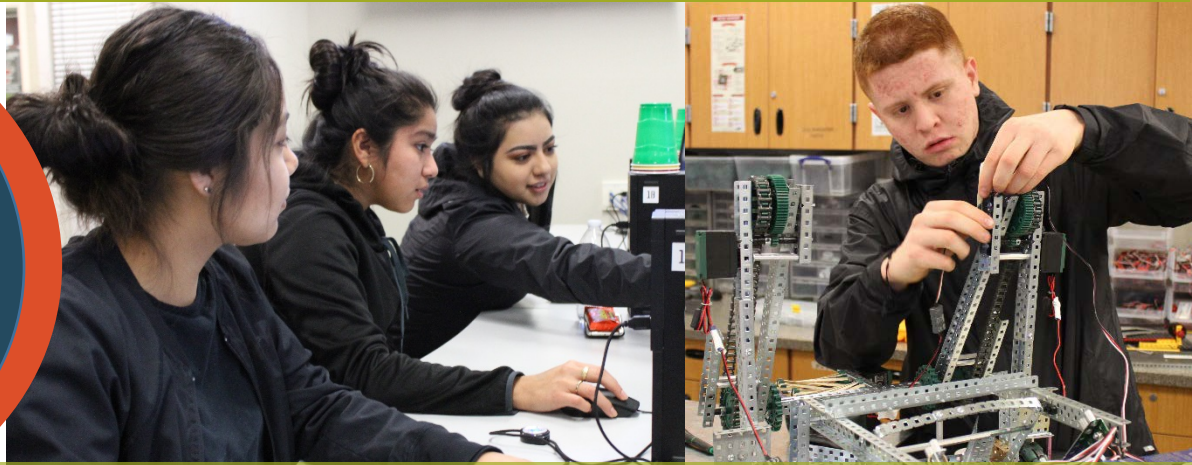# Educational Technology Learning Standards

Adopted May, 2018

Photos: Toppenish High School, Sunnyside High School and OSPI, courtesy of OSPI

washington
STATE LEARNING STANDARDS

Portions of this work are based on the 2016 International Society for Technology in Education (ISTE) Standards for Students (https://www.iste.org/standards/for-students) - page 7, Standards and Performance Indicators on pages 9-68, and Appendix F; Essential Conditions on pages B1-B2.

ISTE Standards for Students, ©2016, ISTE (International Society for Technology in Education), iste.org. All rights reserved.

Standards referenced on pages 8-68 include:

The College, Career, and Civic Life (C3) Framework for Social Studies State Standards: Guidance for Enhancing the Rigor of K-12 Civics, Economics, Geography, and History. National Council for the Social Studies (NCSS), Silver Spring, MD, 2013, https://www.socialstudies.org/c3

Common Core State Standards. National Governors Association Center for Best Practices and Council of Chief State School Officers, Washington D.C., 2010, http://www.corestandards.org

CSTA K-12 Computer Science Standards. Computer Science Teachers Association, Albany, NY, 2017, http://www.csteachers.org/page/standards

*Next Generation Science Standards: For States, By State*s. The National Academies Press, Washington D.C., 2013, https://www.nextgenscience.org

K-12 Educational Technology Learning Standards

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May, 2018

Educational Technology K–12 Learning Standards
Adoption Statement

Goal Three of the Washington Basic Education Act requires schools to "integrate technology literacy and fluency" in their curriculum, and the initial Educational Technology K–12 Learning Standards were developed in 2008 to support this expectation.

In this update to the 2008 standards, Washington is adopting the 2016 Technology Standards for Students released by the International Society for Technology in Education (ISTE). These standards were developed collaboratively with teachers, administrators, subject matter experts, state and national associations, and stakeholders in educational technology. Teams of Washington teachers, technology integration specialists, and teacher-librarians have reviewed these standards to ensure they effectively meet the needs of Washington students.

The standards have undergone a thorough review process that included a bias and sensitivity review, input from the state Curriculum Advisory and Review Committee, and a public comment period, providing those with a stake in educational technology an opportunity to inform the development and implementation of the standards and supporting documents.

These standards emphasize the ways technology can be used to amplify and transform learning and teaching, and they resonate with our state's aspiration to empower connected learners in a connected world. In addition, they complement statewide efforts to enhance instruction in digital citizenship and media literacy, which are critical elements of preparing our students for careers, post-secondary aspirations, and beyond.

Adopted on this 18th day of May, 2018.

Chris Reykdal
Superintendent of
Public Instruction

Washington State K-12 Educational Technology Standards

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Educational Technology is part of Basic Education in Washington

In 1993, Washington State Legislature established the commitment that all children would achieve at high levels. The Basic Education Act of 1993 established **four common learning goals** for all Washington students, designed to create high-quality academic standards and raise student achievement.

The four learning goals provided the foundation for the development of content standards, called Essential Academic Learning Requirements (EALRs), for reading, writing, communication, mathematics, science, social studies, health and fitness, the arts, and in 2007, educational technology. In 2011, "integrate technology literacy and fluency" was added to Goal Three.

These **four learning goals** are the foundation of all academic learning standards in Washington:
1. Read with comprehension, write effectively, and communicate successfully in a variety of ways and settings and with a variety of audiences.
2. Know and apply the core concepts and principles of mathematics; social, physical, and life sciences; civics and history, including different cultures and participation in representative government; geography; arts; *and health and fitness* [now named physical education].
3. Think analytically, logically, and creatively, and to **integrate technology literacy and fluency** as well as different experiences and knowledge to form reasoned judgments and solve problems.
4. Understand the importance of work and finance and how performance, effort, and decisions directly affect future career and educational opportunities.

Washington State Learning Standards and Outcomes

Learning standards are for all of us: students, principals, administrators, decision-makers, community partners, teachers, paraeducators, support staff, families, and the public. They help define what is important for students to know and be able to do as they progress through school. Standards help ensure that students acquire the skills and knowledge they need to achieve personal and academic success. Standards also provide an avenue for promoting consistency in what is taught to students in public schools across our state.

The Washington State K–12 Learning Standards are the required elements of instruction and are worded broadly enough to allow for local decision-making. Depending on school resources and community norms, instructional activities may vary. The updated 2018 Educational Technology K–12 Learning Standards reflect OSPI's continuous commitment to supporting rigorous, inclusive, age-appropriate, accurate instruction to ensure that students are prepared to live productive and successful lives in a global society.

Educational Technology Standards: Technology Literacy and Fluency

The initial Educational Technology Standards developed by the Office of Superintendent of Public Instruction in 2007-08 defined technology literacy and its next level of skill development, technological fluency, in this way:

Technology Literacy is the ability to responsibly, creatively and effectively use appropriate technology to:

- Communicate.
- Access, collect, manage, integrate and evaluate information.
- Solve problems and create solutions
- Build and share knowledge.
- Improve and enhance learning in all subject areas and experiences.

Technology Fluency is demonstrated when students:

- Apply technology to real-world experiences.
- Adapt to changing technologies.
- Modify current and create new technologies.
- Personalize technology to meet personal needs, interests and learning style.

2018 Educational Technology Standards Update

Starting with these definitions, teams of educators from across the state assisted OSPI in updating the Educational Technology Standards during 2017-18 by (see Appendix A for the list of 50+ educators that participated in the process). Two goals framed the development work that led to these updated standards:
- Integrate technology across core curricula, and provide realistic examples connected to other content standards whenever possible.
- Determine what students should know and be able to do in a digital world.

After extensive review and discussion, the development team recommended that Washington should adopt the 2016 Technology Standards for Students released by the International Society for Technology in Education (ISTE). These standards emphasize the ways that technology can be used to amplify and even transform learning and teaching, and resonate with our state's aspiration to empower connected learners in a connected world. In addition, they complement statewide efforts to enhance instruction in digital citizenship (ISTE Standard 2) and media literacy (ISTE Standards 1 and 3), as defined below:

> *Digital citizens recognize and value the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they engage in safe, legal and ethical behaviors[1].*
> *Media literacy is the ability to access, analyze, evaluate, create and act using a variety of forms of communication[2].*

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[1] Adapted from the 2016 International Society for Technology in Education (ISTE) Standards for Students
[2] Definition from the National Association for Media Literacy Education

Personalizing Learning Through Technology Integration

Technology integration is the use of technology resources – computers and mobile devices, digital cameras, applications, and networked resources – to support teaching and learning across all subject areas and grade levels. Educators become facilitators of learning, use diagnostic tools to identify student needs, and provide differentiated supports for learners.

Integrated into the classroom, technology becomes a multi-modal way to extend learning. It provides a medium that unpacks the world and opens new channels through which students show what they know and can do. Also, technology can introduce different perspectives on life and culture through the immediacy of videoconferences, email dialogue and social media. Conversation among learners and experts anywhere enriches learning and provides insight into the creative tangents that lead to expert knowledge. These learning experiences achieve relevancy, as the struggles, limits and potentials of problem-solving moves theory into practice for young learners.

Technology integration is achieved when:
- It is a seamless part of the learning process.
- The use of technology is routine and transparent.
- Technology is accessible and readily available for the task at hand.
- Technology tools support curricular goals and state standards.
- It helps students reach their learning goals.

Educators have reported that integrating technology effectively has three positive potentials for the learner:
1. Technology motivates students to delve deeper into a subject area.
2. Technology has an inexhaustible flexibility – mechanically and creatively. Students create, manipulate and individualize their learning artifacts.
3. Technology increases teachers' ability to meet the individual needs of all learners, and support students with different learning styles.

Implementation Considerations

Culturally Responsive Teaching

Many areas throughout Washington have seen a tremendous growth in the diversity of our student populations, which mirrors our national growth and serves as a strength in our classrooms. Research into a list of best practices that effective culturally responsive teachers use to support their students includes the following categories:

- Modeling, scaffolding, and clarification of challenging curriculum
- Using student strengths as starting points and building on their funds of knowledge
- Investing in and taking personal responsibility for students' success
- Creating and nurturing cooperative environments
- Having high behavioral expectations
- Reshaping the prescribed curriculum
- Encouraging relationships among schools and communities
- Promoting critical literacy
- Engaging students in social justice work
- Making explicit the power dynamics of mainstream society
- Sharing power in the classroom. [3]

OSPI will incorporate these cultural competence standards for educators into the implementation and training for the new educational technology standards.

Students with Disabilities

There is no doubt that technology continues to enhance the educational experience of students with disabilities and those served by a Section 504 plan. High on the list of the benefits of assistive and adaptive technologies are greater independence and productivity, and expanded opportunities for social inclusion. Existing and emerging technologies have the power to connect and engage all students with personalized teaching and learning.

Universal Design for Learning

Many schools are also starting to make use of Universal Design for Learning (UDL), a set of principles for curriculum development that give all individuals equal opportunities to learn. It provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone, with flexible approaches that can be customized and adjusted for individual needs.

Equity, Access and the Essential Conditions.

Researchers and educators investigating the many dimensions of technology in education have identified *essential conditions* (see Appendix B) that optimize the likelihood that technology integration will make a positive contribution to teaching and learning. Three of these conditions are critical if schools are to integrate these technology standards successfully:

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[3] Culturally Responsive Teaching, Region 10 Equity Assistance Center, 2009.

- Equalized access for every classroom to a high-speed Internet connection and robust wireless network, up-to-date computers and a variety of digital teaching and learning technologies.
- Professional development for educators and administrators that promotes learner-centered instruction and technology integration.
- Sustainable and sufficient funding to keep the infrastructure of network and classroom technologies current and reliable.

OSPI recognizes that not every classroom has access to a high-speed Internet connection and other up-to-date teaching and learning technologies. An important part of implementing the new educational technology standards will be to continue to advocate for sufficient funding for all districts to help close opportunity gaps related to educational technology and level the playing field for all students in all districts.

The Importance of Media Literacy in Educational Technology
Students must know more than how to use technology. They must become fluent in analyzing the messages delivered via technology, and the motivation for the messages. Some experts estimate that we are exposed to over two million advertisements in our lifetime. Unpacking the messages, both overt and covert, in digital media is an essential 21st century skill. Fortunately, educational technology shares responsibility with all other subject areas to promote critical thinking and analysis skills as students evaluate information in any format, including digital media. Analyzing media influences is an essential skill that needs to be addressed in science, the arts, social studies, English language arts, history, health, and all other subject areas. Educational technology has a unique opportunity to reinforce critical thinking and analysis skills across disciplines. Based on feedback from the expert panel reviewing the draft standards for bias and cultural sensitivity, OSPI incorporated additional samples of student performance that include a focus on building media literacy skills.

Inclusion
Inclusion is active engagement and measurable benefit in teaching and learning based on relevance, rigor, and varied activities that deepen understanding. It includes multiple perspectives and involves students, and families in the education process.

Students must feel safe and comfortable to be able to learn effectively. To be inclusive, an educator must actively address when individual students or student groups are not feeling safe or comfortable. One key success factor for improving inclusion is to recognize the funds of knowledge students bring to the classroom. Students add great value from all perspectives, and active encouragement and support means embracing and highlighting the value added from multiple perspectives. High expectations for all students, along with authentic and active engagement is a key driver for learning for all students.

Diversity
Diversity is the complete representation of the community being served, including populations not "seen". Diversity includes representation of intersectionality, which is the interconnected nature of social categorizations such as culture, race, class, and gender as they apply to a given individual or group, regarded as creating overlapping and interdependent identities. Diversity includes an active student voice, not just the student's "form" identification.

