Unit 07: Coding

Content Area: **English Language Arts**
Course(s):
Time Period: **Trimester 3**
Length: **6-9 sessions**
Status: **Published**

Brief Summary of Unit

First grade students will build upon their coding and computational thinking skills through age-appropriate digital tools and hands-on experiences. Students will develop problem-solving strategies by learning to break problems into smaller steps, recognize patterns, create and follow sequences, and use technology appropriately to solve challenges.

This unit is designed to be part of a developmental progression across grade levels and make interdisciplinary connections across content areas including physical and social sciences, technology, career readiness, cultural awareness, and global citizenship. During this course, students are provided with opportunities to develop skills that pertain to a variety of careers.

Revision Date: July 2026

Standards

The identified standards reflect a developmental progression across grades/ levels and make interdisciplinary connections across content areas including social sciences, technology, career readiness, cultural awareness and global citizenship. The standards that follow are relevant to this course in addition to the associated content-based standards listed below.

Information Literacy: This unit challenges students to locate, evaluate, and use information effectively. Information literacy includes, but is not limited to, digital, visual, media, textual, and technological literacy. Lessons may include the research process and how information is created and produced; critical thinking and using information resources; research methods, including the difference between primary and secondary sources; the difference between facts, points of view, and opinions, accessing peer-reviewed print and digital library resources; the economic, legal, social, and ethical issues surrounding the use of information.

Information Literacy for Elementary Educators

RI.CI.1.2	Determine main topic and retell a series of key details in informational texts (e.g., who, what, where, when, why, how).
RI.IT.1.3	Describe relationships among pieces of information (e.g., sequence of events, steps in a process, cause-effect and compare-contrast relationships) within a text.
RI.PP.1.5	Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
RL.MF.1.6	With prompting and support, use illustrations and details in a story to describe its characters, setting, or events.
RI.MF.1.6	With prompting and support, use text features (e.g., diagrams, tables, animations) to describe key ideas.
W.IW.1.2.B	Develop the topic with facts or other information and examples related to the topic.
W.WR.1.5	With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic.
W.SE.1.6	With guidance and support from adults, gather and select information from multiple sources to answer a question or write about a topic.
W.RW.1.7	Engage in discussion, drawing, and writing in brief but regular writing tasks.
I	Inquire: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
I.A	Learners display curiosity and initiative by:
I.A.1	Formulating questions about a personal interest or a curricular topic.
I.A.2	Recalling prior and background knowledge as context for new meaning.
I.C.1	Interacting with content presented by others.
I.C.3	Acting on feedback to improve.
V.A	Learners develop and satisfy personal curiosity by:
IV.B.1	Seeking a variety of sources.
VI.D.1	Personalizing their use of information and information technologies.
CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	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.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
III.D.1	Actively contributing to group discussions.
TECH.8.1.2	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.
TECH.8.1.2.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations
TECH.8.1.2.A.4	Demonstrate developmentally appropriate navigation skills in virtual environments (i.e., games, museums).
TECH.8.1.2.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.2.C.CS4	Contribute to project teams to produce original works or solve problems.

TECH.8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
TECH.8.1.2.F	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.
TECH.8.2.2	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.
TECH.8.2.2.A.CS1	The characteristics and scope of technology.
TECH.8.2.2.A.CS2	The core concepts of technology.
TECH.8.2.2.E	Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.
TECH.8.2.2.E.1	List and demonstrate the steps to an everyday task.
TECH.8.2.2.E.3	Create algorithms (a sets of instructions) using a pre-defined set of commands (e.g., to move a student or a character through a maze).
TECH.8.2.2.E.5	Use appropriate terms in conversation (e.g., basic vocabulary words: input, output, the operating system, debug, and algorithm).

Essential Questions

- How can I program a coding robot to perform a simple task?
- How can I solve a coding problem on a website to perform a simple task?
- What is computational thinking and how can I use this thinking to solve problems?
- What vocabulary words are used in computer programming and why is it important I use correct terminology?

Students Will Know/Students Will Be Skilled At

- Programming a coding robot to successfully perform a variety of simple tasks.
- Programming various lessons through code.org.
- Simple problems may be solved with computational thinking.
- To apply existing knowledge to generate new ideas.
- Utilizing age appropriate coding activities to build an understanding of the basics of programming.
- Utilizing coding terms appropriately and regularly during class discussion and group work.

Evidence/Performance Tasks

Students demonstrate differentiated proficiency through both formative and summative assessments in the classroom. Based on individual student readiness and performance, assessments can be implemented as formative and/or summative.

Developmental progression across years in media is evidenced through benchmark assessments as part of the

media specialist's Student Growth Objective (SGO). Follow up diagnostic assessments are used to target skill remediation. Student proficiency allows for additional or alternative assessment based on demonstration or absence of skill.

The performance tasks listed below are examples of the types of assessments teachers may use in the classroom and the data collected by the district to track student progress.

- Benchmark/Alternative: Students demonstrate proficient and appropriate use of coding vocabulary terms.
- Formative: Students independently utilize introductory games/tools that teach the elements of basic coding.
- Formative: Students independently code various lessons utilizing code.org.
- Summative: Students work collaboratively in groups to navigate coding robots through an obstacle course/maze.

Learning Plan

Media Specialists may personalize instruction during this unit and address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students.

