Oh what a year!
But still work to do!
Where are we and how did we get here?
Daryl Detrick

- CSTA Central NJ president
- CSNJ co-chair
- New Jersey representative to CSALT
- CS teacher at Warren Hills HS
- DarylDetrick@cstanj.org
CSTANJ goal is to enhance CS Education by promoting communication through a network of CS Educators from K through College. CSTANJ hopes to provide opportunities for discussions, collaboration, professional development, and advocacy work.
Efforts Underway - CSTA in New Jersey

CSTANJ

CSTACNJ
Central NJ chapter @ Rutgers

CSTANNJ
Northern NJ chapter @ Kean

CSNJ
Advocacy Extension w/ community, industry and elected officials
2013 CS4HS presentation

• We had just formed an advocacy group called CSNJ. (July 2013)
• We decided to start with a survey to find out the state of CS in NJ. (remember that?)
• Promoted CS Edweek and introduced this idea of the Hour of Code
  (didn’t have any details at the time)
Every student in every school should have the opportunity to learn computer science
An advocacy outreach of CSTA in New Jersey.

Mission Statement: To establish K-12 computer science as an essential academic discipline in NJ.

Goals:

• Make CS count as math or science core class
• Adopt CS standards for New Jersey
• Define CS teacher certification/endorsement
• Require all New Jersey students take a CS course to graduate

Have any connections in industry, government or DOE?
Opportunities

“We need students to be innovative creators of technology, not just passive users”

Chris Stevenson
CSTA Executive Director
Where the STEM Jobs Will Be
Degrees vs. Jobs Annually

1,000,000 more jobs than students by 2020

$500 billion opportunity

1,000,000 unfilled programming jobs*

400,000 computer science graduates

Sources: BLS, NSF, Bay Area Council Economic Institute
Where the STEM Jobs Will Be
Projected Annual Growth of STEM Job Openings
2008 - 2018 STEM Jobs Will Be

Percentage Of New STEM Jobs By Area Through 2018

- Computing: 71%
- Traditional Engineering: 16%
- Physical Sciences: 7%
- Mathematics: 2%
- Life Sciences: 4%
- Database Admin.: 2%
- Systems Analysis: 10%
- Software Engineering: 27%
- Computer Networking: 21%
- Other Computing: 3%
- CS/IS Research: 1%
- Computer Support: 7%

New Jersey only has enough college Computer Science graduates each year to fill 33% of the states annual job openings in computing.

NCWIT.org

Outdated with new growth?
The Opportunities **WASTED**
(update – good news and bad news)

“Educating students for the jobs of the past is a recipe for both economic and social disaster.”

Chris Stevenson
CSTA Executive Director
High School Advanced Placement

Exams 1997-2011

## Growth in APCS exam

### National Numbers

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Increase</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>22,176</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>26,103</td>
<td>18%</td>
<td>#1</td>
</tr>
<tr>
<td>2013</td>
<td>31,117</td>
<td>19%</td>
<td>#1</td>
</tr>
<tr>
<td>2014</td>
<td>37,521</td>
<td>21%</td>
<td>#?</td>
</tr>
</tbody>
</table>
## New Jersey Statistics on AP exam

<table>
<thead>
<tr>
<th></th>
<th># schools</th>
<th># Students</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>136</td>
<td>942</td>
<td>34% **</td>
</tr>
<tr>
<td>2011</td>
<td>128</td>
<td>1120</td>
<td>19%</td>
</tr>
<tr>
<td>2012</td>
<td>133</td>
<td>1235</td>
<td>10%</td>
</tr>
<tr>
<td>2013</td>
<td>139</td>
<td>1582</td>
<td>28%</td>
</tr>
</tbody>
</table>

Note: Approximately 775 HS in NJ. 505 public and 270 private

** First year without AB exam

Data from College Board via Barbara Ericson
High School Advanced Placement

Exams 2011

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total AP Tests</strong></td>
<td>45%</td>
</tr>
<tr>
<td><strong>Biology</strong></td>
<td>42%</td>
</tr>
<tr>
<td><strong>Environmental Science</strong></td>
<td>45%</td>
</tr>
<tr>
<td><strong>Statistics</strong></td>
<td>49%</td>
</tr>
<tr>
<td><strong>Calculus</strong></td>
<td>53%</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td>53%</td>
</tr>
<tr>
<td><strong>Physics</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Computer Science**

- Male: 81%
- Female: 19%

Females in NJ taking APCS exam

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>156</td>
<td>17%</td>
</tr>
<tr>
<td>2011</td>
<td>193</td>
<td>17%</td>
</tr>
<tr>
<td>2012</td>
<td>217</td>
<td>18%</td>
</tr>
<tr>
<td>2013</td>
<td>242</td>
<td>15%</td>
</tr>
</tbody>
</table>

Data from College Board via Barbara Ericson
<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th>Percent</th>
<th># Black females</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>22</td>
<td>2%</td>
<td>5</td>
</tr>
<tr>
<td>2011</td>
<td>34</td>
<td>3%</td>
<td>10</td>
</tr>
<tr>
<td>2012</td>
<td>37</td>
<td>3%</td>
<td>5</td>
</tr>
<tr>
<td>2013</td>
<td>34</td>
<td>2%</td>
<td>7</td>
</tr>
</tbody>
</table>

Note: 13.6% of NJ residences are black

Data from College Board via Barbara Ericson
Hispanic Students in NJ taking APCS exam

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th>Percent</th>
<th># Hispanic females</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>53</td>
<td>6%</td>
<td>9</td>
</tr>
<tr>
<td>2011</td>
<td>55</td>
<td>5%</td>
<td>7</td>
</tr>
<tr>
<td>2012</td>
<td>74</td>
<td>6%</td>
<td>20</td>
</tr>
<tr>
<td>2013</td>
<td>96</td>
<td>6%</td>
<td>11</td>
</tr>
</tbody>
</table>

Note: 17.6% of NJ residences are Hispanic/Latino
Data from College Board via Barbara Ericson
CSNJ in last 12 months

“Access to CS Education has become the social justice issue of the 21st century. The way to get people out of poverty is to give them access to privileged skills.”

