Scratch computing and its role in learning mathematics formula

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Abstract

Computer Science in K-12 is continuing to become more prevalent. Learning syntax and debugging can be burdensome, many teachers in K-12 use block languages to teach their students. Block languages, such as Scratch, allow students to focus on simple programming concepts and logic, and therefore, make computer programming easier and more approachable to students [2].
The Scratch Website (https://scratch.mit.edu/) has in focus the project uploaded from the children who are following the first steps of programming, using the technique of creative computing. As kids work on Scratch projects, they learn to think creatively and solve problems systematically. Children at elementary school can learn to share animations, dialogues and the dancing cat sprite can follow them to adding media and movement to a Scratch Project. Students at high school can improve their programming skills, by adding programming modules. In this way, they can create games, interactive newsletters, science simulations, virtual tours, birthday cards, animated dance contests, interactive tutorials, and more complex animations.
Scratch Computing can be used for a range of educational and entertainment purposes, from math and science projects, including simulations and visualizations of experiments, recording lectures with animated presentations, to social sciences animated stories, and interactive art and music [1].
The Scratch guide is one of the topics covered in the studies of becoming a teacher of Mathematics and Informatics, in Shkodra University. In the focus of this work is the role of Scratch Computing in understanding mathematics formula. We discuss the motives behind Scratch, the design principles that guided our development of Scratch, understanding the logic of programming and how to creatively build and collaborate and future directions in our efforts to make programming accessible and engaging for everyone. But first, to give a sense of how Scratch is being used, it is given an example from Mathematics theorems. The animation allows the user to choose the sides (α,β,γ) of the parallelepiped, to rotate the parallelepiped and to hide/show the coordinate system. By using this example, students in elementary school will understand how the formula of the volume of the parallelepiped is implemented. The authors conducted a survey to study the effectiveness of using Scratch in learning the parallelepiped formulas in elementary school, in Shkoder. The analysis of the survey will be discussed, as part of the presentation of this abstract.

Keywords: Scratch, Creative Computing, Mathematics, elementary school.

References

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