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AN ANALYSIS OF THE INFLUENCE OF THE INTERNATIONAL MASTERCLASSES HANDS ON PARTICLE PHYSICS ON THE SELF-EFFICACY BELIEFS OF PHYSICS TEACHERS

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The insertion of Modern and Contemporary Physics (MCP) topics in the high school physics curriculum has been discussed for approximately two decades in Brazil and it is already possible to observe the inclusion of some of these topics in the curricula adopted by some schools. In accordance with the guidelines contained in the National Curricular Parameters for High School (PCNEM) and the complement to this document (PCN+), the official curriculum of the state of São Paulo includes the study of elementary particles and other MCP topics among the subjects to be taught in Physics classes. However, researches shows that most physics teachers are still not addressing these topics in their classes. Teachers argue that, among other obstacles, they lack the knowledge to do so and, even those with some knowledge about these topics say they do not feel confident to teach them. In this study, we consider that one of the variables that may influence teachers' decision to accept or not the challenge of promoting innovations in teaching is their self-efficacy beliefs, that is, the subjects' beliefs about their ability to perform a given action in a satisfactory way, regardless of the outcome of that action. These beliefs gain importance as subjects try to avoid situations that cause them frustrations, and therefore, unless they believe they can perform a task satisfactorily, they have little or no incentive to invest time and energy on it. In this sense, this study aimed to analyze the influence of the participation of Physics teachers in a scientific outreach event – the International Masterclasses Hands on Particle Physics, or simply Masterclass – and in a workshop on particle physics – a related event – on their self-efficacy beliefs, aiming at the teaching of elementary particle physics in high school. To accomplish this objective, we conducted semi-structured interviews with two teachers who had already attended the Masterclass and the workshop, both organized by the São Paulo Research and Analysis Center (SPRACE). Based on these interviews, we elaborated narratives about these teachers' histories and conducted an analysis to characterize their self-efficacy beliefs and the meanings attributed by them to the participation in both events. The analysis revealed that both teachers had high levels of self-efficacy beliefs and attributed educational, instrumental and motivational meanings to the participation in these events. Given that several aspects of teacher education (such as content learning and the theoretical assumptions in which this education relies) and the availability of pedagogical resources (like learning activities, experiments and examples to contextualize the content) can influence teachers' self-efficacy beliefs, this analysis has led us to conclude that attending such events has the potential to affect teachers' self-efficacy beliefs, influencing their decisions about whether accept or not the challenge of promoting curricular innovations

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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