CodeVA SOL Training for Teachers

Executive Summary

Problem Statement

Computer Science SOLs are coming to VA K-12 education and teachers need to be adequately prepared to meet the standards of learning. Many teachers in K-12 education are not familiar with Computer Science and must be educated before they can teach computer science to their students. CodeVA will prepare teachers for Computer Science SOLs but needs the tools to do so. Scratch programs with accompanying Python code and detailed documentation must be created in order to aid the CodeVA teacher coaches, trainers who will be in charge of educating teachers in Computer Science.

Objective

To create scratch programs that are accompanied with Python code and detailed documentation in order to train teachers in how to teach computer science as well as providing teachers with resources for teaching.

Value Proposition

Every teacher that is trained in how to teach computer science will be teaching to a classroom with an average of 28 students. Therefore, the impact of our work will affect thousands of students throughout Virginia and, hopefully, deepening the understanding of computer science throughout the populace of Virginia.

Technical Volume

Technical Approach

Phase One of this project will be creating projects on Scratch Studio that are designed to teach some of the K-5 SOLs. Notes will be taken on difficulties that each team member has with using Scratch and a compiled document that describes how to avoid those difficulties will be created. Scratch is fairly simple to use as it is designed for children to learn how to code. Phase One will be completed using Scratch and our team's shared Scratch Studio. In Phase Two of this project, accompanying Python code will be written to reinforce the ideas taught by the Scratch programs for advanced learners. Phase Two of this project will be completed by writing Python code and sharing with the team and CodeVA through GitHub or other means. Phase Three of this project will be ensuring that every lesson taught through the Scratch and Python programs has detailed documentation that describes possible difficulties with replicating each of the teaching programs

and describes the fundamentals of programming that are underlying each of the teaching programs. Documentation created in Phase Three will be uploaded to GitHub and other locations as specified by CodeVA. Phase Four of the project represents the stretch goals of our team. Phase Four includes expanding the grade levels for which programs are created, recording video lessons that detail each programming project, or other stretch goals as specified by CodeVA.

Current State

SOLs for computer science have been created for K-12 education. There is currently very little supporting documentation for teachers to figure out how to teach computer science SOLs. Lesson plans for teaching computer science integrated with other topics that must be taught at the elementary level have already been created; however, they are not supported by programs that reinforce the computer science topics taught at present.

Management Volume

Stakeholders

CodeVA: Rebecca Dovi, Bryan Wallace; CodeVA Coaches; VCU: Dr. Caroline Budwell, Dr. Robert Dahlberg; Capstone team members: Benjamin Napier, Hunter Frostick, Dakota Brown, Seth Vickers, Kenneth Richardson; VA teachers, students, curriculum planners

Users

Teachers and students of VA schools, CodeVA coaches

IT Contacts

Rebecca Dovi, Bryan Wallace

Cost Volume

Cost and Time Savers

Zoho, Scratch Studio, Discord

Technology Needed

Computer with internet access, Scratch, Python, GitHub

Resource Volume

Skills

Scratch, Python, GitHub

Mgmt Support

Rebecca Dovi, Bryan Wallace

Team Support (VCU Sponsor Team)

Dr. Caroline Budwell, Dr. Robert Dahlberg, Benjamin Napier, Hunter Frostick, Dakota Brown, Seth Vickers, Kenneth Richardson

After Project Support

The CodeVA coaches will use our examples and documentation to teach VA teachers. They will be responsible for any required upkeep associated with this project. This upkeep may include updating the code and documentation to reflect updates in languages.