ABSTRACT

This thesis focuses on the use of educational robotics in the teaching of STEM subjects in primary school in order to deepen the relationships between computer science, mathematics and physics. The aim is to design and validate task themes based on a robotics project using Arduino microcontrollers. The tasks include 3D modelling, 3D printing, construction of robotic systems and their programming. These themes will be tested in practice through a case study implemented in a classroom with ninth grade elementary school students. The empirical part of the thesis deals in detail with the implementation of the case study, including the definition of the research questions, the formulation of hypotheses, the setting of learning objectives and the analysis of the pupils' results. Colection and analysis of data used to objectively evaluate the effectiveness and benefits of the proposed methodological materials for teaching practice. The result of this work is a set of validated themes and methodological materials that support the development of students' practical skills and integrate modern technologies into the teaching STEM subjects in primary schools. This approach contributes to enhance applied learning and prepares pupils for effective employment in modern society.

KEYWORDS

Educational robotics, STEM, Arduino, robotics, constructivism, elementary school