Teaching Programming and Computer Science Concepts with Alice

GaETC 2009
BYOL Session 195
Christopher Michaud,
Paulding County Public Schools
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

What

Methods

Properties

When

Loops

Conditionals

Events

Variables
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
Quick Alice Introduction: Events

- Open Alice
- Add any Animal or Humanoid Object
- Event Driven - Make Arrows Drive Object
Quick Alice Introduction: Methods

- Keep the same Object
- Click on Object Tree - Select Object
- Drag Methods to “my first method”
- Click “Play”
Why Dancing?

- Explore Sequential Movement in 3D Space and Time.
- Elementary Students learn with their bodies.
- Appeals to Girls
- Leads to Robotics
<table>
<thead>
<tr>
<th>Object:</th>
<th>Parts of the object:</th>
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| 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: Driving

- http://nebomusic.net/alicevehicle.html
Alice Exercise: Dancing

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

- www.nebomusic.net
- nebomusic@gmail.com
- www.alice.org