

ABSTRACT

This diploma thesis maps pupils' understanding about a functional principle of using commands along with testing conditions (IF, IF - THEN, REPEAT - UNTIL, etc.) when creating algorithms. The main aim of the thesis is to design and implement a set of lessons and a teaching approach based on a theory about learning of algorithmic concepts at primary education for pupils (aged in 9-11) with the intention of verifying a functionality of designed teaching procedures and their possible impacts on pupils' understanding. Data was collected through continuous monitoring of pupils' behavioural characteristics, progress and solution of chosen tasks, video recordings of task solving within the suggested unplugged activities, using a virtual tool Code.org for monitoring of a pupils' progress, audio recordings of interview with pupils, and photographs capturing a creation of own blocks of commands set up by a transcription from pupils' mother language into a machine language (programming language) have all been used for a verification process of the designed teaching approach. By combining the acquired data sets, adjustments of these procedures have been made in order to eliminate the most frequent problems that pupils have encountered during teaching. The case study findings revealed that it is important for correct understanding of algorithmical procedures by primary school pupils to combine learning activities in a computer platform (like Code.org) with "unplugged" ones with material aids (a set of paper cards, etc.) and to take care of reading of algorithms and interpreting them with using of another ones (lego cars, toys, etc.).

KEYWORDS

Testing conditions, programming cycles, algorithm design, programming, computational thinking, unplugged activities, Code.org