# Georgia Department of Education
## K-8 NETS-S Scope and Sequence

| X=Exposed | I=Introduced | D=Developed | M=Mastered | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

| **1. Creativity and Innovation** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

| | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Apply existing knowledge to generate new ideas, products, or processes. | I | I | I | I | D | D | M | M | M |
| b. Create original works as a means of personal or group expression. | I | I | D | D | D | D | M | M | M |
| c. Use models and simulations to explore complex systems and issues. | X | I | I | I | D | D | D | D | M |
| d. Identify trends and forecast possibilities. | X | I | I | I | D | D | D | D | M |

| **2. Communication and Collaboration** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

| | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | X | X | I | I | D | D | D | M | M |
| b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | X | X | I | I | I | D | D | D | M |
| c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | I | I | I | I | I | I | D | D | M |
| d. Contribute to project teams to produce original works or solve problems. | X | X | I | I | D | D | M | M | M |

| **3. Research and Information Fluency** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|

Students apply digital tools to gather, evaluate, and use information. Students:

| | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Plan strategies to guide inquiry. | X | X | I | I | I | D | D | M | M |
| b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | X | X | I | I | I | D | D | M | M |
| c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | X | X | I | I | D | D | D | M | M |
| d. Process data and report results. | X | X | I | I | D | D | D | D | M |

| X=Exposed | I=Introduced | D=Developed | M=Mastered | | | | | | |
|---|---|---|---|---|---|---|---|---|---|

| **4. Critical Thinking, Problem Solving, and Decision Making** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: | | | | | | | | | |
| a. Identify and define authentic problems and significant questions for investigation. | X | I | I | I | D | D | D | M | M |
| b. Plan and manage activities to develop a solution or complete a project. | X | X | I | I | I | D | D | M | M |
| c. Collect and analyze data to identify solutions and/or make informed decisions. | X | I | I | I | D | D | M | M | M |
| d. Use multiple processes and diverse perspectives to explore alternative solutions. | X | I | I | I | I | D | D | D | M |

| **5. Digital Citizenship** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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| Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: | | | | | | | | | |
| a. Advocate and practice safe, legal, and responsible use of information and technology. | I | I | I | D | D | M | M | M | M |
| b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | I | I | D | D | M | M | M | M | M |
| c. Demonstrate personal responsibility for lifelong learning. | I | I | I | D | D | D | M | M | M |
| d. Exhibit leadership for digital citizenship. | I | I | I | I | D | D | D | D | M |

| **6. Technology Operations and Concepts** | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: | | | | | | | | | |
| a. Understand and use technology systems. | I | I | I | I | D | D | D | D | M |
| b. Select and use applications effectively and productively. | I | I | I | I | D | D | D | D | M |
| c. Troubleshoot systems and applications. | X | I | I | I | I | I | D | D | M |
| d. Transfer current knowledge to learning of new technologies | I | I | I | I | I | D | D | D | M |

| KT1. Creativity and Innovation<br>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: | |
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| KT1a. Apply existing knowledge to generate new ideas, products, or processes. | In a large-group setting:<br>• KT1a1.  Students will describe what they know and need to know about a challenge/problem selected by the teacher to elicit creative thinking (e.g., bullies, school issues, environment, etc.)<br>• KT1a2.  Students will brainstorm and record ideas that might contribute to a solution using digital tools and resources.<br>• KT1a3.  Students will gather and organize ideas and information using technology tools such as concept mapping tools. |
| KT1b. Create original works as a means of personal or group expression. | As a whole group:<br>• KT1b1. Students will create an original presentation based on a story, activity, or event including text, images and/or sound files using digital tools and resources. |
| KT1c. Use models and simulations to explore complex systems and issues. | Expose students to the following through demonstration or in large-group setting:<br>• KT1c1.  Students will use digital tools and resources to find and organize data.<br>• KT1c2.  Students will create a visual model or use a simulation such as a graph or concept map.  (e.g., life cycle of plants/animals, seasonal changes, school activities, or how community workers contribute to the community. |
| KT1d. Identify trends and forecast possibilities. | Expose students to the following through demonstration or in large-group setting:<br>• KT1d1.  Students will use graphic organizers and simulations (developed specifically for this age group) to identify key variables and patterns and to predict outcomes in everyday events and relationships. |
| KT2.  Communication and Collaboration<br>Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: | |
| KT2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | Expose students to the following through demonstration:<br>• KT2a1.  Students will illustrate information using concept mapping software, graphic organizers, or age appropriate story building software.<br>• KT2a2.  Students will share information and works with students, teachers, parents, and family members. |
| KT2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | Expose students to the following through demonstration:<br>• KT2b1. Students will share curriculum-related concepts with their classmates, families and others using developmentally appropriate online curriculum-based resources (e.g., online songs, stories, games, puzzles, clip art, presentation, templates, and webpages). |
| KT2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | With assistance or in large group:<br>• KT2c1.  Students will use technology tools to exchange-classroom to classroom-stories, artifacts, and information about their lives, communities, and cultures. |
| KT2d. Contribute to project teams to produce original works or solve problems. | Expose students to the following through demonstration or in large-group setting:<br>• KT2d1. Students will use age appropriate technology tools to create a product.<br>• KT2d2.  Students will use age appropriate technology tools to solve a problem. |
| KT3.  Research and Information Fluency<br>Students apply digital tools to gather, evaluate, and use information. Students: | |

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| KT3a. Plan strategies to guide inquiry. | Expose students to the following through demonstration or in large-group setting:<br>• KT3a1. Students will use age appropriate technology to create a KWL chart of the steps involved in planning a project such as investigating weather, exploring why birds fly south in the winter, or determining what makes a good friend. |
| KT3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Expose students to the following through demonstration or in large-group setting:<br>• KT3b1. Students will navigate preselected digital sources to locate information using subject directories and key words.<br>• KT3b2. Students will use age appropriate tools or teacher-created templates to organize and share what they learned. |
| KT3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | Expose students to the following through demonstration or in large-group setting:<br>• KT3c1. Students will describe the uses of a variety of age-appropriate digital tools.<br>• KT3c2. Students will select tools or resources from those available to effectively accomplish a variety of tasks. |
| KT3d. Process data and report results. | Expose students to the following through demonstration or in large-group setting:<br>• KT3d1. Students will use digital resources to collect data about a topic (e.g., weather, current events, personal interests).<br>• KT3d2. Students will use data to create ordered lists, identify patterns and display results.<br>• KT3d3. Students will share conclusions in text and or/or graphic formats. |

**KT4. Critical Thinking, Problem Solving, and Decision Making**
Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

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| KT4a. Identify and define authentic problems and significant questions for investigation. | Expose students to the following through demonstration or in large-group setting:<br>• KT4a1. Students will identify ways technology can help them explore and understand everyday problems (e.g., how to dress for the day's weather, important aspects of taking care of a pet, which community helper might help in a given situation).<br>• KT4a2. Students will use technology to record questions for investigation and capture answers and additional questions. |
| KT4b. Plan and manage activities to develop a solution or complete a project. | Expose students to the following through demonstration or in large-group setting:<br>• KT4b1. With teacher support, students will identify and apply strategies to select information and digital resources to complete an activity or solve a particular problem.<br>• KT4b2. With teacher support, students will identify and record steps to complete a task. |
| KT4c. Collect and analyze data to identify solutions and/or make informed decisions. | Expose students to the following through demonstration or in large-group setting:<br>• KT4c1. Students will collect data on an everyday problem or issue.<br>• KT4c2. Students will record results using age-appropriate digital graphing tools (e.g., online survey tool, electronic chart).<br>• KT4c3. Students will identify patterns and propose a decision or solution. |
| KT4d. Use multiple processes and diverse perspectives to explore alternative solutions. | Expose students to the following through demonstration or in large-group setting:<br>• KT4d1. Students will explore problem solving processes and solutions (captured using charts, concept maps, timelines) and discuss similarities and differences. |

**KT5. Digital Citizenship**
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

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| KT5a. Advocate and | With assistance or in large-group setting: |

| practice safe, legal, and responsible use of information and technology. | • KT5a1. Students will demonstrate an understanding of age-appropriate issues related to safe, healthy, and acceptable use of digital devices (e.g., online safety and privacy, amount of screen use per day, safe searching, online etiquette)<br>• KT5a2. Students will describe personal consequences of inappropriate technology use. |
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| KT5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | With assistance or in large-group setting:<br>• KT5b1. Students will articulate and demonstrate ongoing cooperative and collaborative use of technology to contribute to an effective learning environment (e.g., work productively with a partner or in a small group on a technology based activity and discuss or reflect on the benefits of working with a partner to complete the task). |
| KT5c. Demonstrate personal responsibility for lifelong learning. | With assistance or in large-group setting:<br>• KT5c1. Students will recognize the value of and use technology as a way to communicate with others and to access information for formal and informal learning. |
| KT5d. Exhibit leadership for digital citizenship. | With assistance:<br>• KT5d1. Students will model technology use, sharing, and safety rules and encourage peers to follow accepted guidelines. |

**KT6. Technology Operations and Concepts**
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

| KT6a. Understand and use technology systems. | Expose students to the following through demonstration or in large-group setting:<br>• KT6a1. Students will communicate about technology using developmentally appropriate and accurate terminology (e.g., be able to identify and refer to parts of the computer with proper terms).<br>• KT6a2. Students will demonstrate the ability to navigate in electronic environments (e.g., eBooks, educational games and simulations, digital presentation software, mobile devices, and websites).<br>• KT6a3. Students will perform basic hardware and software operations (e.g., copy and paste, navigate among open windows, use input devices, control sound and brightness of image, undo/redo). |
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| KT6b. Select and use applications effectively and productively. | Expose students to the following through demonstration or in large-group setting:<br>• KT6b1. Students will select from a teacher-approved list and independently apply age-appropriate applications and resources to address content-related tasks and problems (e.g., use games to practice basic skills, text readers and eBooks to read, word processors to write, digital cameras to record stages in science projects, graphics programs to draw). |
| KT6c. Troubleshoot systems and applications. | Expose students to the following through demonstration:<br>• KT6c1. Students will identify and common technology problems that occur during everyday use (e.g., frozen screen, failure to print, difficulty accessing Internet, computer doesn't power up).<br>• KT6c2. Students will identify possible solutions to these common problems. |
| KT6d. Transfer current knowledge to learning of new technologies | Expose students to the following through demonstration or in large-group setting:<br>• KT6d1. Students will recognize common terminology, icons, and symbols related to basic functions of technology and apply that knowledge to new technologies. |

