Adventures in Alice Programming
Two-Week Workshop
Motivation and Background

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Introductions - Faculty/Teacher Presenters

Susan Rodger
Duke Univ.

Chari Distler
North Broward Preparatory School

Richard Lucic
Duke University

Introductions – Students/Staff

Alex
Erin
David

Kathy Menchaca
Stanford

Pam
Camelia

Agenda for Workshop

• Week One - Motivation and Introduction to Alice
  – Overview and Past Work
  – Research Study
  – Getting Started Tutorials and Special Topic Tutorials
  – Presentations and Advice from a teacher who
    previously took this workshop – Chari Distler

• Week Two - Usage of Alice in Middle Schools and
  High Schools
  – Presentation on VCL – Richard Lucic
  – Lesson Plans with Alice – develop three lesson plans
  – A few more tutorials
  – Visit the Dive
Motivation and Introduction to Alice

Problems with Computer Science in Grades 1-12
1. Computer Science is not in many schools
   Few high schools teach AP computer science
   Fewer middle schools teach computing
   Not even required at the college level
2. Students don’t know what it is
   Not keyboarding, PowerPoint, spreadsheets
3. Where are the women and minorities?
   Number of underrepresented groups in computer science is low

Why Schools Should Teach Computer Science (CS) – (from NCWIT.org)
• Computer Science gives students vital 21st century skills
  – C.S. underlies most innovation today
• C.S. means rewarding careers
  – Predicted shortage of technical jobs in the future
  – Wide range of options in CS (health, environment, finance, arts, security ...)
• C.S. is more than just technology
  – CS teaches design, logical thinking and problem solving

How do we Introduce and Teach Science?
• Physics – experiments
• Chemistry - experiments
• Biology - experiments
If taught, how do we introduce CS?

- Write a calculator
- Write a banking program
- In the beginning, mostly textual input/output...

Programming Language

- Create interactive stories or games
- Learn programming in an easy way, drag-and-drop your code
- Problem solving with visual feedback  
  — Logical thinking, Computational thinking
- Along the way, learn computer science concepts:  
  — Loops, classes, methods, functions, arrays

Bring on Alice Virtual Worlds!

- Alice is  
  — Hands-on!
  — Interactive!
  — Visual!
  — Less error prone
  — Exciting results right away!

- Alice has the potential to excite kids about computer science in the same way that experiments excite kids about chemistry, physics and biology!

Alice Developed by Randy Pausch

- Carnegie Mellon University
- Virtual Reality Researcher
- Wrote the Last Lecture
- Died of Pancreatic Cancer in 2008
The Alice Team – Alice is free!
www.alice.org

Alice Demo: Kitty Story – children’s book on handicapped child

By Betty Stone
Animated by Deborah Nelson

KITTY STORY

Let’s visit Little Kitty the kitty. She lives with her Daddy, her Mommy, and her sister, Moon Song.

Let’s look at your x-ray Kitty.

Sometimes Her mom takes her to the Doctor so that she can check out her knee. Sometimes that hurts a bit and sometimes it doesn’t.
More on ... Alice Programming Language

- Has libraries of 3D objects
- Keeps Track of objects you select

Objects Have Multiple Parts that are moveable

Object Position

- Objects
  - Are positioned in 3D space
  - Have six degrees of freedom

At night, her mom or dad puts leg splints on her knees. Kitty does not like this one little bit! She does a good job of crying.
Alice Code is Easy to Learn

Select Code, Drag-and-Drop code in program

Versions of Alice

- Alice 2.4 - WE WILL USE THIS VERSION
  - Good for Middle School/High School introduction to programming
  - Supported, will be around for awhile, stable
- Alice 3
  - Good for full High School programming course to lead into a Java course
  - Released but, still improving it
- StoryTelling Alice - Caitlin Kelleher
  - Written as prototype, not supported
  - PhD Thesis under Pausch
  - Now developing Looking Glass

Play Alice Animation

- Chicken rises, cow turns head and talks

Next Steps

- Research Study
- Get Alice 2.4 installed
- Then ...... Let’s Try some Alice