Structural and institutional racism, sexism, homophobia, ableism, and other divisive factors that enforce the feeling that some students experience based on their identity must be addressed in all educational environments. In particular with regard to educational technology standards, school personnel are encouraged to engage in meaningful conversations about ensuring the broad representation of all cultures and economic backgrounds in learning educational technology skills and concepts. By checking assumptions and actions carefully, we can start the process of unwinding opportunity gaps related to educational technology. Sometimes, reducing opportunity gaps may even include *restrictions* on screen time (e.g., "go outside and play" or spend some 1:1 time interacting with a teacher) instead of more time in front of an online math program.

2018 Standards for Technology Literate & Fluent Students (Based upon 2016 ISTE Student Standards)
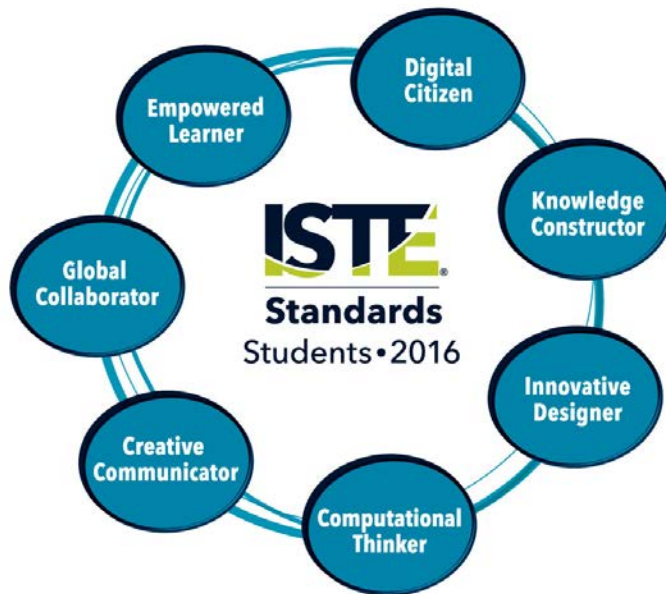
1. **Empowered Learner** - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

2. **Digital Citizen** - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

3. **Knowledge Constructor** - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

4. **Innovative Designer** - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

5. **Computational Thinker** - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

6. **Creative Communicator** - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

7. **Global Collaborator** - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

Understanding the Educational Technology Standards Framework

A **Standard** is a broad statement of the learning that applies to Grades K–12.

A **Performance Indicator** is a statement containing the essential content or process to be learned and the cognitive demand required to learn it. Each standard includes developmentally-appropriate grade-band performance indicators, which are considered essential to the standards.

Samples of student performance provide specific illustrations of the learning by the completion of the grade band. However, these examples are not exhaustive, and educators are encouraged to find multiple ways by which learners can demonstrate what they know.

Connected standards are logical connections to other content areas at approximately the same grade that also have a match in cognitive demand. With this alignment, teachers can expect that when students can demonstrate mastery of one standard (educational technology or other content area), they can also meet the other.

> **1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.**
>
> **1.a. With guidance from an educator, students consider and set personal learning goals and utilize appropriate technologies that will demonstrate knowledge and reflection of the process.**
>
> *Samples of student performance (by the end of grade 2):*
> - Students complete exit tickets (digitally utilizing electronic forms or feedback tools) for quick formative reflection (e.g., gathering exit task information).
> - Students collect work samples within a digitized portfolio such as writing, fluency or mathematical computation, and conference with teacher to set a goal for improvement.
>
> *Connected Standards:*
> - With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA W6 (K-2)

Connected Standards Codes
- C3= College, Career, and Civic Life (C3) Framework for Social Studies State Standards (https://www.socialstudies.org/c3)
- CS=Computer Science Learning Standards (http://www.k12.wa.us/ComputerScience/)
- H=Health Standards (http://www.k12.wa.us/HealthFitness/Standards.aspx)
- ELA=English Language Arts Standards (http://www.corestandards.org/ELA-Literacy/)
- Math=Mathematics Standards (http://www.k12.wa.us/Mathematics/Standards.aspx)
- PE=Physical Education Standards (http://www.k12.wa.us/HealthFitness/Standards.aspx)
- Science=Next-Generation Science Standards (https://www.nextgenscience.org/get-to-know)
- Social Studies=Social Studies Standards (http://www.k12.wa.us/SocialStudies/EALRs-GLEs.aspx)

Grades K-2 Standards for Technology Literate and Fluent Students

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
1.a. With guidance from an educator, students consider and set personal learning goals and utilize appropriate technologies that will demonstrate knowledge and reflection of the process. *Samples of student performance (by the end of grade 2):* • Students complete exit tickets (digitally utilizing electronic forms or feedback tools) for quick formative reflection (e.g., gathering exit task information). • Students collect work samples within a digitized portfolio such as writing, fluency or mathematical computation, and conference with teacher to set a goal for improvement. *Connected Standards:* • With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA W6 (K-2)
1.b. With guidance from an educator, students learn about various technologies that can be used to connect to others or make their learning environments personal and select resources from those available to enhance their learning. *Samples of student performance (by the end of grade 2):* • Students participate in teacher-led connections with current events both in and outside the student's community (e.g., videoconference, email, virtual field trips). • With guidance and support from adults, students use tools such as highlighting, video, text-to-speech, and audio, to make content accessible. • Students can identify main ideas and details while reading online digital resources. • Students know how to use communication tools in a secure environment. *Connected Standards:* • Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. ELA SL5 (2)

Standards for Technology Literate & Fluent Students
Grades K-2

1.c. With guidance from an educator, students recognize performance feedback from digital tools, make adjustments based on that feedback and use age-appropriate technology to share learning.

Samples of student performance (by the end of grade 2):
- Students work collaboratively with another grade level to produce and publish an e-book within the school's domain, with feedback provided from other grade bands to improve the final product.

Connected Standards:
- With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA W6 (2)

1.d. With guidance from an educator, students explore a variety of technologies that will help them in their learning and begin to demonstrate an understanding of how knowledge can be transferred between tools.

Samples of student performance (by the end of grade 2):
- Students develop basic skills for locating and using information with digital tools and resources, including age-appropriate databases, video clips, or e-books.
- Students learn how to choose and transfer information from one digital platform to another (e.g., maps, images, etc.)

Connected Standards:
- Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. CS 1A-CS-01
- Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). CS 1A-CS-02
- Describe basic hardware and software problems using accurate terminology. CS 1A-CS-03
- Use maps, graphs, photographs, and other representations to describe places and the relationships and interactions that shape them. C3 D3.Geo.2 (K-2)

2: Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2.a. Students practice responsible use of technology through teacher-guided online activities and interactions to understand how the digital space impacts their life.

Samples of student performance (by the end of grade 2):
- Students identify both positive and negative impacts technology can have on them.
- Students explain how information shared online leaves a digital footprint or "trail."

2.b. With guidance from an educator, students understand how to be careful when using devices and how to be safe online, follow safety rules when using the internet and collaborate with others.

Samples of student performance (by the end of grade 2):
- Students can explain the potential implications of interacting with others online.
- Students can explain the difference between information that is likely safe and appropriate to share online, and information that should be kept private.

2.c. With guidance from an educator, students learn about ownership and sharing of information, and how to respect the work of others

Samples of student performance (by the end of grade 2):
- Students understand and can articulate the importance of respecting others' belongings as they apply to digital content and information.
- Students can locate an author and/or title for a digital resource.
- Students understand that some digital content may be created by a company and not a single person.

2.d. With guidance from an educator, students demonstrate an understanding that technology is all around them and the importance of keeping their information private.

Samples of student performance (by the end of grade 2):
- Students can explain basic steps to follow when choosing a website to use for personal use (e.g., games).
- Students can explain why they shouldn't enter their personal information into a website, online game system, etc. without adult supervision.

Connected Standards:
- Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access. CS 1A-NI-04

3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3.a. With guidance from an educator, students use digital tools and resources, contained within a classroom platform or otherwise provided by the teacher, to find information on topics of interest.

Samples of student performance (by the end of grade 2):
- Students use photos to illustrate how families are different and the same.
- Students are able to identify simple search terms to find information in a digital resource or online library catalog.
- Students can use basic search tools in an age-appropriate digital resource.

Connected Standards:
- Recall information from experiences or gather information from provided sources to answer a question. ELA W8 (2)
- Compare and contrast the most important points presented by two texts on the same topic. ELA R9 (2)
- Understands how questions are used to find out information. Social Studies 5.2.1 (K)
- Uses texts and visuals to identify the main ideas or key details to study family life. Social Studies 5.2.2 (2)

3.b. With guidance from an educator, students become familiar with age-appropriate criteria for evaluating digital content

Samples of student performance (by the end of grade 2):
- Students can apply basic questions to help them evaluate whether a digital resource or e-book is a good fit for them (e.g., the correct reading level).
- Students can distinguish between nonfiction and fiction digital resources.

Connected Standards:
- Students compare and contrast the most important points presented by two texts or media productions on the same topic. ELA RI9 (2)
- Students know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key fact for information in a text efficiently. ELA RI5(2)
- Describe how reasons support specific points the author makes in a text. ELA RI8 (2)

3.c. With guidance from an educator, students explore a variety of teacher-selected tools to organize information and make connections to their learning.

Samples of student performance (by the end of grade 2):
- With guidance, students use digital learning tools to add audio or visual media to clarify information.
- Students can use digital organizers as a class or with a partner to support classroom learning.

Connected Standards:
- Recall information from experiences or gather information from provided sources to answer a question. ELA W8 (2)
- Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. ELA SL5 (2)
- Students use information gained from the illustrations in a print or digital text to demonstrate understanding of characters, setting, or plot. ELA RL7 (2)

3.d. With guidance from an educator, students explore real-world issues and problems and share their ideas about them with others.

Samples of student performance (by the end of grade 2):
- Students utilize diverse media formats (e.g., website, video clip, print, digital/print weekly) to report on a shared topic, then participate in a classroom discussion on the topic using digital tools.
- Students pair fiction and nonfiction digital resources.

Connected Standards:
- Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. ELA R.7
- Use technology, including the internet, to produce and publish writing and to interact and collaborate with others. ELA W.6

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4.a. With guidance from an educator, students ask questions, suggest solutions, test ideas to solve problems and share their learning.

Samples of student performance (by the end of grade 2):
- Students use journaling or blogging to show progress.
- Students share examples of design process in science (e.g., inventions such as light bulb, airplanes, cars).
- Students use digital tools to record/save questions, draw solutions, etc.
- Students use digital drawing tools or projector/whiteboard to share solutions.

Connected Standards:
- Make sense of problems and persevere in solving them. Math P1
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. Science K-2-ETS1-1
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. Science K-2-ETS1-2
- Construct an argument with reasons. C3 D4.1 (K-2)
- Construct explanations using correct sequence and relevant information. C3 D4.2 (K-2)
- Present a summary of an argument using print, oral, and digital technologies. D4.3 (K-2)
- Ask and answer questions about arguments. C3 D4.4 (K-2)
- Ask and answer questions about explanations. C3 D4.5 (K-2)
- Generate questions and a particular historical source as it relates to a particular historical event or development. C3 D2.His.12 (K-2)
- Generate possible reasons for an event or development in the past. C3 D2.His.14 (K-2)

Standards for Technology Literate & Fluent Students
Grades K-2

4.b. Students use age-appropriate digital and nondigital tools to design something and are aware of the step-by-step process of designing.

Samples of student performance (by the end of grade 2):
- Students record their step-by-step process through digital drawing or video.
- Students participate in makerspace activities.

Connected Standards:
- Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks. CS 1A-AP-08
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. Science K-2-ETS1-1
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. Science K-2-ETS1-2
- Construct explanations using correct sequence and relevant information. C3 D4.2 (K-2)

4.c. Students use a design process to develop ideas or creations, and they test their design and redesign if necessary

Samples of student performance (by the end of grade 2):
- Students use storyboarding, planning, and revision for stop-motion videos and presentation tools.
- With educator assistance, students use journaling or blogging to show progress.
- Students participate in makerspace activities.

Connected Standards:
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. Science K-2-ETS1-1
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. Science K-2-ETS1-2

4.d. Students demonstrate perseverance when working to complete a challenging task.

Samples of student performance (by the end of grade 2):

- Students complete digital exit tickets (e.g., using digital feedback tools) upon project completion to reflect on and rate their effort and understanding.
- With educator assistance, students use journaling or blogging to record mindset and model growth mindset regarding potential barriers or opportunities.

Connected Standards:

- Make sense of problems and persevere in solving them. Math P1.

5. Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

5.a. With guidance from an educator, students identify a problem and select appropriate technology tools to explore and find solutions.

Samples of student performance (by the end of grade 2):
- Students participate in makerspace activities.
- Given a variety of resources (e.g., print, online, digital), students self-select an appropriate resource to solve the identified problem.

Connected Standards:
- Decide when to use qualitative vs. quantitative data. Science SEP5 (K-2)
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. Science K-2-ETS1-1
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. Science K-2-ETS1-2

5.b. With guidance from an educator, students analyze age-appropriate data and look for similarities in order to identify patterns and categories.

Samples of student performance (by the end of grade 2):
- Students can collect data (e.g., survey responses) and create charts/graphs, either individually or collectively as a class.
- Students can find patterns and explore the meaning of charts, graphs, and tables.
- Students use an interactive whiteboard or other interactive tool to sort and categorize various items or objects to support classroom learning.

Connected Standards:
- Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. Science K-2-ETS1-3
- Collect and present the same data in various visual formats. CS 1A-DA-06
- Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions. CS 1A-DA-07
- Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. ELA CCR.R7

5.c. With guidance from an educator, students break a problem into parts and identify ways to solve the problem.

