3.1.I b. Compare recognized systems to document a section of a dance using writing, symbols, or media technologies.
- DA:Cr3.1.II b. Develop a strategy to record a dance using recognized systems of dance documentation (for example, writing, a form of notation symbols, using media technologies).
- DA:Cr3.1.III b. Document a dance using recognized systems of dance documentation (for example, writing, a form of notation symbols, using media technologies).



Show Me interactive whiteboard app <https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8>

- Record audio and drawings on this interactive white board
- Documents can be uploaded, displayed and drawn on while recording audio
- Educators can upload the dance sequence for students to draw on the tablet with notes

Screencast-O-Matic

<https://screencast-o-matic.com/home>

- Users can record on-screen activity for short tutorials, visual presentations, and communicate during demonstrations.
- Students can watch recordings of rehearsals on the computer and record comments on adjustments and improvements as they watch, including typing notes on the screen.
- The platform has a free version that allows a 15 minute video recording that can be published to YouTube



Supporting SEL standards – **Goal 1-** Develop self-management skills by dividing the sequences into manageable steps. **Goal 2 –** Increase social awareness by collaborating with everyone on the changes desired. **Goal 3-** Students can demonstrate decision-making skills by listening and participating in group decisions.

**PERFORMING***Embody- Anchor Standard 5: Develop and refine artistic techniques and work for presentation.*

- DA:Pr5.1.8 c. Collaborate with peers to discover strategies for achieving performance accuracy, clarity, and expressiveness. Articulate personal performance goals and practice to reach goals. Document personal improvement over time (for example, journaling, portfolio, timeline).
- DA:Pr5.1.I Introductory c. Collaborate with peers to establish and implement a rehearsal plan to meet performance goals. Use a variety of strategies to analyze and evaluate performances of self and others (for example, use video recordings of practice to analyze the difference between the way movements look and how they feel to match performance with visual affect). Articulate performance goals and justify reasons for selecting particular practice strategies.

**Padlet**<https://padlet.com/>

- Online, Google apps and mobile devices
- It works like a sheet of paper where you can put anything (images, videos, documents, text) anywhere, from any device (pcs, tablets, phones), together with anyone.

**Remind**<https://www.remind.com/>

- text message platform that allows educators to text students and parents without either person having the phone number of the other party.
- Educators could create an account for the cast or team that allows a key student to send and others can respond.

**CONNECTING***Synthesize – Anchor Standard 10: Synthesize and relate knowledge and personal experiences to make art.*

- DA:Cn10.1.I Introductory b. Conduct research using a variety of resources to find information about a social issue of great interest. Use the information to create a dance study that expresses a specific point of view on the topic. Discuss whether the experience of creating and sharing the dance reinforces personal views or offers new knowledge and perspectives.
- DA:Cn10.1.II Intermediate b. Use established research methods and techniques to investigate a topic. Collaborate with others to identify questions and solve movement problems that pertain to the topic. Create and perform a piece of choreography. Discuss orally or in writing the insights relating to knowledge gained through the research process, the synergy of collaboration, and the transfer of learning from this project to other situations.
- DA:Cn10.1.III Advanced b. Investigate various dance-related careers and college readiness through a variety of research methods and techniques. Select options of most interest. Develop and implement a capstone project that reflects opportunities in dance.

**Career Onestop**<http://www.careeronestop.org/Toolkit/toolkit.aspx>

- Research into careers and educational pathways for academic and trade paths. Search by skills, career, industry or state. Includes job search skills, skills assessments and local training finder.
- Video library is extensive and includes career and career cluster videos in many fields including the arts.

Supporting SEL standards – **Goal 1-** Develop backgrounds and music to help create a sense of emotion or feeling to the production, such as fast music to create excitement, slow music for sadness...etc.. **Goal 2** – Increase social awareness and interpersonal skills by recording scripts that show what to do and what not to do within a social interaction. Example- How to respond to a bully, how to stand up for someone being bullied. **Goal 3-** Students can demonstrate decision-making skills by participate in creating safety rules on production set or theater set prior to the start of the work.

**MEDIA ARTS****PRODUCING***Integrate – Anchor Standard 4: Select, analyze, and interpret artistic work for presentation.*

- MA:Pr4.1.I Introductory a. Integrate ideas from various media arts and other sources into unified productions, considering the reactions and interactions of a given or intended audience.
- MA:Pr4.1.II Intermediate a. Integrate ideas from various arts, media arts forms, and other sources into unified media arts productions, considering the reactions and interactions of various audiences.
- MA:Pr4.1.III Advanced a. Synthesize ideas from various arts, media arts forms, academic curriculum, and other sources into unified media arts productions that retain artistic fidelity across platforms and audiences.

**Adobe Spark**<https://spark.adobe.com/>

- Create videos, webpages and audio incorporating many media formats
- Users can create online, iOS or Chromebook. All files are stored online
- Many ideas can be found within the Educators Guide that is available online as well.



Microsoft Sway

<https://sway.com/>

- Free platform that allows for uploads of photos, templates, PowerPoint slides and then creates a presentation that can automatically adjust to any platform.
- As an example, a presentation can be viewed on a laptop and then is automatically adjusted for viewing on a mobile device (tablet or phone).

Supporting SEL standards – **Goal 1-** Develop self-management skills by creating media projects identifying community members that can support student when they need it...teachers, principal, nurse, coach, aide. **Goal 2** – Increase social awareness by creating a media project that shows students participating in an activity or simulation that allows them to experience life from the perspective of another group or use literature to analyze various responses to human diversity (e.g., learning from, being tolerant of, aware of stereotyping). **Goal 3-** Students can demonstrate decision-making by creating a media project on how to apply decision-making skills to deal responsibly with daily academic and social situations.

Practice – Anchor Standard 5: Develop and refine artistic techniques and work for presentation.

- MA:Pr5.1.6 a. Develop a variety of artistic, design, technical, and soft skills through performing various assigned roles in producing and presenting media artworks (for example, invention, formal technique, production, self-initiative, problem solving).
c. Demonstrate adaptability using tools and techniques in standard and experimental ways in constructing media artworks.
- MA:Pr5.1.8 a. Demonstrate a defined range of artistic, design, technical, and soft skills through performing specified roles in producing and presenting media artworks (for example, strategizing, collaborative communication).
c. Demonstrate adaptability using tools, techniques and content in standard and experimental ways to communicate intent in the production of media artworks.
- MA:Pr5.1.I Introductory a. Demonstrate progression in artistic, design, technical, and soft skills as a result of selecting and fulfilling specified roles in the production and presentation of a variety of media artworks.
- MA:Pr5.1.II Intermediate a. Demonstrate effective command of artistic, design, technical, and soft skills in managing, producing, and presenting media artworks.
- MA:Pr5.1.III Advanced a. Employ mastered artistic, design, technical, and soft skills in managing, producing and presenting media artwork.