Students are exposed to STEM-related activities during this unit allowing them to experience varied disciplines including science and mathematics.

Media Specialists at the elementary level design their own unique lesson plans in order to incorporate the essential questions provided in this unit. The order in which this information is presented is dependent upon the variables specific to each elementary school community. For example, students may be called to the carpet for a lesson followed by guided practice, then independent practice. After the lesson, students will check out books. Library Media time ends with an electronic story or students going to a makerspace station.

First grade students will review and continue to build coding and computational thinking through age appropriate websites/manipulatives. Computational thinking is problem solving in an efficient way. It can include knowing how and when to use computing tools, knowing what steps you need to take to solve a problem, and logically organizing and analyzing data. This unit incorporates code.org curriculum for first grade and various coding robots appropriate for grade level.

Code.org coding lessons should be completed in order following the progresson of Course A to Course F. Grade 1 should ideally focus on the lessons in Course A.

Course A Lesson Plans can be found at the following link: https://studio.code.org/courses/coursea-2025/units/1 and https://studio.code.org/courses/coursea-2025/units/1?section_id=6502663&viewAs=Instructor

During this unit, students usually do lessons 2-6 in Code.org but can continue lessons if time permit. See below for description and lesson plans.

Course A (2025) Overview:

Learn the basics of computer science and internet safety. At the end of the course, create your very own game or story you can share.

Lesson 1: Safety in my Online Neighborhood

Lesson 2: Learn to Drag and Drop

Lesson 3: Happy Maps

Lesson 4: Sequencing with Scrat

Lesson 5: Programming with Scrat

Lesson 6: Programming with Rey and BB-8

Lesson 7: Happy Loops

Lesson 8: Loops with Scrat

Lesson 9: Loops with Laurel

Lesson 10: Ocean Scene with Loops

Lesson 11: The Big Event Jr.

Lesson 12: Mini-Project: On the Move with Play Lab

Leson 13: End of Course Project

Unplugged Coding Activity Bank

Grades K–2

- Human Robot – Students give step-by-step directions to guide a partner (the "robot") through a task or path, practicing algorithms and precise instructions.
- Algorithm Relay – Students sequence picture cards or steps to complete familiar tasks (e.g., brushing teeth, planting a seed) and discuss why order matters.
- Debug the Teacher – Students identify errors in intentionally incorrect instructions and explain how to fix the "bug."
- Simon Says Coding – Students use movement commands to create and follow simple programs using directional and action-based commands.
- Grid Coding Paths – Students use arrow cards or symbols to program a character through a grid while avoiding obstacles.
- Pattern Programming – Students identify and create repeating patterns using movements, sounds, colors, or objects to

explore the idea of loops.

- LEGO/Building Block Algorithms – Students create step-by-step building instructions that a partner follows to recreate a structure.
- Story Coding – Students sequence events from familiar stories and represent the steps as an algorithm.
- Coding with Beebots/Robots (No Screen) – Students plan and test movement sequences using programmable floor robots or manipulatives.
- Unplugged Sorting & Classification – Students organize objects or information by attributes to practice patterns and logical thinking.

- Demonstrate Code and Go Robot Mouse prior to use.
- Demonstrate how to access age appropriate pre-selected online resources.
- Mini lessons may include: Demonstration/modeling of how to safely use tools such as Code and Go Robot Mouse, ipads, laptops, How to access appropriate online sites/applications such as Code.org, and Guided practice of online coding tutorials.
- Preview the essential questions and connect to learning throughout the unit.
- Refer to visual aids displayed in library media center.
- Utilize age appropriate coding tutorials.
- Vocabulary to introduce: program, algorithm, drag and drop, sequencing.
- Within the library media center have materials available for inquiry/ creative activities.

Materials

The materials used in this course allow for integration of a variety of instructional, enrichment, and intervention materials that support student learners at all levels in the school and home environments. Associated web content and media sources are infused into the unit as applicable and available. Code.org and specific robots earmarked for each grade are core materials used by all library media specialists across district.

Please be sure to refer to the Cranford Public School's Acceptable Use of Generative AI Plan (2025-2026) for guidelines on elementary restriction on AI use. Linked here: https://docs.google.com/document/d/1fGZ8SlURzqXRV_NdjANqaw8vRpv4B9B8S-31McW_I1s/edit?tab=t.0

Suggested Supplemental Resources

Select this link to view the first grade Google Folder under media in the Grades K-5 folder.

Websites and Applications:

- Hour of Code (Please do not use Hour of AI)
- Elementary Code.org Lesson Plans
- Scratch Jr.

- Code-a-pillar App

Robots Available:

- Code & Go Mouse
- How to Use Your Code and Go Mouse Robot (Youtube)
- Botley
- Dash
- Dot
- Edison
- Bee-Bot
- Ozobot
- Indi
- ... and more!

- Age appropriate online websites
- Age appropriate websites/applications
- Code and Go Robot Mouse
- Computer technology (Ipads/Tablets/Chromebooks)
- Interactive board technology (SmartPanel)
- Presentation software
- Visual aids

Suggested Strategies for Accommodations and Modifications

Content specific accommodations and modifications as well as Career Ready Practices are listed here for all students, including: Special Education, English Language Learners, At Risk of School Failure, Gifted and Talented, Students with 504.