CS1 Students' Perspectives on the Computer Science Gender Gap: Achieving Equity Requires Awareness

Kimberly Michelle Ying, Alexia Charis Martin, Fernando J. Rodr´ıguez, and Kristy Elizabeth Boyer (2021)

Summary:

This paper explores the awareness and perceptions of CS1 (introductory computer science) students regarding the gender gap in computer science. The study aimed to understand the extent to which male and female CS students are aware of the gender gap and their beliefs about women's experiences and the need for targeted support. The findings of the study revealed significant differences in awareness and beliefs between male and female students.

Overall, the paper highlights the importance of raising awareness and promoting a deeper understanding of the gender gap in computer science, with the aim of fostering more inclusive and equitable environments within the field.

Familiarity:

Moderate. I have read quite a few papers in this area and currently, I am analyzing data from the Computer Science Department at K-State, specifically focusing on the dominance of male students within the department.

Strengths of the Study:

1. Sample Size
2. Mixed Methods Approach
3. Inclusion of Diverse Perspectives
4. Focus on CS1 Students

Weaknesses of the Study:

1. Single Institution and Timeframe: The study was conducted at a single university during Fall 2019, which limits the generalizability of the findings to other institutions and different time periods. Cultural, institutional, and temporal factors could influence the awareness and perspectives of CS1 students on the gender gap.
2. Self-Selection Bias: The participants in the study were self-selected, as they chose to complete the survey and opt-in for the follow-up interviews. This could introduce bias, as those who volunteered may have had a particular interest or awareness of the gender gap, potentially skewing the results.
3. Lack of Longitudinal Perspective: The study provides a snapshot of CS1 students' awareness and perspectives at a specific point in time. A longitudinal perspective would have provided insights into how awareness and attitudes may change over time or throughout the students' academic journey.
Research Papers

Motivation/Research Questions:

The motivation behind this research is to understand the awareness and perspectives of CS1 students, particularly male and female students, on the gender gap in computer science.

Prior & Related Work:

The paper acknowledges prior research that has identified important factors in women's experiences in computer science, such as sense of belonging, and has recommended recruitment and retention initiatives to support women in computing majors. However, the authors note that there has been limited research on students' understanding of the gender gap issue itself.

Scientific Approach:

The study employs a mixed methods approach, combining survey responses and follow-up interviews. It included specific questions related to the gender gap. The interviews were semi-structured and allowed for open-ended discussions, providing qualitative data to complement the quantitative survey results.

Impact:

In summary, this paper has the potential to contribute new knowledge, challenge misconceptions, inspire action, and guide policy and practice in the field of computer science to promote gender diversity and create more inclusive educational environments.

Presentation/Grammar:

No grammar/presentation issues found.

Audience:

The intended audience of this paper includes researchers, educators, curriculum developers, policymakers, and practitioners in the field of computer science education and diversity and inclusion.

Overall:

Overall, this paper is a valuable contribution to the field of computer science education and diversity. It addresses a significant gap in the literature by examining CS1 students' awareness and perspectives on the gender gap, providing new insights and identifying misconceptions that need to be addressed.

The paper is well-structured, clearly presenting the research questions, methods, and findings. The integration of quotes from the interviews adds qualitative evidence and supports the arguments made by the authors. The call-to-action for including DEI training in undergraduate CS curricula is a practical and important recommendation for improving awareness and understanding of the gender gap.