

# Mid Range Project

Content Area: **Computer Science**  
Course(s):  
Time Period: **Marking Period 2**  
Length: **4-6 weeks**  
Status: **Published**

## Summary

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Students will develop a structure in which they will continue learning and building towards their project's end goal. The 4-6 week timeline is designed to set up a plan for how to move forward while leaving flexibility to pivot if something catastrophic occurs down a particular path, what resources will be used and what can be expected within the given timeline. At the end of this block of time, students will present their progress. Pitfalls & how they were overcome, major breakthroughs, and developing the next steps towards their end goal will be adequately defined within these presentations.

Diversity and Inclusion: Students will focus on equity, inclusion, and tolerance when analyzing the comparison of various quantities regarding characteristics of people & resources. Equality will also be highlighted through the topic of digital citizenship. This can be associated with treating people fairly and equally.

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
CS.9-12.8.1.12.AP.6	Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.
CS.9-12.8.1.12.AP.8	Evaluate and refine computational artifacts to make them more usable and accessible.
CS.9-12.8.1.12.AP.9	Collaboratively document and present design decisions in the development of complex programs.
CS.9-12.8.1.12.CS.4	Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.
CS.9-12.8.1.12.DA.2	Describe the trade-offs in how and where data is organized and stored.
CS.9-12.8.1.12.IC.1	Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.ITH.1	Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.
LA.W.11-12.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

TECH.K-12.1.1.a	articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
TECH.K-12.1.1.b	build networks and customize their learning environments in ways that support the learning process.
TECH.K-12.1.1.c	use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
TECH.K-12.1.1.d	understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.
TECH.K-12.1.2.a	cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
TECH.K-12.1.2.b	engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
TECH.K-12.1.2.c	demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.
TECH.K-12.1.3.a	plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
TECH.K-12.1.3.b	evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.
TECH.K-12.1.3.c	curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
TECH.K-12.1.3.d	build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
TECH.K-12.1.4.a	know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
TECH.K-12.1.4.b	select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
TECH.K-12.1.4.d	exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.
TECH.K-12.1.5.a	formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
TECH.K-12.1.5.c	break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.
TECH.K-12.1.6.b	create original works or responsibly repurpose or remix digital resources into new creations.
TECH.K-12.1.6.d	publish or present content that customizes the message and medium for their intended audiences.
TECH.K-12.1.7.a	use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

## **Essential Questions & Essential Understanding**

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- How do you prepare a presentation on progress, and potentially not a complete project?
- How do you prepare a proposal for a portion of a larger project?
- What are some pitfalls of individualized learning, and how do you overcome them?

## **Objectives**

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### Students Will Know

- how to plan and build a proposal to continue their research and building of their larger project.
- how to develop short term goals to reach a larger end project.

### Students Will Be Skilled At

- keeping up with self established deadlines and to adjust future deadlines accordingly.
- self guided learning.

## **Learning Plan**

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Present previous project ideas to inspire new ideas. Classroom discussion on potential paths for each of the projects.

Develop Proposal Guidelines and Structure based on student project topics

Weekly check-ins to determine student progress on the deadlines.

Presentation at the end of each unit to review progress, discuss roadblocks and pitfalls & develop strategies for advancing.

## **Materials**

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### Core Resource(s)

- CodeHS

### Supplemental Resource(s)

- Khan Academy
- Pygame Textbook
- other approved tutorial sites

## **Assessments**

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- Formative: Daily assessments using check ins and exit tickets
- Summative: Teacher-created assessments dealing with each individual project
- Benchmark: Unit progress on the end project
- Alternative Assessments: Presentations, playtesting, and discussions

## **Integrated Accomodations & Modifications**

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**[Possible accommodations/modification forAdvanced Topics in Computer Science](#)**