Instructional Technology Curriculum

Grade 5 (Unit 2)
# Course Description

**Subject Area:** Instructional Technology

<table>
<thead>
<tr>
<th>Course Name: Instructional Technology - 5</th>
<th>Grade: 5</th>
</tr>
</thead>
</table>

**Description:** Fifth Grade students will learn how to effectively work in teams to solve real world problems using collaborative technological tools such as word processors, spreadsheets and presentation software. They will learn how to use advanced functions in spreadsheets to organize their data effectively and accurately. These students will also build a strong comprehensive understanding of block coding where they will design their own computer programs to solve technology based problems. These students will also use online communication tools to convey their ideas to a diverse world audience.

Key Skills/Areas:

- A. Technology Operations and Concepts
- B. Creativity and Innovation
- C. Communication and Collaboration
- D. Digital Citizenship
- E. Research and Information Literacy
- F. Critical Thinking, Problem Solving, and Decision Making
# Pacing Chart

<table>
<thead>
<tr>
<th>Unit I</th>
<th>Unit II</th>
<th>Unit III</th>
<th>Unit IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 weeks</td>
<td>9 weeks</td>
<td>9 weeks</td>
<td>9 weeks</td>
</tr>
</tbody>
</table>
**Career Ready Practices**

**Standards:**

CRP2, CRP4, CRP6, CRP12

- **CRP2. Apply appropriate academic and technical skills.**
  Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

  **Examples of use within the unit:**

  Students will learn how to manipulate tables in word to organize their ideas and thought process into categories with an X and Y axis.

- **CRP4. Communicate clearly and effectively and with reason.**
  Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others’ time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

  **Examples of use within the unit:**

  Students will write five paragraph compositions in word processors with evidence to persuade someone to see the merits of their arguments.
- **CRP6. Demonstrate creativity and innovation.**
  Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

  **Examples of use within the unit:**
  Students will use innovation to write computer algorithms that have an impact in their society.

- **CRP12. Work productively in teams while using cultural global competence.**
  Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

  **Examples of use within the unit:**
  Students will design and write computer code that has a direct impact to a global technological society.
# Differentiated Instruction

**Accommodate Based on Students Individual Needs: Strategies**

<table>
<thead>
<tr>
<th>Time/General</th>
<th>Processing</th>
<th>Comprehension</th>
<th>Recall</th>
<th>Assistive Technology</th>
<th>Tests/Quizzes/Grading</th>
<th>Behavior/Attention</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra time for assigned tasks</td>
<td>Extra response time</td>
<td>Precise step-by-step directions</td>
<td>Teacher-made checklist</td>
<td>Computer/whiteboard</td>
<td>Extended time</td>
<td>Consistent daily structured routine</td>
<td>Individual daily planner</td>
</tr>
<tr>
<td>Adjust length of assignment</td>
<td>Have students verbalize steps</td>
<td>Short manageable tasks</td>
<td>Use visual graphic organizers</td>
<td>Spell-checker</td>
<td>Study guides</td>
<td>Simple and clear classroom rules</td>
<td>Display a written agenda</td>
</tr>
<tr>
<td>Timeline with due dates for reports and projects</td>
<td>Repeat, clarify or reword directions</td>
<td>Brief and concrete directions</td>
<td>Reference resources to promote independence</td>
<td>Audio-taped books</td>
<td>Shortened tests</td>
<td>Frequent feedback</td>
<td>Note-taking assistance</td>
</tr>
<tr>
<td>Communication system between home and school</td>
<td>Mini-breaks between tasks</td>
<td>Provide immediate feedback</td>
<td>Visual and verbal reminders</td>
<td></td>
<td>Read directions aloud</td>
<td></td>
<td>Color code materials</td>
</tr>
<tr>
<td>Provide lecture notes/outline</td>
<td>Provide a warning for transitions</td>
<td>Small group instruction</td>
<td>Graphic organizers</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Reading partners</td>
<td>Emphasize multi-sensory learning</td>
<td></td>
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</tr>
</tbody>
</table>

**Tests/Quizzes/Grading**
- Extended time
- Study guides
- Shortened tests
- Read directions aloud

**Behavior/Attention**
- Consistent daily structured routine
- Simple and clear classroom rules
- Frequent feedback

**Organization**
- Individual daily planner
- Display a written agenda
- Note-taking assistance
- Color code materials
## Differentiated Instruction

### Accommodate Based on Students’ Individual Needs:

- Leveled Text
- Chunking text
- Choice Board/Menu
- Tiered Instruction
- Small group instruction
- Tangible items/pictures (i.e., to facilitate vocabulary acquisition)
- Use of oral assessment
- Tiered learning centers
- Tiered questioning
- Data-driven student partnerships
- Computer/whiteboard
- Test-to-speech
- Spell-checker
- Audio book
- Teacher-made checklist
- Repeat, clarify or reword directions
- Emphasize multi-sensory learning
## Enrichment