Arts Alive

<http://artsalive.ca/en/>

- Teacher resources kits for dance, music and theater
- Lessons and resources on all aspects of art and the skills in production and presenting
- Website resources can be embedded into other websites



Trello collaboration

<https://trello.com/home>

- Team collaboration board that shows the progress of a project with “cards”
- To-Do lists, assignment of roles, checklists, due dates or anything needed for the group
- Can be simple to complex as need per grade and project

Draw.io

<https://www.draw.io/>

- Online flowchart, mapping, diagram drawing and design platform, assign roles and structure of the team
- Create theater sets, dance choreographies or layouts for media designs in an online collaborative environment.



Present – Anchor Standard 6: Convey meaning through the presentation of artistic work.

- MA:Pr6.1.6 a. Analyze various presentation formats and fulfill various tasks and defined processes in the presentation and/ or distribution of media artworks.
b. Analyze the results of, and improvements for, presenting media artworks.
- MA:Pr6.1.8 a. Design the presentation and distribution of media artworks through multiple formats and/or contexts.
b. Evaluate the results of, and implement improvements for, presenting media artworks, considering impacts on personal growth and external effects.
- MA:Pr6.1.I Introductory a. Design the presentation and distribution of collections of media artworks, considering combinations of artworks, formats, and audiences.
- MA:Pr6.1.II Intermediate a. Curate and design the presentation and distribution of collections of media artworks through a variety of contexts (for example, mass audiences, physical and virtual channels).
- MA:Pr6.1.III Advanced a. Curate, design, and promote the presentation and distribution of media artworks for intentional impacts, through a variety of contexts (for example, markets, venues).

Word Press

<http://wordpress.com/>

- Website creation tool for teachers/students to create an art portfolio
- All websites on the free account have ".wordpress.com" as part of the web address. The website is more "text" based, but can include graphics, photo, media tools..





Seesaw Digital Portfolio

<http://web.seesaw.me/>

- Digital portfolio system that allows students to upload their work and add comments either graphically or with video/audio
- Students can offer and receive peer feedback (monitored), parents can see their students work from online as well.

Supporting SEL standards – **Goal 1-** Develop self-management skills by demonstrating skills related to achieving goals by managing steps, setting short and long term goals with to-do list, check lists and structures. **Goal 2** – Increase social awareness by collaborating online using communication and social skills using feedback to give complements and encouragement during the project. **Goal 3-** Students can demonstrate decision-making by creating a media project on how to apply decision-making skills to deal responsibly with daily academic and social situations.

Relate- Anchor Standard 11: Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.

- MA:Cn11.1.6 b. Analyze and interact appropriately with media arts tools and environments, considering fair use and copyright, ethics, and media literacy.
- MA:Cn11.1.8 b. Analyze and responsibly interact with media arts tools, environments, and legal and technological contexts, considering ethics, media literacy, social media, and virtual worlds.
- MA:Cn11.1.I Introductory b. Critically evaluate and effectively interact with legal, technological, systemic, and vocational contexts of media arts, considering ethics, media literacy, social media, virtual worlds, and digital identity.
- MA:Cn11.1.II Intermediate b. Critically investigate and ethically interact with legal, technological, systemic, and vocational contexts of media arts, considering ethics, media literacy, digital identity, and artist audience interactivity.
- MA:Cn11.1.III Advanced a. Examine in depth and demonstrate the relationships of media arts ideas and works to local and global contexts, purposes, and values through relevant media artworks that have an impact.

My Pop Studio

<http://mypopstudio.com/index2.php>



- Students go behind the scenes within four media platforms to find out how media influences teenagers
- Discover how Magazine layouts, TV studios, Music studio and a digital studio with social media impact life around us

Common Sense Media Digital Citizenship Curriculum

<https://www.commonsensemedia.org/educators/digital-citizenship>



- Grade band specific resources, online and paper/pencil, for all grade levels – including parent-community activities.
- Professional development modules available as well.
- [Digital passport](#) is the online game/app for 3-5 students

Copyright Kids

<http://www.copyrightkids.org/>



- Resources for educators on copyrights basics
- Games and activities for student to gain an understanding of what is copyrighted information, how to get something copyrighted and how to ask permission to use works.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by recognizing external supports available when questioning Fact or Fiction of advertising or commercial media around students today. **Goal 2** – Increase social awareness in the use of social media for students and digital citizenship in communication. **Goal 3-** Students can demonstrate decision-making by considering ethical, safety, and societal factors in making internet safety.

MUSIC

CREATING

Anchor Standard 2: Organize and develop artistic ideas and work.

- MU:Cr2.1.6 b. Use standard and/ or iconic notation and/ or audio/video recording to document personal rhythmic phrases, melodic phrases, and harmonic musical ideas.
- MU:Cr2.1.8 b. Use standard and/ or iconic notation and/ or audio/video recording to document personal rhythmic phrases, melodic phrases, and harmonic sequences.
- MU:Cr2.1.I Introductory a. Select, develop, and use notation and/or audio/video recording to document melodic, rhythmic, and harmonic ideas for drafts of simple melodies.

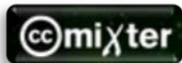
- b. Use standard and/ or iconic notation and/ or audio/video recording to document personal rhythmic phrases, melodic phrases, and harmonic sequences.
- MU:Cr2.1.II Intermediate a. Select, develop, and use notation and/or audio/video recording to document draft melodies, harmonies, and rhythmic passages and accompaniments for given melodies.
b. Use standard and/ or iconic notation and/ or audio/video recording to document personal rhythmic phrases, melodic phrases, and harmonic sequences.
- MU:Cr2.1.III Advanced a. Select, develop, and use notation and/or audio/video recording to document arrangements, sections, and short compositions, improvisations, and accompaniment patterns in a variety of styles and harmonization for given melodies.
b. Use standard and/or iconic notation and/or audio/video recording to document personal rhythmic phrases, melodic phrases, and harmonic sequences.



Music Theory.Net

<http://www.musictheory.net/>

- Music lesson, exercises and tools for note identification, scales, tempo and rhythm
- 10 different tools to assist in creation of music
- Over 50 lessons and exercises in many categories with a “pop-up” keyboard available on every screen



CC Mixer

<http://ccmixter.org/>

- (Creative Commons Mixer) is a music website for downloadable music for all background music needs.
- Musicians upload to this website with complete creative commons share-a-like license release.
- Instrumental and vocal music is searchable and can be previewed prior to download.
- Caution- lyrics should be checked by educators before final use, the website monitors but uploads do happen.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying music that connects to emotions and feelings. Examples—what sounds funny, sad, scary, happy, excited...etc. **Goal 2** – Increase social awareness and social skills to interact effectively with others by taking turns and sharing instruments and other resources with classmates and practice sharing encouraging comments with others. **Goal 3-** Students can demonstrate decision-making by creating calming strategies with the integration of music. Develop other strategies to handle situations of emotion in the classroom where music may assist.