| **1T1. Creativity and Innovation** Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: | |
|---|---|
| 1T1a. Apply existing knowledge to generate new ideas, products, or processes. | In a large-group setting: <br>• 1T1a1.  Students will describe what they know and need to know about a challenge/problem selected by the teacher to elicit creative thinking (e.g., bullies, school issues, environment, etc.) <br>• 1T1a2.  Students will brainstorm and record ideas that might contribute to a solution using digital tools and resources. <br>• 1T1a3.  Students will gather and organize ideas and information using technology tools such as concept mapping tools. |
| 1T1b. Create original works as a means of personal or group expression. | In a large-group setting: <br>• 1T1b1. Students will create an original presentation based on a story, activity, or event including text, images and/or sound files using digital tools and resources. |
| 1T1c. Use models and simulations to explore complex systems and issues. | In a large-group setting: <br>• 1T1c1.  Students will use digital tools and resources to find and organize data. <br>• 1T1c2.  Students will create a visual model or use a simulation such as a graph or concept map.  (e.g., life cycle of plants/animals, seasonal changes, school activities, or how community workers contribute to the community. |
| 1T1d. Identify trends and forecast possibilities. | In a large-group setting: <br>• 1T1d1.  Students will use graphic organizers and simulations (developed specifically for this age group) to identify key variables and patterns and to predict outcomes in everyday events and relationships. |
| **1T2.  Communication and Collaboration** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: | |
| 1T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | Expose students to the following through demonstration: <br>• 1T2a1.  Students will collaborate in pairs to illustrate information using concept mapping software, graphic organizers, or age appropriate story building software. <br>• 1T2a2.  Students will share information and works with students, teachers, parents, and family members. |
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| 1T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | With assistance or in a large-group setting <br>• 1T2c1. Students will use technology tools to exchange-classroom to classroom-stories, artifacts, and information about their lives, communities, and cultures. |
| 1T2d. Contribute to project teams to produce original works or solve problems. | Expose students to the following through demonstration and in a large-group setting: <br>• 1T2d1.  Students will share with a partner or team steps to use age appropriate technology tools to create a product. <br>• 1T2d2.  Students will share with a partner or team steps to use age appropriate technology tools to solve a problem. |

| **1T3. Research and Information Fluency** | |
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| Students apply <u>digital tools</u> to gather, evaluate, and use information. Students: | |
| 1T3a. Plan strategies to guide inquiry. | Expose students to the following through demonstration and in a large-group setting: <br> • 1T3a1. Students will use age appropriate technology to create a KWL chart of the steps involved in planning a project such as investigating weather, exploring why birds fly south in the winter, or determining what makes a good friend. |
| 1T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Expose students to the following through demonstration and in a large-group setting: <br> • 1T3b1. Students will navigate preselected digital sources to locate information using subject directories and key words. <br> • 1T3b2. Students will use age appropriate tools or teacher-created templates to organize and share what they learned. |
| 1T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | Expose students to the following through demonstration and in a large-group setting: <br> • 1T3c1. Students will describe the uses of a variety of age-appropriate digital tools. <br> • 1T3c2. Students will select tools or resources from those available to effectively accomplish a variety of tasks. |
| 1T3d. Process data and report results. | Expose students to the following through demonstration and in a large-group setting: <br> • 1T3d1. Students will use <u>digital resources</u> to collect data about a topic (eg., weather, current events, personal interests). <br> • 1T3d2. Students will use data to create ordered lists, identify patterns and display results. <br> • 1T3d3. Students will share conclusions in text and or/graphic formats. |
| **1T4. Critical Thinking, Problem Solving, and Decision Making** | |
| Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: | |
| 1T4a. Identify and define authentic problems and significant questions for investigation. | With assistance or in large-group setting: <br> • 1T4a1. Students will identify ways technology can help them explore and understand everyday problems (e.g., how to dress for the day's weather, important aspects of taking care of a pet, which community helper might help in a given situation). <br> • 1T4a2. Students will use technology to record questions for investigation and capture answers and additional questions. |
| 1T4b. Plan and manage activities to develop a solution or complete a project. | Expose students to the following through demonstration: <br> • 1T4b1. Students will identify and apply strategies to select information and digital resources to complete an activity or solve a particular problem. <br> • 1T4b2. Students will identify and record steps to complete a task. |
| 1T4c. Collect and analyze data to identify solutions and/or make informed decisions. | Expose students to the following through demonstration or in large-group setting: <br> • 1T4c1. Students will collect data on an everyday problem or issue. <br> • 1T4c2. Students will record results using age-appropriate digital graphing tools (e.g., online survey tool, electronic chart). <br> • 1T4c3. Students will identify patterns and propose a decision or solution. |
| 1T4d. Use multiple processes and diverse perspectives to explore alternative solutions. | Expose students to the following through demonstration or in large-group setting: <br> • 1T4d1. Students will explore problem solving processes and solutions (captured using charts, concept maps, timelines) and discuss similarities and differences. |
| **1T5. Digital Citizenship** | |
| Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: | |

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|---|---|
| 1T5a. Advocate and practice safe, legal, and responsible use of information and technology. | In large-group setting:<br>• 1T5a1. Students will demonstrate an understanding of age-appropriate issues related to safe, healthy, and acceptable use of digital devices (e.g., online safety and privacy, amount of screen use per day, safe searching, online etiquette)<br>• 1T5a2. Students will describe personal consequences of inappropriate technology use. |
| 1T5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | With assistance or in groups:<br>• 1T5b1. Students will articulate and demonstrate ongoing cooperative and collaborative use of technology to contribute to an effective learning environment (e.g., work productively with a partner or in a small group on a technology based activity and discuss or reflect on the benefits of working with a partner to complete the task). |
| 1T5c. Demonstrate personal responsibility for lifelong learning. | Expose students to the following through demonstration or in large-group setting:<br>• 1T5c1. Students will recognize the value of and use technology as a way to communicate with others and to access information for formal and informal learning. |
| 1T5d. Exhibit leadership for digital citizenship. | With assistance:<br>• 1T5d1. Students will model technology use, sharing, and safety rules and encourage peers to follow accepted guidelines. |

**1T6. Technology Operations and Concepts**
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| 1T6a. Understand and use technology systems. | With assistance:<br>• 1T6a1. Students will communicate about technology using developmentally appropriate and accurate terminology (e.g., be able to identify and refer to parts of the computer with proper terms).<br>• 1T6a2. Students will demonstrate the ability to navigate in electronic environments (e.g., eBooks, educational games and simulations, digital presentation software, mobile devices, and websites).<br>• 1T6a3. Students will perform basic hardware and software operations (e.g., copy and paste, navigate among open windows, use input devices, control sound and brightness of image, undo/redo). |
| 1T6b. Select and use applications effectively and productively. | With assistance or in small groups:<br>• 1T6b1. Students will select from a teacher-approved list and independently apply age-appropriate applications and resources to address content-related tasks and problems (e.g., use games to practice basic skills, text readers and eBooks to read, word processors to write, digital cameras to record stages in science projects, graphics programs to draw). |
| 1T6c. Troubleshoot systems and applications. | In large-group setting:<br>• 1T6c1. Students will identify and common technology problems that occur during everyday use (e.g., frozen screen, failure to print, difficulty accessing Internet, computer doesn't power up).<br>• 1T6c2. Students will identify possible solutions to these common problems. |
| 1T6d. Transfer current knowledge to learning of new technologies | With assistance or in large-group setting:<br>• 1T6d1. Students will recognize common terminology, icons, and symbols related to basic functions of technology and apply that knowledge to new technologies. |

| **2T1. Creativity and Innovation** |
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| Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: |

| 2T1a. Apply existing knowledge to generate new ideas, products, or processes. | With assistance or in large-group setting:<br>• 2T1a1.  Students will describe what they know and need to know about a challenge/problem selected by the teacher to elicit creative thinking (e.g., bullies, school issues, environment, etc.)<br>• 2T1a2.  Students will brainstorm and record ideas that might contribute to a solution using digital tools and resources.<br>• 2T1a3.  Students will gather and organize ideas and information using technology tools such as concept mapping tools. |
|---|---|
| 2T1b. Create original works as a means of personal or group expression. | With Assistance:<br>• 2T1b1. Students will create an original presentation based on a story, activity, or event including text, images and/or sound files using digital tools and resources. |
| 2T1c. Use models and simulations to explore complex systems and issues. | With assistance or in large-group setting:<br>• 2T1c1.  Students will use digital tools and resources to find and organize data.<br>• 2T1c2.  Students will create a visual model or use a simulation such as a graph or concept map.  (e.g., life cycle of plants/animals, seasonal changes, school activities, or how community workers contribute to the community. |
| 2T1d. Identify trends and forecast possibilities. | With assistance or in large-group setting:<br>• 2T1d1.  Students will use graphic organizers and simulations (developed specifically for this age group) to identify key variables and patterns and to predict outcomes in everyday events and relationships. |

| **2T2.  Communication and Collaboration** |
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| Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: |

| 2T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | With assistance or in small groups:<br>• 2T2a1.  Students will collaborate in pairs to illustrate information using concept mapping software, graphic organizers, or age appropriate story building software.<br>• 2T2a2.  Students will share information and works with students, teachers, parents, and family members. |
|---|---|
| 2T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | With assistance or in large-group setting:<br>• 2T2b1.  Students will share curriculum-related concepts with their classmates, families and others using developmentally appropriate online curriculum-based resources (e.g., online songs, stories, games, puzzles, clip art, presentation, templates, and webpages). |
| 2T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | With assistance or in small groups:<br>• 2T2c1.  Students will use technology tools to exchange-classroom to classroom-stories, artifacts, and information about their lives, communities, and cultures. |
| 2T2d. Contribute to project teams to produce original works or solve problems. | With assistance or in large-group setting:<br>• 2T2d1.  Students will share with a partner or team steps to use age appropriate technology tools to create a product.<br>• 2T2d2.  Students will share with a partner or team steps to use age appropriate technology tools to solve a problem. |

| **2T3. Research and Information Fluency** Students apply digital tools to gather, evaluate, and use information. Students: ||
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| 2T3a. Plan strategies to guide inquiry. | With assistance or in large-group setting: <br> • 2T3a1. Students will use age appropriate technology to create a KWL chart of the steps involved in planning a project such as investigating weather, exploring why birds fly south in the winter, or determining what makes a good friend. |
| 2T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | With assistance, in large-group setting, or in small groups: <br> • 2T3b1. Students will navigate preselected digital sources to locate information using subject directories and key words. <br> • 2T3b2. Students will use age appropriate tools or teacher-created templates to organize and share what they learned. |
| 2T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | With assistance or in large-group setting: <br> • 2T3c1. Students will describe the uses of a variety of age-appropriate digital tools. <br> • 2T3c2. Students will select tools or resources from those available to effectively accomplish a variety of tasks. |
| 2T3d. Process data and report results. | With assistance or in large-group setting:: <br> • 2T3d1. Students will use digital resources to collect data about a topic (eg., weather, current events, personal interests). <br> • 2T3d2. Students will use data to create ordered lists, identify patterns and display results. <br> • 2T3d3. Students will share conclusions in text and or/graphic formats. |
| **2T4. Critical Thinking, Problem Solving, and Decision Making** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: ||
| 2T4a. Identify and define authentic problems and significant questions for investigation. | With assistance or in large-group setting: <br> • 2T4a1. Students will identify ways technology can help them explore and understand everyday problems (e.g., how to dress for the day's weather, important aspects of taking care of a pet, which community helper might help in a given situation). <br> • 2T4a2. Students will use technology to record questions for investigation and capture answers and additional questions. |
| 2T4b. Plan and manage activities to develop a solution or complete a project. | With assistance or in large-group setting: <br> • 2T4b1. With teacher support, students will identify and apply strategies to select information and digital resources to complete an activity or solve a particular problem. <br> • 2T4b2. With teacher support, students will identify and record steps to complete a task. |
| 2T4c. Collect and analyze data to identify solutions and/or make informed decisions. | With assistance or in large-group setting: <br> • 2T4c1. Students will collect data on an everyday problem or issue. <br> • 2T4c2. Students will record results using age-appropriate digital graphing tools (e.g., online survey tool, electronic chart). <br> • 2T4c3. Students will identify patterns and propose a decision or solution. |
| 2T4d. Use multiple processes and diverse perspectives to explore alternative solutions. | Expose students to the following through demonstration or in large-group setting: <br> • 2T4d1. Students will explore problem solving processes and solutions (captured using charts, concept maps, timelines) and discuss similarities and differences. |
| **2T5. Digital Citizenship** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: ||

