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How student teachers understand distance force interactions in different contexts.

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Summary: In this paper, we describe empirical research on the recording of primary school and preschool student teacher conceptions of the concept of distant force interactions in different contexts related to the school curriculum for this subject. For this objective to be achieved, we undertook ten semi-structured interviews with student teachers. Based on the findings from these interviews, we developed a written ten-item questionnaire that was distributed to 264 first-year student teachers at three Greek universities. The main findings of our research are that a significant number of students: (i) experience difficulty in recognizing the interactions in different contexts, and even in different cases within the same context; (ii) place the arrow representing the force on the body that exerts it and not on that which accepts it; and (iii) hold the alternative view that the larger the body interacting, the greater the force it exerts. Based on the above results, as well as in the ways in which they seem to be related, we developed hypotheses, potentially able to lead to the construction of a teaching-learning sequence, which focuses on the comprehension of force as the measure of a unified concept of interaction between two entities.

Classification: M59 C39 B52

Keywords: alternative conceptions; distance force interactions; learning in different contexts; physics education; student teachers' content knowledge; primary school teachers; empirical investigations

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