THEATRE

CREATING

Envision/Conceptualize – Anchor Standard 1: Generate and conceptualize artistic ideas and work.

- TH:Cr1.1.I Introductory b. Explore the impact of technology on design choices in a drama/ theatre work.
- TH:Cr1.1.II Intermediate b. Understand and apply technology to design solutions for a drama/ theatre work.
- TH:Cr1.1.III Advanced a. Synthesize knowledge from a variety of dramatic forms, drama/ theatre conventions, and technologies to create the unified concept of a drama/ theatre work.
b. Create a complete design for a drama/ theatre work that incorporates multiple elements of technology.



3D Blender

<https://www.blender.org/>

- Open Source, downloadable program that also allows animation creation in 3D. (Can be used in video production or background in a theater production)
- Software can also be used in 3D printing.
- Many examples and resources available for teachers and students to get inspiration on the website and via YouTube.



Sumo Paint

<https://www.sumopaint.com/home/>

- Online photo editing platform similar to PhotoShop. (medium difficulty level)
- Students can upload photos and edit using the same "layer" concepts that are used in the other photo editing programs. Many tools are available to create morphed and modified photos.
- Students can create design elements for productions that can be imported to videos or printed/transferred and painted.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying music that connects to emotions and feelings. Examples—what sounds funny, sad, scary, happy, excited...etc. **Goal 2** – Increase social awareness and social skills to interact effectively with others by taking turns and sharing instruments and other resources with classmates and practice sharing encouraging comments with others. **Goal 3-** Students can demonstrate decision-making by creating calming strategies with the integration of music. Develop other strategies to handle situations of emotion in the classroom where music may assist.



PERFORMING

Prepare – Anchor Standard 5: Develop and refine artistic techniques and work for presentation.

- | | |
|--------------|---|
| TH:Pr5.1.6 | b. Articulate how technical elements (costumes, lights, props, set, sound) are integrated into a drama/theatre work. |
| TH:Pr5.1.8 | b. incorporate a variety of technical elements to create a design for a rehearsal or drama/theatre production. |
| TH:Pr5.1.1 | b. Research technical elements to increase the impact of a design for a drama/theatre production. |
| Introductory | |
| TH:Pr5.1.1I | b. Apply technical elements and research to create a design that communicates the concept of a drama/ theatre production. |
| Intermediate | |
| TH:Pr5.1.1II | b. Explain and justify the selection of technical elements used to build a design that communicates the concept of a drama/ theatre production. |
| Advanced | |

Next Vista for Learning

<http://www.nextvista.org/>



- Library of videos created by students and teachers, many about drama and video creation
- How To videos on technical use of theater equipment, video equipment...etc.
- Include videos on Puppeteering and stop motion recordings

Classic Cat Music Catalog

<http://www.classiccat.net/>



- 6000 downloadable music files of classic music that is creative commons usage rights
- Choose the artist and then the song you would like to download.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by creating videos or performances that identify student's choice- things they like to do, things they do well, special skills or talents, situations where they are confident and situations where they need help. **Goal 2** – Increase social awareness by creating media that demonstrate how students help each other, demonstrate honesty and fairness or follow rules. **Goal 3-** Students can demonstrate decision-making practicing group decision making by having production meetings while working on a group project.

VISUAL ARTS

PRESENTING

Relate – Anchor Standard 4: Select, analyze, and interpret artistic work for presentation.

- | | |
|------------|--|
| VA:Pr4.1.6 | a. Analyze similarities and differences associated with preserving and presenting two dimensional, three dimensional, and digital artwork. |
| VA:Pr4.1.7 | a. Analyze how past, present, and emerging technologies have impacted the preservation and presentation of artwork. |

Google Arts & Culture

<https://www.google.com/culturalinstitute/beta/u/0/>



- 60 art and culture museums from around the world
- Search by artist, medium or artistic movement, Platform also has projects for educators



National Gallery of Art

<http://www.nga.gov/content/ngaweb.html>

- Explore all of the current exhibits of this Washington DC museum and interactives
- Educators can access many lessons and other resources

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by creating an online portfolio of student work where the students select and display items that convey a theme or specific meaning to them (Some items could be photos of non-digital created items). **Goal 2** – Increase interpersonal skills by adding a feedback tool or blog post section to each of the online exhibits so classmates can leave encouragement for peers. **Goal 3-** Students can demonstrate decision-making by posting a reflection on their online gallery about the items chosen to display...why these items and what they would like to do next.

MATHEMATICS**STANDARDS FOR MATHEMATICAL PRACTICE****MP**

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

GEOMETRY**G***Draw, construct, and describe geometrical figures and describe the relationships between them.*

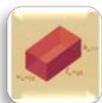
- 7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
- 7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
- 7.G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

**GeoGebra**
<http://www.geogebra.org/>

- Online, mobile and downloadable software apps for geometry
- Draw multiple configurations and shapes in 2D and 3D
- Works on interactive whiteboards as well and offers many tutorials and educator resources

**Isometric Drawing Tool**
<https://illuminations.nctm.org/Activity.aspx?id=4182>

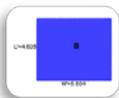
- Use this interactive tool to create dynamic drawings on isometric dot paper.
- Draw figures using edges, faces, or cubes.

**Investigating connections between measurements** <http://illuminations.nctm.org/Activity.aspx?id=6410>

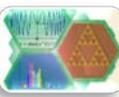
- Choose denominations to add up to the correct dollar amount
- Multiple different combinations are correct answers

Understand congruence and similarity using physical models, transparencies, or geometry software.

- 8.G.1 Verify experimentally the properties of rotations, reflections, and translations:
- 8.G.1.a Lines are taken to lines, and line segments to line segments of the same length.
- 8.G.1.b Angles are taken to angles of the same measure.
- 8.G.1.c Parallel lines are taken to parallel lines.
- 8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
- 8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- 8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
- 8.G.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

**Side Length and Area of Similar Figures**
<http://illuminations.nctm.org/Activity.aspx?id=6648>

- The user can manipulate the side lengths of one of two similar rectangles and the scale factor to learn about how the side lengths, perimeters, and areas of the two rectangles are related.