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| 2T5a. Advocate and practice safe, legal, and responsible use of information and technology. | With assistance or in large-group setting: <br> • 2T5a1. Students will demonstrate an understanding of age-appropriate issues related to safe, healthy, and acceptable use of digital devices (e.g., online safety and privacy, amount of screen use per day, safe searching, online etiquette) <br> • 2T5a2. Students will describe personal consequences of inappropriate technology use. |
| 2T5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | With assistance: <br> • 2T5b1. Students will articulate and demonstrate ongoing cooperative and collaborative use of technology to contribute to an effective learning environment (e.g., work productively with a partner or in a small group on a technology based activity and discuss or reflect on the benefits of working with a partner to complete the task). |
| 2T5c. Demonstrate personal responsibility for lifelong learning. | With assistance or in large-group setting: <br> • 2T5c1. Students will recognize the value of and use technology as a way to communicate with others and to access information for formal and informal learning. |
| 2T5d. Exhibit leadership for digital citizenship. | Independently <br> • 2T5d1. Students will model technology use, sharing, and safety rules and encourage peers to follow accepted guidelines. |
| **2T6. Technology Operations and Concepts** <br> Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: | |
| 2T6a. Understand and use technology systems. | With assistance: <br> • 2T6a1. Students will communicate about technology using developmentally appropriate and accurate terminology (e.g., be able to identify and refer to parts of the computer with proper terms). <br> • 2T6a2. Students will demonstrate the ability to navigate in electronic environments (e.g., eBooks, educational games and simulations, digital presentation software, mobile devices, and websites). <br> • 2T6a3. Students will perform basic hardware and software operations (e.g., copy and paste, navigate among open windows, use input devices, control sound and brightness of image, undo/redo). |
| 2T6b. Select and use applications effectively and productively. | With assistance or in small groups: <br> • 2T6b1. Students will select from a teacher-approved list and independently apply age-appropriate applications and resources to address content-related tasks and problems (e.g., use games to practice basic skills, text readers and eBooks to read, word processors to write, digital cameras to record stages in science projects, graphics programs to draw). |
| 2T6c. Troubleshoot systems and applications. | With assistance or in large-group setting: <br> • 2T6c1. Students will identify and common technology problems that occur during everyday use (e.g., frozen screen, failure to print, difficulty accessing Internet, computer doesn't power up). <br> • 2T6c2. Students will identify possible solutions to these common problems. |
| 2T6d. Transfer current knowledge to learning of new technologies | With assistance or in large-group setting: <br> • 2T6d1. Students will recognize common terminology, icons, and symbols related to basic functions of technology and apply that knowledge to new technologies. |

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| **3T1. Creativity and Innovation**<br>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: | |
| 3T1a. Apply existing knowledge to generate new ideas, products, or processes. | Expose students to the following through demonstration:<br>• 3T1a1. Students will identify local or global problems that require creative solutions.<br>• 3T1a2. Students will use existing knowledge to brainstorm solutions to local or global problems using digital tools (e.g. graphs, wikis, multimedia presentations) to capture and share information with whole group.<br>• 3T1a3. Students will analyze and evaluate information to create original works expressing ideas using digital tools. |
| 3T1b. Create original works as a means of personal or group expression. | With Assistance<br>• 3T1b1.  Students will create a digital work (e.g., movie, podcast/vodcast, digital storytelling, web publishing, etc.), individually or collaboratively about a specific topic using primary resources and secondary resources .<br>• 3T1b2. Students will use online collaborative tools (e.g., online discussion forums, blogs, and wikis) to gather and share information with other students. |
| 3T1c. Use models and simulations to explore complex systems and issues. | Expose students to the following through demonstration:<br>• 3T1c1.  Students will describe and illustrate a concept or process using models, simulations, or concept-mapping software.<br>• 3T1c2.  Students will compare and contrast two systems using digital graphic organizers, models, or simulations. |
| 3T1d. Identify trends and forecast possibilities. | Expose students to the following through demonstration:<br>• 3T1d1.  Students will collect, record, organize, and display data using graphing software.<br>• 3T1d2.  Students will use graphs to identify patterns and trends.<br>• 3T1d3.  Students will interpret data from graphs to predict future outcomes. |
| **3T2.  Communication and Collaboration**<br>Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: | |
| 3T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | Expose students to the following through demonstration:<br>• 3T2a1. The students will collaborate with peers or subject-matter experts using online communication tools (e.g. email, video-conferencing, blogging, wikis, etc.) to create and publish technology-based presentations or products.<br>• 3T2a2. The students will show awareness of intended audience in a digital environment by using appropriate communication and etiquette (e.g. "LOL" would not be appropriate when responding to a blog in an academic setting). |
| 3T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | Expose students to the following through demonstration:<br>• 3T2b1.  The students will create products using digital text, images, audio, etc. to communicate individual and group curriculum activities, ideas, or results to multiple audiences.<br>• 3T2b2.  The students will describe different types of media and formats for specific audiences. |
| 3T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | Expose students to the following through demonstration:<br>• 3T2c1.  The students will use technology communication tools (e.g., online forums, blogs, e-mail, video-conferencing, etc) to interact with students or experts from different cultures or geographic locations on a content-specific activity or project. |
| 3T2d. Contribute to project teams to produce original works | Expose students to the following through demonstration:<br>• 3T2d1. The students will use digital reference tools (e.g., search engines, encyclopedias) to investigate a local or global issue in pairs or small groups and recommend solutions to |

| or solve problems. | problem. |
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| | • 3T2d2. The students will produce an original work using appropriate tools (e.g. animation and drawing software, multimedia software, visual data tools, video cameras) on subject specific concepts or content. |

**3T3. Research and Information Fluency**
Students apply digital tools to gather, evaluate, and use information. Students:

| 3T3a. Plan strategies to guide inquiry. | Expose students to the following through demonstration:<br>• 3T3a1. The students will define and narrow topic for research.<br>• 3T3a2. The students will use digital planning tools (e.g., concept mapping, KWHL charting tools) to outline steps in investigation.<br>• 3T3a3. The students will practice using key words and phrases to conduct Internet searches to widen or limit the results.<br>• 3T3a4. The students will list types of digital reference tools (search engines, maps, encyclopedias, dictionaries). T3a1. |
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| 3T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Expose students to the following through demonstration:<br>• 3T3b1. The students will use appropriate digital reference tools to locate information.<br>• 3T3b2. The students will distinguish between primary resources and secondary resources as well as evaluate the authority of sources.<br>• 3T3b3. The students will evaluate content to determine fact/opinion, bias and accuracy.<br>• 3T3b4.The students will organize information using a digital planning tool (e.g. concept mapping, KWHL charting tools.<br>• 3T3b5. Cite three or more sources, including the title, author, and website. |
| 3T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | Expose students to the following through demonstration:<br>• 3T3c1. The students will compare and contrast two or more digital tools and digital reference tools to accomplish task.<br>• 3T3c2. The students will select a digital tool appropriate to a task. |
| 3T3d. Process data and report results. | Expose students to the following through demonstration:<br>• 3T3d1. The students will select a digital tool (e.g. spreadsheets, graphs, visualizations) to organize data to show trends and patterns.<br>• 3T3d2. The students will report information using multimedia presentation software. |

**3T4. Critical Thinking, Problem Solving, and Decision Making**
Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

| 3T4a. Identify and define authentic problems and significant questions for investigation. | Expose students to the following through demonstration:<br>• 3T4a1. Students will use print and online resources to identify significant issues for their school, community, or beyond (e.g., making their school more energy efficient, cyber bullying, reducing school trash and litter, hunger and poverty issues in their community).<br>• 3T4a2. Students will use technology to record the results of their investigations along with relevant questions and analyze results (e.g., using ranking and sorting tools, visualization tools) to clarify and focus the issue or problem. |
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| 3T4b. Plan and manage activities to develop a solution or complete a project. | Expose students to the following through demonstration:<br>• 3T4b1. Students will conceptualize, guide, and manage individual or group activities using digital planning tools for completing a project or solving a problem (e.g., wikis, age-appropriate project management software, learning management system, social bookmarking tools). |
| 3T4c. Collect and analyze data to | Expose students to the following through demonstration:<br>• 3T4c1. Students will select and apply digital tools to collect, organize, and analyze data for evaluating theories and testing hypotheses (e.g., cause and effect tools, |

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| identify solutions and/or make informed decisions. | spreadsheets, graphs, and modeling and simulation tools). |
| 3T4d. Use multiple processes and diverse perspectives to explore alternative solutions. | Expose students to the following through demonstration:<br>• 3T4d1. Students will apply digital tools and resources (e.g., online surveys, video interviews, blogs, forums, wikis, webinars) to explore a topic from the perspective of multiple stakeholders and propose more than one possible solution. |

**3T5.  Digital Citizenship**
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

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| 3T5a. Advocate and practice safe, legal, and responsible use of information and technology. | With assistance:<br>• 3T5a1. Students will research, discuss, and apply safe, responsible, and legal use of technology (e.g., privacy, security, copyright, file sharing, accessibility, plagiarism).<br>• 3T5a2. Students will use technology resources to convey the relevance of these issues to other students and the public at large. |
| 3T5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | With assistance:<br>• 3T5b1. Students will select and apply technology resources and describe how these tools improve their ability to communicate, collaborate, be productive, and achieve goals. |
| 3T5c. Demonstrate personal responsibility for lifelong learning. | With assistance:<br>• 3T5c1. Students will describe how they select and use technology resources to pursue their personal and academic learning projects outside of the classroom. |
| 3T5d. Exhibit leadership for digital citizenship. | Expose students to the following through demonstration:<br>• 3T5d1. Students will identify and discuss the effects of existing and emerging technology on individuals, society, and the global community (e.g., access of "haves and have nots"; screentime on health and fitness, multitasking on attention and deeper comprehension; energy used by digital tools and effects on the environment).<br>• 3T5d2. Students will model positive digital behaviors. |

