Story of “Georgia Computes!”

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How “Georgia Computes!” Came To Be

Career, Technical, and Agricultural Education (CTAE) in Georgia Department of Education

- Recognized that their high school Business teachers who taught Office and keyboarding were going to lose their jobs to middle school.
  - Wanted a way to learn Java for Business majors. Georgia Tech had just started teaching Media Computation.

- Valued their sole Advanced Placement test: Computer Science Level A.

- In 2004, Maureen Biggers started Institute for Computing Education at Georgia Tech (ICE@GT) and hired Barbara Ericson.

- “Georgia Computes!” was funded as an NSF Broadening Participation in Computing alliance in 2006.
Order of Events

• ICE@GT started teacher professional development.
  • But can’t start with AP CS.

• CTAE defined a four course computer science pathway.
  • Based on CSTA K-12 Model Curriculum.

• Georgia Professional Standards Committee (PSC) created an endorsement so that there was a credential for teachers.

• University System of Georgia accepted AP CS to count as a math or science towards admissions.
  • Department of Education accepted AP CS to count as a science towards graduation.
What has “Georgia Computes!” tried

Faculty (undergraduate teachers) workshops
   – Least successful intervention
Teacher workshops
   – 4 weeks in summer and 1 day ones during the school year
Computing summer camps
   – 8-11 weeks in the summer
Weekend workshops
Competitions
   – Alice, Scratch, Advanced Placement CS
Lending library of robot kits, phones, & Kinects
Distance learning website
   – Video tutorials and projects
PSAT letters to recruit
Teacher Workshops
Teacher Workshops

500+ teachers from 312 schools and 20 states

Organized around GA CS Curriculum
(1 week per course)
Computing in the Modern World (Like ECS)
  – Scratch, LEGO WeDos, HTML 5, and CSS 3
Beginning Programming
  – Alice and Java Media Computation
Intermediate Programming
  – App Inventor and Greenfoot
AP CS A
Robots
  – Pleo, LEGO WeDo, NXT, and Tetrix, Finch, IPRE
Summer Camps

We started with 2 weeks for 9th – 12th grade in 2004
  – Camps were popular, but lost money
Addressed camps for 6th – 8th grade in 2006
  – Camps broke even
Addressed camps for 4th – 6th grade in 2009
  – Camps make a profit and show statistically significant changes in attitudes, and learning gains

Wonderful example of crossing and mixing levels.
Impact

Total AP CS A Test Takers in Georgia

# Women
# Black

Total in Georgia

Key points

Georgia Computes succeeded because of a partnership with Georgia Department of Education

• Got all the pieces together, in order.

• Barbara was key, as a state-wide coordinator whose fulltime job was to make CS Ed work in Georgia.

• Summer camps were a dramatic success, involving collaboration across multiple levels in a sustainable, effective model.
Extra Slides
Professional Development – AP CS A

Number of Schools

Number of Test-takers

- Alabama
- Georgia
- California
- Massachusetts
- South Carolina
# Professional Development for Faculty

<table>
<thead>
<tr>
<th>Year</th>
<th># of workshops</th>
<th># of participants</th>
<th>Workshop Agenda&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Learning Objectives&lt;sup&gt;2&lt;/sup&gt;</th>
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<td>68</td>
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<td>2010</td>
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<td>Total</td>
<td>21</td>
<td>287</td>
<td>4.67 (Average)</td>
<td>3.62 (Average)</td>
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</table>
Summer Camps 2012

High School - 3 weeks

- App Inventor
- Alice and LEGO NXT and Tetrix robots
- EarSketch

Middle School - 3 weeks

- Scratch and PicoCrickets
- Alice and LEGO NXT robots
- Cool Girls – WeDo, Scratch, Pleo

Elementary School – 5 weeks

- Art and Movement - Scratch and WeDo
- Art and Simulations – LEGO NXT & Scratch
- Music and Dancing – LEGO NXT & Scratch
- 2 - Artificial Lifeforms – LEGO NXT & Alice
Summer camp 2012

At Georgia Tech: 213 Campers
• 32% female
• 44% Black
• 2.3% Hispanic

Across Georgia
• Over 1,000
• (Data available)