**Shodor Interactives**
<http://www.shodor.org/interactivate/>

- This is a link to the main page where users can choose either learners or instructors. Learners can search by activities and instructors can search by standards
- The geometry category for students have 48 interactive activities on concepts that fit standards

RATIOS AND PROPORTIONAL RELATIONSHIPS**RP***Analyze, Compare, Create, And Compose Shapes.*

- 7.RP.2 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 7.RP.2.a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

- 7.RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
- 7.RP.2.c For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.
- 7.RP.2.d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.

**Scale Fator**

<https://illuminations.nctm.org/Activity.aspx?id=4207>

- A common misconception is that when the dimensions of an object are doubled, the area is doubled, too. But this is not true!
- Use this applet to investigate how changes in the scale factor influence the ratio of perimeters and the

Dunk Tank! Ratio and Proportion

<http://illinois.pbslearningmedia.org/resource/f9dbedd6-b4ed-47b4-bdd1-69ab5c73deae/f9dbedd6-b4ed-47b4-bdd1-69ab5c73deae/>

- In this interactive game, learners explore how to use ratio and proportion to solve problems.
- Activities include Sleuths on the Loose -- a mini-game that challenges students to apply what they know about ratio and proportion; a comedy act that uses proportional relationships between parts of the body; and game questions designed to promote proportional reasoning.
- This resource is part of Dunk Tank!, a math-themed collection that features a combination of video and interactive gaming.



Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 6.RP.3.a Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- 6.RP.3.b Solve unit rate problems including those involving unit pricing and constant speed.
- 6.RP.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
- 6.RP.3.d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Equation Training

<http://games.altec.org/games/equation/equation.html>

- Equation training provides practice in setting up proportions.
- The platform allows for different levels, from simple drag and drop to completely independent creation
- Users are taken through the building of the equation from word problems.

**Scale Factor X**

<http://www.mathplayground.com/ScaleFactorX2/GameLoader.html>

- Users are faced with “alien mayhem” that is causing altered ratios, proportions and scale factors.
- Users must gain access to secured areas and repair the mischief caused by the aliens
- Simple arcade style game with built in problem solving math concepts



EXPRESSIONS AND EQUATIONS

EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.3 Apply the properties of operations to generate equivalent expressions.

Shuttle Mission Math

<https://itunes.apple.com/us/app/shuttle-mission-math/id498617241?ls=1&mt=8>

- Mathematical puzzle game that makes algebraic thinking both visual and interactive
- The goal is to find the weight of each space creature and assemble a team for the next shuttle mission

**Connect Three**

<http://nrich.maths.org/5864>

- This activity promotes students to explore and analyze the number of different ways of achieving each of the specific outcomes when adding and subtracting positive and negative integers while playing the game
- By answering key questions, the players work out a strategy for improving their chances of winning the game.
- The Teachers' Notes page offers suggestions for implementation, discussion questions, ideas for support,



Work with radicals and integer exponents.

- 8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
- 8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very

small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Scientific Notation

Scientific Notation Practice

<https://janus.astro.umd.edu/astro/scinote/>

- Simple platform to practice converting between scientific notation and normal numbers
- Users can also try addition/subtraction and multiplication/division problems



PBS Learning Media – Scientific Notation Resources

<http://illinois.pbslearningmedia.org/resource/muen-math-ee-scientificnotation/scientific-notation/>

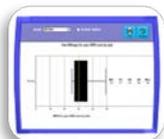
- Educator resources – Video and activity to explain and process scientific notation
- Extension activities

STATISTICS AND PROBABILITY

SP

Summarize and describe distributions.

- 6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.5 Summarize numerical data sets in relation to their context, such as by:
- 6.SP.5.a Reporting the number of observations.
- 6.SP.5.b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
- 6.SP.5.c Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- 6.SP.5.d Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.



Advanced Data Grapher

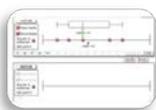
<https://illuminations.nctm.org/Activity.aspx?id=3476>

- The Advanced Data Grapher can be used to analyze data with box plots, bubble graphs, scatterplots, histograms, and stem-and-leaf plots.
- Users can enter multiple rows and columns of data, select which set(s) to display in a graph, and choose

Mean and Median

<https://illuminations.nctm.org/Activity.aspx?id=3576>

- This applet allows the user to investigate the mean, median, and box-and-whisker plot for a set of data that they create.
- The data set may contain up to 15 integers, each with a value from 0 to 100.



Investigate chance processes and develop, use, and evaluate probability models.

- 7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
- 7.SP.7.a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
- 7.SP.7.b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
- 7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- 7.SP.8.a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- 7.SP.8.b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
- 7.SP.8.c Design and use a simulation to generate frequencies for compound events.

Adjustable Spinner

<https://illuminations.nctm.org/adjustables spinner/>

- Change the number of sectors and increase or decrease their size to create any type of spinner. Then, conduct a probability experiment by spinning the spinner many times.
- This interactive will play on the desktop and on a tablet



Smart Exchange- Experimental Probability

<http://exchange.smarttech.com/details.html?id=6a1bb79c-cabc-44f2-9b88-8efae693b100>

- Smart Notebook file that can be used online without an interactive board or software
- Includes activities on probability, including student centered/collaborative game



**Investigate patterns of association in bivariate data.**

- 8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- 8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
- 8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
- 8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

**Create a Graph**<https://nces.ed.gov/nceskids/createagraph/default.aspx>

- Simple platform to create graphical representations of data
- Tutorials available

**Tsunami Surge Project**<http://www.ciese.org/curriculum/tsunami/>

- Cross Curricular project that connects students to real world bivariate data sources. Teacher guide and student activities are outlined on this website along with links to all the resources needed.
- Connects to many interactive and live resources for current events and real world data collection.

MATHEMATICS – HIGH SCHOOL**CREATING EQUATIONS****CED***Create equations that describe numbers or relationships*

- A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
- A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

**CPalms resources for A.CED**<http://www.cpalms.org/Public/PreviewStandard/Preview/5557>

- CPalms is Florida's educator's open educational resource platform that holds all of their lessons and units aligned to standards

REASONING WITH EQUATIONS AND INEQUALITIES**REI***Represent and solve equations and inequalities graphically*

- A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

**Desmos Graphing Calculator**<https://www.desmos.com/calculator>

- Graphing calculator has many options and resources under the ? menu. Users can take a tour of the sliders, tables, restrictions and regressions available.
- There are also many video tutorials to help users get the most out of this online resources.

