Computer Science Attitude Survey

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A survey was developed to measure attitudes towards computer programming and computer science in general. This instrument was derived from the Fennema-Sherman mathematics attitudes scales (Fennema, 1976), modified to reflect programming and computer science rather than mathematics. The survey consists of a series of positive and negative statements. Participants respond to these statements on a five-point scale, ranging from strongly agree to strongly disagree. The negative statements are reverse coded prior to summing the subscale scores. The survey uses five of the seven subscale categories used in the Fennema-Sherman instrument. In addition, the survey opens with a statement concerning the participant's intent to major in computer science. The reliability of the new instrument was evaluated for internal consistency of the subscales with the responses from 162 students at the beginning of the semester taking an introductory computer science course (Williams, Wiebe, Yang, Ferzli & Miller, 2002). Values of Cronbach's alpha ranged from 0.83 and 0.91 for the five subscales. The five subscales, the survey questions that belong to each subscale, and the alpha score are given in Table 1.

Table 1. Survey subscales.

Subscale	Survey Statement Numbers	Cronbach's Alpha
1. Confidence in learning computer science and programming	2-13	0.91
2. Attitude toward success in computer science	14-25	0.86
3. Computer science as a male domain	26-33	0.83
4. Usefulness of computer science and programming	34-45	0.91
5. Effective motivation in computer science and programming	46-57	0.90

References

Fennema, E., & Sherman, J. A. (1976). Fennema-Sherman mathematics attitudes scales. Instruments designed to measure attitudes toward the learning of mathematics by females and males. JSAS: Catalog of Selected Documents in Psychology, 6(31), (Ms. No. 1225).

Williams, L., Wiebe, E., Yang, K., Ferzli, M., & Miller, C. (2002). In support of paired programming in the introductory computer science course. *Computer Science Education*, *12* (3), 197-212

Directions

Enter your student ID number onto the answer sheet. Please note that your answers will be kept confidential.

On the following pages are a series of statements.
1. Read each statement.
2. Think of the extent to which you agree or disagree with each statement
3. Mark your response on the answer sheet

Please remember:
- There are no right or wrong answers. Don't be afraid to put down what you really think.
- Don't spend a lot of time on any one item. Move quickly!
- Complete all of the items.

Respond to the following questions on the answer sheet, using the following scale:
a) strongly agree
b) agree, but with reservations
c) neutral, neither agree nor disagree
d) disagree, but with reservations
e) strongly disagree

1. I plan to major in computer science.
2. Generally I have felt secure about attempting computer programming problems.
3. I am sure I could do advanced work in computer science.
4. I am sure that I can learn programming.
5. I think I could handle more difficult programming problems.
6. I can get good grades in computer science.
7. I have a lot of self-confidence when it comes to programming.
8. I'm no good at programming.
9. I don't think I could do advanced computer science.
10. I'm not the type to do well in computer programming.
11. For some reason even though I work hard at it, programming seems unusually hard for me.
12. Most subjects I can handle O.K., but I have a knack for flubbing up programming problems.
13. Computer science has been my worst subject.
14. It would make me happy to be recognized as an excellent student in computer science.
15. I'd be proud to be the outstanding student in computer science.
16. I'd be happy to get top grades in computer science.
17. It would be really great to win a prize in computer science.
18. Being first in a programming competition would make me pleased.
19. Being regarded as smart in computer science would be a great thing.
20. Winning a prize in computer science would make me feel unpleasantly conspicuous.
21. People would think I was some kind of a nerd if I got A's in computer science.
22. If I had good grades in computer science, I would try to hide it.
23. If I got the highest grade in computer science I'd prefer no one knew.
24. It would make people like me less if I were a really good computer science student.
25. I don't like people to think I'm smart in computer science.
26. Females are as good as males at programming.
27. Studying computer science is just as appropriate for women as for men.
28. I would trust a woman just as much as I would trust a man to figure out important programming problems.
29. Women certainly are logical enough to do well in computer science.
30. It's hard to believe a female could be a genius in computer science.
31. It makes sense that there are more men than women in computer science.
32. I would have more faith in the answer for a programming problem solved by a man than a woman.
33. Women who enjoy studying computer science are a bit peculiar.
34. I'll need programming for my future work.
35. I study programming because I know how useful it is.
36. Knowing programming will help me earn a living.

37. Computer science is a worthwhile and necessary subject.
38. I'll need a firm mastery of programming for my future work.
39. I will use programming in many ways throughout my life.
40. Programming is of no relevance to my life.
41. Programming will not be important to me in my life's work.
42. I see computer science as a subject I will rarely use in my daily life.
43. Taking computer science courses is a waste of time.
44. In terms of my adult life it is not important for me to do well in computer science in college.
45. I expect to have little use for programming when I get out of school.
46. I like writing computer programs.
47. Programming is enjoyable and stimulating to me.
48. When a programming problem arises that I can't immediately solve, I stick with it until I have the solution.
49. Once I start trying to work on a program, I find it hard to stop.
50. When a question is left unanswered in computer science class, I continue to think about it afterward.
51. I am challenged by programming problems I can't understand immediately.
52. Figuring out programming problems does not appeal to me.
53. The challenge of programming problems does not appeal to me.
54. Programming is boring.
55. I don't understand how some people can spend so such time on writing programs and seem to enjoy it.
56. I would rather have someone give me the solution to a difficult programming problem than to have to work it out for myself.
57. I do as little work in computer science courses as possible.