

# **Investigating the Effect of a Proposed Educational Robot on Students' Motivation and Learning of Thermodynamic Concepts**

## **Abstract:**

Research in Morocco shows a decrease in motivation and learning of physics subjects for Moroccan middle school students, which negatively impacts their school achievement. The present study aims to identify the effect of using educational robotics on middle school students' motivation and learning of physics concepts, particularly regarding the concept of temperature. A total of 90 first-year middle school students from a public school in Meknes, Morocco, voluntarily participated in this study. The students were divided into two groups (46 for the experimental, and 44 for the control). The study was carried out during the 2020-2021 school year. The experimental group was taught the temperature lesson using educational robotics (ER). While the control group was taught the same lesson using a conventional teaching method. Two indices were evaluated and analyzed. The index of students' achievement in acquiring the concept of temperature was measured by pre-test (diagnostic test) and post-test (formative evaluation test). The students' motivation index was measured by a Likert scale questionnaire. The data collected were analyzed using SPSS software. The post-test results of this study show that students in the experimental group perform better than the control group students. Additionally, the results of the motivation questionnaire show a considerable improvement for the experimental group. The results of the study recommend that teachers integrate educational robotics into their courses to help students achieve better results in the subject of physical sciences.

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