INTERPRETING FUNCTIONS**IF***Analyze functions using different representations*

- F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- F.IF.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.
- F.IF.7.b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
- F.IF.7.c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
- F.IF.7.e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

**CK-12 Online Textbooks**<http://www.ck12.org/ccss/high-school:-functions/interpreting-functions>

- Online open educational platform that allows educators to select sections from textbook ebooks to create their own "flexbooks" and assign them to students within their "class".
- These flexbooks can be access from anywhere using any device or even printed out as a PDF

BUILDING FUNCTIONS**BF***Build new functions from existing functions*

- F.BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

**CK-12 Online Textbooks**<http://www.ck12.org/ccss/high-school:-functions/building-functions>

- Online open educational platform that allows educators to select sections from textbook ebooks to create their own “flexbooks” and assign them to students within their “class”.
- These flexbooks can be access from anywhere using any device or even printed out as a PDF

INTERPRETING CATEGORICAL AND QUANTITATIVE DATA**ID***Summarize, represent, and interpret data on a single count or measurement variable*

- S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- S.ID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

**Data Flyer**<http://www.shodor.org/interactivate/activities/DataFlyer/>

- This activity allows the user to plot a set of (x,y) ordered pairs and graph a function on the same coordinate plane.
- The applet allows the manipulation of a function of the form $y = f(x)$.
- Using slider bars one can manipulate the function to change the constant values and view the effects of those changes.

Summarize, represent, and interpret data on two categorical and quantitative variables

- S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
- S.ID.6.a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*
- S.ID.6.b Informally assess the fit of a function by plotting and analyzing residuals.
- S.ID.6.c Fit a linear function for a scatter plot that suggests a linear association.

**Scatter Plot**<http://www.shodor.org/interactivate/activities/ScatterPlot/>

- This applet allows the user to input a series of (x,y) ordered pairs and plot them either as a connected function or unconnected data points.
- Parameters such as minimum and maximum x value, minimum and maximum y value, and x - and y -scale can be set by the user or determined by the applet.

Interpret linear models

- S.ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.

**Microsoft Excel- Correlation Formula**<https://support.office.com/en-us/excel>

- Correlation formula will compute the data

CONGRUENCE**CO***Experiment with transformations in the plane*

- G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
- G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

**Congruence Theorems**<http://illuminations.nctm.org/activity.aspx?id=3504>

- Investigate congruence by manipulating the parts (sides and angles) of a triangle.
- If you can create two different triangles with the same parts, then those parts do not prove congruence.

Make geometric constructions

- G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

**Geometric Solids**

<https://illuminations.nctm.org/Activity.aspx?id=3521>

- Learn about various geometric solids and their properties.
- Users can manipulate and color each shape to explore the number of faces, edges, and vertices.

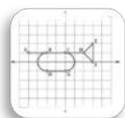
**Shape Tool**

<https://illuminations.nctm.org/Activity.aspx?id=3587>

- This tool allows you to create any geometric shape imaginable. Squares, triangles, rhombi, trapezoids and hexagons can be created, colored, enlarged, shrunk, rotated, reflected, sliced, and glued together.

SIMILARITY, RIGHT TRIANGLES, AND TRIGONOMETRY**SRT***Understand similarity in terms of similarity transformations*

- G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor:
- G.SRT.1.a A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
- G.SRT.1.b The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

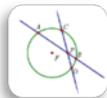
**Computer Animation**

<http://illuminations.nctm.org/Lesson.aspx?id=3141>

- In this lesson, students transform images through rotation, reflection, dilation, and translation using matrix multiplication.
- After digitizing images by representing the images as matrices, they multiply image matrices by various transformation matrices, producing transformed images.

GEOMETRIC MEASUREMENT AND DIMENSION**GMD***Explain volume formulas and use them to solve problems*

- G.GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.

**Power of Point**

<http://illuminations.nctm.org/Activity.aspx?id=6875>

- Use this tool to investigate what happens when point P is moved to various points within, on, and outside the circle.

MODELING WITH GEOMETRY**MG***Apply geometric concepts in modeling situations*

- G.MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
- G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

**Tinkercad**

<https://www.tinkercad.com/>

- Browser-based 3D design and modeling tool for all.
- Tinkercad is also the perfect 3d printing companion – it allows students to imagine anything, and then design it in minutes!

REASONING WITH EQUATIONS AND INEQUALITIES**REI***Represent and solve equations and inequalities graphically*

- A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

**Inequalities**

<http://www.shodor.org/interactivate/activities/inequality/>

- This activity allows the user to graph linear inequalities in 2 variables. Users can input inequalities in algebraic form and graph them on a coordinate plane.
- The user can graph up to four inequalities as well as many ordered pairs.
- This activity is an extension of the Graphit applet.design it in minutes!



LINEAR, QUADRATIC, AND EXPONENTIAL MODELS

LE

Construct and compare linear, quadratic, and exponential models and solve problems

- F.LE.4 For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.



Was Galileo Right?

<https://concord.org/stem-resources/was-galileo-right>

- Explore the effect of gravity on objects of various mass during free fall.

MAKING INFERENCES AND JUSTIFYING CONCLUSIONS

IC



Understand and evaluate random processes underlying statistical experiments

- S.IC.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- S.IC.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.

Make inferences and justify conclusions from sample surveys, experiments, and observational studies

- S.IC.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
- S.IC.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.



Describing Velocity

<https://concord.org/stem-resources/describing-velocity>

- This web-based graphing activity explores the similarities and differences between Velocity vs. Time and Position vs. Time graphs.
- It interactively accepts user inputs in creating "prediction graphs", then provides real-time animations of the process being analyzed.

Supporting SEL standards – **Goal 1-** Develop self-management skills by recognizing external supports and identifying people who can give you the help you need when struggling including peers in group activities. **Goal 2** – Increase interpersonal skills by demonstrating how students help each other to discuss multiple ways to achieve mastery and share with other students. **Goal 3-** Students can demonstrate responsible behaviors by recognizing that one has choices in how to respond to situations in the classroom such as disagreements in group or partner work.

PHYSICAL DEVELOPMENT AND HEALTH



ACHIEVE AND MAINTAIN A HEALTH-ENHANCING LEVEL OF PHYSICAL FITNESS BASED UPON CONTINUAL SELF-ASSESSMENT.

Assess Individual Fitness Levels.

- 20.B.3a Monitor intensity of exercise through a variety of methods (e.g., perceived exertion, pulse, heart rate monitors), with and without the use of technology.
- 20.B.4a Record and interpret health-related physiological data (e.g., blood pressure, body mass index, oxygen exchange), with and without the use of technology.
- 20.B.5a Collect and interpret health-related fitness data over a period of time, with and without the use of technology.



Online Heart Rate

<http://onlineheartrate.com/>

- This website will help you measure your heart rate online, in beats per minute (BPM), without using an actual heart rate monitoring device.
- Based on your age and maximum heart rate (HRmax), it will also determine your heart rate training zone.