Samples of student performance (by the end of grade 2):

- Students can communicate design plans and solutions using a variety of communication options (e.g., drawing and oral or written descriptive language).

Connected Standards:

- Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. CS 1A-AP-11

5.d. Students understand how technology is used to make a task easier or repeatable and can identify real-world examples.

Samples of student performance (by the end of grade 2):

- Students can describe and provide examples of how resources such as digital tools and materials are things that help people get a task done.
- Students can explain that systems have parts or components that work together to accomplish a goal.

Connected Standards:

- Develop programs with sequences and simple loops, to express ideas or address a problem. CS 1A-AP-10

6. Creative Communicator - **Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**

6.a. With guidance from an educator, students choose different tools for creating something new or for communicating with others.

Samples of student performance (by the end of grade 2):
- Students select appropriate digital learning tools and resources to produce and publish information.
- Students participate in makerspace activities.

Connected Standards:
- Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations, create how to tutorials for mathematical concepts). ELA W7 (2)
- Construct an argument with reasons. C3 D4.1 (K-2)
- Construct explanations using correct sequence and relevant information. C3 D4.2 (K-2)
- Present a summary of an argument using print, oral, and digital technologies. C3 D4.3 (K-2)
- Construct maps, graphs, and other representations of familiar places. C3 D2.Geo.1 (K-2)

6.b. Students use digital tools to create original works.

Samples of student performance (by the end of grade 2):
- Students create videos, songs, artwork (e.g., using video, music, or various draw or paint applications).
- Students create an animation using digital tools.

Connected Standards:
- With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA W6 (K-2)
- Add drawings or other visual displays to descriptions as desired to provide additional detail. ELA SL5 (K-1)
- Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. ELA SL5 (2)
- Construct maps, graphs, and other representations of familiar places. C3 D2.Geo.1 (K-2)
- Construct an argument with reasons. C3 D4.1 (K-2)
- Construct explanations using correct sequence and relevant information. C3 D4.2 (K-2)
- Present a summary of an argument using print, oral, and digital technologies. C3 D4.3 (K-2)

6.c. With guidance from an educator, students share ideas in multiple ways-visual, audio, etc.

Samples of student performance (by the end of grade 2):

- Using a document camera (zoom in/out, lighting, rotation, camera capture, video capture), students present their work to classmates.
- Students create electronic graphs.
- Students use a digital drawing program to develop illustrations that describe key details of a text, then animate these illustrations to show movement.
- Students use a digital simulation to gain understanding into the interconnectivity and roles of the parts of the system.
- Students use different presentation platforms (e.g., slide presentation, movie, book trailer) throughout a unit of study.

Connected Standards:

- Explain how the consumption of products connects people to distant places. C3 D2.Geo.11 (K-2)
- Generate possible reasons for an event or development. C3 D2.His.14 (K-2)
- Select which reasons might be more likely than others to explain a historical event or development. C3 D2.His.16 (K-2)
- Explain why and how people, goods, and ideas move from place to place. C3 D2.Geo.7 (K-2)
- Explain how weather, climate, and other environmental characteristics affect people's lives in a place or region. C3 D2.Geo.4 (K-2)

6.d. With guidance from an educator, students select technology to share their ideas with different people.

Samples of student performance (by the end of grade 2):

- Students can select appropriate digital tools to create their products and presentations.
- Students discuss and identify communication needs considering the task, situation and information to be shared digitally.

Connected Standards:

- Use technology, including the internet, to produce and publish writing and to interact and collaborate with others. ELA CCRA W.6

7. Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

7.a. With guidance from an educator, students use technology tools to work with friends and with people outside their neighborhood, city and beyond.

Samples of student performance (by the end of grade 2):
- Students utilize video/voice conferencing to connect for learning (e.g., author presentations that teach the writing process, outside experts/consultants).

Connected Standards:
- Work respectfully and responsibly with others online. CS 1A-IC-17
- Use listening, consensus-building, and voting procedures to decide on and take action in their classrooms. C3 D4.8 (K-2)

7.b. With guidance from an educator, students use technology to communicate with others and to look at problems from different perspectives.

Samples of student performance (by the end of grade 2):
- Students collaborate using online software so that multiple perspectives can be captured.
- Students participate in global collaborative projects utilizing video/voice conferencing.
- Students record and share their perspectives with supporting reasoning using digital tools.

Connected Standards:
- Identify and explain a range of local, regional, and global problems, and some ways in which people are trying to address these problems. C3 D4.6 (K-2)
- Follow agreed-upon rules for discussions while responding attentively to others when addressing ideas and making decision as a group. C3 D2.Civ.9 (K-2)
- Compare their own point of view with others' perspectives. C3 D2.Civ.10 (K-2)
- Describe why people in one country trade goods and services with people in other countries. C3 D2.Eco.14 (K-2)
- Describe products that are produced abroad and sold domestically and product that are produced domestically and sold abroad. C3 D2.Eco.15 (K-2)
- Compare how people in different types of communities use local and distant environments to meet their daily needs. C3 D2.Geo.8 (K-2)
- Identify ways that a catastrophic disaster may affect people living in a place. C3 D2.Geo.12 (K-2)

Standards for Technology Literate & Fluent Students
Grades K-2

7.c. With guidance from an educator, students take on different team roles and use age-appropriate technologies to complete projects.

Samples of student performance (by the end of grade 2):
- Students work collaboratively to create a digital product (e.g., slideshow, concept mapping/webbing, video, poster, text document), and assume roles such as writer, recorder, editor, artist or graphics placer.

Connected Standards:
- Use listening, consensus-building, and voting procedures to decide on and take action in their classrooms. C3 D4.8 (K-2)

7.d. With guidance from an educator, students use age-appropriate technologies to work together to understand problems and suggest solutions.

Samples of student performance (by the end of grade 2):
- Students view global images and micro-write or record reactions and solutions using digital tools.

Connected Standards:
- With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. ELA W6 (K-2)
- Identify ways to take action to help address local, regional, and global problems. C3 D4.7 (K-2)

Grades 3-5 Standards for Technology Literate and Fluent Students

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
1.a. Students develop learning goals in collaboration with an educator, select the technology tools to achieve them, and reflect on and revise the learning process as needed to achieve goals. *Samples of student performance (by the end of grade 5):* • Students monitor their reading fluency using a technology-assisted program (e.g., fluency tutor) or audio recordings, and set goals for improvement. • Students record each other doing a specific task in P.E., then review the video and rate themselves on a rubric before making a goal to improve. • With guidance, students identify and use digital learning tools or resources to support planning, implementing and reflecting upon a defined task. • Students explain their choice of selected digital learning tools and resources to support productivity and learning. • Students seek information about appropriate technology to use in a cultural setting and abide by the cultural norms established.
1.b. With the oversight and support of an educator, students build a network of experts and peers within school policy and customize their environments to enhance their learning. *Samples of student performance (by the end of grade 5):* • Students create a list of classmates to ask for help based on skills, and keeps this list to use later.

Standards for Technology Literate & Fluent Students
Grades 3-5

1.c. Students seek feedback from both people and features embedded in digital tools, and use age-appropriate technology to share learning.

Samples of student performance (by the end of grade 5):
- Students evaluate the various features of digital learning tools and select tools based on the characteristics of a specific audience.
- Students create a digital piece of writing or presentation and use collaborative digital tools to solicit teacher and peer feedback to help make edits, as appropriate (e.g., spell and grammar check).

Connected Standards:
- Add audio recording and visual displays to presentations when appropriate to enhance the development of main ideas and themes. ELA SL 4.5
- With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others. ELA W 4.6

1.d. Students explore age-appropriate technologies and begin to transfer their learning to different tools or learning environments.

Samples of student performance (by the end of grade 5):
- Students collect and evaluate data, and create graphical displays using the technology tool of their choice.

Connected Standards:
- Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. ELA W8 (3)
- Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ELA W8 (5)
- Model how computer hardware and software work together as a system to accomplish tasks. CS 1B-CS-02
- Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. CS 1B-CS-03

Standards for Technology Literate & Fluent Students
Grades 3-5

2: Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2.a. Students demonstrate an understanding of the role an online identity plays in the digital world and learn the permanence of their decisions when interacting online.

Samples of student performance (by the end of grade 5):
- Students can identify the components of digital identities and digital footprints.

2.b. Students practice and encourage others in safe, legal and ethical behavior when using technology and interacting online, with guidance from an educator.

Samples of student performance (by the end of grade 5):
- Students demonstrate appropriate use of technology and explain the importance of responsible and ethical technology use.
- Students exercise digital etiquette when communicating and collaborating.
- Students identify and discuss laws and rules that apply to digital content and information (e.g., copyright laws).

Connected Standards:
- Describe how family, school, community, peers, media, and technology influence food and beverage choices and eating behaviors. H2.N6.4

2.c. Students learn about, demonstrate and encourage respect for intellectual property with both print and digital media when using and sharing the work of others.

Samples of student performance (by the end of grade 5):
- Students explain basic concepts of plagiarism and copyright.
- Students use digital citation tools to cite sources with appropriate guidance.

Connected Standards:
- Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ELA W8 (5)
- Observe intellectual property rights and give appropriate attribution when creating or remixing programs. CS 1B-AP-14
- Use public domain or creative commons media, and refrain from copying or using material created by others without permission. CS 1B-IC-21

2.d. Students demonstrate an understanding of what personal data is, how to keep it private and how it might be shared online.

Samples of student performance (by the end of grade 5):
- Students demonstrate understanding of different levels of security when using personal information and passwords.

Connected Standards:
- Discuss real-world cybersecurity problems and how personal information should be protected, such as the necessity of backing up data to guard against loss, how to create strong passwords and the importance of not sharing passwords, or why we should install and keep anti-virus software updated to protect data and systems. CS 1B-NI-05

Standards for Technology Literate & Fluent Students
Grades 3-5

3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3.a. Students collaborate with a teacher to employ appropriate research techniques to locate digital resources that will help them in their learning process.

Samples of student performance (by the end of grade 5):
- Students use digital tools to identify questions related to a topic of interest to broaden or narrow the topic as needed.
- Students use a variety of appropriate search techniques to locate needed information using digital learning tools and resources.
- Students gather, organize and summarize information from multiple digital learning tools and resources to build knowledge of a topic.

Connected Standards:
- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. ELA RI7 (5)
- Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of keywords and phrases. ELA L4c (5)

3.b. Students learn how to evaluate sources for accuracy, perspective, credibility and relevance.

Samples of student performance (by the end of grade 5):
- With guidance, students use multiple criteria to differentiate between relevant and irrelevant information found with digital learning tools and resources.

Connected Standards:
- Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem). ELA RL7 (5)
- Describe how family, school, community, peers, media, and technology influence food and beverage choices and eating behaviors. H2.N6 (4)
- Evaluates the accuracy of primary and secondary sources. Social Studies 5.1.2 (4)

3.c. Using a variety of strategies, students organize information and make meaningful connections between resources.

Samples of student performance (by the end of grade 5):

- Students interpret and analyze images, diagrams, maps, graphs, infographics, videos, animations, etc. in digital learning tools and resources to clarify and add to knowledge.
- Students use digital tools to analyze observations and data collected to determine if patterns are present.

Connected Standards:

- Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ELA W8 (5)

3.d. Students explore real world problems and issues and collaborate with others to find answers or solutions.

Samples of student performance (by the end of grade 5):

- Students work collaboratively using technology to identify and analyze a solution to a problem.

Connected Standards:

- Using technology, including the internet, to produce and publish writing and to interact and collaborate with others. ELA W6 (3-5)
- Identify how peers, media, and technology influence decisions related to tobacco, alcohol, and marijuana. H2.Su1 (4)
- Describe influence of peers and social media on body image. H2.So2.5

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4.a. Students explore and practice how a design process works to generate ideas, consider solutions, plan to solve a problem or create innovative products that are shared with others.

Samples of student performance (by the end of grade 5):

- Students demonstrate how applying human knowledge using tools and machines extends human capabilities to meet our needs and wants.
- Students give examples of how requirements for a product can limit the design possibilities for that product.
- Students plan and implement a design process: identify a problem, think about ways to solve the problem, develop possible solutions, test and evaluate solution(s), present a possible solution, and redesign to improve the possible solution.
- Students design a digital product with multiple components and describe how the components interact to form a system.

Connected Standards:

- Develop a diagram or simple physical prototype to convey a proposed object, tool, or process. Science SEP 2 (3-5)
- Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system. Science SEP 2 (3-5)
- Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation. Science SEP 4 (3-5)
- Create and/or use graphs and/or charts generated from simple algorithms to compare alternative solutions to an engineering problem. Science SEP 5 (3-5)
- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. Science SEP 6 (3-5)
- Gather relevant information from multiple sources while using the origin, structure, and context to guide the selection. C3 D3.1 (3-5)
- Use distinctions among fact and opinion to determine the credibility of multiple sources. C3 D3.2 (3-5)
- Construct arguments using claims and evidence from multiple sources. C3 D4.1 (3-5)

4.b. Students use digital and non-digital tools to plan and manage a design process.

Samples of student performance (by the end of grade 5):
- Students generate ideas for a variety of projects (e.g., book talks, informational video, narrative story) using digital storyboard tools.
- Students generate ideas using digital mind-mapping tools.

Connected Standards:
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)

4.c. Students engage in a cyclical design process to develop prototypes and reflect on the role that trial and error plays.

Samples of student performance (by the end of grade 5):
- Students generate, develop and communicate design ideas and decisions using appropriate terms and graphical representations.

Connected Standards:
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. NGSS 3-5-ETS1-3

4.d. Students demonstrate perseverance when working with open-ended problems.

