

Classification of Games for Computer Science Education

Peter Drake
Lewis & Clark College

Overview

- * Major Categories
- * Issues in the CS Classroom
- * Resources



Major Categories

- * Classical Abstract Games
- * Children's Games
- * Family Games
- * Simulation Games
- * Eurogames ("German Games")

Classical Abstract Games

- * Simple rules
- * Often deep strategy
- * Backgammon, Bridge, Checkers, Chess, Go, Hex, Mancala, Nine Men's Morris, Tic-Tac-Toe



Children's Games

- * Simple rules
- * Decisions are easy and rare
- * Candyland, Cootie, Go Fish, Snakes and Ladders, War



Family Games

- * Moderately complex rules
- * Often a high luck factor
- * Battleship, Careers, Clue, Game of Life, Risk, Scrabble, Sorry, Monopoly, Trivial Pursuit, Yahtzee



Simulation Games

- * Extremely complex rules
- * Theme is usually war or sports
- * Blood Bowl, Panzer Blitz, Star Fleet Battles, Strat-o-Matic Baseball, Twilight Imperium, Wizard Kings



Eurogames ("German Games")

- * Complexity comparable to family games
- * Somewhat deeper strategy
- * Carcassonne, El Grande, Puerto Rico, Ra, Samurai, Settlers of Catan, Ticket to Ride



Issues in the CS Classroom

- * Game mechanics
- * Programming issues
- * Cultural and thematic issues
- * Games for particular topics

Game Mechanics

- * Time to play
- * Number of players
- * Number of piece types
- * Board morphology
- * Determinism



Programming Issues

- * Detecting or enumerating legal moves
- * Hidden information
- * Artificially intelligent opponent
- * Testing
- * Proprietary games



Cultural and Thematic Issues

- * Students may be engaged by games from their own culture
- * Theme may attract or repel various students
- * Religious objections
- * A small number of students just don't like games



Games for Particular Topics

- * Quantitative reasoning: play some games!
- * Stacks and queues: solitaire card games
- * Sets: word games
- * Graphs: complicated boards
- * OOP: dice, cards, simulations
- * Networking: hidden information, multiplayer games
- * AI: classical abstract games

Resources

- * <http://www.boardgamegeek.com>
- * <http://www.funagain.com>
- * International Computer Games Association,
<http://www.cs.unimaas.nl/icga/>