Chris Stevenson
CSTA Executive Director
Good Timing

CSTA
NCWIT
Computing in the Cores etc.

CS Education

CSTANJ (Dec 2012)
Code.org (Jan 2013)
Petitioning Commissioner Chris Cerf

New Jersey State Board of Education: Please help make Computer Science count towards high school graduation requirements in math or science.

Petition by
Mayra Bachrach
West Orange
To:
Commissioner Chris Cerf, New Jersey Department of Education
Assemblyman Patrick J. Diegnan Jr., New Jersey Legislature
Senator M. Teresa Ruiz, New Jersey Legislature
Assemblyman Angel Fuentes, New Jersey Legislature
Diane Shoener, Director of the Office of the New Jersey State Board of Education
Board President Arcelio Aponte, New Jersey State Board of Education

Please help make computer science count towards high school graduation requirements in math or science.

Sincerely,
[Your name]
NJDOE

• Started an email conversation based on a comment made by Bari Erlichson on a newspaper article about Hour of Code. Bari is the Assistance Commissioner of Education at NJDOE.

• Had a 2 hour meeting in April with 6 high level members of NJDOE and 4 members of CSNJ.

• Made presentation on the state of CS education in NJ and the need to introduce more students to CS. Presented a proposal called 3+3+STEM.

• Has lead to additional conversations.
Legislation

www.njleg.state.nj.us  keyword “computer science”

A4404 / A2070

– CS as a graduation requirement
– Assemblyman Fuentes
– Got CSNJ mobilized and energized
– The bill died in committee
Legislation

A2597 / S2161

- Make CS count as a math or science
- Assemblyman Singleton and Diegnan (petition)
- 4 more co-sponsors
- CSNJ testified at the Assembly Education Committee (Passed 8-0)
- Passed the Assembly on 6/26 (76-0)
- Referred to the Senate Education Committee
- Senate version sponsored by Senator Ruiz (petition)
Legislation

A3440 / S2030

• Requires State Board of Education to develop rigorous computer science curriculum guidelines and school districts to incorporate those guidelines in grades six through 12

• Introduced by Senator Cody (2 cosponsors)

• CSNJ testified to the Senate Budget and Appropriations Committee (Passed 13-0)

• Passed the Senate on 6/30 (35-1)

• Referred to the Assembly Education Committee
Legislation

• CSNJ has had conversations with about 10 legislators or their offices about CS Education
• Meeting with Assemblyman Diegnan on Wednesday
• Meeting with Senator Codey is being planned with the help of Code.org
• To find out more about the bills go to www.njleg.state.nj.us and type keyword “computer science”.
Standards

Sue Sullivan of NJDOE is responsible for the Technology Standards and 21st Century Careers (8 and 9)

These standards were in the last days of their 5 year update. She wanted to add computational thinking.

CSNJ testified at public hearing held by NJBOE last week. Standards should be released this fall.

Drafts are posted at:
Standards

CSNJ expressed gratitude for the added standards, but with the hope that more detailed standards can be added to the science standards once A3440/S2032 is law.

CSNJ has handed out copies of CSTA model standards to NJDOE, NJBOE, NJEA, NJPSA
CS Endorsement

CSNJ is working with Rutgers, Kean, TCNJ, Rowan, and Ramapo to create a proposal for a CS endorsement that will be presented to NJDOE.

Preliminary ideas:
• In addition to a certification in another area
• Recommendation, not requirement at first
• Grandfather clause when a requirement
• Four courses equivalent to:
  – CS Principles, APCS A, Data Structures and CS Methods
Grants

• Rutgers- CS in a Box
  – Activities for elementary and middle school computer science clubs
  – Training in the fall for 30 teachers
  – See Fran Trees
Grants

NJ School Boards Association conference
• October 28 and 29
• Booth and presentation

NJEA conference
• November 6 and 7
• Booth and presentation

CS Education: Good for our students and our state
Code.org

• CSNJ has had numerous conversations with Code.org once the bills where presented.
• Code.org gives suggestions and helps make some connections.

• Training  (In discussion phase)
  – Three year commitment from a school
  – Must offer ECS (year 2) and CSP (year 3)
  – Paid for the teachers at schools PD rate
  – NJ would need to find 30 schools in the next 2 months
How to get involved

• Contact legislators
• Join CSTACNJ or CSTANNJ
• Join CSNJ – Next phase PD?
• Stop by CSNJ booth at NJSBA or NJEA
• Send me your thought on anything covered today (good or bad)
• CS in a Box – create or participate
• Add CS at your school – ESC or CSP
• Code.org training???
Next CSNJ meeting

In 15 minutes:
Discuss:
• NJSBA and NJEA conferences
• Try to put in the bill
  – CS for all HS
  – CS grad requirement
  – 3+3+STEM
• Endorsement update
• Training – Code.org ?
CSTA Chapters in NJ

CSTA Central NJ
- Meet at Rutgers
- Second Tuesday of Even Months
- Next meeting October 14th
- Google Group / Website
- Contact Daryl Detrick
  - DarylDetrick@CSTANJ.org

CSTA Northern NJ
- Meet at Kean (normally)
- Next meeting in September ___
- Contact Mayra Bachrach
  - MBachrach@glenridge.org

CSTA Southern NJ ????????