A New Future for K-12 CS Education: Why You Should Care

Bobby Schnabel, Indiana University and Chair, ACM Education Policy Committee
Organization of Session

• Bobby Schnabel: *Introduction, Context*
• Chris Stephenson, Computer Science Teachers Association: *Motivation, current status, national need*
• Cameron Wilson, ACM: *
  *Policy challenges, community response*
• Jan Cuny, NSF: *
  *Community effort to reform AP / high school CS*
• Lucy Sanders, National Center for Women & Info. Tech’y: *
  *Importance of all parts, and what you can do*

**DISCUSSION**
K-12 Computer Science Education

Strong interest recently from:
  • Government Leaders
  • Popular Press
  • Computing Research Community

WHY?
Reasons for Interest in K-12 CS Education

- Large demand for computing professionals
- Number of university / college computer science graduates falls far short of current and projected demand
- K-12 doing very little to expose students to rigorous computer science
Where the STEM Jobs Will Be
Projected Annual Growth of Total STEM Job Openings 2010-2020

- Computing 51%
- Engineering 27%
- Mathematics 1%
- Life Sciences* 7%
- Physical Sciences 5%
- Social Sciences 9%

* STEM is defined here to include non-medical occupations.

Where the STEM Jobs Will Be
Projected Annual Growth of NEWLY CREATED STEM Job Openings 2010-2020

- Computing: 62%
- Engineering: 20%
- Life Sciences*: 6%
- Physical Sciences: 3%
- Social Sciences: 8%
- Mathematics: 1%

* STEM is defined here to include non-medical occupations.


July 2012
Where the STEM Jobs Will Be
Degrees vs. Jobs Annually

Higher Education Pipeline in Computing

Higher Education Pipeline in Computing
CRA Taulbee Survey Results

High School Advanced Placement
Exams 2011

Male
Female

Total AP Tests
45%  55%

Biology
42%  58%

Environmental Science
45%  55%

Statistics
49%  51%

Calculus
53%  47%

Chemistry
53%  47%

Physics
69%  31%

Computer Science
19%  81%

How Computer Science “Counts” In K-12

FIGURE 12 How Computer Science Courses Count Toward Graduation Requirements

Elective 35
Mathematics 8
Science 6
District Determined 1

Organization of Session

- Bobby Schnabel: *Introduction, Context*
- Chris Stephenson, Computer Science Teachers Association: *Motivation, current status, national need*
- Cameron Wilson, ACM: *Policy challenges, community response*
- Jan Cuny, NSF: *Community effort to reform AP / high school CS*
- Lucy Sanders, National Center for Women & Info. Tech’y: *Importance of all parts, and what you can do*

DISCUSSION