Set Goals Based On Fitness Data And Develop, Implement, And Monitor An Individual Fitness Improvement Plan.

- 20.C.4c Evaluate physical fitness services, products, and advertising.
- 20.C.5c Use profile data to monitor an individual wellness/fitness plan.



Google Forms

<https://apps.google.com/learning-center/products/forms/get-started/>

- Create a form to gather fitness data for each student that will be collected in a spreadsheet
- The spreadsheet can then be used to analyze the information within a long term fitness plan
- Google Form can be access from mobile devices as well as other platforms

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by understanding physical responses to emotions and behaviors during games and conflicts. **Goal 2** – Increase social awareness by analyzing how students being left out might feel when games and use a random selection for teams instead of student team captains. **Goal 3-** Students can demonstrate decision-making by choosing healthy snacks and daily exercise using a log and chart as a class to compare or graph the data.

UNDERSTAND PRINCIPLES OF HEALTH PROMOTION AND THE PREVENTION AND TREATMENT OF ILLNESS AND INJURY.

Explain The Basic Principles Of Health Promotion, Illness Prevention And Safety Including How To Access Valid Information, Products, And Services.

- 22.A.4c Demonstrate basic procedures in injury prevention and emergency care that can be used in the home, workplace, and community (e.g., first aid, CPR).
- 22.A.5c Explain how health and safety problems have been altered by technology, media and medicine (e.g., product testing; control of polio; advanced surgical techniques; improved treatments for cancer, diabetes, and heart disease; worksite safety management).



Consumer Product Safety Commission

<https://www.cpsc.gov/Safety-Education>

- CPSC provides free safety alerts, safety resources, posters, brochures, handbooks and other materials which you can use to help spread consumer product safety information in your community.



National Institute of General Medical Sciences

https://publications.nigms.nih.gov/order/pubs_gateway.html

- Free science education materials on a range of topics.
- Students can explore highlights, news and videos of new technologies and resources

Describe And Explain The Factors That Influence Health Among Individuals, Groups, And Communities.

- 22.B.5a Analyze how public health policies, laws, and the media function to prevent and control illness (e.g., product and food labeling, food safety and handling, school immunizations).



Center for Disease Control

<https://www.cdc.gov/mobile/generalconsumerapps.html>

- A series of free apps and resources for consumers on health, food safety, swimming, flu information drug interactions...etc.
- Interactive game called “Solve the outbreak” for students to be in charge of making the decisions

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying values that help you make good choices. **Goal 2** – Increase social awareness by identifying bullying behavior and how it affects people have create a video showing a situation where bullying has been stopped. **Goal 3-** Students can demonstrate decision-making by choosing to walk away from a bully or stand up for another student being bullied.

SCIENCE (NGSS)

MATTER AND ITS INTERACTIONS

STUDENTS WHO DEMONSTRATE UNDERSTANDING CAN.....

- MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures. Clarification Statement: Emphasis is on developing models of molecules that vary in complexity. Examples of simple molecules could include ammonia and methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawings, 3D ball and stick structures or computer representations showing different molecules with different types of atoms. Assessment Boundary: Assessment does not include valence electrons and bonding energy, discussing the ionic nature of subunits of complex structures, or a complete depiction of all individual atoms in a complex molecule or extended structure.
- HS-PS1-8 Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.



Sparticl

<http://www.sparticl.org/>

- Accurate and FUN videos, games, articles, interactive demonstrations, and more for 600+ topics, covering the common concepts and terms used in middle school science.
- Many high school resources pulled from major universities around the world



Particle Adventure

<http://particleadventure.org/>

- Interactive tour of quarks, neutrinos, antimatter, extra dimensions, dark matter, accelerators and article detectors from the Particle Data Group of Lawrence Berkeley National Laboratory
- Online tools, android and iOS apps available with educator resources available



MOTION AND STABILITY: FORCES AND INTERACTIONS

- MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. Clarification Statement: Examples of evidence for arguments could include data generated from simulations or digital tools; and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system. Assessment Boundary: Assessment does not include Newton's Law of Gravitation or Kepler's Laws.
- MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. Clarification Statement: Examples of this phenomenon could include the interactions of magnets, electrically-charged strips of tape, and electrically-charged pith balls. Examples of investigations could include first-hand experiences or simulations. Assessment Boundary: Assessment is limited to electric and magnetic fields. Assessment is limited to qualitative evidence for the existence of fields.
- HS-PS2-6 Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.

Gravity Force Lab



https://phet.colorado.edu/sims/html/gravity-force-lab/latest/gravity-force-lab_en.html

- Visualize the gravitational force that two objects exert on each other. Adjust properties of the objects to see how changing the properties affects the gravitational attraction.

Magnets and Electromagnets <https://phet.colorado.edu/en/simulation/magnets-and-electromagnets>



- Explore the interactions between a compass and bar magnet. Discover how you can use a battery and wire to make a magnet! Can you make it a stronger magnet? Can you make the magnetic field reverse?

Molecular Workbench – States of Matter

<http://authoring.concord.org/activities/11>



- Explore the movement of gases, liquids and solids at a molecular level, and investigate how temperature and intermolecular attractions affect phase changes.
- Gases, Liquids, Solids and their phase changes



ENERGY

- HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

Atoms and Conservation

<https://concord.org/stem-resources/atoms-and-conservation-energy>



- In this activity, students will explore how the Law of Conservation of Energy (the First Law of Thermodynamics) applies to atoms, as well as the implications of heating or cooling a system.
- This activity focuses on potential energy and kinetic energy as well as energy conservation.



WAVES AND THEIR APPLICATIONS IN TECHNOLOGIES FOR INFORMATION TRANSFER

- MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions. Assessment Boundary: Assessment is limited to qualitative applications pertaining to light and mechanical waves.
- MS-PS4-3 Integrate qualitative scientific and technical information to support the claim that digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information. Clarification Statement: Emphasis is on a basic understanding that waves can be used for communication purposes. Examples could include using fiber optic cable to transmit light pulses, radio wave pulses in wifi devices, and conversion of stored binary patterns to make sound or text on a computer screen. Assessment Boundary: Assessment does not include binary counting. Assessment does not include the specific mechanism of any given device.
- HS-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

Sound Grapher

<https://concord.org/stem-resources/how-loud-how-high>



- Use the Sound Grapher to create visualizations of sound and learn about the frequency, wavelength, amplitude and velocity of sound waves.

Physics Tool Box Suite

<https://www.vieyrasoftware.net/>



- Useful for STEM education, academia, and industry, this app uses device sensor inputs to collect, record, and export data in comma separated value (csv) format through a shareable .csv file. Data can be plotted against elapsed time on a graph or displayed digitally.
- The app is available in iOS and Android versions. Includes 17 different tools including Oscilloscope, light meter and sound meter.

