Dec..Gr. 3&4 G&T Unit: Board Game Design

Content Area: **Gifted and Talented**
Course(s):
Time Period: **December**
Length: **6-8 Weeks**
Status: **Published**

Unit Overview

Students will design and create their own board games. The process involves high-level problem solving, conflict resolution and strategic thinking.

Enduring Understandings

- Board game design develops:
  - Creativity
  - Perseverance
  - Communication
  - Empathy
  - Self-awareness
- Engineering design is a creative and interactive process for identifying and solving problems that meet established criteria and constraints.
- A core engineering design skill is being able to translate abstract concepts into functional ideas.

Essential Questions

- What is a strategy game?
- What are the main elements of a strategy game?
- How can I develop my own strategy game?
- What is the engineering design process?

Instructional Strategies & Learning Activities

Instructional strategies and learning activities

- Watch https://www.youtube.com/watch?v=812rZ_JBzlI- board game video (6min)
- Show student examples of games. Students should understand that their board games will not look like the commercially manufactured games they're used to playing. https://boardgamegeek.com/geeklist/240994/game-designs-minds-middle-schoolers-vol-16
- Play short/simple board games over several days to see what different types of games are out there. Have a class discussion afterwards, so students can share what strategies their games involved, the mechanics used to play the game. Create a list on the smartboard or on easel paper, so students can use

these strategies and mechanics in their own games later on. https://www.kathleenmercury.com/recommended-games.html

- Assign small groups a specific game to learn and teach to the class. They must be able to explain the game mechanics. This process provides gaming experience and literacy. This may take several days. See link above for game suggestions.
- Students can work individually to create their games, but time constraints may require them to work in small groups. 2-3 students max per group. The teacher should decide ahead of time if there will be a required theme for the games. Students can have flexibility to choose any theme or their games could revolve around a unit they've already studied or a book they've read. Once the theme is determined, students should complete the board game design handouts. These were created for a fairytale themed game, but they can be modified for any unit/theme. https://docs.google.com/document/d/1q3ghVwuo9Cpew_yenHv89Xp4CqqgF0pYOrLZaCmfFf8/edit
- Put the "ask yourself questions like this" on the smartboard while they're brainstorming their game ideas.
- Before making a prototype, explain the engineering design process (or refresh their memories if they've used it before). Students need to be prepared that their games are just ideas at this point and they will definitely need to revise their games as they create them. They shouldn't start the process thinking their prototype is their final draft. Watch this video about how the engineering design process (EDP) is like making tacos. https://www.youtube.com/watch?v=MAhpfFt_mWM. Share this image on the smartboard of the EDP and discuss with students. https://www.google.com/search?q=engineering+design+process&rlz=1C1CAFB_enUS721US721&source=lnms&tbm=isch&sa=X&ved=0ahUKEwi-rvWDotrjAhXHhOAKHawhCTUQ_AUIESgB&biw=1396&bih=657#imgrc=O12RS4QvanJFSM:
- Make a prototype (rough draft). This should only be sketches- think fast and cheap. This will not be a final draft. Students should then play their games. They should also ask other classmates to play their games. This process will allow them to modify and make changes. All part of the design process.
- Once their prototype is complete, students should type their rules. They should look at other games to examine the technical manner in which rules are written.
- Students can then craft their final games. Students can use old board game pieces and create their own out of found objects. Cardboard is helpful to back their game boards. Cardstock is good for cards/game pieces for durability.
- Students should share their games and rules with classmates. This will provide authentic feedback as to whether their rules are easy to understand. Students should revise their rules based on classmate feedback. Students complete the WINQ (what works, what needs to be improved, what new ideas do I have, and what questions do I have) form in their handout packet.
- Students should complete the WINQ self assessment.
- Students should share their games with other classes or invite parents in for a game day. An authentic audience should be provided.

    - How many players will there be?
    - How long should the game be?
    - What choices will the player make, and when will they make them?
    - How will the player make these choices?
    - How will one player's choice impact the other players?
    - How will the players interact with each other?
    - Are there any choices that can be made by one player, but not by the others?
    - How does the game progress? Is it strictly turn-based, or is it in rounds with phases?
    - What actions will the players be able to take?
    - How will the outcome of an action be determined?
    - What is the player's goal?

- How can the player win?

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Integration of Career Readiness, Life Literacies and Key Skills

9.4.2.CI	Creativity and Innovation
9.1.2.CAP	Career Awareness and Planning
	Brainstorming can create new, innovative ideas.
	Different types of jobs require different knowledge and skills.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Technology and Design Integration

Students will type their instructions and can even create their game boards or game pieces on the computer. Research will be done on the computer for their game ideas.

CS	Computing Systems
	Individuals use computing devices to perform a variety of tasks accurately and quickly. Computing devices interpret and follow the instructions they are given literally.
8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
	A computing system is composed of software and hardware.
8.1.2.CS.2	Explain the functions of common software and hardware components of computing systems.
ED	Engineering Design
	Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.
8.2.2.ED.1	Communicate the function of a product or device.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ITH.2	Explain the purpose of a product and its value.

Interdisciplinary Connections

- Board games can be created for any theme/unit of study.
- Students develop communication arts skills, such as writing and reading rules, technical writing and interpersonal communication.

- Students develop research skills while looking for content for their games.
- Students use STEM while devising strategy and through the engineering design process.
- Students use art skills to create their games.
- Math skills, such as basic math, probability and risk management are used.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.
- **Definitions of Differentiation Components**:
    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

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Gifted and talented curriculum is structured to offer students additional challenges based on individual needs and interests.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.
Modifications and Accommodations used in this unit:

IEP and 504 modifications if necessary

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.
Schoolwide Benchmark assessments:
Aimsweb benchmarks 3X a year
Linkit Benchmarks 3X a year
Additional Benchmarks used in this unit:

Teacher observation and note taking to document growth over time and grades.

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).
Formative Assessments used in this unit:

Teacher observation

Discussion

Game design planning handouts

WINQ forms

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Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

Completed games

WINQ self-assessment

Instructional Materials

- https://www.kathleenmercury.com/gifted-association-of-missouri-conference-2017.html
- https://www.mathshell.com/materials.php?series=numeracy&item=boardgame
- Blank game boards (Google or make your own)
- Old game pieces (counters, dice, cubes…)
- Cardboard
- cardstock
- Craft materials
- Recyclables

Standards

TECH.8.2.5.C	Design: The design process is a systematic approach to solving problems.
TECH.8.2.5.C.2	Explain how specifications and limitations can be used to direct a product's development.
TECH.8.2.5.C.4	Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
TECH.8.2.5.C.CS1	The attributes of design.
TECH.8.2.5.C.CS3	The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.
TECH.8.2.5.D.CS1	Apply the design process.