**3T6.  Technology Operations and Concepts**
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

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| 3T6a. Understand and use technology systems. | Expose students to the following through demonstration:<br>• 3T6a1. Students will demonstrate an understanding of the basic features of computer and network interfaces and use them efficiently without assistance.<br>• 3T6a2. Students will explore  and apply  a variety  of technology systems  and resources (e.g., graphing  calculators, smartphones,  Internet-connected digital devices, digital cameras, probes,  eBooks, individual response systems,  electronic whiteboards) to complete learning tasks.<br>• 3T6a3. Students will apply basic technology-based thinking strategies (e.g., automated search methods, storage and retrieval techniques, algorithmic thinking) to a variety of problems. |
| 3T6b. Select and use applications effectively and | Expose students to the following through demonstration:<br>• 3T6b1. Students will apply criteria for selecting an appropriate technology application for use with a learning activity. |

| productively. | • 3T6b2. Students will use the selected application proficiently to complete the task and discuss its efficiency and effectiveness. |
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| 3T6c. Troubleshoot systems and applications. | Expose students to the following through demonstration:<br>• 3T6c1. Students will determine the source of common operational and network problems (e.g., loss of connectivity, frozen screen, printing problems, reloading) and propose changes in hardware, software, or network settings to solve them. |
| 3T6d. Transfer current knowledge to learning of new technologies | Expose students to the following through demonstration:<br>• 3T6d1. Students will apply basic concepts and functions (e.g., multiple windows, editing functions, navigational tools, help assistance) from previous learning to new technologies and situations. |

| **4T1. Creativity and Innovation** Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: ||
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| 4T1a. Apply existing knowledge to generate new ideas, products, or processes. | . With Assistance**:**<br>• 4T1a1. Students will identify local or global problems that require creative solutions.<br>• 4T1a2. Students will use existing knowledge to brainstorm solutions to local or global problems using digital tools (e.g. graphs, wikis, multimedia presentations)  to capture and share information with whole group.<br>• 4T1a3. **Students will** analyze and evaluate information to create original works expressing ideas using digital tools |
| 4T1b. Create original works as a means of personal or group expression. | With Assistance:<br>• 4T1b1.  Students will create a digital work (e.g., movie, podcast/vodcast, digital storytelling, web publishing, etc.), individually or collaboratively about a specific topic using primary resources and secondary resources.<br>• 4T1b2. Students will use online collaborative tools (e.g., online discussion forums, blogs, and wikis) to gather and share information with other students. |
| 4T1c. Use models and simulations to explore complex systems and issues. | With Assistance:<br>• 4T1c1.  Students will describe and illustrate a concept or process using models, simulations, or concept-mapping software.<br>• 4T1c2.  Students will compare and contrast two systems using digital graphic organizers, models, and simulations |
| 4T1d. Identify trends and forecast possibilities. | With Assistance<br>• 4T1d1.  Students will collect, record, organize, and display data using graphing software.<br>• 4T1d2.  Students will use graphs to identify patterns and trends.<br>• 4T1d3.  Students will interpret data from graphs to predict future outcomes. |
| **4T2.  Communication and Collaboration** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: ||
| 4T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | With Assistance:<br>• 4T2a1. The students will collaborate with peers or subject-matter experts using online communication tools (e.g. email, video-conferencing, blogging, wikis, etc.) to create and publish technology-based presentations or products.<br>• 4T2a2. The students will show awareness of intended audience in a digital environment by using appropriate communication and etiquette (e.g. "LOL" would not be appropriate when responding to a blog in an academic setting). |
| 4T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | Expose students to the following through demonstration:<br>• 4T2b1.  The students will create products using digital text, images, audio, etc. to communicate individual and group curriculum activities, ideas, or results to multiple audiences.<br>• 4T2b2.  The students will describe different types of media and formats for specific audiences. |
| 4T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | Expose students to the following through demonstration:<br>• 4T2c1.  The students will use technology communication tools (e.g., online forums, blogs, e-mail, video-conferencing, etc) to interact with students or experts from different cultures or geographic locations on a content-specific activity or project. |
| 4T2d. Contribute to project teams to | With Assistance:<br>• 4T2d1.The students will use digital reference tools (e.g., search engines, encyclopedias) |

| produce original works or solve problems. | to investigate a local or global issue in pairs or small groups and recommend solutions to problem. <br> 4T2d2. The students will produce an original work using appropriate tools (e.g. animation and drawing software, multimedia software, visual data tools, video cameras) on subject specific concepts or content. |
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| **4T3.  Research and Information Fluency** <br> Students apply digital tools to gather, evaluate, and use information. Students: | |
| 4T3a. Plan strategies to guide inquiry. | Expose students to the following through demonstration: <br> • 4T3a1 The students will define and narrow topic for research. <br> • 4T3a2. The students will use digital planning tools (e.g., concept mapping, KWHL charting tools) to outline steps in investigation. <br> • 4T3a3.The students will practice using key words and phrases to conduct Internet searches to widen or limit the results. <br> • 4T3a4.The students will list types of digital reference tools (search engines, maps, encyclopedias, dictionaries). 4T3a1. |
| 4T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Expose students to the following through demonstration: <br> • 4T3b1.   The students will use appropriate digital reference tools to locate information. <br> • 4T3b2.  The students will distinguish between primary resources and secondary resources as well as  evaluate the authority of sources. <br> • 4T3b3.  The students will evaluate content to determine fact/opinion, bias and accuracy. <br> • 4T3b4 .The students will organize information using a digital planning tool (e.g. concept mapping, KWHL charting tools. <br> • 4T3b5.  Cite three or more sources, including the title, author, and website. |
| 4T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | With Assistance: <br> • 4T3c1.  The students will compare and contrast two or more digital tools and digital reference tools to accomplish task. <br> • 4T3c2.  The students will select a digital tool appropriate to a task. |
| 4T3d. Process data and report results. | With Assistance: <br> • 4T3d1. The students will select a digital tool (e.g. spreadsheets, graphs, visualizations) to organize data to show trends and patterns. <br> • 4T3d2.  The students will report information using multimedia presentation software. |
| **4T4.  Critical Thinking, Problem Solving, and Decision Making** <br> Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: | |
| 4T4a. Identify and define authentic problems and significant questions for investigation. | With assistance: <br> • 4T4a1. Students will use print and online resources to identify significant issues for their school, community, or beyond (e.g., making their school more energy efficient, cyberbullying, reducing school trash and litter, hunger and poverty issues in their community). <br> • 4T4a2. Students will use technology to record the results of their investigations along with relevant questions and analyze results (e.g., using ranking and sorting tools, visualization tools) to clarify and focus the issue or problem. |
| 4T4b. Plan and manage activities to develop a solution or | Expose students to the following through demonstration: <br> • 4T4b1. Students will conceptualize, guide, and manage individual or group activities using digital planning tools for completing a project or solving a problem (e.g., wikis, age- |

| complete a project. | appropriate project management software, learning management system, social bookmarking tools). |
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| 4T4c. Collect and analyze data to identify solutions and/or make informed decisions. | With assistance:<br>• 4T4c1. Students will select and apply digital tools to collect, organize, and analyze data for evaluating theories and testing hypotheses (e.g., cause and effect tools, spreadsheets, graphs, modeling and simulation tools). |
| 4T4d. Use multiple processes and diverse perspectives to explore alternative solutions. | Expose students to the following through demonstration:<br>• 4T4d1. Students will apply digital tools and resources (e.g., online surveys, video interviews, blogs, forums, wikis, webinars) to explore a topic from the perspective of multiple stakeholders and propose more than one possible solution. |
| **4T5. Digital Citizenship**<br>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: ||
| 4T5a. Advocate and practice safe, legal, and responsible use of information and technology. | With assistance:<br>• 4T5a1. Students will research, discuss, and apply safe, responsible, and legal use of technology (e.g., privacy, security, copyright, file sharing, accessibility, plagiarism).<br>• 4T5a2. Students will use technology resources to convey the relevance of these issues to other students and the public at large. |
| 4T5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | • 4T5b1. Students will select and apply technology resources and describe how these tools improve their ability to communicate, collaborate, be productive, and achieve goals. |
| 4T5c. Demonstrate personal responsibility for lifelong learning. | With assistance:<br>• 4T5c1. Students will describe how they select and use technology resources to pursue their personal and academic learning projects outside of the classroom. |
| 4T5d. Exhibit leadership for digital citizenship. | With assistance:<br>• 4T5d1. Students will identify and discuss the effects of existing and emerging technology on individuals, society, and the global community (e.g., access of "haves and have nots"; screentime on health and fitness, multitasking on attention and deeper comprehension; energy used by digital tools and effects on the environment).<br>• 4T5d2. Students will model positive digital behaviors. |
| **4T6. Technology Operations and Concepts**<br>Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: ||
| 4T6a. Understand and use technology systems. | With assistance:<br>• 4T6a1. Students will demonstrate an understanding of the basic features of computer and network interfaces and use them efficiently without assistance.<br>• 4T6a2. Students will explore and apply a variety of technology systems and resources (e.g., graphing calculators, smartphones, Internet-connected digital devices, digital cameras, probes, eBooks, individual response systems, electronic white boards) to |

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| | complete learning tasks. |
| | • 4T6a3. Students will apply basic technology-based thinking strategies (e.g., automated search methods, storage and retrieval techniques, algorithmic thinking) to a variety of problems. |
| 4T6b. Select and use applications effectively and productively. | With assistance:<br>• 4T6b1. Students will apply criteria for selecting an appropriate technology application for use with a learning activity.<br>• 4T6b2. Students will use the selected application proficiently to complete the task and discuss its efficiency and effectiveness. |
| 4T6c. Troubleshoot systems and applications. | Expose students to the following through demonstration:<br>• 4T6c1. Students will determine the source of common operational and network problems (e.g., loss of connectivity, frozen screen, printing problems, reloading) and propose changes in hardware, software, or network settings to solve them. |
| 4T6d. Transfer current knowledge to learning of new technologies | Expose students to the following through demonstration:<br>• 4T6d1. Students will apply basic concepts and functions (e.g., multiple windows, editing functions, navigational tools, help assistance) from previous learning to new technologies and situations. |

| **5T1. Creativity and Innovation** | |
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| Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: | |
| 5T1a. Apply existing knowledge to generate new ideas, products, or processes. | With Assistance**:**<br>• 5T1a1.  Students will identify local or global problems that require creative solutions.<br>• 5T1a2. Students will use existing knowledge to brainstorm solutions to local or global problems using digital tools (e.g. graphs, wikis, multimedia presentations)  to capture and share information with whole group.<br>• 5T1a3. Students will analyze and evaluate information to create original works expressing ideas using digital tools. |
| 5T1b. Create original works as a means of personal or group expression. | With Assistance:<br>• 5T1b1.  Students will create a digital work (e.g., movie, podcast/vodcast, digital storytelling, web publishing, etc.), individually or collaboratively about a specific topic using primary resources and secondary resources.<br>• 5T1b2. Students will use online collaborative tools (e.g., online discussion forums, blogs, and wikis) to gather and share information with other students. |
| 5T1c. Use models and simulations to explore complex systems and issues. | With Assistance:<br>• 5T1c1.  Students will describe and illustrate concept or process using models, simulations, or concept-mapping software.<br>• 5T1c2.  Students will compare and contrast two systems using digital graphic organizers, models, and simulations. |
| 5T1d. Identify trends and forecast possibilities. | With Assistance:<br>• 5T1d1.  Students will collect, record, organize, and display data using graphing software.<br>• 5T1d2.  Students will use graphs to identify patterns and trends.<br>• 5T1d3.  Students will interpret data from graphs to predict future outcomes. |
| **5T2.  Communication and Collaboration** | |
| Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: | |
| 5T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | With Assistance:<br>• 5T2a1. The students will collaborate with peers or subject-matter experts using online communication tools (e.g. email, video-conferencing, blogging, wikis, etc.) to create and publish technology-based presentations or products.<br>• 5T2a2. The students will show awareness of intended audience in a digital environment by using appropriate communication and etiquette (e.g. "LOL" would not be appropriate when responding to a blog in an academic setting). |
| 5T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | With Assistance:<br>• 5T2b1.  The students will create products using digital text, images, audio, etc. to communicate individual and group curriculum activities, ideas, or results to multiple audiences.<br>• 5T2b1.  The students will describe different types of media and formats for specific audiences. |
| 5T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | Expose students to the following through demonstration:<br>    5T2c1.  The students will use technology communication tools (e.g., online forums, blogs, e-mail, video-conferencing, etc) to interact with students or experts from different cultures or geographic locations on a content-specific activity or project. |
| 5T2d. Contribute to project teams to produce original works | With Assistance:<br>• 5T2d1. The students will use digital reference tools (e.g., search engines, encyclopedias) |