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying emotions that are triggered by various situations such as persevering through trials and experiments. Monitoring progress towards academic goals within a game or experiment.

Goal 2 – Increase social awareness by recognizing the feelings of others by listening to the perspective of others. **Goal 3-** Students can demonstrate decision-making by brainstorming alternative solutions.

LIFE SCIENCE

ECOSYSTEMS: INTERACTIONS, ENERGY, AND DYNAMICS

HS-LS2-1 Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales..



Population Explosion

<https://concord.org/stem-resources/population-explosion>

- Explore several factors that can determine the survival of a population of sheep in this NetLogo model.



Advanced Data Grapher

<https://illuminations.nctm.org/Activity.aspx?id=3476>

- The Advanced Data Grapher can be used to analyze data with box plots, bubble graphs, scatterplots, histograms, and stem-and-leaf plots.
- Users can enter multiple rows and columns of data, select which set(s) to display in a graph, and choose the type of representation.

HEREDITY: INHERITANCE AND VARIATION OF TRAITS

MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. *Clarification Statement: Emphasis is on using models such as Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and resulting genetic variation.*

Star Genetics

<http://star.mit.edu/genetics/index.html>

StarGenetics

- StarGenetics allows students to simulate mating experiments between organisms that are genetically different across a range of traits to analyze the nature of the traits in question.
- Its goal is to teach students about genetic experimental design and genetic concepts.
- JAVA is required for the program to run once it is downloaded

BIOLOGICAL EVOLUTION: UNITY AND DIVERSITY

HS-LS4-6 Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.



Virtual Biology Lab

<http://virtualbiologylab.org/biodiversity-ecology/>

- The website has three different interactive models of biodiversity – Island, plant and stream
- Students can manipulate items within the model and make comparisons
- Educator resources and instruction available on each model

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying personal traits and behaviors they may have that match their families. **Goal 2** – Increase social awareness by recognizing traits within social situations that help friends get along and traits that create disagreements. **Goal 3-** Students can demonstrate decision-making by identifying foods and behaviors that keep the body healthy.

EARTH AND SPACE

EARTH'S PLACE IN THE UNIVERSE

MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. Clarification Statement: Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students' school or state). Assessment Boundary: Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth.

HS-ESS1-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.



Gravity and Orbits

<https://phet.colorado.edu/en/simulation/gravity-and-orbits>

- Move the sun, earth, moon and space station to see how it affects their gravitational forces and orbital paths.
- Visualize the sizes and distances between different heavenly bodies, and turn off gravity to see what



Google Sheets <https://gsuite.google.com/learning-center/products/sheets/get-started/>

- Users can use the mathematical formulas available to create representations of the computations required to calculate the orbits



EARTH AND HUMAN ACTIVITY

- HS-ESS3-3 Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
- HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.



EarthComm: Earth's Natural Resources <https://www.americangeosciences.org/education/ec/enr>

- A large collection of lessons and activities for three main resources- Water, Energy and Mineral
- Each unit has lessons full of online videos and interactive tools as well as offline activities for individual and group activities.



Energy Star Kids https://www.energystar.gov/index.cfm?c=kids.kids_index

- Resources on many forms of energy and energy saving concepts
- Many ideas on how students can help the planet with recycling and energy conservation



ENGINEERING DESIGN

- HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.



Engineering in the Classroom

<http://www.jpl.nasa.gov/edu/teach/resources/engineering-in-the-classroom.php#hs>

- Shares examples of how the NGSS engineering standards are used at NASA's Jet Propulsion Laboratory -- a leading center for robotic exploration of the solar system.
- Connects those vignettes to lessons that you can use to engage your students in engineering in the classroom.
- Videos, lessons, experiments and extensions

Supporting SEL standards – **Goal 1-** Develop self-management skills by identifying ways students can contribute to Earth's global health, climate awareness, etc. **Goal 2** – Increase social awareness by discussion and researching ways to constructively resolve conflicts environmental crisis either locally or globally. **Goal 3-** Students can demonstrate decision-making by plan and implement a project to improve the local communities environment.

SOCIAL SCIENCE

INQUIRY SKILLS

Gathering and Evaluating Sources

- SS.IS.3.6-8: Determine sources representing multiple points of view that will assist in organizing a research plan.



InstaGrok

<https://www.instagrok.com/>

- Innovative, interactive search engine with multimedia components
- Searches “branch out” like a mind map as words are selected within the search
- Results include websites for more information, videos, pictures, definitions and much more.



Kidrex search engine

<http://www.kidrex.org/>

- Powered by Google – safe search updated daily for inappropriate websites
- Deletes inappropriate results based on keywords within the filtering system



Internet Public Library 2

<http://www.ipl.org/>

- Specific sections for Kids, Teens, Newspapers, Special Collections. Can search by subject
- An online library curated by over 20 universities for the last 20 years (Currently no active “librarian” to ask questions.)



Developing Claims and Using Evidence

SS.IS.4.9-12 Gather and evaluate information from multiple sources while considering the origin, credibility, point of view, authority, structure, context, and corroborative value of the sources.



NewsELA (Pro/Con articles)

<https://newsela.com/>

- Current events from several news outlets in multiple reading levels for each article
- Educators can search for articles based on content- Including PRO/CON issues



Taking it Global

<http://www.tigweb.org/tiged/>

- Educators can connect their classroom with other classrooms around the world
- Share information, views and values with students living in another country on global issues

Newspaper Map

<http://newspapermap.com/>

- The website shows a world map with color icons
- The key on the right hand side of the screen shows the language that matches with the color.
- Each icon matches to a local newspaper that is in the language of the colored icon. If the language is not English(yellow) then you can select to have the newspaper translated.



Communicating Conclusions

SS.IS.6.6-8.LC: Construct arguments using claims and evidence from multiple sources, while acknowledging their strengths and limitations.

SS.IS.6.6-8.MdC: Construct explanations using reasoning, correct sequence, examples and details, while acknowledging their strengths and weaknesses.

SS.IS.6.6-8.MC: Present arguments and explanations that would appeal to audiences and venues outside the classroom using a variety of media.



Venngage

<https://venngage.com/>

- Drag and drop platform to build infographics
- Create posters to compare and contrast or show progression of information



Easelly

<https://www.easel.ly/>

- Build infographics from pre-designed templates
- Create graphics to compare and contrast or show progression of information



Edpuzzle Video platform

<https://edpuzzle.com/>

- Take already existing videos from many platforms (YouTube, Khan Academy, Crash Course, Vimeo, etc...), or upload your own and add interactive questions and your voice to engage students with the content.
- Students can take the created productions and embed them on websites or blogs to post feedback form others

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by reflecting on the possible consequences before expressing an emotion during an argument. **Goal 2** – Increase social awareness by interpreting non-verbal communication cues during conversations from multiple sources. **Goal 3-** Students can demonstrate decision-making by considering ethical, safety, and societal factors in making decisions within many cultures.

