Enhancing Early Childhood Education With Computer Science Curriculum

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Motivation

Decrease in Students interested in majoring in Computer Science & other technical fields

1. Interest in CS as a major dropped by a whopping 70% between 2000 and 2005 and has since flattened to a point where just over 1% of incoming freshmen indicate CS as a probable major.

2. Students write off science and engineering as probable majors in middle school because it’s not associated with what is “cool,” aiding this decrease.

Intention to major in CS compared to degrees granted in the US

Why is this so important?

1. Computer scientists are in demand, rated #4 of college degrees in demand.

2. U.S. Bureau of Labor & Statistics projects that 71% of all science & engineering jobs will be for computer scientists & engineers.

Best way to find more Computer Scientists:

Start them young!

Approach

Developing a Storytelling Alice curriculum that:

1. Teaches Computer Science concepts

2. caters to K-8 students with easily understood and simple in language

3. informs by teaching one main concept per lesson

4. easily executed using a self-contained LiveCD or MyVICE: My Virtual Instances of Computing Environments, hosted at Virginia Tech

5. engages and entertains students by creating 3D animated short

Lessons filled with FUN:

1. Playing With Storytelling Alice

2. Parallelism

3. Running Around in Loops

4. Method to Making Methods

5. What If?

6. Did You Hear That, Alice?

7. Making Movies

8. Variables

9. Creating Classes

10. Recursion

Ongoing Outreach

Successful deployments of the current curriculum at New River Valley elementary schools & VT programs:

• Margaret Beeks Elementary School (Spring 2010)

• Harding Avenue Elementary School (Spring 2010)

• Blacksburg New School (Spring 2010)

• West End Center (Spring 2010)

• Kids’ Tech University (February 27, 2010 & April 10, 2010)

Based on the feedback from the Spring deployments, the curriculum is currently being updated to enhance:

• Content

• Clarity

• Visual Appeal

References


3. CNBC, 10 College Degrees in Most Demand, 2008.

Acknowledgements

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