

Unit 01: Intro to Games, Gaming and Game Design

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 1**
Length: **25 - 30 days**
Status: **Published**

Summary

Students will learn the basic elements (formal and dramatic) of games, both electronic and non-electronic. Students will also work on solving various "dilemmas," meant to allow students to practice problem-solving. Related to this, students will learn the basics of probability, an understanding of which will be necessary when they go to design their own games. We will also review brainstorming techniques meant to help students when they are trying to think of ideas for a game. Students will discover the different roles within the design team and the background of how games are brought from the initial thought phase to release, and lastly, various trends in the gaming industry will be discussed.

Revised October 2020

Designing products through an inclusive fashion will include information about various people and their culture/history. This addresses the following:

Amistad Commission

This unit also reflects the goals of the Department of Education and the Amistad Commission including the infusion of the history of Africans and African-Americans into the curriculum in order to provide an accurate, complete, and inclusive history regarding the importance of African-Americans to the growth and development of American society in a global context.

Asian American and Pacific Islander History Law

This unit includes instructional materials that highlight the history and contributions of Asian Americans and Pacific Islanders in accordance with the New Jersey Student Learning Standards in Social Studies.

New Jersey Diversity and Inclusion Law

In accordance with New Jersey's Chapter 32 Diversity and Inclusion Law, this unit includes instructional materials that highlight and promote diversity, including:

economic diversity, equity, inclusion, tolerance, and belonging in connection with gender and sexual orientation, race and ethnicity, disabilities, and religious tolerance.

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.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-12.1.4.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.d	exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.
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.
MA.S-CP.A.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
MA.S-CP.A.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A , and the conditional probability of B given A is the same as the probability of B .
TECH.K-12.1.6.a	choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
MA.S-CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
MA.S-CP.B.6	Find the conditional probability of A given B as the fraction of B 's outcomes that also belong to A , and interpret the answer in terms of the model.
MA.S-CP.B.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
MA.S-CP.B.8	Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = [P(A)] \times [P(B A)] = [P(B)] \times [P(A B)]$, and interpret the answer in terms of the model.
MA.S-CP.B.9	Use permutations and combinations to compute probabilities of compound events and solve problems.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
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.
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.

CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
CAEP.9.2.12.C.9	Analyze the correlation between personal and financial behavior and employability.
TECH.8.1.12.A.1	Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
TECH.8.1.12.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.D.CS2	Demonstrate personal responsibility for lifelong learning.
TECH.8.2.12.C.2	Analyze a product and how it has changed or might change over time to meet human needs and wants.

Essential Questions/Enduring Understandings

Essential Questions:

- What makes a game (be it digital or non-digital) fun to play?
- What skills must people in the Game Design Industry possess?

Enduring Understandings:

- Various elements contribute to the enjoyment a game provides. An engaging plot, an attainable yet challenging objective, strategic use and allotment of resources, and creative use and manipulation of boundaries are just some of the elements that can contribute to the enjoyment of a game.
- The Game Design Industry is multi-faceted. Some examples: The actual game designers are just one piece of the industry. They must be creative and proficient in various programming languages and creative design programs. Those in the marketing division must have an ability to communicate and draw people to the product they are marketing. Publishing companies must be skilled in business. Project managers must be able to coordinate many different groups of people and ensure that deadlines are met. Regardless of the specialty of a particular individual in the industry, the ability to communicate with others and work as a team is indispensable.

Objectives

Students Will Know:

- The formal and dramatic elements that games possess.
- Brainstorming techniques that can help to generate good ideas for the premise of a game.
- The different roles available in the Game Design Industry.

Students Will be Skilled at:

- Identifying the particular elements that a game employs.
- How to calculate probabilities.
- Generating different game ideas using the brainstorming techniques they have learned.

Learning Plan

- Discuss the formal elements of games:
 - Players
 - Objectives
 - Procedures
 - System Procedures (Digital Games)
 - Rules
 - Resources
 - Conflict
 - Boundaries
 - Outcome
- Discuss the dramatic elements of games:
 - Challenge
 - Play
 - Premise
 - Character
 - Story
- Explore "dilemas."
- Learn about probability through provided examples.
- Examine Brainstorming "Best Practices:"
 - State a Challenge
 - No Criticism
 - Vary the Method
 - Playful Environment
 - Put it on the Wall
 - Go for Lots of Ideas
 - Don't Go for Too Long
- Examine various brainstorming techniques that can be used when one is having trouble coming up with an idea for a game:
 - Making Lists
 - Idea Cards
 - Mind Map
 - Stream of Consciousness
 - Blue Sky Brainstorm
 - Exquisite Corpse
- Have students research the various job roles that comprise the Game Design industry.

Assessment

- Assessments
 - Formative: Daily assessments using examples from class notes and CodeHS.com, AP Classroom/Albert Checks for Understanding
 - Summative: Teacher-created assessments/projects and CodeHS Computer Science Projects, AP Classroom/Albert Unit Assessments
 - Benchmark: Check for understanding benchmark assessments on CodeHS, AP Classroom/Albert/Khan Academy Diagnostics
 - Alternative Assessments: Student-centered activities such as a doorbell coding project, game design projects, and other activities involving real world applications
- Quiz on elements.
- Practice problems on probability.
- Examination of ideas generated from brainstorming techniques.
- Group presentation on the Game Design Industry.

Materials

- Core instructional materials: [Core Book List](#) including Game Design Workshop by Fullerton

Supplemental materials: CodeHS

- Computers
- Dice
- Powerpoint (or a similar program)

Integrated Accommodation and Modifications

See [linked](#) document.