Samples of student performance (by the end of grade 5):
- Students are given an engineering design challenge, with an end goal in mind, and work through the process collaboratively using digital tools to simulate, record, reiterate, or present solutions.

Standards for Technology Literate & Fluent Students
Grades 3-5

5. Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

5.a. Students explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking, with guidance from an educator.

Samples of student performance (by the end of grade 5):

- Using digital tools, students compare data to create visually appropriate graphical representation of the data (e.g., line graphs, circle graphs, bar graphs, etc.).

Connected Standards:

- Compare and refine multiple algorithms for the same task and determine which is the most appropriate. CS 1B-AP-08
- Decide if qualitative or quantitative data are best to determine whether a proposed object or tool meets criteria for success. Science SEP 5

5.b. Students select effective technology to represent data.

Samples of student performance (by the end of grade 5):

- With guidance, students select media formats appropriate to content and audience.

Connected Standards:

- Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. ELA W8 (5)
- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. CC ELA RI7 (5)
- Organize and present collected data visually to highlight relationships and support a claim. CS 1B-DA-06
- Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea. CS 1B-DA-07

5.c. Students break down problems into smaller parts, identify key information and propose solutions.

Samples of student performance (by the end of grade 5):
- Students create and test solutions to a given problem through the use of a coding activity.

Connected Standards:
- Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. CS 1B-NI-04
- Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process. CS 1B-AP-11

5.d. Students understand and explore basic concepts related to automation, patterns and algorithmic thinking.

Samples of student performance (by the end of grade 5):
- Students describe a process as a series of actions and how it is used to produce a result, and explain how controls use information to cause systems to change, like a home thermostat turning on the heat based on the low temperature of a room.

Standards for Technology Literate & Fluent Students
Grades 3-5

6. Creative Communicator - **Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**

6.a. Students recognize and utilize the features and functions of a variety of creation or communication tools.

Samples of student performance (by the end of grade 5):
- Students choose from a variety of digital tools to create a digital "storybook" featuring a narrative, expository, or other piece of writing.

Connected Standards:
- Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. ELA SL5 (5)
- Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. ELA SL5 (3)
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)
- Construct explanations using reasoning, correct sequence, examples, and details with relevant information and data. C3 D4.2 (3-5)

6.b. Students create original works and learn strategies for remixing or repurposing to create new artifacts.

Samples of student performance (by the end of grade 5):
- Students create artifacts using digital learning tools and resources to demonstrate knowledge.

Connected Standards:
- Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. ELA SL2 (5)
- Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. CS 1B-AP-12
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)

Standards for Technology Literate & Fluent Students
Grades 3-5

6.c. Students create digital artifacts to communicate ideas visually and graphically.

Samples of student performance (by the end of grade 5):
- Students use digital tools to create an infographic, flowchart, timeline, or digital museum.
- Students create multimedia presentations explaining a hypothesis for a scientific question.
- Students create digital presentations that explain the causes(s) and effect(s) of a historical event.

Connected Standards:
- Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. ELA W.5.2.A
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)
- Construct maps and other graphic representations of both familiar and unfamiliar places. C3 D2.Geo.1 (3-5)

6.d. Students learn about audience and consider their expected audience when creating digital artifacts and presentations.

Samples of student performance (by the end of grade 5):
- With guidance, students discuss and identify digital communication needs considering goals, audience and content.

Connected Standards:
- Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. CS 1B-AP-13
- Gather relevant information from multiple sources while using the origin, structure, and context to guide the selection. C3 D3.1 (3-5)
- Identify evidence that draws information from multiple sources in response to compelling questions. C3 D3.3 (3-5)
- Use evidence to develop claims in response to compelling questions. C3 D3.4 (3-5)
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)

7. Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

7.a. Students use digital tools to work with friends and people from different backgrounds or cultures.

Samples of student performance (by the end of grade 5):
- Students create a plan and select collaboration and/or communication tools to complete a given task.
- Students identify the positive and negative impact the use of technology can have on relationships, communities and self.
- Students describe the advantages/disadvantages of technology (past, present, future) to understand the relationship between technology, society and the individual.
- Students use digital tools to seek feedback from other groups in their class or students at another grade level.

Connected Standards:
- Seek diverse perspectives for the purpose of improving computational artifacts. CS 1B-IC-20
- Present a summary of arguments and explanations to others outside the classroom using print and oral technologies and digital technologies. C3 D4.3 (3-5)

7.b. Students use collaborative technologies to connect with others, including peers, experts and community members, to explore different points of view on various topics.

Samples of student performance (by the end of grade 5):
- Using digital tools, students connect with other classes in different regions around their state to discuss landforms and create a digital state tourism webpage or digital presentation.
- Students post, compare and discuss data related to an environmental issue to share with another group, class or community to broaden their awareness of the issue.
- Students use digital tools to discuss ideas on a common text or media collection (e.g., the Washington state or Library of Congress photo archive).

Connected Standards:
- Explain how cultural and environmental characteristics affect the distribution and movement of people, goods, and ideas. C3 D2.Geo.7 (3-5)
- Explain how human settlements and movements relate to the locations and use of various natural resources. C3 D2.Geo.8 (3-5)
- Analyze the effects of catastrophic environmental and technological events on human settlements and migration. C3 D2.Geo.9 (3-5)
- Explain why environmental characteristics vary among different world regions. C3 D2.Geo.10 (3-5)
- Explain how natural and human-made catastrophic events in one place affect people living in other places. C3 D2.Geo.12 (3-5)

7.c. Students perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem.

Samples of student performance (by the end of grade 5):

- Students use digital tools and assigned roles to create a digital presentation addressing a project or solving a problem (e.g., present the steps used to complete a design and engineering task in science like designing, testing, and refining a device that converts energy from one form to another).
- Students create a public service announcement on a health issue by taking on different roles in the production (e.g., sound editing, graphic design, script writing, etc.).
- Students create a documentary about a historical topic using a range of digital tools and resources (e.g., mock interviews, archived photos, etc.).

Connected Standards:

- Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development. CS 1B-AP-16

7.d. Students work with others using collaborative technologies to explore local and global issues.

Samples of student performance (by the end of grade 5):

- Students identify positive and negative impacts their use of personal technology and technology systems (e.g., agriculture, transportation, energy generation, water treatment) can have on their community.

Connected Standards:

- Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. ELA W6 (3-5)
- Explain how cultural and environmental characteristics affect the distribution and movement of people, goods, and ideas. C3 D2.Geo.7 (3-5)
- Explain how human settlements and movements relate to the locations and use of various natural resources. C3 D2.Geo.8 (3-5)
- Analyze the effects of catastrophic environmental and technological events on human settlements and migration. C3 D2.Geo.9 (3-5)
- Explain why environmental characteristics vary among different world regions. C3 D2.Geo.10 (3-5)
- Explain how natural and human-made catastrophic events in one place affect people living in other places. C3 D2.Geo.12 (3-5)

Grades 6-8 Standards for Technology Literate and Fluent Students

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

1.a. Students articulate personal learning goals, select and manage appropriate technologies to achieve them, and reflect on their successes and areas of improvement in working toward their goals.

Samples of student performance (by the end of grade 8):
- Students lead teacher-parent conferences using technology tools.
- Students create digital portfolios.
- Students identify types of technology tools and resources best able to assist them in their learning, and justify the rationale for their selection.
- Students set personal learning goals and use online tools to share and reflect on their learning.

Connected Standards:
- Using one or more technologies, create short- and long-term goals to establish and track healthy eating patterns. H6.N6.8
- Using one or more technologies, construct a personal workout using the FITT principle and evaluate progress toward goal. PE3.5.8
- Using one or more technologies, maintain and reflect on a personal physical activity and nutrition log and set goals for improvement. PE3.11.8

1.b. Students identify and develop online networks within school policy, and customize their learning environments in ways that support their learning, in collaboration with an educator.

Samples of student performance (by the end of grade 8:
- Students participate in school-approved online groups to support learning (e.g., online discussion boards through a Learning Management System).
- Students use school-approved collaborative and file sharing groups to network and get assistance from teachers and peers.
- Students demonstrate awareness that online groups and discussion boards may have biases which should be considered.

Standards for Technology Literate & Fluent Students
Grades 6-8

1.c. Students actively seek performance feedback from people, including teachers, and from functionalities embedded in digital tools to improve their learning process, and they select technology to demonstrate their learning in a variety of ways.

Samples of student performance (by the end of grade 8):

- Students use interactive digital tools to create online polls or surveys to gather data to help guide and assess information during the learning process.
- Students comment on writing projects using online tools (e.g. blogs, online discussions, comments on live documents, etc.).
- Using knowledge about target audiences, students create digital presentations that provide opportunities for audience participation and feedback.
- Students solicit feedback for their ideas using digital tools.

1.d. Students are able to navigate a variety of technologies and transfer their knowledge and skills to learn how to use new technologies.

Samples of student performance (by the end of grade 8):

- Students use a variety of devices (e.g., mobile devices and computers) to support planning, implementing, and reflecting upon a defined task.
- Students apply their knowledge and skills from existing technologies and devices to successfully use new technologies.
- Students develop criteria for selecting digital learning tools and resources to accomplish a defined task.
- Students identify a product and describe how people from different disciplines combined their skills in the design and production of the product.
- Students from a variety of backgrounds are able to use digital technologies with fluency and ease.

Standards for Technology Literate & Fluent Students
Grades 6-8

2: Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2.a. Students manage their digital identities and reputations within school policy, including demonstrating an understanding of how digital actions are never fully erasable.

Samples of student performance (by the end of grade 8):
- Students participate in class discussions about media literacy and online safety.
- Students demonstrate knowledge of core concepts and key questions of media literacy.
- Students demonstrate knowledge of when to share personal information.
- Students identify the differences between ethical and unethical online and digital use behavior.
- Students identify the consequences of unethical uses of technology.
- Students are aware that what goes online is never completely erased, and can be easily replicated and reused for unintended purposes.

2.b. Students demonstrate and advocate for positive, safe, legal and ethical habits when using technology and when interacting with others online.

Samples of student performance (by the end of grade 8):
- Students lead or participate in class discussions about media literacy and online safety.
- Students identify the differences between ethical and unethical online and digital use behavior.
- Students identify the consequences of unethical uses of technology.
- Students explain the positive and negative impact the use of technology can have on personal, professional and community relationships.

Connected Standards:
- Understand differences between reliable and unreliable sources of nutrition information. H3.N1.6
- Determine availability of valid and reliable nutrition information, products, and services. H3.N1.7
- Investigate valid and reliable nutrition information, products, and services. H3.N1.8

2.c. Students demonstrate and advocate for an understanding of intellectual property with both print and digital media- including copyright, permission and fair use-by creating a variety of media products that include appropriate citation and attribution elements.

Samples of student performance (by the end of grade 8):
- Students identify the differences between ethical and unethical online and digital use behavior.
- Students comply with copyright law when reusing content or resources from websites.
- Students are able to correctly cite copyrighted works in their digital portfolios and online work.
- Students describe the impact of unethical and illegal use of technology on individuals and society.

Connected Standards:
- 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. ELA W8 (6)
- 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. ELA W8 (7-8)

2.d. Students demonstrate an understanding of what personal data is and how to keep it private and secure, including the awareness of terms such as encryption, HTTPS, password, cookies and computer viruses; they also understand the limitations of data management and how data-collection technologies work.

Samples of student performance (by the end of grade 8):
- Students use secure passwords to protect the privacy of information.
- Students participate in class discussions about online safety.
- Students understand when and when not to click on "pop-ups" and advertisements while using the Internet.
- Students understand that ads pop up on certain sites in an attempt to reach and influence a pre-determined target audience.
- Students understand and can identify online phishing, spam and malicious emails.
- Students demonstrate knowledge of when to share personal information.
- Students identify what type of storage (local, cloud, or other) is the appropriate option dependent on data size, sharing needs, etc.
- Students can evaluate online tools (e.g., extensions, apps, software, etc.) to determine their safety, privacy policy, and appropriate use.

Connected Standards:
- Identify potential dangers of sharing personal information through electronic media. H1.Sa3.6b
- Understand potential dangers of sharing personal information through electronic media. H1.Sa3.7b
- Describe potential dangers of sharing personal information through electronic media. H1.Sa3.8c
- Describe tradeoffs between allowing information to be public and keeping information private and secure. CS 2-IC-2

3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3.a. Students demonstrate and practice the ability to effectively utilize research strategies to locate appropriate digital resources in support of their learning.

Samples of student performance (by the end of grade 8):
- Students use online library databases to complete a research project of their choice.
- Students make effective keyword choices when searching online and are able to explain what terms they used to find their information.
- Students are able to use their lived-experiences and work to enhance their learning and research strategies, and to incorporate content from non-traditional media and resources.

Connected Standards:
- Write arguments to support claims with clear reasons and relevant evidence. ELA W1 (6-8)
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. ELA W2 (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. ELA W8 (6)
- 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. ELA W8 (7-8)
- Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate. ELA W7 (6)
- Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation. ELA W7 (7)
- Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. ELA W7 (8)
- Creates and uses research questions to guide inquiry on an issue or event. Social Studies 5.2.1 (7)
- Gather relevant information from multiple sources while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection. C3 D3.1 (6-8)

3.b. Students practice and demonstrate the ability to evaluate resources for accuracy, perspective, credibility and relevance.

Samples of student performance (by the end of grade 8):

- Students create and publish digital stories online for peer review.
- Students use their knowledge of media literacy and multiple criteria to evaluate the validity of information found with digital learning tools and resources.
- Students understand that media present value messages and have an inherent bias, and question who produced material and what they may have left out.
- Students can cite relevant evidence and resources to support or validate accuracy and perspective.

