Alice in Virginia Beach
A Continuing Experiment

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Virginia Beach, VA
Overview

- Background
- First Year
- Growth
- Curriculum
  - Alice
  - Java
- Future
- Conclusions
Background

Virginia Beach City Public School System

Approximately 70,000 students
22,000 High School Students
11 High Schools
8 have a specialized academy program

Offered Computer Programming and AP Computer Science since late 1980’s

Princess Anne HS also offers IB Computer Science
<table>
<thead>
<tr>
<th>Demographics</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>24%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>52%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>10%</td>
</tr>
<tr>
<td>Asian</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
<tr>
<td>Female</td>
<td>49%</td>
</tr>
<tr>
<td>Male</td>
<td>51%</td>
</tr>
<tr>
<td>Economic Disad</td>
<td>33%</td>
</tr>
<tr>
<td>Disabilities</td>
<td>12%</td>
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Alice History

Formed a partnership with Steve Cooper in 2005 to start teaching Alice in 2006 – 2007 school year

Two weeks of summer workshops to train teachers and write curriculum

First year
- 10 Schools
- 14 sections
- about 300 students the first year
2012 - 2013

10 of 11 High Schools continue to teach Alice

- 27 sections
- Over 670 students
- Enrollment closely mirrors VBCPS Demographics
Typical Alice Student

- High School Junior or Senior
- Using Alice course as a Math Credit to meet graduation requirements
- May have only completed Algebra I and Geometry
The Curriculum

Teach Alice for the first three quarters of the school year
- Cover Chapters 1 – 9 or 10 of Learning to Program with Alice
  - Chapter 8 – Recursion – is optional

Teach Java for the final quarter
- Focus on big picture concepts that carry over from Alice
  - Methods, control structures, objects, arrays
Alice Curriculum

Each section of the textbook is introduced with a class lecture incorporating examples of the new concept in action in Alice.

- Students may be assigned to repeat the demonstration example as the first step in the new unit.

Students complete a programming lab assignment:
- Short answer concept questions
- Three to five Alice programs, with storyboards

Each unit ends with a programming project, typically more complex and incorporating more features than an individual lab.
Java Curriculum

Originally based on the BlueJ approach

- Used the Shapes project to introduce Java concepts
- Book quickly moved from the visual projects to more typical introductory programming assignments
  - Bank accounts

Many students had difficulty making the transition
Moved to the Objectdraw approach introduced in *Java, an Eventful Approach*

Students had some success but were quickly confused with multiple java files and html file required to run the applet in JCreator
Media Computation

Introduced Media Computation in 2011
- Focused on picture manipulation
- Students seem to have more success and enjoy the visual nature of the assignments
- Java portion has evolved to a code completion or revision exercise using various Java programming concepts
2012 - 2013

- Implemented some of the concepts in *Exploring Wonderland*
  - Switched to Dr. Java from JCreator
  - Introduced Turtle graphics
- Used Objectdraw to provide some basic interactive programs
- Returned to Media Comp for 5 picture manipulation assignments and a final project
Java Assignments

Turtle Graphics
- Introduction to Dr. Java and Turtles
- Write your name using Turtles

Objectdraw
- TouchyWindow
- Making Dots
- Random Color Dots
Java Assignments

Media Comp

- Change amount of red, green or blue in a picture
- Set the red, green or blue amount to zero
- Negative and grayscale images
- Changing or replacing the background
- Adding speech or thought balloons
- Create your own comic strip
  - Use green screen effects to put student in an Alice world
Future

🌍 Virginia Beach is starting the textbook adoption process this summer for Computer Programming

į Strong desire by most teachers to continue the Alice approach

إصابة Exploring Wonderland is one of the top contenders
Conclusions

Alice curriculum fills a vital need at many of our high schools

- Students who have not been successful in Algebra or Geometry need a third math credit option
- Some move to AP Computer Science as Juniors or Seniors
  - About 3 to 5 per year at Princess Anne

Demand continues to grow

- 165 students projected at PA for 2013 - 2014
Final Media Comp Project

Create a 3 or 4 panel comic strip that incorporates:
- Green screen chromaKey method
- Alice background
- Thought and/or speech balloons
public static void chromaKey(Picture pictObj1, Picture pictObj2) {
    Pixel currPixel = null;
    Pixel newPixel = null;
    for (int x=0; x<pictObj1.getWidth(); x++) {
        for(int y=0; y < pictObj1.getHeight(); y++) {
            currPixel = pictObj1.getPixel(x, y);
            if(currPixel.getRed() + currPixel.getBlue() < currPixel.getGreen()) {
                newPixel = pictObj2.getPixel(x, y);
                currPixel.setColor(newPixel.getColor());
            }
        }
    }
}
bad robot dude I CHOOSE YOU
bad robot dude I CHOOSE YOU
JOSH I CHOOSE YOU

YOU CAN NOT DEFEAT MY SUPER JOSH. AHAHAHA!

WHAT AM I DOING HERE
HEY!

I'M TOO TIRED!

WHAT DID ONE BICYCLE SAY TO THE OTHER BICYCLE?

YEAH, I KNOW!

THAT WAS FUNNY!
WHAT DID THE ZEN BUDDHIST SAY TO THE HOTDOG VENDOR?

MAKE ME ONE WITH EVERYTHING.
WHAT A LOVELY DAY FOR A SWIM

EEK A GREAT WHITE SHARK

I'M GONNA EAT YOU

WE ARE GOING TO NEED A BIGGER BOAT

OH NO YOU DON'T!

YAY! A RESCUE BOAT!

COME BACK HERE
I'm dying to know what food is in the ER today!

It sure is corny in here!!

I heard their sandwiches are to die for!

So corny!!

I'm ready for their food!!

You're weird!!
Questions

email: jeharris@vbschools.com
Alice curriculum online at www.aliceprogramming.net