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

AP CS Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrollment</th>
</tr>
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<tbody>
<tr>
<td>2009</td>
<td>16,622</td>
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<tr>
<td>2010</td>
<td>20,120</td>
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<tr>
<td>2011</td>
<td>22,176</td>
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<tr>
<td>2012</td>
<td>26,403</td>
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<td>2013</td>
<td>31,117</td>
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<tr>
<td>2014</td>
<td>39,278</td>
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<tr>
<td>2015</td>
<td>48,994</td>
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<td>2016</td>
<td>57,937</td>
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<tr>
<td>2017</td>
<td>104,849</td>
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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/
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 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.
Thank You

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