

Undergraduate Thesis Prospectus

CS at UVa: Curriculum's Platform for Future Success

(technical research project in Computer Science)

Teachers Fight Back Against Unfavorable Conditions

(sociotechnical research project)

by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## **General Research Problem**

*How can the U.S. education system be improved?*

The Program for International Student Assessment (PISA) releases a report every three years. PISA assesses 15-year-old students in reading, mathematics, and science literacy. The U.S. ranked 9th in reading literacy, 31st in math literacy, and 12th in science literacy in their 2018 report. Are there any ways to increase the rankings of our education system? American University's School of Education states ways to improve our education system are addressing overcrowding, funding schools more, and raising standards for teachers (American, 2019). Preparing students for future global success requires a revamp to the system from which they learn today.

## **CS at UVa: Curriculum's Platform for Future Success**

*How may the Computer Science curriculum at the University of Virginia better prepare students for success?*

The project's department is Computer Science with technical advisor Briana Morrison and technical writing instructor Rosanne Vrugtman and it is a capstone project. The project goes over the timeline of a computer science student's coursework at UVa and how areas can be improved or changed to prepare the student better for the future. The goal is to improve the curriculum for students in the Computer Science department. Currently a new system has been placed that breaks courses up but it still falls into some issues from the old curriculum path which just delays the same issues. To help solve the problem course websites are used for objective breakdowns as well as interviews from current and past students for first-hand experience and opinions. In the end I will have a new curriculum path that better aligns for student's future success.

## **Teachers Fight Back Against Unfavorable Conditions**

*How are teachers' unions, school districts, non-union teachers, parents, advocacies, and others competing to influence responses to teacher shortages in the United States?*

Why are teachers fighting for better conditions? Many teachers attribute the U.S. teacher shortage to heavy workloads and low pay. The Institute of Education Sciences, a research arm of the U.S. Department of Education, reports that 53 percent of schools report understaffing (IES, 2022). In the 1990s, the National Commission on Teaching and America's Future recommended policies to improve conditions for teachers, but because the problems persist today, some policymakers have withdrawn their support for reform (Berry & Shields, 2017). To relieve the teacher shortage, Secretary of Education Miguel Cardona promises that his department will "take a very active role," for example by hiring retired teachers to return to schools (Stanford, 2022). However, with student enrollment on an upward trend, fewer people entering the teaching profession, and the loss of teachers every year (Berry & Shields, 2017) this may not be enough.

The American Federation of Teachers (AFT), one of the largest U.S. teacher unions at 1.7 million members, calls for "increasing salaries and benefits" and "lowering class sizes" (AFT, 2022). In many school districts, applications are too low to relieve the shortage. According to Superintendent John Downs: "It's concerning to see the number of applications declining ... How bad could it get down the road?" (Will, 2022). How do teachers in the U.S. compare to other teachers internationally? U.S. teachers teach the most hours per week, lowest amount of hours for planning, and above-average class sizes (Hammond, 2022). According to Hammond (2022): "shortages are just one symptom of how teaching has struggled to be recognized and treated as a profession in the United States."

Parents are important participants. Lindsay Oles says: “I am worried, ... in order to keep teachers we have to respect them” (Goncalves, 2022). Parents worry for their children who could be unsupervised in empty classrooms. School districts desperate for substitute teachers hired parents (Hahn, 2022). However, some parents have attributed to the teacher shortage issue. Julie Marburger, a teacher from Texas reports: “One parent today thought it was wrong of me to hold her son accountable for his behavior and decided to very rudely tell me so.” Marburger adds: “I have nearly half of my students failing due to missing assignments. Most of these students and their parents haven’t seemed to care...But now I’m probably going to spend my entire week fielding calls and emails from irate parents.” is what she had to say in a post (Baliūnaitė, 2018). The AFT lists the benefits of healthy parent-teacher relationships: parents can learn from schools about supporting their children, student’s motivation to learn may improve, and teachers can attend to teaching (AFT, 2010).

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