**Accommodate Based on Students Individual Needs: Strategies**

- Adaption of Material and Requirements
- Evaluate Vocabulary
- Elevated Text Complexity
- Additional Projects
- Independent Student Options
- Projects completed individual or with Partners
- Self-Selection of Research
- Tiered/Multilevel Activities
- Learning Centers
- Individual Response Board
- Independent Book Studies
- Open-ended activities
- Community/Subject expert mentorships
### Assessments

**Suggested Formative/Summative Classroom Assessments**

- Timelines, Maps, Charts, Graphic Organizers
- Quizzes
- Short Answer
- Accountable Talk, Debate, Oral Report, Role Playing, Think Pair, and Share
- Projects, Gallery Walks
- Homework
- Create an Original Song, Film, or Poem
- Student Response System (clickers)
- Self-reflection Rubric
<table>
<thead>
<tr>
<th>Content Area</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</td>
</tr>
<tr>
<td>Strand</td>
<td>A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.</td>
</tr>
<tr>
<td>3-5</td>
<td>Select and use applications effectively and productively. 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>Standard</td>
<td>8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</td>
</tr>
<tr>
<td>Strand</td>
<td>E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade Level bands</th>
<th>Content Statement</th>
<th>Indicator</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5</td>
<td>Students will:</td>
<td>8.1.5.E.1</td>
<td>Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.</td>
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<tr>
<td></td>
<td>Plan strategies to guide inquiry.</td>
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<tr>
<td></td>
<td>Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.</td>
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<tr>
<td></td>
<td>Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.</td>
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<tr>
<td>Content Area</td>
<td>Technology</td>
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<tr>
<td>Standard</td>
<td>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</td>
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<tr>
<td>Strand</td>
<td>C. Design: The design process is a systematic approach to solving problems.</td>
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<tr>
<td>3-5</td>
<td>The application of engineering design.</td>
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<tr>
<td>8.2.5.C.5</td>
<td>Explain the functions of a system and subsystems.</td>
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</tbody>
</table>

| Standard     | 8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. |
| Strand       | E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge. |
| Grade Level  | Content Statement |
| bands        | Students will be able to understand: |

<p>| 3-5          | Computational thinking and computer programming as tools used in design and engineering. |
| 8.2.5.E.1    | Identify how computer programming impacts our everyday lives. |
| 8.2.5.E.2    | Demonstrate an understanding of how a computer takes input of data, processes and stores the data through a series of commands, and outputs information. |
| 8.2.5.E.3    | Using a simple, visual programming language, create a program using loops, events and procedures to generate specific output. |
| 8.2.5.E.4    | Use appropriate terms in conversation (e.g., algorithm, program, debug, loop, events, procedures, memory, storage, processing, software, coding, procedure, and data). |</p>
<table>
<thead>
<tr>
<th>NJDOE Student Learning Objective</th>
<th>Essential Questions</th>
<th>Sample Activities</th>
<th>Resources</th>
<th>Interdisciplinary Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADVANCED WORD PROCESSING</strong></td>
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</tbody>
</table>
| 8.2.5. E.2 Demonstrate an understanding of how a computer takes input of data, processes and stores the data through a series of commands, and outputs information. | How can tables help me to organize written information in a manner that will help me to explain my point of view? | **Word Processing:**  
  - Creating and Organizing Tables  
  - How to use Font size to highlight important information  
  - Proofreading and Editing  
  - Idea Webs Journal  
**Word Processing Activities:**  
  - Collaborative story writing using word processing software  
  - Inserting Tables to Compare and Contrast information  
  - Explore the sites regarding inventions as a class or you could create teams and | The following link is a Scrambled Stories activity’s for Grade 5  
The following website allows Grade 5 students to create their own mind mapping graphical presentations  
[https://bubbl.us/](https://bubbl.us/)  
The following link allows students to create an interactive Venn Diagram  
Grade 5 lesson plan for “Applying Question-Answer” | Literacy  
Students will type compositions that compare and contrast different characters using a table.  
RI.5.3 |
| have each team explore a site and report back to the class what was found. “This site will help you ……………. (what).
This site had great research about ……….. (what). |
| Relationships to Pictures”
http://www.readwritethink.org/classroom-resources/lesson-plans/applying-question-answer-relationships-370.html |
# Unit Vocabulary

**Grade 5:**

- word processing
- design
- checklists
- creating a document
- graphics
- text
- application
- evaluate work
- template
- media
- white space
- layout
- software
- audience
- writing process
- surveying
- solutions
- problem statement
- gallery
- live preview
- ribbon interface
- quick access
- contextual menu
- application button
- groups
- review
- home tab
- dialog box

- hover
- Office button
- command
- research
- speaking
- toolbars
- program menus
- interfaces
- navigation
- GPS
- mapping technology
- map
- global navigation systems
- Collaboration
- Technical Writing
- Persuasive Writing
- Mapping Programs
- Global Navigation Satellite Systems
- Descriptive Writing
- Mapping Skills
- Research
- Word Processing Software
- Formatting
- Problem Solving
- spell check
### REQUIRED CODING LESSONS

