CSTA NATIONAL SECONDARY COMPUTER SCIENCE SURVEY (2011)

Methodology:
This survey instrument was developed by CSTA’s Research Committee and was administered in spring 2011 to 19,280 high school teachers who defined themselves as computer science, computer programming, or AP computer science teachers. Survey invitations, which directed respondents to a Survey Monkey online survey, were mailed to teachers across the United States using contact information provided by a market data company. In addition, CSTA’s home page featured a request with a link to the survey. A total of 1561 people responded to the survey (a response rate of 8.1%). Of these responses, 1384 were usable, the remainder having been eliminated because they were submitted by college faculty, teachers of lower grades, or people outside the US. The results below represent the percentages and averages for those who answered each question.

Results:

1. Does your school offer any introductory (or pre-AP) Computer Science (CS) courses?
   - Yes 69%
   - No 31%

2. What type of credit is earned by the course(s)? (Check all that apply.)
   - Technology 39%
   - Computing Credit 36%
   - Business Credit 25%
   - Math Credit 11%
   - Science Credit 3%
   - Other Credit 21%

3. Are students required to take introductory CS?
   - Yes 31%
   - No 69%

4. How many students are enrolled in introductory CS?
   - 1-10 10%
   - 11-25 24%
   - 26-50 25%
   - 51-100 20%
   - 101+ 21%

For more information, contact the Research Committee: cstaresearch@csta.acm.org
5. What percentage of students enrolled in introductory CS is female? (Skip if your school is single-sex.)

- 0% females: 4% of schools
- 1-20% females: 43% of schools
- 21-40% females: 22% of schools
- 41-60% females: 29% of schools
- 61-80% females: 1.7% of schools
- 81-99% females: 0.1% of schools
- 100% females: *0.2% of schools*

*Does not include 8 teachers at single-sex schools who specified 100%.

6. What percentage of students enrolled in introductory CS are members of an ethnic minority?

- 0% minority: 7% of schools
- 1-20% minority: 53% of schools
- 21-40% minority: 20% of schools
- 41-60% minority: 6% of schools
- 61-80% minority: 5% of schools
- 81-99% minority: 6% of schools
- 100% minority: 2% of schools

7. What content is covered in introductory CS? Check all that apply.

- Programming: 69%
- Problem solving: 65%
- Ethics and social issues: 54%
- Hardware: 49%
- Graphics: 46%
- Web Development: 37%
- Computer Security: 35%
- Game programming: 32%
- Productivity software: 30%
- Databases: 27%
- Networks: 21%
- Logic: 16%
- Other: 13%

8. What programming languages / software tools are used in introductory CS? Check all that apply.

- Java: 38%
- Alice: 29%
- Visual Basic: 25%
- Scratch: 17%
- JavaScript: 13%
- C++: 12%
- Python: 9%
- Greenfoot: 4%
- C#: 3%
- Other: 22%

For more information, contact the Research Committee: cstaresearch@csta.acm.org
9. **Does your school offer AP Computer Science?**
   - Yes 36%
   - No 64%

10. **How many students take AP CS?**
   - 1-10 students 44% of schools
   - 11-25 students 36% of schools
   - 26-50 students 13% of schools
   - 51-100 students 6% of schools
   - 101+ students 2% of schools

11. **What percentage of students enrolled in AP CS are female?** (Skip if your school is single-sex.)
   - 0% females 22% of schools
   - 1-20% females 53% of schools
   - 21-40% females 20% of schools
   - 41-60% females 5% of schools
   - 61-80% females 0.4% of schools
   - 81-99% females 0.4% of schools
   - 100% females * 0% of schools
   * Does not include 2 teachers at single-sex schools who specified 100%.