Connected Standards:

- Analyze validity and reliability of health and wellness information and products. H3.W4.7
- Describe how values, media, and technology influence health decisions and behaviors. H2.W3.8
- Write arguments to support claims with clear reasons and relevant evidence. ELA W1 (6-8)
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. ELA W2 (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. ELA W8 (6)
- 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. ELA W8 (7-8)
- Evaluate the credibility of a source by determining its relevance and intended use. C3 D3.2 (6-8)

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3.c. Students locate and collect resources from a variety of sources and organize assets into collections for a wide range of projects and purposes.

Samples of student performance (by the end of grade 8):
- Students create a digital collection of resources on an interactive platform to share with others.
- Students create multimedia presentations proposing their solution to a current issue with links or references to supporting resources.
- Students create media and digital campaigns for specific purposes.
- Students use several resources to find information not usually found in standard texts to confirm or refute statements made in the text.

Connected Standards:
- Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information. ELA SL5 (6)
- Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. ELA SL5 (7)
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. ELA SL5 (8)
- 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. ELA W6 (7)
- 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. ELA W6 (8)
- Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently. ELA W6 (6-8)
- 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. ELA RI7 (6)
- Identify evidence that draws information from multiple sources to support claims, noting evidentiary limitations. C3 D3.3 (6-8)

3.d. Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

Samples of student performance (by the end of grade 8):
- Students research a current issue using online resources.
- Student develop digital materials to promote personal or community-related points of view.
- Students demonstrate knowledge that not all online sources are credible.

Connected Standards:
- Analyze factors that influence substance use and abuse. H2.Su1.8
- Compare and contrast sources of information on substance use. H3.Su1.8
- Write arguments to support claims with clear reasons and relevant evidence. ELA W1 (6-8)
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. ELA W2 (6-8)

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4.a. Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.

Samples of student performance (by the end of grade 8):
- Students investigate and illustrate complex ideas or processes using a digital tool to develop their own thinking.
- Students create a digital space to collaborate, innovate, and share ideas.
- Students use digital tools to brainstorm and develop collaborative and collective solutions to a shared problem.

Connected Standards:
- Apply concepts of statistics and probability (including mean, median, mode, and variability) to analyze and characterize data, using digital tools when feasible. Science SEP 4 (6-8)
- Use digital tools and/or mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem. Science SEP 5 (6-8)
- Construct an explanation that includes qualitative or quantitative relationships between variables that predict(s) and/or describe(s) phenomena. Science SEP 6 (6-8)
- Construct an explanation using models or representations. Science SEP 6 (6-8)
- Develop or modify a model—based on evidence—to match what happens if a variable or component of a system is changed. Science SEP 2 (6-8)
- Use and/or develop a model of simple systems with uncertain and less predictable factors. Science SEP 2 (6-8)
- Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. Science SEP 2 (6-8)
- Develop and/or use a model to predict and/or describe phenomena. Science SEP 2 (6-8)
- Plan an investigation individually and collaboratively, and in the design identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. Science SEP 3 (6-8)
- Conduct an investigation and/or evaluate and/or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of the investigation. Science SEP 3 (6-8)
- Collect data to produce data to serve as the basis for evidence to answer scientific questions or to test design solutions under a range of conditions. Science SEP 3 (6-8)

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4.b. Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.

Samples of student performance (by the end of grade 8):
- Students identify stages in their design process and match one or more tools to each stage.
- Students use design tools to illustrate a thought or process.
- Students estimate time needed for different phases of a project, and check the accuracy of their predictions at the project's end.
- Students study a design-process framework (e.g., Design Thinking) and articulate tools appropriate to each stage with respect to an assigned project.

Connected Standards:
- Develop or modify a model—based on evidence—to match what happens if a variable or component of a system is changed. Science SEP 2 (6-8)
- Use and/or develop a model of simple systems with uncertain and less predictable factors. Science SEP 2 (6-8)
- Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. Science SEP 2 (6-8)
- Develop and/or use a model to predict and/or describe phenomena. Science SEP 2 (6-8)
- Plan an investigation individually and collaboratively, and in the design identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. Science SEP 3 (6-8)
- Conduct an investigation and/or evaluate and/or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of the investigation. Science SEP 3 (6-8)
- Evaluate the accuracy of various methods for collecting data. Science SEP 3 (6-8)
- Collect data to produce data to serve as the basis for evidence to answer scientific questions or to test design solutions under a range of conditions. Science SEP 3 (6-8)
- Collect data about the performance of a proposed object, tool, process, or system under a range of conditions. Science SEP 3 (6-8)
- Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. Science SEP 5 (6-8)
- Use digital tools and/or mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem. Science SEP 5 (6-8)
- Apply scientific ideas or principles to design, construct, and/or test a design of an object, tool, process or system. Science SEP 6 (6-8)
- Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints. Science SEP 6 (6-8)
- Optimize performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting. Science SEP 6 (6-8)
- Use flowcharts and/or pseudocode to address complex problems as algorithms. CS 2-AP-10

4.c. Students engage in a design process to develop, test and revise prototypes, embracing the cyclical process of trial and error and understanding problems or setbacks as potential opportunities for improvement

Samples of student performance (by the end of grade 8):

- Students use criteria developed with guidance to evaluate a new or improved product for its functional, aesthetic and creative elements.
- Students create design prototypes to address personal and/or community challenges.
- Students are able to use online feedback/comments to evaluate feasibility and practicality of prototypes.
- Students are able to use data collected online to test and evaluate designs.
- Students understand the design process and are able to digitally illustrate design criteria and constraints.

Connected Standards:

- Plan an investigation individually and collaboratively, and in the design identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. Science SEP 3 (6-8)
- Conduct an investigation and/or evaluate and/or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of the investigation. Science SEP 3 (6-8)
- Evaluate the accuracy of various methods for collecting data. Science SEP 3 (6-8)
- Collect data to produce data to serve as the basis for evidence to answer scientific questions or to test design solutions under a range of conditions. Science SEP 3 (6-8)
- Collect data about the performance of a proposed object, tool, process, or system under a range of conditions. Science SEP 3 (6-8)
- Apply scientific ideas or principles to design, construct, and/or test a design of an object, tool, process or system. Science SEP 6 (6-8)
- Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints. Science SEP 6 (6-8)
- Optimize performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting. Science SEP 6 (6-8)
- Refine computational models based on the data they have generated. CS 2-DA-09

4.d. Students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.

Samples of student performance (by the end of grade 8):

- Students use digital tools to develop thinking, and identify and select information to help make decisions.
- Students present solutions to an official group using digital tools to review options and possibly determine best solutions.
- Students examine a familiar product or process and suggest improvements to its design.

5. Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
5.a. Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking. *Samples of student performance (by the end of grade 8):* • Students use a variety of tools to model a process. • Students practice breaking down complex tasks to make a process manageable and easily communicated. • Students utilize software and hardware to solve personal and community problems. • Students create simple computational codes to respond to simple commands. • Students create software that guides system input and output. *Connected Standards:* • Collect data using computational tools and transform the data to make it more useful and reliable. CS 2-DA-08 • Create algorithms (a series of ordered steps) to solve a problem. Science SEP5 (6-8)
5.b. Students find or organize data and use technology to analyze and represent it to solve problems and make decisions. *Samples of student performance (by the end of grade 8):* • Students gather data, examine patterns, and apply information for decision-making using digital tools and resources. • Students analyze data collected or retrieved from a variety of digital learning tools and resources to determine if patterns or trends are present. • Students use computational thinking (e.g., step-by-step thinking or directions) to solve problems and make decisions. *Connected Standards:* • Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. Science SEP 5 (6-8) • Identify evidence that draws information from multiple sources to support claims, noting evidentiary limitations. C3 D3.3 (6-8)

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5.c. Students break problems into component parts, identify key pieces and use that information to problem solve.

Samples of student performance (by the end of grade 8):
- Students break down a problem into a logical flow.
- Students create a project plan timeline and role descriptions for an upcoming group project.
- Students design a solution, articulate the biggest challenges to implementation, and reflect on their process.

Connected Standards:
- Use mathematical representations to describe and/or support scientific conclusions and design solutions. Science SEP5 (6-8)

5.d. Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

Samples of student performance (by the end of grade 8):
- Students create algorithms, or a list of ordered steps, to solve a problem or communicate an idea.
- Students demonstrate an understanding of logical processes and use reasoning (e.g., IF-THEN statements) to infer and compare solutions, and draw conclusions in a variety of content areas.

6. Creative Communicator - **Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**

6.a. Students select appropriate platforms and tools to create, share and communicate their work effectively.

Samples of student performance (by the end of grade 8):
- Students use a variety of tools to communicate their learning effectively.
- Students evaluate the appropriateness of their chosen platform or tools before, during, and after completion, and are able to justify their choice in light of their audience.

Connected Standards:
- 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. ELA W6 (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. ELA W6 (7)
- 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 ELA W6 (8)
- Analyze the impact of technology and social media on friendships and relationships. H2.Se8.8
- Present adaptations of arguments and explanations on topics of interest to others to reach audiences and venues outside the classroom using print and oral technologies (e.g., posters, essays, letters, debates, speeches, reports, and maps) and digital technologies (e.g., Internet, social media, and digital documentary). C3 D4.3 (6-8)

6.b. Students create original works or responsibly repurpose other digital resources into new creative works.

Samples of student performance (by the end of grade 8):
- Students create an audio or visual project from resources found online, and are able to correctly cite and give credit to the original creator.
- Students reflect on their sources of inspiration for original work, even if not quoted directly.
- Students work with librarians and educators in media literacy to understand how to attribute material in a digital product.

Connected Standards:
- 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. ELA RI7 (6)

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6.c. Students communicate complex ideas clearly using various digital tools to convey the concepts textually, visually, graphically, etc.

Samples of student performance (by the end of grade 8):

- Students integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
- Students use metaphorical thinking to communicate complex processes, and illustrate their thinking using digital tools.
- Students analyze and present data tables and charts to their peers, explaining the significance of each element.
- Students use tools to create data visualization that are easily understood by their peers and others.

Connected Standards:

- Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information. ELA SL5 (6)
- Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. ELA SL5 (7)
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. ELA SL5 (8)
- Construct arguments using claims and evidence from multiple sources, while acknowledging the strengths and limitations of the arguments. C3 D4.1 (6-8)
- Construct explanations using reasoning, correct sequence, examples, and details with relevant information and data, while acknowledging the strengths and weaknesses of the explanations. C3 D4.2 (6-8)
- Present adaptations of arguments and explanations on topics of interest to others to reach audiences and venues outside the classroom using print and oral technologies (e.g., posters, essays, letters, debates, speeches, reports, and maps) and digital technologies (e.g., Internet, social media, and digital documentary). C3 D4.3 (6-8)

6.d. Students publish or present content designed for specific audiences and select platforms that will effectively convey their ideas to those audiences.

Samples of student performance (by the end of grade 8):

- Students evaluate the effectiveness of a digital tool to communicate information with multiple audiences.
- Students share what is learned about a topic, problem, or question with multiple audiences.
- Students use digital tools to document personal learning experience and receive feedback from peers.

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7. Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

7.a. Students use digital tools to interact with others to develop a richer understanding of different perspectives and cultures.

Samples of student performance (by the end of grade 8):
- Students utilize online databases to search for information on cultures other than their own, and consider the biases of each source.
- Students interview local elders or other community members, and edit interviews into media presentations to be shared with the community.
- Students post book reviews, highlighting the circumstance of the main characters.

Connected Standards:
- 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. ELA W6 (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. ELA W6 (7)
- 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. ELA W6 (8)

7.b. Students use collaborative technologies to connect with others, including peers, experts and community members, to learn about issues and problems or to gain broader perspective.

Samples of student performance (by the end of grade 8):
- Students collaborate in an online platform with a variety of peers, experts, and community members.
- Students participate in online discussions moderated and assessed by their teacher.

Connected Standards:
- 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. ELA W6 (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. ELA W6 (7)
- 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. ELA W6 (8)

7.c. Students determine their role on a team to meet goals, based on their knowledge of technology and content, as well as personal preference.

Samples of student performance (by the end of grade 8):

- Students serve different roles in collaborative projects to determine strengths and weaknesses and allow them to better choose their roles.
- Students use a digital project management tool to track team performance on assigned tasks.
- Students plan a project using online tools (e.g. assign group roles and establish timelines using an online calendar).

7.d. Students select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues

Samples of student performance (by the end of grade 8):

- Students digitally collect and analyze survey data from their communities.
- Students create digital products to demonstrate understanding and analysis of global issues.
- Students initiate online shared documents and lay ground rules for how to develop them.
- Students collaborate together digitally to present their learning and solutions.

Connected Standards:

- Using collaborative technologies, determine strategies for responding to harassment, intimidation, and bullying. H5.So5.7
- Using collaborative technologies, advocate for a bully-free school and community environment. H8.So5.8
- 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. ELA W6 (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. ELA W6 (7)

Grades 9-12 Standards for Technology Literate and Fluent Students

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
1.a. Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.   *Samples of student performance (by the end of grade 12):*   • Students create a digital portfolio that will provide the means to articulate and monitor their personal learning goals and G.P.A. (e.g., High School and Beyond Plan or Student-Led Conference).   • Student use digital tools to create study guides, interactive notebooks, flashcards, etc. to help them meet personal learning goals.   *Connected Standards:*   • Implement strategies to achieve a personal health goal using technology to develop, monitor, and evaluate progress. H6.W7.HS   • **Design and implement a personal fitness and nutrition plan (assessment scores, goals for improvement, plan of activities for improvement, log of activities to reach goals, timeline for improvement). PE3.8.HS1**
1.b. Students build networks and customize their learning environments in ways that support the learning process.   *Samples of student performance (by the end of grade 12):*   • Students participate in school-approved online groups to support learning (e.g., online discussion boards through a Learning Management System).   • Students collaboratively take notes in an online "master document" during class to be used by all to share questions, further explanation, comments, and constructivist learning.   • Students curate a Personal Learning Network (PLN) for a specific curricular area or topic, using a variety of social media feeds, news sites, people, etc. to support critical thinking skills.   • Students work collaboratively on an online/real-time team project to create one end-product (e.g., a science project presentation). Groups are required first to define and articulate the steps of their process, including the strengths and responsibilities of each member, and how each step is intended to enrich the quality of the end-product.

