The CS 10K Project

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What’s happening in high schools?
In most high schools, computing courses …

• Cover only basic literacy
• Are taught as CTE (vocational ed)
• Aren’t eligible for college prep credit
• Don’t count as a math or science credit
AP Participation

In 2008 15,527 students took AP CS A

- 222,835 Calculus AB
- 154,504 Bio
- 108,284 Statistics
AP math & science exams

Source: College Board Exam Volume Data
Gender Gap

AP CS A had the worst gender balance of any of the AP tests

- 18.6% CS A
- 48.6% Calculus AB
- 50.7% Statistics
The missing 70%

**National School Enrollment and APCS Exam Participation by Race and Gender**

- **Enrollment**
  - American Indian: 1.3%
  - Asian: 5%
  - Black: 3%
  - Latino: 6%
  - White: 57%
  - Female: 49%
  - Male: 51%

- **APCS Exams**
  - American Indian: 0.5%
  - Asian: 23%
  - Black: 17%
  - Latino: 19%
  - White: 67%
  - Female: 15%
  - Male: 85%
Behind National the Trends

Change in Percentage of Women and URM’s Obtaining Associate’s, Bachelor’s, Master’s and Doctorate Degrees 1986 - 2005

Source: National Center for Education Statistics, Digest of Education Statistics
Moving on through the pipeline
Figure 2. Undergraduate CS Degree Enrollments

Source: CRA Taulbee Survey

CRA, Taulbee 2010
Future trends?

Intention to major in CS compared to degrees granted

CS’ share of all bachelor’s degrees granted
Share of Freshman listing CS as a possible major 4 years earlier

Sources: UCLA at HERI and NSF SRS    CRA: Vegso
Why HS?
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Without it

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- Anything we do for middle school will be lost.
- Anything we do at the college level will be insufficient.
Why focus on AP?
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- Only point of national leverage
What's wrong with the current AP course?
What’s wrong with the current AP course?

- Doesn’t appeal to many students (particularly women and minorities)
- Inaccessible to students without previous experience
- Fails to introduce the fundamental concepts of CT
- Doesn’t teach the breadth of application or “magic” of computing
Math and Science in U.S. High Schools (NRC, 2002)

- AP courses should
  - Reflect what we know about how students learn
  - Build students’ transferable, conceptual understanding and inquiry skills
  - Convey the content and unifying concepts of a discipline

- AP courses should not be designed solely to replicate introductory college courses (which are not typically exemplary models)
Chemistry, Biology, Physics, and Environmental Science are leading the
Chemistry, Biology, Physics, and Environmental Science are leading the way. Computer Science is right behind.

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(Proposed) CS Principles
Proposed AP CS Principles

- Engaging, accessible, inspiring, rigorous
- Focused on the fundamental concepts of computing (CT)
- A target for K-9 course development; An impetus for college curriculum reform
- Available nationwide
High School

• Introductory course for everyone
• Proposed AP CS Principles
• AP CS Programming?
Not an AP fan?

Other models, like dual credit or a single senior year course?

Mix and match available curricular materials
The new AP course will be coming to a school near you in 2014 … Getting it taught, and taught well.
CS 10K

Develop an effective new high school computing curriculum and get it taught in 10,000 schools by 10,000 well-prepared teachers by 2015.
10,000 Teachers / 10,000 Schools

- In-service preparation
- Pre-service preparation
- Ongoing professional development
- Entrée into schools
The ASK

- Get computing listed as a recommended course for incoming students at your university
- Help make CS Principles a great AP course
- Collaborate with K-12 and Ed Schools to on CS 10K (see new CISE solicitation)
AMERICA’S GOT TALENT
But Not Enough Is Going into Computer Science

CS PRINCIPLES
FOR 21ST CENTURY COMPUTING

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