

DIFFICULTIES IN THE TRANSFER OF KNOWLEDGE BETWEEN MATHEMATICS AND PHYSICS IN THE RESOLUTION OF A TASK

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The relation between Mathematics and Physics cannot be dissolved (Abebe & Dirbeba, 2017). The results of different investigations (Planinic et al., 2012) with Secondary Education students (15-16 years) conclude that students do not realize that they are working with the same mathematical element when they solve tasks in a different context. The aim of this work is to identify the difficulties observed in the resolution of a task about the speed by high school students.

Knowledge transfer can be defined as the application of what you have learned in a situation to a different one (Rebello et al., 2017). The transfer of knowledge can only occur when a coherent and robust scheme has been built in the initial domain of learning. Using the theoretical framework proposed by Rebello et al. (2017), horizontal transfer occurs when students assign information read on a problem to an item of prior knowledge.

This research has been conducted with 104 students (17-18 years old) that have already studied the asked math and physics concepts. The students answered a task about instantaneous speed given the position function. Our methodological approach has been qualitative and inductive. Only 16 out of 104 students were able to solve the task (transfer of knowledge occurs). This shows the future difficulties the students will have to face in the study of STEM disciplines. The students have learnt the concept of derivative, but they fail to apply it to a statement out of the mathematic domain.

References

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