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| or solve problems. | to investigate a local or global issue in pairs or small groups and recommend solutions to problem. <br> • 5T2d2. The students will produce an original work using appropriate tools (e.g. animation and drawing software, multimedia software, visual data tools, video cameras) on subject specific concepts or content. |

| **5T3. Research and Information Fluency** ||
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| Students apply digital tools to gather, evaluate, and use information. Students: ||
| 5T3a. Plan strategies to guide inquiry. | With Assistance: <br> • 5T3a1. The students will define and narrow topic for research. <br> • 5T3a2. The students will use digital planning tools (e.g., concept mapping, KWHL charting tools) to outline steps in investigation. <br> • 5T3a3. The students will practice using key words and phrases to conduct Internet searches to widen or limit the results. <br> • 5T3a4. The students will list types of digital reference tools (search engines, maps, encyclopedias, dictionaries). |
| 5T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | With Assistance: <br> • 5T3b1.  The students will use appropriate digital reference tools to locate information. <br> • 5T3b2.  The students will distinguish between primary resources and secondary resources as well as evaluate the authority of sources. <br> • 5T3b3.  The students will evaluate content to determine fact/opinion, bias and accuracy. <br> • 5T3b4.The students will organize information using a digital planning tool (e.g. concept mapping, KWHL charting tools. <br> • 5T3b5.  Cite three or more sources, including the title, author, and website. |
| 5T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | With Assistance: <br> • 5T3c1.  The students will compare and contrast two or more digital tools and digital reference tools to accomplish task. <br> • 5T3c2.  The students will select a digital tool appropriate to a task. |
| 5T3d. Process data and report results. | With Assistance: <br> • 5T3d1. The students will select a digital tool (e.g. spreadsheets, graphs, visualizations) to organize data to show trends and patterns. <br> • 5T3d2.  The students will report information using multimedia presentation software. |

| **5T4. Critical Thinking, Problem Solving, and Decision Making** ||
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| Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: ||
| 5T4a. Identify and define authentic problems and significant questions for investigation. | With assistance: <br> • 5T4a1. Students will use print and online resources to identify significant issues for their school, community, or beyond (e.g., making their school more energy efficient, cyberbullying, reducing school trash and litter, hunger and poverty issues in their community). <br> • 5T4a2. Students will use technology to record the results of their investigations along with relevant questions and analyze results (e.g., using ranking and sorting tools, visualization tools) to clarify and focus the issue or problem. |
| 5T4b. Plan and manage activities to develop a solution or | With assistance: <br> • 5T4b1. Students will conceptualize, guide, and manage individual or group activities using digital planning tools for completing a project or solving a problem (e.g., wikis, age- |

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| complete a project. | appropriate project management software, learning management system, social bookmarking tools). |
| 5T4c. Collect and analyze data to identify solutions and/or make informed decisions. | With assistance:<br>• 5T4c1. Students will select and apply digital tools to collect, organize, and analyze data for evaluating theories and testing hypotheses (e.g., cause and effect tools, spreadsheets, graphs, modeling and simulation tools). |
| 5T4d. Use multiple processes and diverse perspectives to explore alternative solutions. | With assistance:<br>• 5T4d1. Students will apply digital tools and resources (e.g., online surveys, video interviews, blogs, forums, wikis, webinars) to explore a topic from the perspective of multiple stakeholders and propose more than one possible solution. |
| **5T5.  Digital Citizenship**<br>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: | |
| 5T5a. Advocate and practice safe, legal, and responsible use of information and technology. | Independently:<br>• 5T5a1. Students will research, discuss, and apply safe, responsible, and legal use of technology (e.g., privacy, security, copyright, file sharing, accessibility, plagiarism).<br>• 5T5a2. Students will use technology resources to convey the relevance of these issues to other students and the public at large. |
| 5T5b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | Independently:<br>• 5T5b1. Students will select and apply technology resources and describe how these tools improve their ability to communicate, collaborate, be productive, and achieve goals. |
| 5T5c. Demonstrate personal responsibility for lifelong learning. | With assistance:<br>• 5T5c1. Students will describe how they select and use technology resources to pursue their personal and academic learning projects outside of the classroom. |
| 5T5d. Exhibit leadership for digital citizenship. | With assistance:<br>• 5T5d1. Students will identify and discuss the effects of existing and emerging technology on individuals, society, and the global community (e.g., access of "haves and have nots"; screentime on health and fitness, multitasking on attention and deeper comprehension; energy used by digital tools and effects on the environment).<br>• 5T5d2. Students will model positive digital behaviors. |
| **5T6.  Technology Operations and Concepts**<br>Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: | |
| 5T6a. Understand and use technology systems. | With assistance:<br>• 5T6a1. Students will demonstrate an understanding of the basic features of computer and network interfaces and use them efficiently without assistance.<br>• 5T6a2. Students will explore  and apply  a variety  of technology systems  and resources (e.g., graphing  calculators, smartphones,  Internet-connected digital  devices, digital cameras, probes,  eBooks, individual  response systems,  electronic whiteboards) to |

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| | • 5T6a3. Students will apply basic technology-based thinking strategies (e.g., automated search methods, storage and retrieval techniques, algorithmic thinking) to a variety of problems. |
| 5T6b. Select and use applications effectively and productively. | With assistance:<br>• 5T6b1. Students will apply criteria for selecting an appropriate technology application for use with a learning activity.<br>• 5T6b2. Students will use the selected application proficiently to complete the task and discuss its efficiency and effectiveness. |
| 5T6c. Troubleshoot systems and applications. | Expose students to the following through demonstration:<br>• 5T6c1. Students will determine the source of common operational and network problems (e.g., loss of connectivity, frozen screen, printing problems, reloading) and propose changes in hardware, software, or network settings to solve them. |
| 5T6d. Transfer current knowledge to learning of new technologies | With assistance:<br>• 5T6d1. Students will apply basic concepts and functions (e.g., multiple windows, editing functions, navigational tools, help assistance) from previous learning to new technologies and situations. |

| **6T1. Creativity and Innovation**<br>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: ||
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| 6T1a. Apply existing knowledge to generate new ideas, products, or processes. | Independently:<br><br>• 6T1a1. Students will create digital products to demonstrate curriculum-related knowledge or processes that could be used to provide innovative solutions in the real world.<br>• 6T1a2. Students will research real-world topics using appropriate online resources.<br>• 6T1a3. Students will reflect on and debate topics using online tools (blog, chat, message-board, etc.)<br>• 6T1a4. Students will create curriculum-related multimedia projects. |
| 6T1b. Create original works as a means of personal or group expression. | Independently:<br><br>• 6T1b1. Students will create original digital products (animations, videos, podcasts, web pages, blogs, etc.) about a topic of personal interest or in response to a learning activity and document a reflection on the quality of the production<br>• 6T1b2. Students will express original ideas through technology programs or online resources.<br>• 6T1b3. Students will create digital works using technology resources.<br>• 6T1b4. Students will print, post, or publish original work using technology. |
| 6T1c. Use models and simulations to explore complex systems and issues. | With assistance:<br><br>• 6T1c1. Students will describe and illustrate a complex curriculum-related concept or process using a model, simulation, concept-mapping software, or hypermedia.<br>• 6T1c2. Students will use technology to create models or digital simulations.<br>• 6T1c3. Students will use digital simulations to examine and determine the effects of manipulating one or more variables.<br>• 6T1c4. Students will use digital models to compare and contrast concepts, demonstrate patterns, make predications, and demonstrate understanding of curriculum-related concepts. |
| 6T1d. Identify trends and forecast possibilities. | With assistance:<br><br>• 6T1d1. Students will develop and apply a research strategy for making data-driven predictions.<br>• 6T1d2. Students will use technology to manipulate data to identify trends, forecast results, and identify variables that affect a process.<br>• 6T1d3. Students will determine models that allow you to manipulate variables, including graphs that can be extended over time and allow you to make predictions for particular circumstances (e.g., uphill vs downhill acceleration, pre- and post-unit attitudes about cyberbullying).<br>• 6T1d4. Students will use technology resources to gather data, graph patterns and trends, and evaluate patterns and trends.<br>• 6T1d5. Students will use technology-based models and simulations to predict outcomes. |

| **6T2. Communication and Collaboration** | |
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| Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: | |
| 6T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | With assistance:<br>• 6T2a1. Students will use digital media tools (e.g., blogs, wikis, video-conferencing, virtual worlds, etc.) for synchronous and asynchronous collaboration with peers/experts/global partners to plan, design, and publish a content-specific product.<br>• 6T2a2. Students will present and/or post work products online. For example, collaborate in a virtual world to design and produce a re-enactment of a historical event, play, or experiment, or collaborate with students in another classroom using digital tools to debate an important issue.<br>• 6T2a3. Students will submit results for publication to appropriate channels (e.g., national competitions for solutions, local newspaper editorials, online blogs and networks). |
| 6T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | With assistance:<br>• 6T2b1. Students will, individually or in collaborative groups, identify and evaluate information from a variety of online sources for accuracy, bias, and comprehensiveness. Summarize and distribute results to multiple audiences (e.g., audiences with different levels of knowledge or perspectives) using a variety of communications media and formats (e.g., presentation, webpage, wiki, blog, online collaborative writing tools).<br>• 6T2b2. Students will collaborate with local and global partners and content experts to develop multimedia presentations incorporating a variety of media elements (e.g., clip art, movies, animations, graphs, concept maps) to clearly illustrate, explain, explore, or demonstrate a demanding/complex concept, principle, or procedure appropriate for specific audiences (e.g., audience with specific level of knowledge or perspectives). |
| 6T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | With assistance:<br>• 6T2c1. Students will identify a topic of global concern and use a variety of digital tools to collaborate with learners from other cultures to better understand the topic from different perspectives.<br>• 6T2c2. Students will identify potential solutions or create products that help others understand a global issue/perspective. |
| 6T2d. Contribute to project teams to produce original works or solve problems. | Independently:<br>• 6T2d1. Students will identify an appropriate project or problem associated with a specific content area and identify and assign roles for project team members.<br>• 6T2d2. Students will select appropriate digital tools for supporting investigation and/or experimentation related to the project/problem.<br>• 6T2d3. Students will work collaboratively to arrive at identifying and testing possible solution(s).<br>• 6T2d4. Students will share findings through real-time and/or recorded demonstrations to classmates and/or a broader audience using technology. |
| **6T3. Research and Information Fluency** | |
| Students apply digital tools to gather, evaluate, and use information. Students: | |
| 6T3a. Plan strategies to guide inquiry. | With assistance:<br>• 6T3a1. Students will create a concept map describing the aspects of a research topic or essential question, and select key topics for exploration.<br>• 6T3a2. Students will determine data collection and search needs and strategies for gathering information (e.g., determine appropriate search engine database, share links |

