

HOW TO DESIGN FAMILY GAMES IN EDUCATION

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Abstract

With thousands of new board games and card games published every year, there's no shortage of game possibilities to play. But with so many choices, it can be a daunting task to narrow it down to just a few games to get. In an effort to help make the right selection, it's human nature to categorize items in groups and subgroups. And it's no different with board games and card games. There are plenty of ways to group games. The most typical grouping selection is by age, time, and number of players. While helpful, that still leaves huge ranges of games. So we create additional groups by type such as strategy, cooperative, abstract, deduction, bluffing, or racing. Or we group by theme such as adventure, fantasy, economic, area control, war, or travel. In all the grouping and sub-grouping of board games and card games, perhaps the one that causes the most questions is the common label of "Family Game"

These findings suggest the need for game programming platforms to design around the unique kinds of collaboration in inter-generational domain-specific programming.

Key words: combination of game, Domain Specific Languages, Children, Families, Computational literacy, critical thinking, communication skill

Introduction

Games are an amazing way for families to play, have fun, and laugh together. Games can also teach important skills, like strategic thinking, empathy, and self-regulation. You do not need a huge shelf of games in order to play as a family. A great way to get the whole family involved and invested in your game play is to create your own game! If you and your family are a bit more advanced, try observing others playing your games without intervening, and then see if others have fun too

Practice & Brainstorming

The easiest way to start designing a new game is by modifying a simple existing game, like you just practiced. Here are some more examples of simple games you can start with. For each game, work together to identify the:

- game mechanics
- rules

- gameplay loop
- win conditions

Games are a combination of game mechanics (what players do) and the rules (why they do it) that allow players to work towards a goal. Games can happen on a board with pieces, on a table with cards or dice, with any combination of things, or with absolutely nothing at all. Games are a great way to explore learning through play, and game design can dig into even more interesting concepts.

Designing a game can seem confusing and that is ok! The best way for you and your family to learn is trial and error. Having children take the lead on the project will help them expand their critical thinking, problem solving, and confidence. When they do get stuck, here are some questions you can ask to guide them:

Sub-questions:

- How should players interact with each other?
- Are all players equal, or do they have different jobs?
- What makes other games you've played fun? How could this game be more like that?
- How do you win the game?
- What pieces and type of board do we need? Do we need them at all?

Playtesting questions

- What part was the most fun for you?
- What would you do to make this more fun?
- Were there any times while playing that you were bored? How do we fix that?
- Are the players working together or separately?
- Do we want to get rid of any old rules/mechanics to make room for new ones?
- Is anything confusing while playing? How do we fix that?

A lot of the fun comes from who you play with. Good game design enhances and facilitates the fun of playing with others. One thing that is important about games is the way players interact with each other. Games where players are competing with each other can be super fun, but so can games where players are all working together. There are lots of different ways that players can interact in a game, the most important part is thinking through that interaction so it's clear and fits into your game mechanics.

Heads and Tails

Find a coin to flip. Each player takes a turn flipping the coin. Before flipping, the player must guess whether the coin will land heads-up or tails-up. If the player guesses correctly on their turn, they win! This game can also be played with a dice-rolling app using a D2.

Game Patterns. Soloway and his colleagues provided evidence that both novice and expert programmers have schemas that match commonly used code patterns, which they termed *programming plans*. Programming plans are small program fragments that achieve a goal, like selecting values from a list that match specific criteria. Other studies have shown that novice programmers use many code tracing and pattern recognition strategies. Specific research on children's game programming showed that providing programming patterns and templates for different game types could facilitate computational literacy and expression . These approaches encouraged us to create a collection of ten game patterns that children could use as examples when devising their game plans and game behaviors. Our patterns provided examples of different game behaviors (e.g., throwing objects, animated motion). For each example, we showed an animation of the game's behavior in action. In addition, we showed images of the combination of game rules that could be used to achieve particular behavior.

“Guess the Rule” Quiz. After watching the videos, we asked the children to answer the “Guess the rule” quiz. We shared the quiz on our computer and asked children to talk aloud as they replied to questions. The quiz asked questions about three rules: a motion rule, a collision rule, and a trigger rule. For the first two rules (motion and collision), children had to pick the correct explanation (multiple choice). For the trigger rule, the children had to write down their explanations. The quiz is included in the appendix.

Handheld Arcade. We distributed a low-cost, battery-powered gaming handheld (a “Meowbit”) to each participating family so they could work with TileCode without needing access to the Internet or a computer with a web browser. When the Meowbit runs TileCode, it can store eight games at a time. Families could copy their video games from the Meowbit to their computer and then send them to us, letting us inspect and test their games. Unfortunately, the ability to transfer games between the TileCode browser application and the Meowbit was not available at the time we ran the study. The device has four directional buttons and two selection buttons (select and back). In addition, it contains a 1.8’ full-color screen, 6 x programmable buttons, 1 x buzzer, built-in light sensor, temperature sensor, and SD card slot (for external storage).

A final mark of what makes a great Family Game is a game that can be played many times over without overstaying its welcome.

A game will overstay its welcome if it’s too repetitive or predictable. Games with variable elements and outcomes are much more likely to see repeated play.

Whether played repeatedly back-to-back or on a weekly, or monthly basis, games well suited for family play will be played regularly.

Great family games include enough variety to keep the game interesting no matter the number of times it gets played. Activities we enjoy become ones that we choose to experience over and over. The same is true with games.

Games that are easy to understand, include both strategy and luck, have fun playing pieces, can be played repeatedly, and your whole family can enjoy together are the greatest Family Games of all.

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