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1.c. Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

Samples of student performance (by the end of grade 12):

- Students use technology to connect and learn from experts in their field of study.
- Students interact and collaborate with others using a variety of digital tools (e.g. an LMS or social media site).
- Students use online forms to gather feedback from peers after a final presentation, identifying areas where they wish to improve and fashioning survey questions whose answers will inform their development.
- Students share a collaborative online tool to receive written or video (recorded or live) feedback from classmates, school audience, or an audience or expert outside of the school district.

Connected Standards:

- 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. ELA W6

1.d. Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

Samples of student performance (by the end of grade 12):

- Student create help documents, screencasts, and other digital artifacts to demonstrate how they solved their issue so others may benefit by reading or viewing.
- Students analyze and evaluate the ease of use and effectiveness of available features of selected digital learning tools and resources.
- Students report on the capacities and limitations of various technologies as a content exploration, recommending different technologies to peers for specific purposes.

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2: Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2.a. Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

Samples of student performance (by the end of grade 12):
- Students use a credible online identity review service to manage their reputation and design a PSA of the dos and don'ts when using the Internet.
- Students analyze how social media impacts society, individuals and organizations.
- Students actively cultivate a social media presence designed for future employers or schools to view.

Connected Standards:
- Compare how family, peers, culture, media, technology, and other factors influence safety and injury prevention practices and behaviors. H2.Sa1.HS

2.b. Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

Samples of student performance (by the end of grade 12):
- Students research an incident reported by news media of unethical use of technology, ideally involving someone of their age, and identify steps that might have been taken to prevent or mitigate the incident as part of a class project.
- Students participate and engage with the global community within expected norms of behavior and positive interaction.
- Students can use advanced search tools and strategies to locate and then give credit for online images and other digital media.

Connected Standards:
- Analyze potential dangers of sharing personal information through electronic media. H1.Sa3.HS
- Compare and contrast the influence of family, peers, culture, media, technology, and other factors on harassment, intimidation, and bullying. H2.So5.HS

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2.c. Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

Samples of student performance (by the end of grade 12):

- Students practice ethical and appropriate use of all media and comply with copyright law.
- Students cite electronic and print sources in appropriate format for school and personal work.
- Students understand Fair Use and utilize Creative Commons Licensing for personal work to protect created digital products.

2.d. Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

Samples of student performance (by the end of grade 12):

- Students practice safe and responsible sharing of information, data and opinions online.
- Students understand privacy issues and how personal data is archived and publicly available.
- Students understand how to actively manage their settings (e.g., purge cookies) to protect personal information.

Connected Standards:

- Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. CS 3A-IC-29

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3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3.a. Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

Samples of student performance (by the end of grade 12):
- Students apply keyword choice search techniques (e.g., basic and advanced Boolean).
- Students compare search browsers and recognize features that allow for filtering of information.
- Students identify sources using a database to research material for a persuasive speech.
- Students can modify search strategies to demonstrate resiliency in the research process.

Connected Standards:
- Create a resource that outlines where and how students can access valid and reliable health information, products, and services. H3.W4.HS
- 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. ELA W8 (9-10)
- 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 overreliance on any one source and following a standard format for citation. ELA W8 (11-12)
- Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection. C3 D3.1 (9-12)
- Creates and uses research questions that are tied to an essential question to focus inquiry on an idea, issue, or event. Social Studies 5.2.1 (9-10)

3.b. Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

Samples of student performance (by the end of grade 12):
- Students compare and contrast information found about the same global issue from different databases and analyze bias and fairness to the topic, using advanced search tools and country codes to find sources originating from different countries.
- Students use a framework for evaluating information found online.
- Student recognize bias in online research and sources.
- Students assess how point of view and purpose impact content, message, and style of text, media, digital, and online presentation.

Connected Standards:
- Evaluate how culture, media, society, and other people influence our perceptions about relationships and other related topics. H2.Se3.HS
- Evaluate the credibility of a source by examining how experts value the source. C3 D3.2 (9-12)
- Evaluates the validity, reliability, and credibility of sources when researching an issue or event. Social Studies 5.2.2 (9-10)

3.c. Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

Samples of student performance (by the end of grade 12):
- Students collect information and report on an issue of their choice, creating a digital product that effectively highlights the reasoning behind their collection's choice of media.
- Students use online content curation tools to organize research and information, and personalize online news content.
- Students analyze survey data, report information and display the data in a variety of ways to support conclusions.
- Students create their own digital text/resource sets to show varying perspectives on an issue to support papers, presentations and other school projects that show their ability to make connections and evaluations of those varying sources.

Connected Standards:
- Evaluate resources for accessing valid and reliable information, products, and services for healthy eating. H3.N1.HS
- Identify evidence that draws information directly and substantively from multiple sources to detect inconsistencies in evidence in order to revise or strengthen claims. C3 D3.3 (9-12)

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3.d. Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

Samples of student performance (by the end of grade 12):

- Students explore a variety of media for current issues and then share their ideas for how to remediate those issues in a variety of formats (e.g., speech, debate, presentation).
- Students examine various organizations that address a global issue and compare those solutions to their own ideas.
- Students use statistics and other forms of data to inform their ideas on solutions to problems that have a global connection.

Connected Standards:

- Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. Science SEP 6

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4.a. Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

Samples of student performance (by the end of grade 12):

- Students implement, document and present the design process as applied to a particular product, process or problem.

Connected Standards:

- Using one or more technologies, design, monitor, and adjust a personal nutrition plan, considering cost, availability, access, nutritional value, balance, freshness, and culture. H7.N6.HS
- Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. Science SEP 6
- Design a test of a model to ascertain its reliability. Science SEP 2
- Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. Science SEP 2
- Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations. Science SEP 2
- Develop a complex model that allows for manipulation and testing of a proposed process or system. Science SEP 2
- Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems. Science SEP 2
- Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled. Science SEP 3
- Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. Science SEP 3
- Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points or improve performance relative to criteria for success or other variables. Science SEP 3

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4.b. Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

Samples of student performance (by the end of grade 12):

- Students create a webpage to promote their school's spring dramatic production, incorporating elements of line, shape, form, value, space, color, texture, graphics and typography, and principles of organization of balance and proportion, that demonstrate design constraints and calculated risks.

Connected Standards:

- Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems. Science SEP 2
- Select appropriate tools to collect, record, analyze, and evaluate data. Science SEP 3
- Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. Science SEP 6
- Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. Science SEP 4

4.c. Students develop, test and refine prototypes as part of a cyclical design process.

Samples of student performance (by the end of grade 12):

- Students evaluate a design solution using conceptual, physical, digital and mathematical models at various intervals of the design process in order to check for proper design and note areas where improvements are needed (e.g., check the design solutions against criteria and constraints).

Connected Standards:

- Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled. Science SEP 3
- Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly. Science SEP 3
- Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points or improve performance relative to criteria for success or other variables. Science SEP 3
- Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. Science SEP 6
- Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions. CS 3A-AP-16

4.d. Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

Samples of student performance (by the end of grade 12):

- Students critically evaluate and demonstrate a design solution at multiple points of the design process, and consider design requirements and adjust processes and outcomes as needed.

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5. Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

5.a. Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

Samples of student performance (by the end of grade 12):
- Students are presented with civic problems, such as transportation or housing, and challenged to design and prototype technology-based solutions.

Connected Standards:
- Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations. Science SEP 5

5.b. Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

Samples of student performance (by the end of grade 12):
- Students construct a spreadsheet workbook with multiple worksheets, organize multiple worksheets to reflect the data, and use mathematical or logical functions, charts and data from all worksheets to convey the results.
- Students collect and analyze data through the use of online survey tools.
- Students download a large set of data and perform filtering and formula-based calculations in a spreadsheet to draw conclusions.

Connected Standards:
- Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. Science SEP 4

5.c. Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

Samples of student performance (by the end of grade 12):

- Students create musical instruments using inexpensive microcontrollers, sensors, and sound-production components.
- Students develop an instructional video, brochure, notebook, or other presentation tool to explain a complex scientific issue into smaller factors and systems to teach others about the issue.

Connected Standards:

- Create and/or revise a computational model or simulation of a phenomenon, designed device, process, or system. Science SEP 5
- Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. Science SEP 6
- Identify evidence that draws information directly and substantively from multiple sources to detect inconsistencies in evidence in order to revise or strengthen claims. C3 D3.3 (9-12)

5.d. Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

Samples of student performance (by the end of grade 12):

- Students apply techniques of algebra and functions to digitally represent and solve scientific and engineering problems.
- Students apply systems thinking to solve a complex problem.

6. Creative Communicator - **Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.**

6.a. Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

Samples of student performance (by the end of grade 12):
- Students use digital learning tools and resources to identify communication needs considering goals, audience, content, access to tools or devices, timing of communication (e.g., time zones), etc.

Connected Standards:
- Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically). Science SEP 8
- Present adaptations of arguments and explanations that feature evocative ideas and perspectives on issues and topics to reach a range of audiences and venues outside the classroom using print and oral technologies (e.g., posters, essays, letters, debates, speeches, reports, and maps) and digital technologies (e.g., Internet, social media, and digital documentary). C3 D4.3 (9-12)

6.b. Students create original works or responsibly repurpose or remix digital resources into new creations.

Samples of student performance (by the end of grade 12):
- Students research a current topic and select online information that is appropriate and credible to support a point of view, explaining why their audience should lend credence to their sources.
- Students are able to use multiple creation programs to design a final product (e.g., composing music for a film, retouching images for a final product, etc.).

6.c. Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

Samples of student performance (by the end of grade 12):
- Students design models using a computer programming language to support ideas on a topic.
- Students use graphic design software to create visual representations of a complex idea in a subject area.

Connected Standards:
- Develop a complex model that allows for manipulation and testing of a proposed process or system. Science SEP 2
- Present adaptations of arguments and explanations that feature evocative ideas and perspectives on issues and topics to reach a range of audiences and venues outside the classroom using print and oral technologies (e.g., posters, essays, letters, debates, speeches, reports, and maps) and digital technologies (e.g., Internet, social media, and digital documentary). C3 D4.3 (9-12)

6.d. Students publish or present content that customizes the message and medium for their intended audiences.

Samples of student performance (by the end of grade 12):
- Students engage local experts in final digital presentations, especially in a judging or evaluative context.
- Student project planning exercises include an analysis of the target audience and how that audience best receives or interprets information.

Connected Standards:
- Design a drug-free message for a community beyond school. H8.Su3.HS

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7. Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
7.a. Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning. *Samples of student performance (by the end of grade 12):* • Students contribute to an online project that combines photos and personal stories in order to share perspectives and understanding. • Students connect with students and classrooms around the world using online tools.
7.b. Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints. *Samples of student performance (by the end of grade 12):* • Students partner with students in other countries to collectively create software addressing a common global problem. • Students use recording media to take oral histories from community members and compile them into a representative data bank. • Students participate on online discussions about topics that encourage multiple perspectives on an issue.
7.c. Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal. *Samples of student performance (by the end of grade 12):* • Students use project management tools to organize individual and group tasks and reflect on participation and goal completion. • Student project planning includes culturally responsive explorations, such as reporting on different cultures' uses of technology.
7.d. Students explore local and global issues and use collaborative technologies to work with others to investigate solutions. *Samples of student performance (by the end of grade 12):* • Students connect with local health organizations to create digital promotional materials. • Students create collaborative presentations or websites that focus on solutions for a particular issue (e.g., a website with information and resources about climate change). *Connected Standards:* • Using collaborative technologies, design a message that promotes health for a community beyond school. H8.Su3.HS

Glossary

Acceptable/Responsible Use Policy (AUP/RUP): A school or organization's official policy statement regarding the use of the Internet or other computer networks.

Algorithm: A process or set of steps to be followed in calculations or other problem-solving operations, especially by a computer.

Authentic Problem: A genuine, real or original problem to be solved.

Blogging: The process of writing a blog (also known as a Weblog), an online journal in which the writer shares their thoughts about a particular subject with readers.

Cloud computing: The practice of storing and accessing data and programs over the Internet rather than a local server or a personal computer (e.g., iCloud, Google Cloud, OneDrive and Dropbox).

Cookie: A piece of code or data created by a web server and stored on a user's computer. It is used to keep track of the user's usage patterns and preferences.

Creative Commons: Creative Commons licenses are designed to facilitate and encourage more versatility and flexibility in copyright law.

Cybersecurity: Measures taken to protect networks, computers, programs and data from attack, damage or unauthorized access**.**

Design Process: An approach for breaking down a large project into manageable chunks.

Digital Footprint: The information about a particular person that exists on the Internet as a result of their online activity A *digital identity* is an online or networked identity adopted or claimed in cyberspace by an individual, organization or electronic device.

Digital Portfolio: A collection of electronic evidence assembled and managed by a user. Also known as an e-portfolio or an electronic portfolio.

Digital Stories: A variety of forms of digital narratives (web-based stories, interactive stories, hypertexts and narrative computer games).