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|  | with important text highlighted using social bookmarking tools, collect data using digital probes and/or student response systems, access news from information aggregators).<br>• 6T3a3. Students will use digital planning tools or project management software to lay out inquiry processes and procedures. |
| 6T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | With assistance:<br>• 6T3b1. Students will independently develop and apply effective search strategies for locating credible resources in multiple digital databases.<br>• 6T3b2. Students will categorize and classify information to support analysis<br>• 6T3b3. Students will use technology to synthesize results and report conclusions (e.g., using data visualization, spreadsheets and graphs, and other productivity tools).<br>• 6T3b4. Students will document sources using a process and format appropriate for digital publication. |
| 6T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | With assistance:<br>• 6T3c1. Students will select and apply appropriate tools and digital resources to accomplish a variety of tasks.<br>• 6T3c2. Students will justify their selected digital tools based on efficiency and effectiveness for completing the projects. |
| 6T3d. Process data and report results. | With assistance:<br>• 6T3d1. Students will employ data analysis tools (e.g., databases, visualization tools, statistical programs, graphing calculators) to analyze data collections.<br>• 6T3d2. Students will create projections and models to inform decision making.<br>• 6T3d3. Students will use multimedia formats to effectively report results to specific audiences. |
| **6T4. Critical Thinking, Problem Solving, and Decision Making**<br>Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students: ||
| 6T4a. identify and define authentic problems and significant questions for investigation. | With assistance:<br>• 6T4a1. Students will identify a problem and create essential questions that guide investigation of an authentic problem using digital resources.<br>• 6T4a2. Students will identify, plan and research a topic from a global community perspective. |
| 6T4b. plan and manage activities to develop a solution or complete a project. | With assistance:<br>• 6T4b1. Students will select and use appropriate digital planning tools to complete a project.<br>• 6T4b2. Students will implement virtual field trips to explore content. |
| 6T4c. collect and analyze data to identify solutions and/or make informed decisions. | Independently:<br>• 6T4c1. Students will gather and organize data, examine patterns, and present ideas using digital tools. |
| 6T4d. use multiple processes and diverse perspectives to explore alternative solutions. | With assistance:<br>• 6T4d1. Students will identify references from a variety of viewpoints.<br>• 6T4d2. Students will contact a variety of experts to get diverse viewpoints.<br>• 6T4d3. Students will communicate with individuals from other cultures to gather diverse perspectives. |

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| | • 6T4d4. Students will use forums or threaded discussions to gather information. |

**6T5.  Digital Citizenship**
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

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| 6T5a. advocate and practice safe, legal, and responsible use of information and technology. | Independently:<br>• 6T5a1. Students will identify fair use of reference material in a production or presentation.<br>• 6T5a2. Students will identify information and/or resources as being copyright protected.<br>• 6T5a3. Students will communicate through social media sites (blogs, wikis, social networking sites, etc.) safely and appropriately. |
| 6T5b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | Independently:<br>• 6T5b1. Students will explain the value of existing and emerging technologies on individuals, society, and the global community. |
| 6T5c. demonstrate personal responsibility for lifelong learning. | Independently:<br>• 6T5c1. Students will assess the potential of technologies to address personal, social, lifelong learning, and career needs.<br>• 6T5c2. Students will utilize resources that are not restricted by copyright protection (fair use).<br>• 6T5c3. Students will show proper citation for resources according to national standards. |
| 6T5d. exhibit leadership for digital citizenship. | With assistance:<br>• 6T5d1. Students will explain the concepts of digital etiquette, access, and literacy.<br>• 6T5d2. Students will describe personal and societal responsibilities of existing and emerging technologies in the global community. |

**6T6.  Technology Operations and Concepts**
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

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| 6T6a. understand and use technology systems. | With assistance:<br>• 6T6a1. Students will demonstrate keyboarding skills by completing a variety of productivity tasks in a timely manner.<br>• 6T6a2. Students will describe the components of a technology system and how they interact.<br>• 6T6a3. Students will create, save, retrieve, and produce files through a network system and through digital tools and peripherals. |
| 6T6b. select and use applications effectively and productively. | With assistance:<br>• 6T6b1. Students will use formatting and editing tools when producing documents or presentations.<br>• 6T6b2. Students will use tracking tools to revise and edit documents.<br>• 6T6b3. Students will input, manipulate, and graph data in spreadsheets. |

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| | • 6T6b4. Students will create spreadsheet functions to analyze, interpret, and display data. |
| | • 6T6b5. Students will use a graphing/scientific calculator to calculate, graph, analyze data, and complete other functions to solve problems. |
| 6T6c. troubleshoot systems and applications. | With assistance: <br> • 6T6c1. Students will apply strategies for solving common hardware and software problems. |
| 6T6d. transfer current knowledge to learning of new technologies | With assistance: <br> • 6T6d1. Students will apply experience with technology systems and programs when using new tools to create a product. <br> • 6T6d2. Students will use various digital tools to create documents and presentations. |

| **7T1. Creativity and Innovation**<br>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: ||
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| 7T1a. Apply existing knowledge to generate new ideas, products, or processes. | Independently:<br><br>• 7T1a1. Students will create digital products to demonstrate curriculum-related knowledge or processes that could be used to provide innovative solutions in the real world.<br>• 7T1a2. Students will research real-world topics using appropriate online resources.<br>• 7T1a3. Students will reflect on and debate topics using online tools (blog, chat, message-board, etc.)<br>• 7T1a4. Students will create curriculum-related multimedia projects. |
| 7T1b. Create original works as a means of personal or group expression. | Independently:<br><br>• 7T1b1. Students will create original digital products (animations, videos, podcasts, web pages, blogs, etc.) about a topic of personal interest or in response to a learning activity and document a reflection on the quality of the production<br>• 7T1b2. Students will express original ideas through technology programs or online resources.<br>• 7T1b3. Students will create digital works using technology resources.<br>• 7T1b4. Students will print, post, or publish original work using technology. |
| 7T1c. Use models and simulations to explore complex systems and issues. | With assistance:<br><br>• 7T1c1. Students will describe and illustrate a complex curriculum-related concept or process using a model, simulation, concept-mapping software, or hypermedia.<br>• 7T1c2. Students will use technology to create models or digital simulations.<br>• 7T1c3. Students will use digital simulations to examine and determine the effects of manipulating one or more variables.<br>• 7T1c4. Students will use digital models to compare and contrast concepts, demonstrate patterns, make predications, and demonstrate understanding of curriculum-related concepts. |
| 7T1d. Identify trends and forecast possibilities. | With assistance:<br><br>• 7T1d1. Students will develop and apply a research strategy for making data-driven predictions.<br>• 7T1d2. Students will use technology to manipulate data to identify trends, forecast results, and identify variables that affect a process.<br>• 7T1d3. Students will determine models that allow you to manipulate variables, including graphs that can be extended over time and allow you to make predictions for particular circumstances (e.g., uphill vs downhill acceleration, pre- and post-unit attitudes about cyberbullying).<br>• 7T1d4. Students will use technology resources to gather data, graph patterns and trends, and evaluate patterns and trends.<br>• 7T1d5. Students will use technology-based models and simulations to predict outcomes. |

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| **7T2. Communication and Collaboration** <br> Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: ||
| 7T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. | Independently: <br> • 7T2a1. Students will use digital media tools (e.g., blogs, wikis, video-conferencing, virtual worlds, etc.) for synchronous and asynchronous collaboration with peers/experts/global partners to plan, design, and publish a content-specific product. <br> • 7T2a2. Students will present and/or post work products online. For example, collaborate in a virtual world to design and produce a re-enactment of a historical event, play, or experiment, or collaborate with students in another classroom using digital tools to debate an important issue. <br> • 7T2a3. Students will submit results for publication to appropriate channels (e.g., national competitions for solutions, local newspaper editorials, online blogs and networks). |
| 7T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | With assistance: <br> • 7T2b1. Students will, individually or in collaborative groups, identify and evaluate information from a variety of online sources for accuracy, bias, and comprehensiveness. Summarize and distribute results to multiple audiences (e.g., audiences with different levels of knowledge or perspectives) using a variety of communications media and formats (e.g., presentation, webpage, wiki, blog, online collaborative writing tools). <br> • 7T2b2. Students will collaborate with local and global partners and content experts to develop multimedia presentations incorporating a variety of media elements (e.g., clip art, movies, animations, graphs, concept maps) to clearly illustrate, explain, explore, or demonstrate a demanding/complex concept, principle, or procedure appropriate for specific audiences (e.g., audience with specific level of knowledge or perspectives). |
| 7T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | With assistance: <br> • 7T2c1. Students will identify a topic of global concern and use a variety of digital tools to collaborate with learners from other cultures to better understand the topic from different perspectives. <br> • 7T2c2. Students will identify potential solutions or create products that help others understand a global issue/perspective. |
| 7T2d. Contribute to project teams to produce original works or solve problems. | Independently: <br> • 7T2d1. Students will identify an appropriate project or problem associated with a specific content area and identify and assign roles for project team members. <br> • 7T2d2. Students will select appropriate digital tools for supporting investigation and/or experimentation related to the project/problem. <br> • 7T2d3. Students will work collaboratively to arrive at identifying and testing possible solution(s). <br> • 7T2d4. Students will share findings through real-time and/or recorded demonstrations to classmates and/or a broader audience using technology. |
| **7T3. Research and Information Fluency** <br> Students apply digital tools to gather, evaluate, and use information. Students: ||
| 7T3a. Plan strategies to guide inquiry. | Independently: <br> • 7T3a1. Students will create a concept map describing the aspects of a research topic or essential question, and select key topics for exploration. <br> • 7T3a2. Students will determine data collection and search needs and strategies for gathering information (e.g., determine appropriate search engine database, share links |

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| | with important text highlighted using social bookmarking tools, collect data using digital probes and/or student response systems, access news from information aggregators). <br> • 7T3a3. Students will use digital planning tools or project management software to lay out inquiry processes and procedures. |
| 7T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Independently: <br> • 7T3b1. Students will independently develop and apply effective search strategies for locating credible resources in multiple digital databases. <br> • 7T3b2. Students will categorize and classify information to support analysis <br> • 7T3b3. Students will use technology to synthesize results and report conclusions (e.g., using data visualization, spreadsheets and graphs, and other productivity tools). <br> • 7T3b4. Students will document sources using a process and format appropriate for digital publication. |
| 7T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | Independently: <br> • 7T3c1. Students will select and apply appropriate tools and digital resources to accomplish a variety of tasks. <br> • 7T3c2. Students will justify their selected digital tools based on efficiency and effectiveness for completing the projects. |
| 7T3d. Process data and report results. | With assistance: <br> • 7T3d1. Students will employ data analysis tools (e.g., databases, visualization tools, statistical programs, graphing calculators) to analyze data collections. <br> • 7T3d2. Students will create projections and models to inform decision making. <br> • 7T3d3. Students will use multimedia formats to effectively report results to specific audiences. |

