



Development of children and teenager teaching material for Programming and Platform Applications.

Luana M. S. Brito, João V. V. D'Abreu*.

Abstract

For this study, it was of interest to investigate how we could relate the basic concepts of Programming with algorithms that could be reproduced by children and teenagers. The aim is to develop more sophisticated methods for teaching Programming to the target public, based on a language they can understand, in an effort to introduce this area in the first years of academic life.

Key words:

Learning, Logo, Algorithmic thinking.

Introduction

Recent theoretical developments have revealed that it is possible to teach by using tasks or games that can not only amuse the public but also considerably contribute to the learning process. A challenging problem which arises in this domain is to teach such a complex topic, by using language and tools that kids and teenagers are able to understand. One approach to solve this problem involves the use of games and activities designed for the particular public, with the main focus of teaching Algorithm thinking, in other words, the ability to divide the problems into steps in order to reach a goal.

Results and Discussion

The experiments were performed by using booklets expected to raise the interest of people that never had contact with Programming before, and give them an opportunity to become acquainted with the topic. The booklets consisted of general tasks, same level difficulty exercises, and one part with individual challenges generated based on the profile of each student, which employs data obtained from how each one executed the tasks.

The booklet used in this work consists of the introduction, each student answer a form, used to create their profile; questions regarding the introduction part; explanation of commands that could be used throughout the activity; general exercises which could be discussed in groups; an individual challenge. We used an established application, namely Logo 3.0 to analyze the results. This software has been chosen for it uses Portuguese, which is the public's native language; and also for the visual content, that makes it easier to visualize the results of the algorithm used, and in addition to that for the prototypes that students should create afterward. The main topics approached were: Variables and Constants; Decision Structures, Mathematical Expressions; Repetitive Structures, input; Usage of the Functionality.

The visual aid and the native language significantly contributed to a fast and natural learning process. The students easily understood the purpose of the activities,

the commands, and their functionalities. In comparison with other techniques, this method has the advantage of improving learning performance, even by students who never had contact with programming before and the additional advantage resulting in a greater interest to learn more about the topic, mainly about the possibility of creating applications that could fit their individual needs.

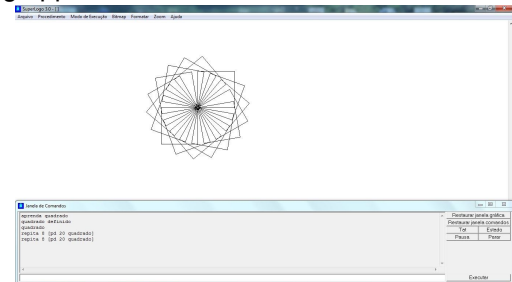


Image 1. Graphical user interface of Super Logo 3.0

Conclusions

For the current work, it is sufficient to point out that the use of the platform raised the participants' interest in further discoveries. The profiling was crucial since, during the individual tasks, it was possible to spot and practice specific difficulties faced by each student. By the end of the experiment, all the participants reached the same level and found it easier to learn more complex languages and platforms. Our research aims at expanding the field and reaching more students, in order to continue and constantly improve the method.

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