**COURSE C**

[https://studio.code.org/s/coursec](https://studio.code.org/s/coursec)

<table>
<thead>
<tr>
<th>UNIT</th>
<th>COURSE C LESSON &amp; STANDARDS</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><strong>Lesson 5: Programming in Collector</strong>&lt;br&gt;8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:&lt;br&gt;All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.&lt;br&gt;CISTA K-12 Computer Science Standards&lt;br&gt;AP - Algorithms &amp; Programming&lt;br&gt;1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.&lt;br&gt;1A-AP-11 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.</td>
<td>Order movement commands as sequential steps in a program.&lt;br&gt;Represent an algorithm as a computer program.&lt;br&gt;Develop problem solving and critical thinking skills by reviewing debugging practices.</td>
</tr>
<tr>
<td>Lesson 6: Programming in Artist</td>
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<td>--------------------------------</td>
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<tr>
<td>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:</td>
<td>All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</td>
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<tr>
<td>CSTA K-12 Computer Science Standards</td>
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<tr>
<td>AP - Algorithms &amp; Programming</td>
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<tr>
<td>1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.</td>
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<tr>
<td>1A-AP-11 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.</td>
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<tr>
<td>1A-AP-14 - Give attribution when using the ideas and creations of others while developing programs.</td>
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<tr>
<td>Create a program to complete an image using sequential steps.</td>
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<tr>
<td>Break complex shapes into simple parts.</td>
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</tbody>
</table>
## Lesson 7: Getting Loopy

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

CSTA K-12 Computer Science Standards

### AP - Algorithms & Programming

- 1A-AP-09 - Model the way programs store and manipulate data by using numbers or other symbols to represent information.
- 1A-AP-10 - Develop programs with sequences and simple loops, to express ideas or address a problem.
- 1A-AP-11 - Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.
- 1A-AP-14 - Give attribution when using the ideas and creations of others while developing programs.

<table>
<thead>
<tr>
<th>Repeat actions initiated by the instructor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translate a picture program into a live-action dance.</td>
</tr>
<tr>
<td>Convert a series of multiple actions into a single loop.</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</td>
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</table>
## Optional Unit Project (Choose 1)

### Grade 5

<table>
<thead>
<tr>
<th>Project (Suggested)</th>
<th>Project (Suggested)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advice Column</strong></td>
<td><strong>Finding Facts in Fiction</strong></td>
</tr>
<tr>
<td>Subject: ELA • Class Periods: 5</td>
<td>Subject: ELA • Class Periods: 5</td>
</tr>
<tr>
<td>Final Student Media: Typed Advice Column</td>
<td>Final Student Media: Online Glog (Digital Poster)</td>
</tr>
<tr>
<td><strong>Technology and Core Area Learning Objectives:</strong></td>
<td><strong>Technology and Core Area Learning Objectives:</strong></td>
</tr>
<tr>
<td>• Create a survey to identify a problem</td>
<td>• Compare and contrast the structures and viewpoints of fictional and nonfictional texts</td>
</tr>
<tr>
<td>• Write a problem-solution essay</td>
<td>• Provide evidence from fictional and nonfictional texts to support understanding</td>
</tr>
<tr>
<td>• Use the Internet to research information</td>
<td>• Use basic computer skills to create a glog (digital poster) to display creative writing</td>
</tr>
<tr>
<td>• Use word processing software to review track changes</td>
<td>• Use graphics software to combine images and text</td>
</tr>
</tbody>
</table>

### What's the Point?

Subject: Math • Class Periods: 4
Final Student Media: Graph Art

**Technology and Core Area Learning Objectives:**

- Describe the key attributes of the coordinate plane
- Describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane
- Use basic software application functions to open, create, modify, and save files
- Use online tools to collaborate with and offer feedback to peers

### Decisions, Decisions!

Subject: Math • Class Periods: 5
Final Student Media: Digital Spreadsheet

**Technology and Core Area Learning Objectives:**

- Practice decision making about spending in a virtual environment
- Use the Internet to research ways to spend money
- Create a simple budget
- Use spreadsheet software to keep a budget
### What is the Alternative?

**Subject: Science • Class Periods: 4**

**Final Student Media: Typed Brochure**

**Technology and Core Area Learning Objectives:**
- Gather and organize information from video, audio, and text sources on the Internet
- Create a brochure using word processing or publishing software
- Use word processing or publishing software to save documents to file folders
- Tag documents by modifying document properties

### Environmental Changes

**Subject: Social Studies • Class Periods: 4**

**Final Student Media: Interactive Timeline**

**Technology and Core Area Learning Objectives:**
- Understand how human activity has impacted the environment over time
- Determine the positive and negative consequences of human modification of the environment
- Use the Internet to research information and create an online product
- Post comments online

**END**