A Pre-College Professional Development Program

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Outline

- Project description
- Results
- Lessons learned/Advice for others
- Future work
Support

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Partial support from IBM Faculty Awards

CRA-W has also supported summer students
NSF ITEST program

K-12 teacher professional development track

120 contact hours in summer

Teachers then incorporate what they have learned into their classes

Teachers develop lesson plans
Project Description

Pilot in Virginia Beach, VA.
- With high school teachers

Implementation in
- North Carolina (middle school, 10-13)
- South Carolina (high school, 13-16)
- Mississippi (middle and high school)
- San Jose, CA. area (high school)
- Colorado (high school)

Some sites focused on computing/programming teachers, and others integrated Alice into other disciplines
Project Description

Summer

- One week Alice content
- One week curriculum development
  - Pedagogy
  - Mapping to state standards
- One week teaching a summer camp*

Academic year support

Following summer wrap up

* The Duke Youth program has started an Alice camp and hired teachers that went through this workshop to teach it
Project Description

https://www.aliceprogramming.net/ITEST

Population:
- > 100 teachers
- Several thousand students

IRB issues
Results

Strong pilot results (published in SIGCSE 2010)
- 3x students taking intro programming
- 3x students taking AP CS course
- 0% - 20% women in AP CS course
- 20% minorities

Other states
- Strong results with respect to teacher changes
Lessons learned

Differences in background among high school teachers

- Weaker backgrounds
  - Business Certification
  - Emergency certifications

- Stronger backgrounds
  - Math
  - Science
Lessons learned

Difference in backgrounds between middle and high school teachers

Teachers’ previous programming experience (or lack thereof)
Lessons learned

- Need to involve school IT directors
  - Principal support wasn’t enough

- Need for school-year support
  - Actual details varied widely between sites
  - Creating a community of practice – regular meetings to share successes and failures
  - Problems in Colorado
Lessons learned

A forum to showcase teacher work
  Duke Summer 2009 symposium

Need for a repository of teaching materials created by the teachers

Other difficulties with the economy: teachers cut, computer labs cut, courses cut, etc.
Lessons learned

Where does computing fit?
- In middle school
- In high school
  - Career and Technical Education versus College-bound
  - Challenges of varied student background

A partnership between college and pre-college instructors
The future

Scaling up our project

- 5 years of funding
- Three week workshops every summer
- Another Alice Symposium bring together teachers from all 3 states

- Any interested teachers from NC, SC, and/or MS?
Questions?

http://www.cs.duke.edu/~rodger/baking/cs.html