12. **What percentage of students enrolled in AP CS are members of an ethnic minority?**
   - 0% minority 15% of schools
   - 1-20% minority 48% of schools
   - 21-40% minority 17% of schools
   - 41-60% minority 8% of schools
   - 61-80% minority 4% of schools
   - 81-99% minority 5% of schools
   - 100% minority 2% of schools

13. **Does your school offer computing courses other than introductory and AP Computer Science?**
   - Yes 82%
   - No 18%

14. **What kinds of courses?**
   - Web design 70% of schools
   - Computer graphics 50% of schools
   - Computing communications/media 40% of schools
   - Programming 38% of schools
   - Networking 15% of schools
   - Game development 15% of schools
   - Other 35% of schools
15. Do the CS courses offered in your school have prerequisites?
   Yes 49%
   No 51%

16. How have CS enrollments changed in your school over the past three (3) years?
   Increased 23% of schools
   Decreased 31% of schools
   Stayed about the same 47% of schools

17. In your judgment, do you think there are students who should be taking or would like to
take the CS course(s) your school offers but who are not?
   Yes 81%

18. Why? Please rank each reason below:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Very common</th>
<th>Somewhat common</th>
<th>Uncommon</th>
</tr>
</thead>
<tbody>
<tr>
<td>No room in timetable</td>
<td>73%</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>Greater interest in other subjects</td>
<td>33%</td>
<td>50%</td>
<td>10%</td>
</tr>
<tr>
<td>Elective courses are less important</td>
<td>48%</td>
<td>35%</td>
<td>11%</td>
</tr>
<tr>
<td>Subject matter too difficult</td>
<td>29%</td>
<td>44%</td>
<td>19%</td>
</tr>
<tr>
<td>CS is perceived to be 'geeky'</td>
<td>18%</td>
<td>39%</td>
<td>33%</td>
</tr>
<tr>
<td>Perceived as male-dominated</td>
<td>19%</td>
<td>38%</td>
<td>33%</td>
</tr>
<tr>
<td>Perception of limited job opportunities</td>
<td>6%</td>
<td>19%</td>
<td>64%</td>
</tr>
</tbody>
</table>

19. What has been the impact of the No Child Left Behind (NCLB) legislation on your CS
    program?
   Negative impact 35% of schools
   No impact 63% of schools
   Positive impact 3% of schools

20. Under what department(s) is CS offered in your school?
   Business 37% of schools
   Technology 35% of schools
   Computing 19% of schools
   Math 15% of schools
   Science 2% of schools

21. Does your district or state require you to teach a specific computer science course
    curriculum that includes specific content and outcomes?
   Yes 33%
   No 67%

22. (if Yes) Are these requirements enforced?
   Yes 73%
   No 27%
23. Do you use all or part of the standard curriculum as outlined in the ACM/CSTA Model Curriculum for K-12 Computer Science?
   
   Yes 19%

24. What do you perceive as the greatest challenges in teaching CS? Please rank each challenge below:

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Great challenge</th>
<th>Moderate challenge</th>
<th>Minor/no challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of student interest/enrollment</td>
<td>34%</td>
<td>45%</td>
<td>20%</td>
</tr>
<tr>
<td>Rapidly changing technology</td>
<td>34%</td>
<td>45%</td>
<td>21%</td>
</tr>
<tr>
<td>Difficult subject matter</td>
<td>24%</td>
<td>52%</td>
<td>24%</td>
</tr>
<tr>
<td>Lack of support / interest by school staff</td>
<td>39%</td>
<td>35%</td>
<td>26%</td>
</tr>
<tr>
<td>Lack of student subject knowledge</td>
<td>22%</td>
<td>50%</td>
<td>28%</td>
</tr>
<tr>
<td>Lack of curriculum resources</td>
<td>23%</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td>Lack of hardware / software resources</td>
<td>25%</td>
<td>36%</td>
<td>39%</td>
</tr>
<tr>
<td>Lack of teacher subject knowledge</td>
<td>18%</td>
<td>36%</td>
<td>45%</td>
</tr>
</tbody>
</table>

25. What do you perceive as the greatest professional development needs? Please rank each need below:

<table>
<thead>
<tr>
<th>Need</th>
<th>Great need</th>
<th>Moderate need</th>
<th>Minor/no need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time for training</td>
<td>60%</td>
<td>32%</td>
<td>8%</td>
</tr>
<tr>
<td>Sufficient training opportunities</td>
<td>53%</td>
<td>37%</td>
<td>10%</td>
</tr>
<tr>
<td>Training cost (and lack of reimbursement)</td>
<td>59%</td>
<td>27%</td>
<td>14%</td>
</tr>
<tr>
<td>Training facilities and resources</td>
<td>40%</td>
<td>41%</td>
<td>19%</td>
</tr>
</tbody>
</table>

