SIGCSE Special Project Grant Completion Report

Project: What Exactly Are We Expecting Our Novice Programming Students to Achieve?

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Date of Award: December 2016. End of Study: January 1, 2018 (extended to July 1, 2018)

Abstract

The proposed research was to collect, categorize and analyze the learning outcome statements of CS1 courses across a large, diverse set of institutions. This was aimed at providing an answer to the question: *What exactly are we expecting our novice programming students to achieve?* This will hopefully help the CS education community to decide if, as recent evidence has suggested, we have unrealistic expectations of our CS1 students. If this is indeed the case, the outputs of this research will also provide a starting point for the community to adjust its expectations of novice programmers. This could result in improvements in failure rates, retention, diversity and equity in CS education.

Proposed outputs

1. An online repository of CS1 LOs from a diverse and representative set of institutions. Upon completion of this project the repository will be available to, and updatable by the community.
2. A research paper categorizing, analyzing and presenting these LOs at the SIGCSE symposium, ITiCSE, or ICER. This will allow the community to decide if we have unrealistic expectations of our CS1 students, and provide a starting point for the community to adjust its expectations of novice programmers.

Achieved outputs

1. The repository is now available at csed.ucd.ie/SIGCSE2019. *This is still under refinement for presentation purposes. The website will be final by the time the paper (below) is presented at the SIGCSE Technical Symposium in February 2019.*
2. The outputs of this work are detailed in a paper being presented at SIGCSE 2019. I have attached a copy of the camera-ready version to the email accompanying this report.

Brett A. Becker and Thomas Fitzpatrick. 2019. What Do CS1 Syllabi Reveal About Our Expectations of Introductory Programming Students?. In Proceedings of the 50th ACM Technical Symposium on Computer Science Education (SIGCSE '19), February 27-March 2, 2019, Minneapolis, MN, USA. ACM, New York, NY, USA, 7 pages. https://doi.org/10.1145/3287324.3287485

Details

Output 1 was achieved by collecting CS1 LOs from the following sources/methods.

1. CITIDEL - Tungare, et al. (2007). This yielded 31 syllabi.
2. 916 universities on the 2016-17 QS University World Rankings (234 syllabi found).

The bulk of the grant funding went to pay for the student intern who worked on the project with me. He is a co-author on the paper. He was entering 4th year at the time of this study. He is now a PhD student in our school.

Thanks

I would like to thank the SIGCSE board for this opportunity. I believe this was a very worthwhile research project. The funding source is acknowledged in the paper.