

Another Victim of COVID-19: Computer Science Education

YeckehZaare, Grot, Dimovski, Pollock, Fox (2022)

Summary

This paper looks at the effect that the COVID-19 pandemic had on computer science education (CSE) by examining the overall interactions students had with an eBook for an introductory computer science class. The paper includes two tests conducted over 7 semesters in the same CSE course, giving the students GPA and information about a student's interactions with the eBook. A focus of these research questions was study spacing, or over how many days does a student typically study. The study cited other research that stated the more spaced a student's study was, the higher scores and grades they achieved, so they measured the pandemic's effects on spacing as one of their key research questions. The study also provided extensive demographic information about the 1028 students that were a part of this research.

The analysis provided showed that the pandemic had a significant negative effect on the amount of studying as well as the quality of studying. The analysis consisted of two regression models, one with four semesters from before the pandemic and two during the pandemic, and the other comparing two sequential winter semesters. Both of these models returned similar results that supported the conclusion that the pandemic had a negative effect of CSE.

Familiarity

Low. I was a student during the pandemic but have never read any literature on the topic

Strengths & Weaknesses

Strengths:

- The paper was well written and easy to follow.
- The study included a large sample size of over 1000 students.
- The study included extensive demographic information about the students in the study.

Weaknesses:

- There were only two research questions, would have liked to see at least one more measure of students overall learning.
- The third regression table was a little hard to read.
- This is not really on the researchers, but the class they chose changed their final exam questions during the pandemic, so the researchers were not able to compare those. Not necessarily a weakness of the paper itself but worth noting.

Impact

The study brings together some new information about the pandemic's effects specifically on computer science. The study's results also prompt new questions that need answering, such as "Why did students study and space less during the pandemic?", "How can we motivate students to maintain the quantity and quality of their studying throughout remote learning?", and "Have similar effects occurred in other CS courses?". These questions are important to the future of CSE and the hybrid learning environment.

Presentation/Grammar

As mentioned earlier, the third table included information about every grade level and while comprehensive, it is difficult to read.

Audience

The paper is mostly targeted at CS education researchers who are looking at the pandemic's effect on CSE. The inclusion of further discussion questions seems to indicate this as the study prompts new questions this audience could potentially explore.

Overall

Overall, I recommend this paper. It provides valuable insight as to the effect that the pandemic had on CSE and prompts some interesting discussion questions that both professors and students could explore. Following the various citations of the paper will allow readers to gain an understanding about spacing and how the pandemic effected other fields of study outside of computer science.