6- Projects Utilizing our Creative Computing Skills

Content Area: **Technology**
Course(s):
Time Period: **Marking Period 4**
Length: **10 blocks**
Status: **Published**

Course Description & Instructional Notes

In this unit, students will have a chance to build their own application using the new skills they've learned!

Prior Knowledge

Students should be able to recall any topic from the course with minimal reminders.

Instructional Notes

Students should be encouraged to solve a problem they experience in real life and write an app to solve that problem. Students should be given extensive freedom in grouping and choice of problem to address, but the teacher should plan for intermediary due dates to make sure students are progressing in a timely manner. This unit is a chance for students to experience what a career in programming could be like.

Technology Integration

Computer Science naturally integrates technology on a daily basis.

Enduring Understandings

Our creative computing skills can be used to solve real-life problems.

Essential Questions

Why did we learn the big ideas of this course?

Student Learning Objectives

Students will be able to…

- Synthesize concepts and skills learned in the course to create their own final project.
- Scope their project (eliminate features that aren't necessary) so that it fits in the time frame allotted.
- Present their project to their classmates and talk about how the project was developed.

Vocabulary & Learning Experiences

Essential Academic Vocabulary: none

Planned Learning Experiences

The AP Computer Science Principles framework details the concepts and skills students must master to be successful on the AP exam. To address those concepts and skills effectively, it helps to incorporate a variety of instructional approaches and best practices into daily lessons and activities. The following list presents strategies that can help students develop mastery of the skills by engaging them in learning activities that apply their understanding of course concepts.

Programming and Problem-Solving Strategies:

Code Tracing

Create a Plan

Error Analysis

Identify a subtask

Look for a Pattern

Marking the Text

Pair Programming

Predict and compare

Simplify the problem

Think Aloud

Cooperative Learning Strategies:

Ask the expert

Discussion Group

Jigsaw

Kinesthetic learning

Sharing and responding

Student Response system

Think-pair-share

Unplugged activities

Using manipulatives

Making Connections Strategies:

Activating prior knowledge

Diagramming

Note-taking

Paraphrasing

Quickwrite

Vocabulary Organizer

These strategies above should be implemented throughout the course as appropriate to the specific skill being learned. As a guideline, CollegeBoard in the AP Computer Science Principles Course and Exam Description have created a suggested list of activities and strategies to tie along with the skills of the course. In using this guideline, the students will develop computational thinking practices that are fundamental to the discipline of computer science as well as successful completion of the AP Exam.

Resources

CodeHS
Code.org
MobileCSP
Google Classroom
AP Classroom

Assessments

Formative Assessments

Informal student progress checks

Summative Assessments

Final Project and Presentation

NJSLS Standards

NJSLS Standards Copied and Pasted as well as linked.

NJSLS Computer Science and Design Thinking

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.

8.2.12.ED.4: Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs, and aesthetic and ethical considerations and share this information with an appropriate audience.

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

8.2.12.NT.2: Redesign an existing product to improve form or function.

Additional NJSLS Standards

NJSLS Standards Copied and Pasted as well as linked.

Interdisciplinary Connections

NJSLS Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice

9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task

9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.

9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to

analyze and propose a resolution to a real-world problem

NJSLS Companion Standards Grades 9-12 (Reading & Writing in Science & Technical Subjects)

Modifications/Accommodations

GENERAL CONSIDERATIONS FOR DIVERSE LEARNERS

English Language Students Receiving Special Education Services Advanced Learners

Learners

- Personal glossary
- Text-to-speech
- Extended time
- Simplified / verbal instructions
- Frequent breaks

- Small group/One to one
- Additional time
- Review of directions
- Student restates information
- Space for movement or breaks
- Extra visual and verbal cues and prompts
- Preferential seating
- Follow a routine/schedule
- Rest breaks
- Verbal and visual cues regarding directions and staying on task
- Checklists
- Immediate feedback

- Use of high level academic vocabulary/texts
- Problem-based learning
- Pre assess to condense curriculum
- Interest-based research
- Authentic problem-solving
- Homogeneous grouping opportunities

[WIDA Can Do Descriptors for Grade 9-12]

[WIDA Essential Actions Handbook]

[FABRIC Paradigm]

[Wall Township ESL Grading Protocol]

*Use WIDA Can Do Descriptors in coordination with Student Language Portraits (SLPs).

[Knowledge and Skill Standards in Gifted Education for All Teachers]

[Pre-K-Grade 12 Gifted Programming Standards]

[Gifted Programming Glossary of Terms]

Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.

[Considerations for Special Education Students 6-12]

[National Center on Universal Design for Learning - About UDL]

[UDL Checklist]

[UDL Key Terms]

Students with 504 Plan

Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.

Alternative Assessments

Choice Boards

Games and Tournaments

Group Investigations

Learning Contracts

Leveled Rubrics

Literature Circles

Multiple Texts

Personal Agendas

Homogeneous Grouping

Independent Research & Projects

Multiple Intelligence Options

Project-Based Learning

Varied Supplemental Activities

Varied Journal Prompts

Tiered Activities/Assignments

Tiered Products

Graphic Organizers

Choice of Activities

Mini-Workshops to Reteach or Extend

Think-Pair-Share by readiness or interest

Use of Collaboration of Various Activities

Jigsaw

Think-Tac-Toe

Cubing Activities

Exploration by Interest

Flexible Grouping

Goal-Setting with Students

Homework Options

Open-Ended Activities

Varied Product Choices

Stations/Centers

Work Alone/Together