Teaching Computer Science Concepts to Elementary Students with Alice

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BYOL Session BBT04
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Three Activities of Children

- Games
- Storytelling
- Simulations
7 Essentials of Elementary Programming:

- Objects
- Methods
- Properties
- Loops
- Conditionals
- Events
- Variables
7 Essentials of Elementary Programming:

Who

Objects

Methods

Properties

What

Loops

Conditionals

Variables

When

Events
Why Programming?

- Problem solving skills
- Manipulate dynamic system that moves and changes through time.
- Programming encodes logical thought.
What is Alice?

- Alice is a visual based programming language for 3 dimensional games, movies, or simulations using drag and drop blocks to create methods, logic, and events.
- The late Randy Pausch created Alice in conjunction with Carnegie Mellon University as a means to teach programming concepts in a relevant and engaging environment.
- Carnegie Mellon University develops, maintains and shares Alice as a free resource for teaching computer science, programming, and storytelling.
- (Source: www.alice.org)
Why Alice?

- Builds on computer science concepts introduced in Scratch.
- “Primes the Pump” for object orientated programming. (Constructing and manipulating methods)
- Kinesthetic Approach: Students need to move to learn. Program with their bodies.
Three Types of Alice Projects

- **Games** - User Directs Story
- **Storytelling** - Programmer tells story
- **Simulations** - Experiment in safe environment
Why Dancing?

- Explore Sequential Movement in 3D Space and Time.
- Elementary Students learn with their bodies.
- Appeals to Girls
- Leads to Robotics
## Objects in Alice:

<table>
<thead>
<tr>
<th>Object:</th>
<th>Parts of the object:</th>
</tr>
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</table>
| **Skateboard:** | Board  
Front Axel  
Left Front Wheel  
Right Front Wheel  
Back Axel  
Left Back Wheel  
Right Back Wheel |
| **Human** | Body  
Left Leg  
Left Foot  
Right Leg  
Right Foot  
Neck  
Head |
Movement Methods in Alice:

Movement for Entire Object:
- Forward-Back
- Left-Right
- Up-Down

Orientation for Object and its Parts:
- Pitch
- Roll
- Yaw
Alice Exercise #1: Dancing

- [http://nebomusic.net/alicedancelesson/alicelaraspa.html](http://nebomusic.net/alicedancelesson/alicelaraspa.html)
Have a Great Nebo Day!

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