

Name

## Sample Persuasive Outline

General Function: To Persuade

Specific Purpose: After my speech my audience will know an issue with Computer Science education and one way to solve it.

Claim: Computer Science education has two parts, and one (mathematics) that is currently partially neglected should not be.

Pattern of organization: Problem/Solution

Outline:

- I. Introduction
  - A. Making a stew involves both reading and cooking (two different things, like Computer Science)
  - B. Ethos
  - C. Preview points
- II. Body
  - A. The mathematical portion of computer science education is neglected
    - 1. Computer Science is engineering
      - a. writing programs is similar to other disciplines like electrical engineering
      - b. programs have to be engineering for unique platforms
    - 2. Computer Science is math
      - a. mathematical principles apply to computer science
      - b. field was developed by mathematicians
  - B. Add more math to the curriculum
    - 1. Define the Engineering part to be Software Engineering
      - a. cannot be neglected, and still important
      - b. this is the traditional Computer Science degree
    - 2. Define the math part to be Computational Mathematics
      - a. includes neglected areas like “program as formula”
      - b. important to understanding why data structures/algorithms work
- III. Conclusion
  - A. Repeat Claim
  - B. Conclude

## **Works Cited**

1. Dijkstra, E. "On the cruelty of really teaching computer science".  
<https://www.psy.gla.ac.uk/~steve/educ/dijk/EWD1036.v4.pdf>.

This speech transcription discusses replacing current introductory computer science curriculum with pure mathematics. Dijkstra was one of the founding pioneers of computer science. He has published reputable work in peer-reviewed journals. He received the Turing award for excellent research in the field of computer science.

2. Barker, L. et. al. "What can computer science learn from from a fine arts approach to teaching?". Doi: 10.1145/1047124.1047482.

This paper discusses making computer science education more communal to decrease student stress and improve the mental health effects of the curriculum. Specifically, group work as a diversity booster is mentioned. Both authors are professors at reputable universities. They all have a history of publishing research in reputable journals

3. Cooper, S. et. al. "Teaching objects-first in introductory computer science". Doi: 10.1145/792548.611966.

This paper discusses teaching data structures before algorithms in introductory computer science courses. This allows students to learn data-driven development and become comfortable with programming faster. All of the authors are professors at their respective universities with teaching experience. All of the authors have a history of publishing in reputable journals.

4. Cooper, S. et. al. "Teaching computer science in context". Doi: 10.1145/1721933.1721934.

This article discusses the history of computer science education, specifically when it pertains to mathematics. Specifically, the "Calculus Reform" that impacted mathematics education effectively removed mathematics from the computer science curriculum. Both authors are professors at their respective universities. Both authors have a history of publishing research in reputable journals.

5. Fee, S. et. al. "Teaching Computer Science through problems, not solutions".

This paper discusses a novel teaching method based on how medical students are taught. Specifically by posing hard problems that force students to discover computer science concepts instead of giving them the solution and posing cases where it comes up. All of the authors are professors at their respective universities. All of the authors have a history of publishing research in reputable journals.

6. Waite, J. “Pedagogy in teaching Computer Science in schools: A Literature Review”.  
<https://royalsociety.org/~media/policy/projects/computing-education/literature-review-pedagogy-in-teaching.pdf>.

This book covers a diverse range of research covering how computer science is taught at the college and K-12 levels. Of interest is how mathematics in computer science education has declined over time. The author is a professor with considerable teaching experience. The author has a history of publishing research in reputable journals.

7. Mirza, D. et. al. “Undergraduate Teaching Assistants in Computer Science: A Systematic Literature Review”. Doi: 10.1145/3291279.3339422.

This paper discusses the use of UTAs in computer science. Specifically how they can meet with students in shorter, more frequent sessions outside of class. The authors are all professors at their respective universities. All of the authors have a history of publishing research in reputable journals.

8. Quinn, M. “On teaching computer ethics within a computer science department”. Doi: 10.1007/s11948-006-0032-9.

This paper contrasts the “farming” of mathematical concepts out to the mathematics department, while ethics is taught by professors underqualified in the area. It also discusses how including philosophy classes in the computer science curriculum leads to better understanding of the relevant ethics by student. The author is a professor at their university, and teaches the computer ethics class. The author has a history of publishing research to reputable journals.