

Preparing K-12 Teachers to Teach Computer Science

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Need for K-12 Computer Science Teaching & Learning

- ❖ Information Technology among Career Fields with greatest need
- ❖ Computational thinking included in K-12 Standards for Science
- ❖ National and International initiatives for CS for All
 - ❖ Code.org
 - ❖ NSF
 - ❖ Pisa

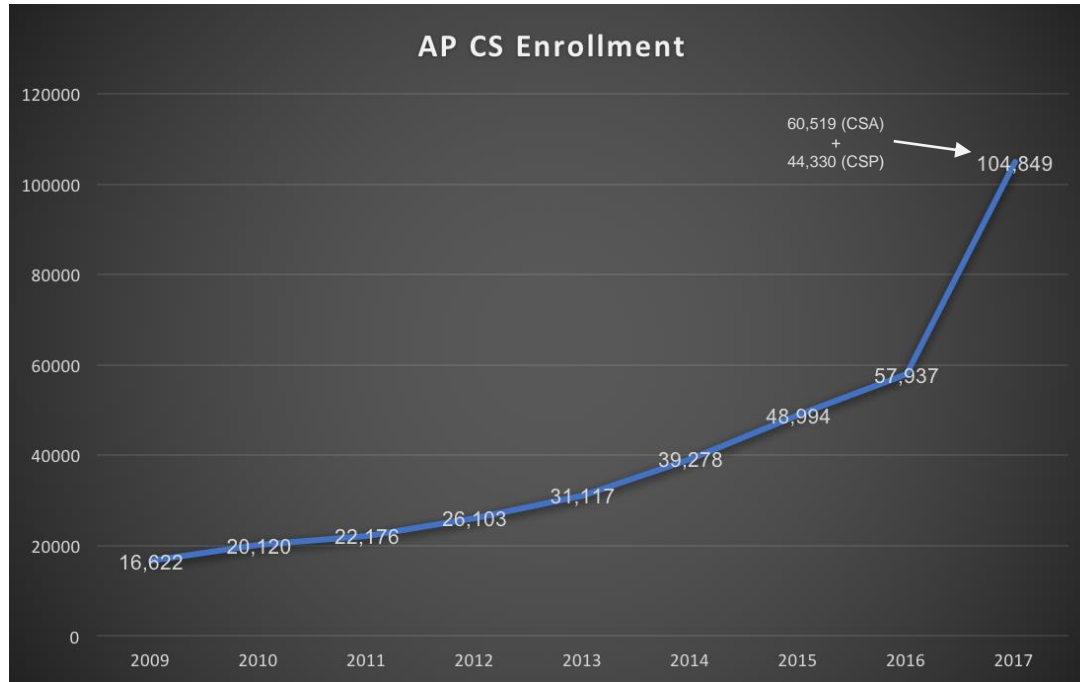


Who Will Teach K-12 CS?

- ❖ Secondary School
 - ❖ Introductory Courses & AP Courses
 - ❖ Mathematics and Business Teachers
 - ❖ No certification requirements
- ❖ Elementary School
 - ❖ General Elementary; Specialists



AP CS Course Enrollments



CSforALL

- ❖ To meet the growing demand/need for CS, we need to:
 - Train new teachers in the teaching of computer science
 - Create in-service opportunities for current teachers
 - Prepare preservice teachers to teach computer science
 - Research and development to create and improve models for educating teachers for CS instruction



Challenges of Teaching Computer Science

“I think in general anything that’s new to me that I don’t have a lot of experience with is challenging to teach because now I’m not only trying to understand it myself but I’m trying to distill it in a way to help students understand it better.”



Source: <http://hechingerreport.org/should-computer-assisted-teaching-expand-its-reach-to-more-states/>

Yadav, A., Gretter, S., Hambrusch, S. & Sands, P. (2016). Expanding computer science education in schools: Understanding teacher experiences and challenges. *Computer Science Education*, 26, 235-254.

Preparing next generation of teachers

- Educational Technology for preservice teacher
- Graduate Certificate in K-12 computer science education



Photo by [Celia Ortega](#) on [Unsplash](#)

CS Education work at Michigan State



CT4EDU

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Professional Development for CS Principles Teaching

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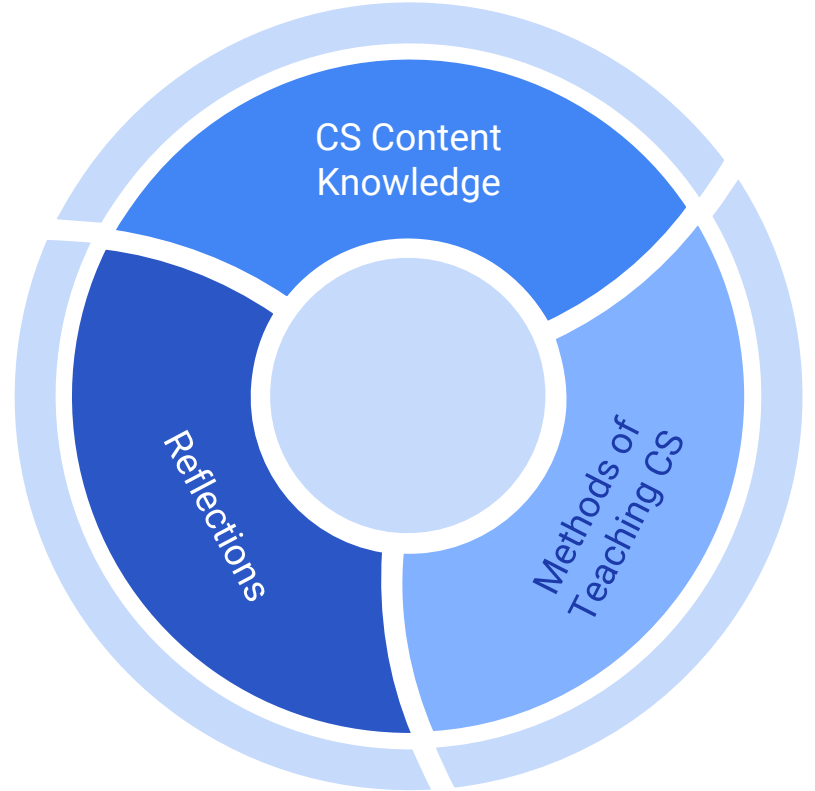
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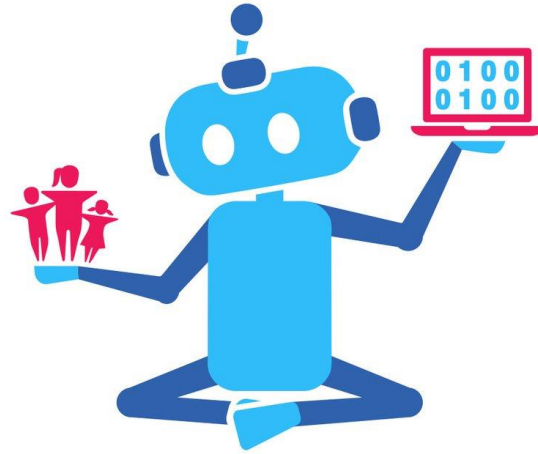
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CT4EDU will design, implement, and assess a high-quality, integrated curriculum, and professional development that supports elementary school teachers in embedding computer science ideas, known as computational thinking into their math and science teaching.

The logo for CT4EDU features the letters 'C', 'T', '4', 'E', 'D', and 'U' in a bold, sans-serif font. The 'C' is red, the 'T' is blue, the '4' is light blue, and the 'E', 'D', and 'U' are green.



3A) →
3P)

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Thank You

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