

ABSTRACT

The bachelor thesis focuses on the topic of developing pupils' algorithmic thinking through gaming projects in the Scratch development environment. The main goal of the work was to create a set of interconnected lessons (a course) in Scratch, which could be used as educational material in computer science classes to develop algorithmic thinking of students aged 8-10 years.

The theoretical part mainly addresses the concept of computational, or rather, algorithmic thinking, relying on the study of professional sources. It focuses on explaining and defining these terms, identifying the possibilities of developing algorithmic thinking with an emphasis on programming. To find further approaches to the development of algorithmic thinking, both the Czech Republic's educational plan and those of selected European countries were analyzed.

The insights gained in the theoretical part were subsequently utilized in the practical part, i.e., in creating the course itself. This course consists of ten lessons, the main content of which is project creation. To motivate students, it was decided that the projects would always be games. The lessons, besides the possible solution procedure, also contain methodological notes, which alert teachers to potential pitfalls or inform them how to present the given topic.

The set of lessons was then tested in programming club sessions with two groups of nine pupils each in the target age category. During the course, it was observed that the pupils were able to use the algorithmic concepts learned in previous lessons, suggesting that their algorithmic thinking had developed. Moreover, based on the experience gained during testing, the individual lessons were adjusted and improved.

KEYWORDS

algorithmic thinking, computational thinking, development of algorithmic thinking, educational programming languages for children, block-structured programming, Scratch, game projects, educational material