Digital Tools: Hardware and software that generate, store and process data.

Ebook: An electronic version of a printed book that can be read on a computer or handheld device designed specifically for this purpose.

Encryption: The process of converting electronic data to an unrecognizable or encrypted form, one that cannot be easily understood by unauthorized parties.

Infographic: A visual image such as a chart or diagram used to represent complex information or data quickly and clearly.

Learning Management System (LMS): A software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, an LMS provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance.

Makerspace: A makerspace is a place where students can gather to create, invent, tinker, explore and discover using a variety of tools and materials.

Malware: The broad term to describe any malicious software designed by hackers. Malware includes viruses, worms, spyware, trojans, keyloggers, zombie programs and any other software that seeks to do one of four things: vandalize your computer in some way; steal your private information; take remote control of your computer (zombie your computer) for other ends; or manipulate you into purchasing something.

Microcontroller: A compact integrated circuit which is dedicated to perform one task and execute one specific application. A typical microcontroller includes a processor, memory and input/output peripherals on a single chip.

Multimedia: Digital products that integrate interactive text, images, sound and color. Multimedia can be anything from a simple PowerPoint slide show to a complex interactive simulation.

Network: A collection of computers that are linked together for the purpose of sharing information.

Podcast: A media file that is distributed over the Internet using syndication feeds, for playback on portable media players and personal computers.

Pop-ups: A secondary web browser window of varying size, often containing a form of advertising, which opens outside of the primary web browser window.

Social Media: The broad term for any online tool that enables users to interact with thousands of other users (e.g., Facebook, Twitter, LinkedIn, Google+, Instagram, Pinterest, Snapchat, Tumblr and Reddit).

Virtual Field Trip: A guided exploration through the World Wide Web that organizes a collection of pre-screened, thematically based web pages into a structured online learning experience.

Virus: A piece of programming code inserted into other programming to cause damage. Viruses can be sent in many forms but are often transmitted via email messages that, when opened, may erase data or cause damage to your hard disk. Some viruses are able to enter your email system and send themselves to other people in your list of contacts.

References

Bailey, Gerald and Mike Ribble. *Digital Citizenship in Schools*. International Society for Technology in Education (ISTE), 2007.

The Center for Universal Design in Education, DO-IT Program, University of Washington, 2018, www.washington.edu/doit/programs/center-universal-design-education/overview.

Culturally Responsive Teaching: A Guide to Evidence-based Practices for Teaching All Students Equitably. Region X Equity Assistance Center (EAC) at Education Northwest, 2016, educationnorthwest.org/sites/default/files/resources/culturally-responsive-teaching-508.pdf.

ISTE Standards for Students. International Society for Technology in Education (ISTE), 2016, www.iste.org/standards/for-students

Preparing Teachers for Schools as They Are: Recommendations for Cultural Competence for all Teachers in Washington State. Cultural Competency Work Group to the Professional Educator Standards Board, 2009, drive.google.com/file/d/0BzB1kJv-8a4iN2pzZUlYVnJVOWM/view

Standards for the 21st Century Learner. American Association of School Librarians (AASL), American Library Association, 2008.

What is Universal Design for Learning? Center for Applied Special Technology (CAST), 2017, www.udlcenter.org/aboutudl/whatisudl

Appendix A – Acknowledgements

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Appendix B – Essential Conditions

Certain conditions are necessary for schools to effectively use technology for learning, teaching and educational management. The International Society for Technology in Education (ISTE) Essential Conditions are 14 critical elements necessary to effectively leverage technology for learning. They offer educators and school leaders a research-backed framework to guide implementation of the technology standards, technology planning and system-wide change.

Shared Vision
Proactive leadership develops a shared vision for educational technology among all education stakeholders, including teachers and support staff, school and district administrators, teacher educators, students, parents and the community.

Empowered Leaders
Stakeholders at every level are empowered to be leaders in effecting change.

Implementation Planning
All stakeholders follow a systematic plan aligned with a shared vision for school effectiveness and student learning through the infusion of information and communication technology (ICT) and digital learning resources.

Consistent and Adequate Funding
Ongoing funding supports technology infrastructure, personnel, digital resources and staff development.

Equitable Access
All students, teachers, staff and school leaders have robust and reliable connectivity and access to current and emerging technologies and digital resources.

Skilled Personnel
Educators, support staff and other leaders are skilled in the selection and effective use of appropriate ICT resources.

Ongoing Professional Learning
Educators have ongoing access to technology-related professional learning plans and opportunities as well as dedicated time to practice and share ideas.

Technical Support
Educators and students have access to reliable assistance for maintaining, renewing and using ICT and digital learning resources.

Curriculum Framework
Content standards and related digital curriculum resources align with and support digital age learning and work.

Student-Centered Learning
Planning, teaching and assessment all center on the needs and abilities of the students.

Assessment and Evaluation
Teaching, learning, leadership and the use of ICT and digital resources are continually assessed and evaluated.

Engaged Communities
Leaders and educators develop and maintain partnerships and collaboration within the community to support and fund the use of ICT and digital learning resources.

Support Policies
Policies, financial plans, accountability measures and incentive structures support the use of ICT and other digital resources for both learning and district/school operations.

Supportive External Context
Policies and initiatives at the national, regional and local levels support schools and teacher preparation programs in the effective implementation of technology for achieving curriculum and learning technology (ICT) standards.

Appendix C – Crosswalk with 2008 Educational Technology Standards

1. Empowered Learner - Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

1.a. Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

[2008 GLE 2.3.1: Select and use common applications.]

1.b. Students build networks and customize their learning environments in ways that support the learning process.

[2008 GLE 2.3.2: Select and use online applications.]

1.c. Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

[2008 GLE 2.2.2: Use a variety of hardware to support learning.]

1.d. Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

[2008 GLE 2.2.1: Develop skills to use technology effectively.]

2. Digital Citizen - Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

2.a. Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

[2008 GLE 2.1.1: Practice personal safety.]

2.b. Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

[2008 GLE 2.1.1: Practice personal safety.]

[2008 GLE 2.1.2: Practice ethical and respectful behavior.]

2.c. Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

[2008 GLE 1.3.3: Analyze, synthesize and ethically use information to develop a solution, make informed decisions and report results.]

[2008 GLE 2.1.2: Practice ethical and respectful behavior.]

2.d. Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

[2008 GLE 2.1.1: Practice personal safety.]

3. Knowledge Constructor - Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

3.a. Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

[2008 GLE 1.3.1: Identify and define authentic problems and significant questions for investigation and plan strategies to guide inquiry.]

3.b. Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

[2008 GLE 1.3.3: Analyze, synthesize and ethically use information to develop a solution, make informed decisions and report results.]

3.c. Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

[2008 GLE 1.3.2: Locate and organize information from a variety of sources and media.]

3.d. Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions

> *[2008 GLE 1.3.3: Analyze, synthesize and ethically use information to develop a solution, make informed decisions and report results.]*
> *[2008 GLE 2.4.1: Formulate and synthesize new knowledge.]*

4. Innovative Designer - Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

4.a. Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

> *[2008 GLE 1.1.1: Generate ideas and create original works for personal and group expression using a variety of digital tools.]*
> *[2008 GLE 2.4.1: Formulate and synthesize new knowledge.]*

4.b. Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

> *[2008 GLE 1.1.2: Use models and simulations to explore systems, identify trends and forecast possibilities.]*

4.c. Students develop, test and refine prototypes as part of a cyclical design process.

> *[2008 GLE 1.1.2: Use models and simulations to explore systems, identify trends and forecast possibilities.]*

4.d. Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

> *[2008 GLE 1.1.2: Use models and simulations to explore systems, identify trends and forecast possibilities.]*

5. Computational Thinker - Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

5.a. Students formulate problem definitions suited for technology- assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

5.b. Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

5.c. Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

5.d. Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator - Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

6.a. Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
> *[2008 GLE 1.2.1: Communicate and collaborate to learn with others.]*

6.b. Students create original works or responsibly repurpose or remix digital resources into new creations.

> *[2008 GLE 1.1.1: Generate ideas and create original works for personal and group expression using a variety of digital tools.*

6.c. Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

> *[2008 GLE 1.2.1: Communicate and collaborate to learn with others.*

6.d. Students publish or present content that customizes the message and medium for their intended audiences.

> *[2008 GLE 1.2.1: Communicate and collaborate to learn with others.*

7. Global Collaborator - Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

    7.a. Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

        [2008 GLE 1.2.2: Develop cultural understanding and global awareness by engaging with learners of other cultures.]

    7.b. Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

        [2008 GLE 1.3.4: Use multiple processes and diverse perspectives to explore alternative solutions.]

    7.c. Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

        [2008 GLE 1.2.1: Communicate and collaborate to learn with others.]

    7.d. Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.

        [2008 GLE 1.2.2: Develop cultural understanding and global awareness by engaging with learners of other cultures.]

Appendix D – Connections to Digital Citizenship, Media Literacy, and Internet Safety

The 2016 legislature directed OSPI to develop best practices and recommendations for instruction in digital citizenship, internet safety, and media literacy, and report to the appropriate committees of the legislature on strategies to implement the best practices and recommendations statewide. To ensure clarity of terminology, OSPI first worked with an advisory committee (called for in the legislation), to develop these concise definitions:

Digital citizens recognize and value the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they engage in safe, legal and ethical behaviors[4].

Media literacy is the ability to access, analyze, evaluate, create and act using a variety of forms of communication[5].

Among the best practices identified by the advisory committee, this section on "Student instruction" has a strong alignment with the newly-updated state Educational Technology Standards:

Districts acknowledge students as consumers and creators of information and ideas. Districts promote cross-curricular integration of digital citizenship and media literacy and leadership instruction at all levels. Districts include students as active participants, role models and peer mentors to address these topics:

- *Online safety, responsibility and security*
  - *The act of bullying*
  - *Students as digital consumers and users*
  - *Online predators and risky communications*
- *Media literacy*
  - *Production of one's own media*
  - *Examination of how people experience media differently*
  - *Identification of embedded values and stereotypes*
  - *Analysis of words and images*
  - *Evaluation of sources of information*
- *Legal, fair use, copyright and intellectual property*
- *Online identity and personal brand*
  - *Footprint and digital persistence*
  - *Inappropriate posting*
  - *Self-image*
- *Digital communications and collaboration*
  - *Fairness and civil discourse*
- *Ethics*

The complete legislative report, along with links to free, high-quality resources to support digital citizenship, media literacy, and internet safety, is available at http://edtech.ospi.k12.wa.us/course/view.php?id=62.

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[4] Adapted from the 2016 International Society for Technology in Education (ISTE) Standards for Students

[5] Definition from the National Association for Media Literacy Education

Appendix E – Educational Technology Assessments

In 2007, the Washington legislature RCW 28A.655.075 directed OSPI to obtain or develop education technology assessments that could be administered in the elementary, middle, and high school grades to assess the essential academic learning requirements for technology. The assessments were to be designed to be classroom or project-based so that they could be embedded in classroom instruction and be administered and scored by school staff throughout the regular school year using consistent scoring criteria and procedures (see RCW 28A.655.075 at
http://app.leg.wa.gov/rcw/default.aspx?cite=28A.655.075)

Since 2010-11, educational technology assessments developed by the Office of Superintendent of Public Instruction (OSPI) have been voluntarily administered in the elementary, middle, and high school grades (see http://www.k12.wa.us/EdTech/Assessment/edtechassessments.aspx). Many teachers use the assessments to determine if students meet Washington's standards for educational technology. The assessments integrate standards from science, math, health, English language arts, social studies, and the arts. Classroom activities are well guided, easy to use and come equipped with a comprehensive inventory of free and low-cost digital resources.

In the 2016–17 school year, 41% of Washington school districts reported using an OSPI-developed assessment for educational technology (down slightly from 42% in 2015–16).

With the adoption of updated Educational Technology Standards in 2018, existing assessments will be aligned to the updated standards, and can continue to be used. In addition, with multiple other states adopting the 2016 ISTE Standards for Students, it is anticipated that additional assessment tools will become available in the coming years at little or no cost for educators to use as well.

Appendix F – Sample Scope & Sequence

OSPI would like to acknowledge the work of Jane Miller, Director of Instructional Technology and her teams of educators at Spokane Public Schools and Federal Way Public Schools in the creation of this sample scope and sequence. Thanks also to the team of teacher-librarians at Auburn School District and others for their feedback and suggestions. The entire document is licensed Creative Commons CC-BY, to encourage continued sharing as changes and improvements are made.

In our local control state, OSPI is responsible for establishing standards, but districts are responsible for defining their own scope and sequence and selecting instructional materials. Thus, this sample scope and sequence is available for optional use by districts, and they may choose to use or adapt it, or simply use it as a template to create their own scope and sequence. The Standards Development Team strongly recommended including it as an Appendix, though, hoping to save considerable time for districts that wished to make use of it in some way.