**7T4. Critical Thinking, Problem Solving, and Decision Making**
Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

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| 7T4a. identify and define authentic problems and significant questions for investigation. | Independently: <br> • 7T4a1. Students will identify a problem and create essential questions that guide investigation of an authentic problem using digital resources. <br> • 7T4a2. Students will identify, plan and research a topic from a global community perspective. |
| 7T4b. plan and manage activities to develop a solution or complete a project. | Independently: <br> • 7T4b1. Students will select and use appropriate digital planning tools to complete a project. <br> • 7T4b2. Students will implement virtual field trips to explore content. |
| 7T4c. collect and analyze data to identify solutions and/or make informed decisions. | Independently: <br> • 7T4c1. Students will gather and organize data, examine patterns, and present ideas using digital tools. |
| 7T4d. use multiple processes and diverse perspectives to explore alternative solutions. | With assistance: <br> • 7T4d1. Students will identify references from a variety of viewpoints. <br> • 7T4d2. Students will contact a variety of experts to get diverse viewpoints. <br> • 7T4d3. Students will communicate with individuals from other cultures to gather diverse perspectives. |

| | • 7T4d4. Students will use forums or threaded discussions to gather information. |
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| **7T5.  Digital Citizenship** | |
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| Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students: | |
| 7T5a. advocate and practice safe, legal, and responsible use of information and technology. | Independently: <br> • 7T5a1. Students will identify fair use of reference material in a production or presentation. <br> • 7T5a2. Students will identify information and/or resources as being copyright protected. <br> • 7T5a3. Students will communicate through social media sites (blogs, wikis, social networking sites, etc.) safely and appropriately. |
| 7T5b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | Independently: <br> • 7T5b1. Students will explain the value of existing and emerging technologies on individuals, society, and the global community. |
| 7T5c. demonstrate personal responsibility for lifelong learning. | Independently: <br> • 7T5c1. Students will assess the potential of technologies to address personal, social, lifelong learning, and career needs. <br> • 7T5c2. Students will utilize resources that are not restricted by copyright protection (fair use). <br> • 7T5c3. Students will show proper citation for resources according to national standards. |
| 7T5d. exhibit leadership for digital citizenship. | With assistance: <br> • 7T5d1. Students will explain the concepts of digital etiquette, access, and literacy. <br> • 7T5d2. Students will describe personal and societal responsibilities of existing and emerging technologies in the global community. |

| **7T6.  Technology Operations and Concepts** | |
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| Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: | |
| 7T6a. understand and use technology systems. | With assistance: <br> • 7T6a1. Students will demonstrate keyboarding skills by completing a variety of productivity tasks in a timely manner. <br> • 7T6a2. Students will describe the components of a technology system and how they interact. <br> • 7T6a3. Students will create, save, retrieve, and produce files through a network system and through digital tools and peripherals. |
| 7T6b. select and use applications effectively and productively. | With assistance: <br> • 7T6b1. Students will use formatting and editing tools when producing documents or presentations. <br> • 7T6b2. Students will use tracking tools to revise and edit documents. <br> • 7T6b3. Students will input, manipulate, and graph data in spreadsheets. |

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| | • 7T6b4. Students will create spreadsheet functions to analyze, interpret, and display data. |
| | • 7T6b5. Students will use a graphing/scientific calculator to calculate, graph, analyze data, and complete other functions to solve problems. |
| 7T6c. troubleshoot systems and applications. | With assistance: <br> • 7T6c1. Students will apply strategies for solving common hardware and software problems. |
| 7T6d. transfer current knowledge to learning of new technologies | With assistance: <br> • 7T6d1. Students will apply experience with technology systems and programs when using new tools to create a product. <br> • 7T6d2. Students will use various digital tools to create documents and presentations. |

| 8T1. Creativity and Innovation |
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| Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students: |

| 8T1a. Apply existing knowledge to generate new ideas, products, or processes. | Independently:<br>• 8T1a1. Students will create digital products to demonstrate curriculum-related knowledge or processes that could be used to provide innovative solutions in the real world.<br>• 8T1a2. Students will research real-world topics using appropriate online resources.<br>• 8T1a3. Students will reflect on and debate topics using online tools (blog, chat, message-board, etc.)<br>• 8T1a4. Students will create curriculum-related multimedia projects. |
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| 8T1b. Create original works as a means of personal or group expression. | Independently:<br>• 8T1b1. Students will create original digital products (animations, videos, podcasts, web pages, blogs, etc.) about a topic of personal interest or in response to a learning activity and document a reflection on the quality of the production.<br>• 8T1b2. Students will express original ideas through technology programs or online resources.<br>• 8T1b3. Students will create digital works using technology resources.<br>• 8T1b4. Students will print, post, or publish original work using technology. |
| 8T1c. Use models and simulations to explore complex systems and issues. | Independently:<br>• 8T1c1. Students will describe and illustrate a complex curriculum-related concept or process using a model, simulation, concept-mapping software, or hypermedia.<br>• 8T1c2. Students will use technology to create models or digital simulations.<br>• 8T1c3. Students will use digital simulations to examine and determine the effects of manipulating one or more variables.<br>• 8T1c4. Students will use digital models to compare and contrast concepts, demonstrate patterns, make predications, and demonstrate understanding of curriculum-related concepts. |
| 8T1d. Identify trends and forecast possibilities. | Independently:<br>• 8T1d1. Students will develop and apply a research strategy for making data-driven predictions.<br>• 8T1d2. Students will use technology to manipulate data in order to identify trends, forecast results, and identify variables that affect a process.<br>• 8T1d3. Students will determine models that allow you to manipulate variables, including graphs that can be extended over time and allow you to make predictions for particular circumstances (e.g., uphill vs downhill acceleration, pre- and post-unit attitudes about cyberbullying).<br>• 8T1d4. Students will use technology resources to gather data, graph patterns and trends, and evaluate patterns and trends.<br>• 8T1d5. Students will use technology-based models and simulations to predict outcomes. |

| 8T2.  Communication and Collaboration |
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| Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students: |

| 8T2a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and | Independently:<br>• 8T2a1. Students will use digital media tools (e.g., blogs, wikis, video-conferencing, virtual worlds, etc.) for synchronous and asynchronous collaboration with peers/experts/global partners to plan, design, and publish a content-specific product.<br>• 8T2a2. Students will present and/or post work products online. For example, collaborate in a virtual world to design and produce a re-enactment of a historical event, play, or experiment, or collaborate with students in another classroom using digital tools to debate an important |
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| media. | issue. <br> • 8T2a3. Students will submit results for publication to appropriate channels (e.g., national competitions for solutions, local newspaper editorials, online blogs and networks). |
| 8T2b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats. | Independently: <br> • 8T2b1. Students will, individually or in collaborative groups, identify and evaluate information from a variety of online sources for accuracy, bias, and comprehensiveness. Summarize and distribute results to multiple audiences (e.g., audiences with different levels of knowledge or perspectives) using a variety of communications media and formats (e.g., presentation, webpage, wiki, blog, online collaborative writing tools). <br> • 8T2b2. Students will collaborate with local and global partners and content experts to develop multimedia presentations incorporating a variety of media elements (e.g., clip art, movies, animations, graphs, concept maps) to clearly illustrate, explain, explore, or demonstrate a demanding/complex concept, principle, or procedure appropriate for specific audiences (e.g., audience with specific level of knowledge or perspectives). |
| 8T2c. Develop cultural understanding and global awareness by engaging with learners of other cultures. | Independently: <br> • 8T2c1. Students will identify a topic of global concern and use a variety of digital tools to collaborate with learners from other cultures to better understand the topic from different perspectives. <br> • 8T2c2. Students will identify potential solutions or create products that help others understand a global issue/perspective. |
| 8T2d. Contribute to project teams to produce original works or solve problems. | Independently: <br> • 8T2d1. Students will identify an appropriate project or problem associated with a specific content area and identify and assign roles for project team members. <br> • 8T2d2. Students will select appropriate digital tools for supporting investigation and/or experimentation related to the project/problem. <br> • 8T2d3. Students will work collaboratively to arrive at identifying and testing possible solution(s). <br> • 8T2d4. Students will share findings through real-time and/or recorded demonstrations to classmates and/or a broader audience using technology. |
| **8T3. Research and Information Fluency** <br> Students apply digital tools to gather, evaluate, and use information. Students: | |
| 8T3a. Plan strategies to guide inquiry. | Independently: <br> • 8T3a1. Students will create a concept map describing the aspects of a research topic or essential question, and select key topics for exploration. <br> • 8T3a2. Students will determine data collection and search needs and strategies for gathering information (e.g., determine appropriate search engine database, share links with important text highlighted using social bookmarking tools, collect data using digital probes and/or student response systems, access news from information aggregators). <br> • 8T3a3. Students will use digital planning tools or project management software to lay out inquiry processes and procedures. |

| 8T3b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. | Independently:<br>• 8T3b1. Students will independently develop and apply effective search strategies for locating credible resources in multiple digital databases.<br>• 8T3b2. Students will categorize and classify information to support analysis<br>• 8T3b3. Students will use technology to synthesize results and report conclusions (e.g., using data visualization, spreadsheets and graphs, and other data visualization).<br>• 8T3b4. Students will document sources using a process and format appropriate for digital publication. |
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| 8T3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. | Independently:<br>• 8T3c1. Students will select and apply appropriate tools and digital resources to accomplish a variety of tasks.<br>• 8T3c2. Students will justify their selected digital tools based on efficiency and effectiveness for completing the projects. |
| 8T3d. Process data and report results. | Independently:<br>• 8T3d1. Students will employ data analysis tools (e.g., databases, visualization tools, statistical programs, graphing calculators) to analyze data collections.<br>• 8T3d2. Students will create projections and models to inform decision making.<br>• 8T3d3. Students will use multimedia formats to effectively report results to specific audiences. |

**8T4. Critical Thinking, Problem Solving, and Decision Making**
Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

| 8T4a. identify and define authentic problems and significant questions for investigation. | Independently:<br>• 8T4a1. Students will identify a problem and create essential questions that guide investigation of an authentic problem using digital resources.<br>• 8T4a2. Students will identify, plan and research a topic from a global community perspective. |
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| 8T4b. plan and manage activities to develop a solution or complete a project. | Independently:<br>• 8T4b1. Students will select and use appropriate digital planning tools to complete a project.<br>• 8T4b2. Students will implement virtual field trips to explore content. |
| 8T4c. collect and analyze data to identify solutions and/or make informed decisions. | Independently:<br>• 8T4c1. Students will gather and organize data, examine patterns, and present ideas using digital tools. |
| 8T4d. use multiple processes and diverse perspectives to explore alternative solutions. | Independently:<br>• 8T4d1. Students will identify references from a variety of viewpoints.<br>• 8T4d2. Students will contact a variety of experts to get diverse viewpoints.<br>• 8T4d3. Students will communicate with individuals from other cultures to gather diverse perspectives.<br>• 8T4d4. Students will use forums or threaded discussions to gather information. |

