# Unit 4: Integrated Technology

Content Area: **CTE**
Course(s): **Technology 8**
Time Period: **September**
Length: **1**
Status: **Published**

## Essential Questions:

- Differentiate between hardware and software; input and output
- Differentiate between writing code and running code.
- How do loop commands, switch commands, and wait commands apply to robotic functions?
- What are conditional statements, iterative statements, and variables?
- What is an algorithm? What properties make an algorithm effective?
- What is the purpose of learning to code and why is it important in computer science?

## Enduring Understandings:

- Design algorithms
- Design and test solutions to identifiable problems
- Follow, test and debug algorithms
- Understand how algorithms are translated

## Lesson Titles:

- What is a computer?
- Code.org
- Binary Coding Winter
- Binary Coding Summer
- Sphero Mini Golf course
- Ozobot lessons
    - Intro to Ozobot
    - Diversity lessons (Dreidel, Unity Cup, Christmas)
    - Ozobot Blockly
- Intro to Java and Python?
- Applied digital skills code a program bar

## Career Readiness, Life Literacies, and Key Skills:

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| CRP.K-12.CRP4.1 | 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. |
| CRP.K-12.CRP6.1 | 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. |
| CRP.K-12.CRP11.1 | Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks. |
| CRP.K-12.CRP12.1 | 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. |
| TECH.9.4.8.CT | Critical Thinking and Problem-solving |
| TECH.9.4.8.CT.1 | Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2). |
| TECH.9.4.8.CT.2 | Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1). |
| TECH.9.4.8.CT.3 | Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome. |
| TECH.9.4.8.GCA.1 | Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a). |
| TECH.9.4.8.GCA.2 | Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal. |
| | Multiple solutions often exist to solve a problem. |
| | Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. |
| | An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful. |
| | Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction. |

## Inter-Disciplinary Connections:

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| VA.6-8.1.5.8.Cr1a | Conceptualize early stages of the creative process, including applying methods to overcome creative blocks or take creative risks, and document the processes in traditional or new media. |
| LA.RST.9-10.1 | Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions. |
| LA.RST.6-8.3 | Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. |
| LA.RST.9-10.4 | Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. |
| LA.RST.6-8.4 | Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics. |
| LA.RST.9-10.7 | Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. |
| LA.RST.6-8.7 | Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). |
| MA.7.EE.B.3 | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. |
| 6-8.MS-ETS1-2.7.1 | Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. |
| 6-8.MS-ETS1-3.ETS1.B.1 | There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. |
| 6-8.MS-ETS1-4.ETS1.B.1 | A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. |
| 6-8.MS-ETS1-3.ETS1.C.1 | Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. |
| 6-8.MS-ETS1-4.ETS1.C.1 | The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. |

## Equity Considerations

## Asian American Pacific Islander Mandate

Topic: Contributions to Computer Science:

Introduce students to prominent AAPI figures who have made significant contributions to the field of computer science, like Grace Hopper, An Wang, Wai-Kai Lai, and Jerry Yang. Showcase their inventions,

research, and leadership roles.

Addresses the Following Component of the Mandate: The political, economic, and social contributions of Asian American Pacific Islander people , as part of the district's implementation of the New Jersey Student Learning Standards.

Materials Used and Resources:

Asian Americans and Pacific Islanders in Computing (AAPI-C)

Asian American Studies Center at UCLA

National Center for Women & Information Technology (NCWIT)

## LGBTQ & Disabilities Mandate

## Climate Change Mandate

## Holocaust Mandate

## Amistad Mandate

## Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- collaboration
- cueing and questioning
- digital tool skills
- Hour of Code
- peer-evaluation

- presentation skills
- researching skills
- self-reflection
- Sphero activities/Lessons
- student-centered instruction

## Modifications

Modifications are based on individual education plans.  Specific modifications and accommodations are provided.

## Formative Assessment:

- Presentations
- Projects
- Warm-Up

## Summative Assessment:

- EOU Presentations
- EOU Project

## Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

## Benchmark Assessments

Skills-based assessment

Reading response

Writing prompt

Lab practical

## Resources & Materials:

- Digital Vision Board
- Google Calendar
- Google Draw
- Google Sites
- Google Slides
- Hour of Code
- Sphero coding activities