Children Learning Computer Science Concepts via Alice Game-Programming

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Project Overview

- 325 middle school students
- Elective technology classes
- Solo or programming pairs
- Storytelling Alice/Alice 2.2
- ~20 hours
- 7-10 hours programming games
Game Analysis Process

- 231 games
- “Reachable” code
- Executed with “no failure”
- Most were successful!
- Non-automated analysis
- Analyzed twice
Reachable with no failure
Construct Categories

- Methods
- Parameters
- Functions
- Variables (list & non-list)

- If/Else
- Loops
- Do in order; Do together

- Event Handlers
Methods & Functions

- All used built-in methods
- 71% created their own methods
- 46% used functions (mostly for collision detection)
Collision Detection
“Bunny Run”
If / Else, Do together, Do in order

If:
- If either broomSword == Sword or broomSword == sword, or both
- duckPrince say Yes! That's correct! duration = 3 seconds
- oliveWaterblossom say Good Job! more...
- sprightlyReedsmoke say YAY! more...
- dragon say Oh noooow! duration = 3 seconds
- dragon resize 0.75 more...
- fire set isShowing to false more...

Else:
- If Do together
- dragon say RAWRRR duration = 3 seconds
- meadSeafather say Oh NOOOO! duration = 3 seconds
- duckPrince say Sorry try again! more...
Events-driven game
“Battle for Victory”
Why some constructs more than others?

- Easier to learn and execute in Alice?
- The curriculum focused more on certain types of games and constructs
- It makes a “good game?”
More Analysis

- Patterns
- Mechanics or “types” of games
- Content
- Curriculum
For more information

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- Linda Werner: linda@soe.ucsc.edu
- Student games at: psweb.etr.org/igame/demo/index.cfm

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