**8T5. Digital Citizenship**
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

| 8T5a. advocate and practice safe, legal, and responsible use of information and technology. | Independently: <br> • 8T5a1. Students will identify fair use of reference material in a production or presentation. <br> • 8T5a2. Students will identify information and/or resources as being copyright protected. <br> • 8T5a3. Students will communicate through social media sites (blogs, wikis, social networking sites, etc.) safely and appropriately. |
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| 8T5b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity. | Independently: <br> • 8T5b1. Students will explain the value of existing and emerging technologies on individuals, society, and the global community. |
| 8T5c. demonstrate personal responsibility for lifelong learning. | Independently: <br> • 8T5c1. Students will assess the potential of technologies to address personal, social, lifelong learning, and career needs. <br> • 8T5c2. Students will utilize resources that are not restricted by copyright protection (fair use). <br> • 8T5c3. Students will show proper citation for resources according to national standards. |
| 8T5d. exhibit leadership for digital citizenship. | Independently: <br> • 8T5d1. Students will explain the concepts of digital etiquette, access, and literacy. <br> • 8T5d2. Students will describe personal and societal responsibilities of existing and emerging technologies in the global community. |
| **8T6. Technology Operations and Concepts** <br> Students demonstrate a sound understanding of technology concepts, systems, and operations. Students: ||
| 8T6a. understand and use technology systems. | Independently: <br> • 8T6a1. Students will demonstrate keyboarding skills by completing a variety of productivity tasks in a timely manner. <br> • 8T6a2. Students will describe the components of a technology system and how they interact. <br> • 8T6a3. Students will create, save, retrieve, and produce files through a network system and through digital tools and peripherals. |
| 8T6b. select and use applications effectively and productively. | Independently: <br> • 8T6b1. Students will use formatting and editing tools when producing documents or presentations. <br> • 8T6b2. Students will use tracking tools to revise and edit documents. <br> • 8T6b3. Students will input, manipulate, and graph data in spreadsheets. <br> • 8T6b4. Students will create spreadsheet functions to analyze, interpret, and display data. <br> • 8T6b5. Students will use a graphing/scientific calculator to calculate, graph, analyze data, and complete other functions to solve problems. |
| 8T6c. troubleshoot systems and applications. | Independently: <br> • 8T6c1. Students will apply strategies for solving common hardware and software problems. |
| 8T6d. transfer current knowledge to learning of new | Independently: <br> • 8T6d1. Students will apply experience with technology systems and programs when using new tools to create a product. |

| technologies | • 8T6d2. Students will use various digital tools to create documents and presentations. |
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| Term | Definition |
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| Algorithmic Thinking | The ability to develop step-by-step procedures for solving problems. |
| Application | A computer program used to accomplish specific tasks (e.g., word processors, spreadsheets, accounting systems). |
| Asynchronous collaboration | Interaction that occurs intermittently with a time delay. Examples are self-paced courses taken via the Internet or CD-ROM, Q&A mentoring, online discussion groups, and e-mail. |
| Blog (web log) | A web page that serves as a publicly accessible personal journal for an individual. Typically updated daily, blogs often reflect the personality of the author. |
| Concept Map | A technique for visualizing the relationships between different concepts; A visual representation to help show relationships between different items; A diagram showing the relationships among concepts; graphical tools for organizing and representing knowledge. |
| Cyberbullying | Using technology to harass, intimidate, embarrass or cause harm to another. |
| Data Visualization | Presenting data and summary information using graphics, animation, 3-D displays, and other multimedia tools. |
| Digital Database | A large collection of data that is developed and maintained for quick searching and retrieving. |
| Digital Device | A device that that produces and/or displays electronic media. |
| Digital Environment | A created environment using a computer. |
| Digital Media | any electronic media that is produced and displayed using computer technology, such as digital audio, digital video and anything that you would find online, internet technology, interactive games, communication & social interaction. |
| Digital Planning Tools | Hardware and software that allows users to easily organize and reorganize information to adapt to changing circumstances.  Examples are PDAs, Inspiration, MS Outlook, and MS Project. |
| Digital Products | Student work, produced in an electronic form, which is designed to demonstrate learning. |
| Digital Publication | Refers to publishing a work in electronic form, usually on the Internet. |
| Digital Reference Tools | Software or web-based tool that assists the user in finding, gathering, storing and citing references. |
| Digital Resources | An all-encompassing term that refers to electronic tools that assist with instruction and learning.  Examples include websites, streaming media, and eBooks. |
| Digital Storytelling | The use of technology to create media-rich stories.  Digital stories usually include images, music, and narrative. |
| Digital Tools | Hardware and software.  Examples might include projectors, interactive whiteboards, digital recorders, digital cameras. |
| eBooks | An electronic version of printed material some with the ability of interactive applications. Also called eTextbooks. |
| Electronic Whiteboard | Also called interactive whiteboard or IWB, is a large interactive display that connects to a computer and projector. A projector projects the computer's desktop onto the board's surface, where users control the computer using a pen, finger or other device. |

| Fair Use | A doctrine in United States copyright law that allows limited use of copyrighted material without requiring permission from the rights holders, such as for commentary, criticism, news reporting, research, teaching or scholarship. |
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| Graphic Organizer | A visual representation of knowledge, ideas or concepts. |
| Hardware | The computer equipment used to do the work (i.e., operate software programs). It consists of the items that can be touched, such as the computer case and peripherals (e.g., monitor, keyboard, mouse) that are attached to the computer. |
| Hypermedia | Multimedia, such as text, sound, and video, with electronic links. |
| Information aggregators | A web-based or local application, e.g. RSS feeds, Google Reader, etc. that collates content from various websites. The content is published by a website as a feed and is typically limited to text and images. More recently, aggregators have been able to work with audio and video content, distributed as podcasts. |
| Learning Management System | Software that automates the administration of a class web site. These often include modules for online class discussions, grade books, homework turn-in and pickup, class calendars, and tools to make it easy to upload documents and link to electronic course reserves. |
| Message Board | Forum on the Internet or an intranet where users can post messages for others to read. |
| Multimedia Presentation | Describes the use of a combination of audio, video, animation, text, images and/or graphics in some form of presentation. Multimedia can be anything from a simple PowerPoint slide slow to a complex interactive simulation. |
| Network Interfaces | The means in which users access a network. |
| Online Collaborative Tools | Software, platforms, or services that enable people at different locations to communicate and work with each other in a secure, self-contained environment. May include capabilities for document management, application sharing, presentation development and delivery, whiteboarding, and chat. |
| Online Discussion Forums | Online message boards used to exchange ideas, post questions, offer answers, or offer help on relevant subjects.  Forums on the Internet or an intranet where users can post messages for others to read |
| Online Etiquette | Online manners; the rules of conduct for online or internet users. |
| Peripheral | A device that is attached to a computer, such as a monitor, keyboard, mouse, external modem, external CD-ROM drive, external DVD drive, printer, scanner, and speakers. |
| Podcast | An audio file that can be downloaded to a portable audio player or computer, usually speech. |
| Primary Resources | An item is considered a primary resource if it is published at the time the event occurred by someone involved in the event. For historical events, a primary resource on Abraham Lincoln would be either one written by Lincoln or by someone who knew Lincoln. |
| Probe | Equipment and software used to gather and analyze data, usually in science, math, or technology classes. |
| Productivity Tools | Software applications that allow users to accomplish specific tasks more efficiently and effectively.  For example, word processing and spreadsheet applications, online Calendar and To-Do lists, etc. |
| Project Management Software | Software programs that provide tools to help manage projects, such as integrated calendars, report generators, scheduling, charting, tracking, and prioritizing. |

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| Ranking and Sorting Tools | Ranking tools allow users to analyze data by placing items in a particular order; Sorting tools allow the user to analyze data by placing items in similar categories. |
| Real-time | Refers to information that is received and processed so quickly by a computer that the interaction seems instantaneous. Videoconferencing and chat are two examples of real-time applications. |
| Secondary Resources | An item is considered a secondary resource if it is written about an event after it occurred. Examples of a secondary resource would be a newsmagazine, such as Time or Newsweek when they report on a particular event or topic after the fact.  Any resource that describes an event, person, place, or thing but not created at the time; published information gathered from primary sources, e.g. published books, biographies, newspaper articles. |
| Simulation | A representation of a real or imaginary system in action.  One main learning benefit of simulations is that they enable learners to practice skills or behaviors in a risk-free environment.  Simulations may be played out in person or through a sort of computer display, from a mobile device to a 3D virtual reality. The purpose of a simulation is to enable users to explore interactions between the elements, observe system operation over time and ask "what if" questions about the effects of changes to any of the system elements or attributes. Simulations are different from models in that simulations are dynamic, whereas models are static.  In the educational world, the terms "simulation" and "game" are often used interchangeably. |
| Smartphone | An electronic handheld device (usually a cell phone) offering advanced capabilities, often with PC-like functionality.  Usually combines voice services with e-mail, fax, pager or Internet access. |
| Social Bookmarking | This is an online version of local bookmarking or favorites, It is more advanced because you can draw on others' bookmarks and tags or keywords.  In a social bookmarking system, users store lists of Internet resources that they find useful, and other people with similar interests can view the links by category, tags, or randomly. Examples are Diigo and del.icio.us. |
| Social Media | Can refer to interactive communication in which participants in online communities such as Facebook share thoughts, photos, etc. with members of their own personal networks in a controlled way; enables people to connect or collaborate through computer-mediated communication. Examples include instant messaging, chatting, blogs, wikis, etc. |
| Software | Programs that tell a computer what to do. |
| Student Response System | A software/hardware system that allows instructors to ask students multiple-choice or numeric questions and receive immediate, in-class feedback using a portable receiver, student remote control response pads, computer projection equipment or response pads with LCD screens and response analysis software. Responses are anonymous unless the instructor knows the specific response pad number for each student. |
| Synchronous collaboration | Real-time interaction in which all participants are logged on at the same time and communicate directly with each other. Interaction may occur via audio- or videoconferencing, internet telephony, or two-way live broadcasts. |
| Technology System | Computer hardware, software, and infrastructure and the interaction between them.  Examples include the Internet, video production, cell phones, and computer networks. |

| Threaded Discussion | A form of asynchronous discussion on the Web whereby one user posts a message or a document giving other users the ability to see it and respond to it in their own time. |
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| Tracking Tool | An application used to denote revisions that have been made to a document, usually identifies the editor responsible for the revision as well.  For example, the Track Changes feature in MS Word and the revision history feature in Google Docs. |
| Video-Conferencing | Interactive video-based communication which allow two or more locations to interact via two-way video and audio transmissions simultaneously. Two-way (or multi-way) videoconferencing involves video links between all participants; one-way videoconferencing involves video in one direction, with audio links in the other. |
| Virtual Worlds | A computer simulated environment where users can interactive with each other via the internet. |
| Visual Data Tools | Tools that present data and summary information using graphics, animation, 3-D displays, and other multimedia tools (see also *visualization tools*). |
| Visualization Tools | Tools that present data and summary information using graphics, animation, 3-D displays, and other multimedia tools (see also *visual data tools)*. |
| Vodcast | A video file that can be downloaded to a portable AV file or computer. |
| Web Publishing | Creating and posting a document that can be accessed on the Internet; may contain information, graphics, and hyperlinks to other web-pages and files. |
| Webinar | A small, synchronous, online learning event in which a presenter and audience members communicate via text chat or audio about concepts often illustrated via online slides and/or an electronic whiteboard. Webinars are often archived as well for asynchronous, on-demand access. |
| Wiki | A collaborative website that enables multi users to edit and add content. One of the best-known and frequently accessed public wikis on the Internet is *Wikipedia*. |