How to Use This "Technology Standards and Targets" Document

Grade Level Targets summary sheet

4th Grade Ed Tech Targets						
EdTech Standard	Introduce	EdTech Standard	Develop	EdTech Standard	Proficient/Assess	
6. Creative Communicator	I will be able to create original multimedia products to present solutions and ideas. I will be able to include text, images, sound, audio and/or video. (Example: infographics, documentary film, music video, etc.)	5. Computational Thinker	I will be able to collect and analyze data in a spreadsheet or table.	7. Global Collaborator	I will be able to participate in virtual field trips and explain how the trips develop cultural understanding.	
5. Computational Thinker	I will be able to find, use, and compare online data, and/or digital models/simulations to collect evidence and forecast trends.	5. Computational Thinker	I will be able to use interactive resources. (Example: digital/online virtual field trips, math manipulatives, electronic maps and other simulations and models, etc.)	3. Knowledge Constructor	I will be able to access, analyze and evaluate electronic content-related audio and/or video to make informed decisions.	
6. Creative Communicator	I will be able to videoconference to communicate and learn with other classrooms.	3. Knowledge Constructor	I will be able to explore and use content-related websites to build background knowledge, investigate topics and plan projects.	3. Knowledge Constructor	I will be able to use digital tools to gather, analyze, graph and/or report results of investigation.	
7. Global Collaborator	I will be able to participate in online projects by uploading content, photo, audio, or video.	2. Digital Citizen	I will be able to explain the dangers of clicking on pop-ups and advertisements.	1. Empowered Learner	I will be able to change font, color, and size of selected text. (Example: use menu commands)	
	Grade level targets to be introduced through modeling, explaining and practicing.		Grade level targets to be developed through practice with guided support as needed.		Grade level targets to be assessed for proficiency after students have practiced to gain mastery.	

1. Empowered Learner

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

a. articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
b. build networks and customize their learning environments in ways that support the learning process.
c. use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
d. understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced.
	D = Develop: Skill is practiced, reinforced, and enhanced.
	P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to properly use a mouse and/or touchpad: single- and double-click, drag-and-drop.	P	P										
I will be able to use left hand on the left side of the keyboard and right hand on the right side of the keyboard simultaneously with thumb on spacebar.	I	D	P									
I will be able to identify the following components: CPU/computer, monitor, mouse /touchpad, speakers, keyboard, headphones/earbuds, microphone.	I	D	P									
I will be able to locate, identify and use: Enter, Escape, Spacebar, Shift, Arrows, and Backspace.		I	D	P								
I will be able to demonstrate correct posture while using the keyboard.		I	D	P								
I will be able to locate, identify, and use letter, number, and punctuation keys.		I	D	P								
I will be able to use basic file commands. (Example: Save, Open, Print, Save As,		I	D	P								
I will be able to use correct hand-finger, home row, and pairing of fingers.			I	D	P							
I will be able to change font, color, and size of selected text. (Example: use menu commands or WordArt, etc.)			I	D	P							
I will be able to use mouse: right-click for menus.			I	D	P							
I will be able to use correct spacing between words and following punctuation.			I	D	P	P						
I will be able to use correct technique for key striking and keying by touch.				I	D	P						
I will be able to locate, identify and use Tab Key.				I	D	P						
I will be able to demonstrate sustained typing for producing/publishing writing in single sitting (CCSSW.6)				I	D	P	P					
I will be able to use cut, copy, and paste using menu.				I	D	P						
I will be able to justify margins: right, left, center.					I	D	P					
I will be able to highlight or hyperlink selected text.						I	D	P				
I will be able to use shortcut keys. (Example: CTRL+C, CTRL+V, CTRL+P, etc.)							I	D	P			
I will be able to establish and maintain a file structure for saving information on a computer, online or on external devices.							I	D	P			
I will be able to explain how to correctly use district network for saving files and gaining internet access.									I	D	P	

Skill												
I will be able to use digital equipment effectively. Digital equipment can include: document cameras, digital still camera, digital video camera, microphones, headphones, computers, mobile devices, student response systems (clickers), microscopes, pedometers, interactive whiteboards, calculators, etc.	I	I	D	D	D	D	P					
I will be able to power on and shut down; login and logout.	I	I	D	P								
I will be able to open and close applications.	I	I	D	P								
I will be able to turn on speakers, mute, and adjust volume using speaker icon in system tray.		I	D	P								
I will be able to ask for help and/or troubleshoot common technology-related problems. (Example: disconnected cables, caps lock, num lock, etc.)			I	I	D	D	P					
I will be able to troubleshoot using "Help" wizard.					I	D	P					
I will be able to apply prior knowledge of digital equipment to operate unfamiliar or new equipment.								I	I	D	D	P
I will be self-reliant in searching for solutions to technology issues.										I	D	P
I will be able to add and resize graphics and text boxes in a project. (Example: clipart, photos, etc.)		I	D	P								
I will be able to select appropriate programs for a multimedia product. (Example: blog, wiki, spreadsheet.)			I	D	D	D	D	P				
I will be able to apply appropriate design and layout in common applications.				I	D	P						
I will be able to add slides, pages, and tabs in common applications.				I	D	P						
I will be able to add hyperlinks, apply transitions and animations in presentation software.					I	D	P					
I will be able to use toolbars in common applications.					I	D	P					
I will be able to use presentation software for presenting to audience: create presentation notes, adjust timing.						I	D	P				
I will be able to identify and use proper file formats (Example: docx, pdf, jpeg, xlsx, etc.)						I	D	P				
I will be able to use common applications to create tables, outlines.						I	D	P				
I will be able to navigate to and use teacher-selected websites.	I	D	P									
I will be able to use basic web-navigation skills. (Example: select browser, favorites, URLs, home page, etc.)				I	D	P						
I will be able to select an appropriate online application for a given task.				I	D	P						
I will be able to comment, link, post and embed information online. (Example: blog, wiki, etc.)					I	I	D	P				
I will be able to create, upload and share multimedia projects.						I	I	D	P			
I will be able to independently design and publish multimedia content.								I	D	D	P	
I will be able to evaluate and select online applications for a specified use.										I	D	P
I will be able to adapt classroom technologies for individual personalized use.							I	D	P			
I will be able to select technology to fit personal needs and style. (Example: Use video as another option for presenting, use online discussions, posting to blogs, etc.)							I	D	P			

2. Digital Citizen

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical. Students:

   a. cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
   b. engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
   c. demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.
   d. manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

	Technology Targets		
	I = Introduce: Skill is demonstrated, discussed, and experienced.		
	D = Develop: Skill is practiced, reinforced, and enhanced.		
	P = Proficient: Efficiently applies skills in predictable and unpredictable situations		

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to understand and comply with the District Acceptable Use / Responsible Use Policy.	P	P	P	P	P	P	P	P	P	P	P	P
I will be able to demonstrate and define digital citizenship.	I	I	D	D	P	P						
I will be able to show respect for opinions and work of others posted electronically.	I	I	D	P								
I will be able to discuss and recognize danger in sharing private information online: password, name, address, phone number or picture.	I	I	I	I	D	P						
I will be able to explain the dangers of clicking on pop-ups and advertisements.	I	I	I	I	D	P						
I will be able to identify and report cyberbullying.		I	I	I	D	P	P					
I will be able to meet expectations for district email.			I	I	D	D	P	P	P			
I will be able to identify and describe the impact of ethical and unethical or illegal use of technology on individuals and society.			I	I	I	I	D	P				
I will be able to describe how digital information is archived.				I	I	D	D	P				
I will be able to explain copyrights, document and cite online resources, authors and content creators including Creative Commons.				I	I	D	P					
I will be able to gather and cite sources using digital bibliography tools.				I	I	I	D	D	P			
I will be able to create and store strong individual passwords. (Example: Strong password checker found at www.howsecureismypassword.net)						I	D	P				
I will be able to actively monitor personal content (online and offline) for digital safety.							I	I	I	D	D	P
I will be able to explain issues involved with using copyrighted materials.							I	D	P			

3. Knowledge Constructor

Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others. Students:

    a. plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

    b. evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

    c. curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

    d. build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced.
	D = Develop: Skill is practiced, reinforced, and enhanced.
	P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to access digital content (audio, video) to build background knowledge and investigate topics.	I	D	P									
I will be able to use digital templates, graphic organizers and/or storyboards to record questions and plan investigations.	I	I	D	D	D	P						
I will be able to explore and use content-related websites to build background knowledge, investigate topics and plan projects.				I	D	D	P					
I will be able to select digital resources to organize a project or solve a problem.					I	I	I	D	P			
I will be able to select and research current issues using databases and digital resources to organize a project or solve a problem.							I	I	D	D	P	
I will be able to search and sort databases and use basic database search skills.								I	I	D	D	P
I will be able to gather information from research using teacher-selected, digital tools.		I	D	P								
I will be able to use the Internet to locate, retrieve and organize information, recording sources.			I	D	D	D	D	D	D	P		
I will be able to use digital search tools effectively. (Example: search engine, database, content library, etc.)				I	D	D	D	P				
I will be able to gather and organize online references for a project. (Example: personal bookmarks, stored shortcuts or hyperlinks, etc.)					I	D	D	D	P			
I will be able to filter search results to narrow results for given task.						I	D	D	D	P		
I will be able to find, catalog and organize resources for given task.							I	D	D	P		
I will be able to select and use an appropriate search engine or directory.										I	D	P
I will be able to use advanced search functions of search engines and databases.										I	D	P

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will continue to focus on bibliographies, references and works cited to determine relevance of sources.										I	D	P
I will be able to use digital templates and graphic organizers to analyze information.	I	D	P									
I will be able to use digital tools to gather, analyze, graph and/or report results of investigation.			I	D	P							
I will be able to access, analyze and evaluate electronic content-related audio and/or video to make informed decisions.			I	D	P							
I will be able to evaluate digital and online sources for appropriateness and bias.							I	D	D	D	P	
I will be able to use technology to explore and brainstorm solutions for real-world problems.							I	D	D	P		

4. Innovative Designer

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. Students:

- a. know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems
- b. select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
- c. develop, test and refine prototypes as part of a cyclical design process.
- d. exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced. D = Develop: Skill is practiced, reinforced, and enhanced. P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to find, understand, select and compare virtual simulations.										I	D	P
I will be able to explore cause & effect of a virtual simulation.										I	D	P
I will be able to select digital resources to organize a project or solve a problem.							I	D	P			
I will be able to modify or create a new technology to solve a problem or meet a need. (Example: build an app, customize font size for reading, etc.)								I	D	D	D	P

5. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions. Students:

a. formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
b. collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
c. break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.
d. understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced. D = Develop: Skill is practiced, reinforced, and enhanced. P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to explore and describe patterns from data in spreadsheets or tables.		I	D	P								
I will be able to collect and analyze data in a spreadsheet or table.			I	D	D	D	D	D	D	P		
I will be able to use digital tools to gather, analyze, graph and/or report results of investigation.			I	I	D	D	D	D	P			
I will be able to use interactive resources. (Example: digital/online virtual field trips, math manipulatives, electronic maps and other simulations and models, etc.)					I	D	D	D	P			
I will be able to find, use, and compare online data, and/or digital models/simulations to collect evidence and forecast trends.						I	D	D	P			
I will be able to select the proper technology tools to input, select, analyze and interpret data.										I	D	D	p

6. Creative Communicator

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. Students:

a. choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
b. create original works or responsibly repurpose or remix digital resources into new creations.
c. communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
d. publish or present content that customizes the message and medium for their intended audiences.

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced.
	D = Develop: Skill is practiced, reinforced, and enhanced.
	P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to organize objects and ideas using a document camera.	I/D	P										
I will be able to organize objects and ideas using: digital drawing tools, digital templates and graphic organizers, brainstorming/mind mapping software. (Example: drawing apps, spreadsheet, etc.)	I	D	P									
I will be able to create digital audio recordings using technology.		I	D	P								
I will be able to modify teacher-created slides using presentation software.		I		D	P							
I will be able to create original multimedia products to present solutions and ideas. I will be able to include text, images, sound, audio and/or video. (Example: infographics, documentary film, music video, etc.)					I	D	D	P				
I will be able to combine multiple technologies to create and share products from multiple content areas.										I	D	P
I will be able to create digital products for culminating projects or inclusion in portfolios.										I	D	P
I will be able to use digital drawing tools and presentation software collaboratively to express ideas.	I	D	P									
I will be able to videoconference to communicate and learn with other classrooms.			I	I	I	I	D	P				
I will be able to collaborate and communicate virtually using shared documents and wikis.					I	I	D	P				
I will be able to use online discussion forums to express ideas. (Example: backchannel apps)						I	D	D	P			
I will be able to select and create an appropriate online forum for communicating and collaborating with a chosen audience.										I	D	P

7. Global Collaborator

Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally. Students:

a. use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
b. use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
c. contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
d. explore local and global issues and use collaborative technologies to work with others to investigate solutions.

	Technology Targets
	I = Introduce: Skill is demonstrated, discussed, and experienced. D = Develop: Skill is practiced, reinforced, and enhanced. P = Proficient: Efficiently applies skills in predictable and unpredictable situations

	K	1	2	3	4	5	6	7	8	9	10	11 12
I will be able to use digital drawing tools and presentation software collaboratively to express ideas.	I	D	P									
I will be able to videoconference to communicate and learn with other classrooms.			I	I	I	I	D	P				
I will be able to collaborate and communicate virtually using shared documents and wikis.					I	I	D	P				
I will be able to participate in online projects by uploading content, photo, audio, or video.					I	D	P					
I will be able to select and create an appropriate online forum for communicating and collaborating with a chosen audience.										I	D	P
I will be able to access content-related digital images, digital stories, audio and video to develop cultural understanding.	I	D	P									
I will be able to participate in virtual field trips and explain how the trips develop cultural understanding.			I	D	P							
I will be able to use digital communication tools: email, videoconference, back channels to develop and share cultural understanding.			I	I	I	D	P					
I will be able to use digital maps to develop cultural understanding.				I	I	I	D	P				
I will be able to research and identify global problems via websites.							I	D	P			
I will be able to participate in an online community to develop cultural understanding.							I	D	P			
I will be able to choose global digital content to identify a local or global issue.								I	D	P		
I will be able to participate in an online community to solve a local or global issue.										I	D	P

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