The National Imperative for K-12 Computer Science Education

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A Little CSTA Context

- An international membership organization of 13,000 members
- 40 chapters in the U.S. and Canada
- Develops and publishes the de facto national standards for K-12 CS education
- Provides professional development for teachers
- Conducts and publishes research
- Provides classroom resources and CS promotional materials
Critical Gaps in Understanding

Believing that students are learning computer science because there are computers in schools is like believing they are learning chemistry because there are beakers in the cupboard.

Just because your kids are using the technology, doesn’t mean they understand it or are capable of creating it.
High School Advanced Placement
Exams 1997-2011

- Calculus: 9.7%
- Biology:
- Statistics:
- Physics:
- Chemistry:
- Envt’l Science:
- Computer Science: 0.63%

Findings: Standards

http://www.acm.org/runningonempty/fullreport.pdf 2010
Computer Science and the Core

• The absence of computer science from the “core” has widespread negative consequences:
  – Ignored in conversations about improving student performance (the MSP example)
  – Damaging and sometimes crazy policy decisions
    • Assessment in Ohio
    • Certification in FL
  – Access to rigorous computer science courses is limited to high-end schools with low minority populations
  – CS does not count for graduation so our best and brightest students cannot take it
Race to the Future

• The future of science, of innovation, of solutions are all grounded in rigorous computing

• Other nations have committed to ensuring that their children build the tools of the future while we continue to educate our children to be simply tool users (the UK example)

• Educating students for the jobs of the past is a recipe for both economic and social disaster

• While educational policy is state driven, we ignore the national impact at our peril:
  – Cyber security
  – Critical skills and employability gaps
  – Jobs we cannot fill
  – Tools we will never build and problems we will never solve
Achieving Real Change

• Most races require dedication and hard work, but changing education also requires:
  
  – Vision

  – Scale

  – Commitment

  – Consistency

  – Courage
THANK YOU!

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