Evaluating the Effectiveness of a New Instructional Approach

Summary

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The main aim of this article is to show whether or not the Alice's course is effective enough to help students ameliorate their skills in computer science field as well as their future performance in further computer science courses, such as CS1, and more importantly pursue this major. The primary focus were students "at risk", who are students with little or no previous programming experience and perhaps weak math preparation. The choice of Alice's approach was not a coincidence. The authors claim that course, which was developed at Carnegie Mellon University (CMU), was appropriate for education fundamentals of computer science, moreover as Alice has a programming visualization environment, it could be highly encouraging to students. Overall, for analysis purposes students were separated to three groups: treatment group, where were students at risk and who enrolled in Alice course, control group1, which included students at risk and who did not enroll in the Alice course, as well as control group2, which had those, who are not at risk or low risk and who did not enroll in the Alice course. Despite the fact that the assessment of differences from the assessment of the content before and after the test did not give significantly different results, authors claim that this may be due to a lack of a tool that showed low reliability of the assessment. In future researches authors desire to focus on improving this tool for measuring student knowledge, which may be more challenging, nevertheless more important than just succeeding the course. It was found that students at risk who participated in Alice received, on average, significantly higher grades than students at risk who did not participate in Alice. The general result of the two-year data shows that students at risk who completed Alice's course also performed well in next CS1 course, as did those who were not at risk. Alice's course seems to be "leveling the playing field." Those students at risk, who did not participate in Alice were the only group in which there was a constant decline in attitudes and overall performance. Researchers intend to continue this work with large groups of students in order to provide more precise and accurate results as they claim that the data presented in this project is for small sample sizes, which makes statistical analysis challenging.