Pre-K - 8 Technology Scope & Sequence

NOTE: Once a concept/skill has been introduced, it is assumed that it will be reinforced as needed or appropriate at subsequent grade levels.

8.1 Educational Technology – All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Pre-K Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
• **Technology Operations and Concepts** Use an input device to navigate a simple screen; Navigate the basic functions of a browser; Use digital devices to create stories with pictures, numbers, letters and words; use basic technology terms in the proper context in conversation;	• **Technology Operations and Concepts** Demonstrate the ability to access and use resources on a computing device; Identify the basic features of a digital device and explain its purpose; Create a document using a word processing application; Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each	• **Technology Operations and Concepts** Demonstrate developmentally appropriate navigation skills in virtual environments; Enter information into a spreadsheet and sort the information; Identify the structure and components of a database; Enter information into a database or spreadsheet and filter the information	• **Technology Operations and Concepts** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problem; Identify advantages and disadvantages of technology; use basic formatting tools in a word processor; utilize tools in a multimedia presentation; create a simple spreadsheet	• **Technology Operations and Concepts** Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures; Insert graphics in a word processing program; create a multimedia presentation including graphics; interpret information in a spreadsheet; identify benefits of digital tools; Use a graphic organizer to organize information about problem or issue	• **Technology Operations and Concepts** Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data; Use advanced features of a word processing program; create a simple database; create multimedia with animation; generate a basic spreadsheet;	• **Technology Operations and Concepts** Demonstrate knowledge of a real world problem using digital tools; Use advanced features of a word processing program; create fields in a database; create a multimedia presentation with images; create a graph using a spreadsheet	• **Technology Operations and Concepts** Create a document using one or more digital applications to be critiqued by professionals for usability; Create a database using sort and query; create a multimedia presentation using sound; select appropriate tools and digital resources to accomplish a task	• **Technology Operations and Concepts** Use and/or develop a simulation that provides an environment to solve a real world problem or theory; use calculations in a spreadsheet; use appropriate tools to complete a variety of tasks and to solve problems; Create a database query, sort and create a report
• **Creativity and Innovation** Create a story about a picture taken by the student on a digital camera or mobile device	• **Creativity and Innovation** Illustrate and communicate original ideas and stories using multiple digital tools and resources	• **Creativity and Innovation** Communicate ideas using digital tools and media rich resources	• **Creativity and Innovation** Produce a digital story	• **Creativity and Innovation** Produce a digital story based on a local event	• **Creativity and Innovation** Collaborative to produce a digital story about a significant local event or issue based on first-person interviews	• **Creativity and Innovation** Synthesize information about a local issue using a web based service	• **Creativity and Innovation** Publish information about a global event using a shared hosted service	• **Creativity and Innovation** Synthesize and publish information about an event using a shared hosted service

• **Communication and Collaboration** Collaborate with peers by participating in interactive digital games or activities	• **Communication and Collaboration** Engage in a variety of learning activities	• **Communication and Collaboration** Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries	• **Communication and Collaboration** Utilize learning activities collaboratively with others	• **Communication and Collaboration** Engage in online discussions with other learners	• **Communication and Collaboration** Engage in online discussions with learners of other cultures to investigate a worldwide issue	• **Communication and Collaboration** Engage in online discussions regarding global issues	• **Communication and Collaboration** Participate in an online learning community to discuss global issues	• **Communication and Collaboration** Participate in an online learning community to discuss global problems and propose possible solutions
• **Digital Citizenship** Understand there are legal and ethical behaviors associated with technology	• **Digital Citizenship** Begin to exhibit legal and ethical behaviors when using technology	• **Digital Citizenship** Develop an understanding of ownership of print and nonprint information	• **Digital Citizenship** Explain the purpose of an acceptable use policy; define a copyright	• **Digital Citizenship** Model appropriate online behaviors related to cyber safety and cyber bullying	• **Digital Citizenship** Understand the need for and use of copyrights Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media	• **Digital Citizenship** Adhere to copyright laws; model appropriate online behaviors; understand cyber translations	• **Digital Citizenship** Understand fair use and Creative Commons guidelines; model appropriate online behaviors including cyber security and cyber ethics	• **Digital Citizenship** Demonstrate the application of appropriate citations to digital content; Outline the fair use and Creative Commons guidelines; explain how controversial information may be biased
• **Research and Information Fluency** Use the internet to explore and investigate information (with support)	• **Research and Information Fluency** Use digital tools and online resources to explore a problem	• **Research and Information Fluency** Use the Internet to explore and investigate questions; Use digital tools and online resources to explore a problem and create possible solutions;	• **Research and Information Fluency** Use digital tools and online resources to identify simple issues within the United States	• **Research and Information Fluency** Use digital tools and online resources to develop solutions to global issues	• **Research and Information Fluency** Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks	• **Research and Information Fluency** Evaluate the accuracy of print and non-print electronic information	• **Research and Information Fluency** Gather findings using data collection technology to produce solutions	• **Research and Information Fluency** Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem; Analyze findings using data collection technology to produce solutions

