CURRENT STATISTICS ABOUT COMPUTING EDUCATION

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What we need to think about...

- The number of students interested in computing
- The number of students who take computing classes in middle/high school & the content/level of those classes
- How that course counts toward graduation credits
- The number who select to major in a computing field as an undergraduate
- The number who actually graduate in a computing field
- The number of jobs that need to be filled

The problem may be too big for anyone of us to solve, but all aspects are intertwined.
WHERE THE STEM JOBS WILL BE
PROJECTED ANNUAL GROWTH OF TOTAL STEM JOB OPENINGS 2010-2020


* STEM is defined here to include non-medical occupations.
THE NUMBERS ADD UP FAST!

$500 billion opportunity

1.4 million computing jobs

400,000 computer science students

$500 billion over 10 years!!

• The highest-paying salaries in the US, job growth 2x the national average
• Each software job yields 4.3 more neighborhood jobs

Sources: BLS, NSF, Bay Area Council Economic Institute
• Less than 2.4% of college students graduate with a degree in computer science.... That’s fewer students than 10 years ago

Sources: College Board, Bureau of Labor Statistics, National Science Foundation
PROJECTION FOR EMPLOYMENT

United States: Number of Degrees Earned in CIS vs. Projected Average Annual Number of Computing Job Openings

144,500 Average Annual Openings

88,161 Annual Degrees Earned

1,340 Doctoral

17,312 Master’s

39,701 Bachelor’s

29,808 Associate’s

Projected Average Annual Openings
YOU GUESS

- With this demand – what percentage of schools (in the US) offer a computer science course?
Only 10% of schools teach computer science, and it’s declining. In 9 out of 10 schools, it’s not even on the menu!

This skill is a fast-track to the best jobs in the country, but it’s largely out of reach for most Americans, especially in under-served rural or urban communities.

We have an opportunity to fix the American dream.
YOU GUESS

- With this demand – how many states accept computer science as a core credit for high school graduation?
• In 36 of 50 states, computer science doesn’t even count towards graduation requirements. (in China: it’s required to graduate)
• CS not even categorized in STEM (science, tech, engineering, math)

• In states that recognize it as a math, AP C.S. enrollment is 50% higher, (without cannibalizing Calculus)

Sources: ACM, College Board
YOU GUESS

- Since it doesn’t count toward graduation in many states: In 2009, how many high school graduates earned a computer science credit?
Introductory secondary school computer science courses have decreased in number by 17 percent from 2005. The number of Advanced Placement (AP) Computer Science Courses has similarly decreased by 33 percent.

In 2009, Only 19% of high school graduates in US had earned credit for computer science (Drop from 25% in 1990 – only STEM field to drop during that time.)

Where does the CS AP enrollment rank when compared to other AP classes?
2012 HIGH SCHOOL A.P. ENROLLMENT

- HISTORY: 1,200,000
- ENGLISH: 1,000,000
- SCIENCE: 800,000
- MATH: 600,000
- FOREIGN LANGUAGES: 500,000
- ECONOMICS: 400,000
- ART + MUSIC: 300,000
- COMPUTER SCIENCE: 200,000
ANOTHER WAY TO LOOK AT IT...

AP Exams 1997-2011

- Calculus
- Biology
- Statistics
- Physics
- Chemistry
- Envt'l Science
- Computer Science

Number of AP Exams


0 50,000 100,000 150,000 200,000 250,000 300,000
Some National 2013 Stats

- CS occupations ranked #1 best jobs (Money Magazine)
- AP exams – CS ranked #1 in increase in number of takers – 16%
- AP exams – CS ranked #1 in score increase
- AP exams – CS ranks #1 in lack of women taking the exam
- Only 14 states offer Computer Science as CORE credit
SOME MORE LOCAL STATS

- DC metropolitan area ranks #1 in IT hiring
- AP exams – MD ranked #1 in per capita for number of takers
Fixes for

- college level CS education
- high school level CS education
- high school credit system for CS classes
- teacher preparation for CS teachers
Even beyond the number of those who are needed for computer specific jobs, more people will be needed who think computationally and are aware of the field.

http://www.youtube.com/watch?v=tfiw511eAB8
Pat