26. What do you believe to be the most effective methods for delivering professional development to CS teachers? Please rank each method below:

<table>
<thead>
<tr>
<th>Method</th>
<th>Most effective</th>
<th>Somewhat effective</th>
<th>Least effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshops / seminars</td>
<td>65%</td>
<td>30%</td>
<td>5%</td>
</tr>
<tr>
<td>Online resources</td>
<td>44%</td>
<td>48%</td>
<td>8%</td>
</tr>
<tr>
<td>Networking with others</td>
<td>49%</td>
<td>42%</td>
<td>9%</td>
</tr>
<tr>
<td>Computer-based tutorials</td>
<td>37%</td>
<td>52%</td>
<td>11%</td>
</tr>
<tr>
<td>Professional conferences</td>
<td>41%</td>
<td>45%</td>
<td>14%</td>
</tr>
<tr>
<td>College courses</td>
<td>32%</td>
<td>51%</td>
<td>17%</td>
</tr>
</tbody>
</table>
27. How many students attend your school?
   1-100 students  4% of schools
   101-250 students  11% of schools
   251-500 students  21% of schools
   501-1000 students  23% of schools
   1001-2000 students  28% of schools
   2001+ students  13% of schools

28. Is your school public or private?
   Public  79% of schools
   Private  21% of schools

29. Is your school a single gender or mixed-gender school?
   Single gender  5% of schools
   Mixed-gender  95% of schools

30. What grade levels?
   Ninth  94% of schools
   Tenth  96% of schools
   Eleventh  98% of schools
   Twelfth  99% of schools

31. What percentage of students at your school speak a language at home other than English?
   0% of students  10% of schools
   1-20% of students  64% of schools
   21-40% of students  14% of schools
   41-60% of students  6% of schools
   61-80% of students  4% of schools
   81-100% of students  2% of schools

32. Which of the following best describes your school's location?
   Urban  32% of schools
   Suburban  46% of schools
   Rural  21% of schools
   Online  0.2% of schools

33. How many years have you been teaching?
   1-3 years  8% of respondents
   4-7 years  19% of respondents
   8-14 years  28% of respondents
   15+ years  45% of respondents

34. How many years have you been teaching CS?
   0 years  6% of respondents
   1-3 years  19% of respondents
   4-7 years  23% of respondents
   8-14 years  27% of respondents
   15+ years  26% of respondents
35. **What percentage of the courses you teach are CS courses?**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25%</td>
<td>29%</td>
</tr>
<tr>
<td>25-50%</td>
<td>15%</td>
</tr>
<tr>
<td>50-75%</td>
<td>14%</td>
</tr>
<tr>
<td>75-100%</td>
<td>42%</td>
</tr>
</tbody>
</table>

36. **How do you identify yourself? Please check all that apply:**

<table>
<thead>
<tr>
<th>Identity</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian / White</td>
<td>89%</td>
</tr>
<tr>
<td>African-American / Black</td>
<td>4%</td>
</tr>
<tr>
<td>Asian-American / Asian</td>
<td>3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>3%</td>
</tr>
<tr>
<td>Native American / Indigenous</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
</tr>
</tbody>
</table>

37. **What is your gender?**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>53%</td>
</tr>
<tr>
<td>Male</td>
<td>47%</td>
</tr>
</tbody>
</table>

38. **What is your age?**

<table>
<thead>
<tr>
<th>Age</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-30 years</td>
<td>8%</td>
</tr>
<tr>
<td>31-40 years</td>
<td>21%</td>
</tr>
<tr>
<td>41-50 years</td>
<td>31%</td>
</tr>
<tr>
<td>51-60 years</td>
<td>33%</td>
</tr>
<tr>
<td>61+ years</td>
<td>7%</td>
</tr>
</tbody>
</table>