Refinement of Logico-Mathematical Intelligence in the Context of Physics Education

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Physics and Mathematics are deeply interwoven causing complexity of their curricular relationship in science education. The span of perspectives spreads from their identity to opposition. Gardner's (1983) multiple intelligences do not suggest more than one relevant category of logico-mathematical intelligence, and testing intelligence (e.g., IQ and SAT) does not distinguish between the skills required in mathematics and natural sciences. Our study investigated the interrelation of mathematics and physics in view of physics teachers. Twenty individual interviews were performed using the constructive-qualitative research method. The constructed profile of teachers' views on the virtues required in learning physics reveals the complexity of different and in a way, complementary views. Although, mathematics preparation apparently correlates with students’ performance in physics one cannot state that it univocally stipulates their success in learning physics. The particular dependence on mathematics requires refinement. It is clear that physics demands specific internal and external psychological features suggesting reexamination and refinement of the concept of logico-mathematical intelligence currently accepted as a prerequisite in learning physics. Confusing the difference between mathematics and physics in our system of education implies far-reaching distortion and shortcomings of physics education.

References