HISTORY



Historical Sources and Evidence

SS.H.2.6-8.LC: Explain how and why perspectives of people have changed over time.

SS.H.2.6-8.MdC: Analyze multiple factors that influenced the perspectives of people during different historical eras.

SS.H.2.6-8.MC: Analyze how people's perspectives influenced what information is available in the historical sources they created.

Timeline JS

<http://timeline.knightlab.com/>

- Simple timeline creation tool that hosts the timeline on their website and allows the user to embed the final creation on their own platform
- Multimedia and website links can be included in the timeline



World History

<https://itunes.apple.com/us/app/world-history-interactive/id922390335?mt=8>

- iOS app on world history Pre-History to Modern History (2014)
- Photos, news articles and videos



Historical Atlas

<http://dsl.richmond.edu/historicalatlas/>

- Interactive maps that show the histories of the United States in population, elections, boundaries, explorations, settlements, military, and so much more.

Historical Sources and Evidence

SS.H.9-12 Analyze the relationship between historical sources and the secondary interpretations made from them.



Digital Research Library of Illinois

<http://livinghistoryofillinois.com/>

- A large collection of digital book resources of all areas of Illinois
- Includes audio recordings with photographs (All files with a red arrow)



Illinois State Museum

http://www.museum.state.il.us/ed_opp/activities.html

- Online activities from Anthropology to Zoology using the Illinois State Museum online resources
- Full lesson plans and activities with links to media within the museum shown on the computer

Supporting SEL standards – **Goal 1-** Develop self-awareness skills by identifying how the people in Illinois history or stories feel during their travels or adventures. **Goal 2** – Encourage social-awareness with discussions and activities recognizing how others interpreted situations differently in history than how we might today. **Goal 3-** Students can demonstrate and discuss responsible behaviors in ethical, safety and societal factors from historic events and locations and how that impacts today.

CIVICS

Civic and Political Institutions

SS.CV.4.9-12 Explain how the U.S. Constitution established a system of government that has powers, responsibilities, and limits that have changed over time and are still contested while promoting the common good and protecting rights.



iCivics

<https://www.icivics.org/>

- Many videos and interactive games on all the areas of government
- Educator resources for lessons and offline activities available as well

Supporting SEL standards – **Goal 1-** Encourage self-awareness and recognition of external supports by identifying community resources of the government that are local and how they can help students and families. **Goal 2** – Increase communication skills by practicing reflective listening and cooperative group activities. **Goal 3-** Students can demonstrate decision-making by constructing an argument to persuade classmates to vote or become a candidate for office in a simulated local, state, and national election..

ECONOMICS AND FINANCIAL LITERACY

Financial Literacy

SS.EC.FL.1.6-8.LC:

Analyze the relationship between skills, education, jobs, and income.

SS.EC.FL.1.6-8.MdC:

Identify how people choose to buy goods and services while still maintaining a budget based on income, taxes, savings, and fixed and variable interest rates.

SS.EC.FL.1.6-8.MC:

Describe the connection between credit, credit options, and interest and credit history.

SS.EC.FL.2.9-12

Explain how to make informed financial decisions by collecting information, planning, and budgeting.



Practical Money Skills

<http://www.practicalmoneyskills.com/games/>

- Four interactive games available- Financial Soccer, Financial Football, Cash Puzzler and Road Trip to Savings
- All games allow users to choose age levels from middle-high school and difficulty levels
- Many educator resources available as well for offline activities

Supporting SEL standards – **Goal 1-** Encourage self-awareness skills needed to achieve financial goals by creating classroom procedures or steps to complete a group or partner project using a flowchart or diagram. **Goal 2** – Increase social-awareness by recognizing the perspectives of others using a Venn diagram or other chart when discussing decisions or topics. **Goal 3-** Students can demonstrate responsible behaviors by implementing stop, think, and act (plan) strategies in solving problems when making decisions in group or partner conversations.



GEOGRAPHY

Geographic Representations

- SS.G.1.6-8.LC: Use geographic representations (maps, photographs, satellite images, etc) to explain the relationships between the locations (places and regions) and changes in their environment.
- SS.G.1.6-8.MdC: Use mapping and graphing to represent and analyze spatial patterns of different environmental and cultural characteristics.
- SS.G.1.6-8.MC: Construct different representations to explain the spatial patterns of cultural and environmental characteristics.
- SS.G.1.9-12 Use maps (created using geospatial and related technologies, if possible), satellite images, and photographs to display and explain the spatial patterns of physical, cultural, political, economic, and environmental characteristics.



Scribble Maps

<https://www.scribblemaps.com/>

- Create a map from simple templates adding text, graphics, shapes...etc.
- Include map locations, latitude and longitude....map landmarks or fieldtrips...etc.



Google Drawing

<https://drawings.google.com/>

- Create a diagram of map using simple shapes on a grid style “paper”
- Integrates with Google Classroom and will work on an interactive white board so the activity could be presented as a whole class process first

Supporting SEL standards – **Goal 1-** Students can recognize external supports by designing a map of the community showing where to locate the police, community outreach organizations and other social contacts., etc.. **Goal 2** – Increase awareness of individual and group similarities and differences by creating and using a neighborhood map. Display the created map and have student discuss what activities around the neighborhood they (and families) participated in over the week(end). (either as an open discussion, groups or writing assignment.) **Goal 3-** Students can contribute to the well-being of the school and community by participating in discussion about what is available in the area around them.

Human-Environment Interaction

- SS.G.2.9-12 Use self-collected or pre-existing data sets to generate spatial patterns at multiple scales that can be used to conduct analyses or to take civic action.

NBC Learn

<https://www.nbclearn.com/portal/site/learn/resources>

- Extensive video collection of news events, writers talking to kids, science and math of hockey, civil rights and many more engaging topics
- All content is original and prepared for students



National & Community Service

<http://www.serve.gov/?q=site-page/toolkits>

- Educators that have students that want to look into a community or school service project, but are unsure where to start this is a website that can help with the planning process.
- There are several tool kits available and many ideas, including a “blank” toolkit if no other category fits the student’s needs.



Supporting SEL standards – **Goal 1-** Students can collect data or surveys to demonstrate ways to show leadership in school or their community. **Goal 2** – Increase social skills by interviewing adults in regards to community needs or local civic actions. **Goal 3-** Students can contribute to the well-being of the school and community by participating in developing the implementation of a class plan to address a community issue.