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Enriching Interaction in the Classroom Based on Typologies of Experiments and Mathematization in Physics Teaching

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Abstract : Changing the traditional way of using experimentation in science teaching is quite a challenge. This research results talk about the characterization of physics experiments, not because of the topic it deals with, nor depending on the material used in the assemblies, but related to the possibilities it offers to enrich interaction in the classroom and thereby contribute to the development of scientific thinking skills. It is an action-research of type intervention in the classroom, with four courses of Physics Teaching undergraduate students from a public university in Bogotá. This process allows characterizing typologies such as discrepant, homemade, illustrative, research, recreational, crucial, mental, and virtual experiments. Students' production and researchers' reports on each class were the most relevant data. Content analysis techniques let to categorize the information and obtain results on the richness that each typology of experiment offers when interacting in the classroom. Results show changes in the comprehension of new teachers' role, far from being the possessor and transmitter of the truth. Besides, they understand strategies to engage students effectively since the class advances extending ideas, reflections, debates, and questions, either towards themselves, their classmates, or the teacher.

Keywords : physics teacher training, non-traditional experimentation, contextualized education, didactics of physics
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