• **Critical Thinking Problem Solving, and Decision Making** Navigate the basic functions of a browser	• **Critical Thinking Problem Solving, and Decision Making** Use mapping tools to navigate various locations	• **Critical Thinking Problem Solving, and Decision Making** Use geographic mapping tools to plan and solve problems	• **Critical Thinking Problem Solving, and Decision Making** Select digital tools to collect data that supports scientific findings	• **Critical Thinking Problem Solving, and Decision Making** Apply digital tools to collect and organize data that support scientific findings	• **Critical Thinking Problem Solving, and Decision Making** Apply digital tools to collect, organize, and analyze data that support a scientific finding	• **Critical Thinking Problem Solving, and Decision Making** Use electronic authoring tools to evaluate current events	• **Critical Thinking Problem Solving, and Decision Making** Use electronic authoring tools to evaluate and summarize a contemporary figure	• **Critical Thinking Problem Solving, and Decision Making** Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Nature of Technology: Creativity and Innovation List ways that technology is important in our day to day lives	**Nature of Technology: Creativity and Innovation** Describe how technology is useful at school, home and work	**Nature of Technology: Creativity and Innovation** Define products produced as a result of technology or of nature Describe factors that influence the development of technology	**Nature of Technology: Creativity and Innovation** Describe how designed products and systems are useful at school, home and work Investigate factors that influence the development of technology	**Nature of Technology: Creativity and Innovation** Choose a product to make and plan the tools and materials needed; Compare and contrast how technology has changed over time	**Nature of Technology: Creativity and Innovation** Compare and contrast how technology has changed due to economic influences Investigate and present factors that influence the development and function of a product and a system	**Nature of Technology: Creativity and Innovation** Compare and contrast how technology has changed due to political, and/or cultural influences Compare and contrast how technologies have changed over time due to human needs and economic, political and/or cultural influences	**Nature of Technology: Creativity and Innovation** Understand that globalization impacts technology Research a product that was designed for a specific demand and identify how the product has changed to meet new demands	**Nature of Technology: Creativity and Innovation** Explain the impact of globalization on the development of technology; Redesign an existing product that impacts the environment to lessen its impact(s) on the environment
Technology and Society Brainstorm options to repair a broken item using the design process; discuss the influence of technology in our personal lives	**Technology and Society** Devise a plan to repair a broken toy using the design process; discuss the influence of technology in our family structure; Demonstrate how reusing a product affects the local and global environment	**Technology and Society** Identify how technology impacts or improves life; Investigate the influence of technology in our communal environment	**Technology and Society** Design an alternative use for an existing product Identify how the ways people live and work has changed because of technology	**Technology and Society** Develop a product using an online simulation design process; compare and contrast technology transfer Examine ethical considerations in the development and production of a product through its life cycle	**Technology and Society** Design a product that addresses a real-world problem using the design process Examine systems used for recycling and recommend simplification of the systems and share with product developers	**Technology and Society** Design and create a product that addresses a real-world problem using the design process and working with specific criteria and constraints Explain the purpose of intellectual property law	**Technology and Society** Identify how a prototype may fail and be improved by completing a design problem; report prototype results in a multimedia presentation	**Technology and Society** Solve a science-based design challenge and build a prototype using science and math principles throughout the design process Identify the desired and undesired consequences from the use of a product or system

Design Understand that reusing a product affects our environment	**Design** Demonstrate how to reuse a product that may affect our environment	**Design** Brainstorm ideas on how to solve a problem or build a product; Understand the impact of disposing of materials in a responsible way	**Design** Understand the purpose of trademarks and the impact of infringement Explain why we need to make new products	**Design** Examine the development of a product from its inception through production	**Design** Define a patent and the process for registering for a patent illustrate components of a designed system	**Design** Explain ethical considerations of a product; understand marketing, use, maintenance and disposal of the product; Examine a malfunctioning tool and identify the process to troubleshoot	**Design** Compare and contract current and past ethical and unethical labor use in the US and other countries Explain the need for optimization in a design process	**Design** Compare and contract current and past ethical and unethical labor use in the US and other countries Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer
Abilities for a Technological World Conduct a classroom survey	**Abilities for a Technological World** Collect results of a classroom survey using data Identify the strengths and weaknesses in a product or system	**Abilities for a Technological World** Collaborate and apply a design process to solve a simple problem from everyday experiences Post results of a classroom survey using data Identify how using a tool (such as a bucket or wagon) aids in reducing work	**Abilities for a Technological World** Analyze responses collected from users of a product Identify and collect information about a problem that can be solved by technology	**Abilities for a Technological World** Suggest modifications in the design of a product based on collected responses Evaluate and test alternative solutions to a problem	**Abilities for a Technological World** Suggest modifications in the design of a product based on collected responses Describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems	**Abilities for a Technological World** Understand ethics in relation to a problem Design and create a product that addresses a real world problem	**Abilities for a Technological World** Understand how ethics and bias play a role on the development of a product Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution	**Abilities for a Technological World** Evaluate various roles in the development of a product and its impact on communities Explain the impact of resource selection and the production process in the development of a common or technological product or system
Computational Thinking: Programming Communicate with other students using digital tools	**Computational Thinking: Programming** Communicate with other students using digital tools to share information Create algorithms Use appropriate terms in conversation	**Computational Thinking: Programming** List and demonstrate the steps to an everyday task Communicate with other students using digital tools to share information Debug an algorithm	**Computational Thinking: Programming** Work collaboratively to produce a report on technology Identify how computer programming impacts our everyday lives	**Computational Thinking: Programming** Work collaboratively to produce a report on the successful and/or unsuccessful problems of technology	**Computational Thinking: Programming** Work collaboratively with peers to develop a product using the design process Use a simple, visual programming language, create a program using loops, events and procedures	**Computational Thinking: Programming** Work collaboratively with peers to develop a product using the design process Identify ways computers are used that have had an impact across the range of human activity	**Computational Thinking: Programming** Work collaboratively with peers to develop a product using the design process and data analysis Demonstrate an understanding of the relationship between hardware and software	**Computational Thinking: Programming** Work collaboratively with peers (or experts) to develop a product using the design process, data analysis, and maintain a log of the development cycle Use appropriate terms in conversation