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THE SPECIALIZED KNOWLEDGE OF A NEW GENERATION OF MATHEMATICS TEACHERS UNDER STEM TRAINING

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This paper aims to analyse the results from a case study made up of a new generation of future mathematics teachers participating in STEM experiences. Four students analyse resolution practices in everyday situations under a STEM approach to provide a broad understanding of the practices and knowledge of the group of future teachers who teach mathematics. Finally, the future teachers reflect the complexities of the processes and overlapping moments in the planning, implementation, and discussion of the mathematics lessons under a STEM model.

MATHEMATICS KNOWLEDGE FOR STEM PRACTICES

International research refers to STEM training as the dialogue between science, technology, engineering and mathematics. This perspective promotes, above all, the interdisciplinarity of knowledge. New generations of mathematics teachers are trained in different universities where, despite the various reforms to the curricula, they continue to delve into fragmented knowledge with little (or nothing) related to other sciences. On the other hand, the interdisciplinary and multidisciplinary training of new generations of professionals is proposed, facing the worrying lack of multidisciplinary academic preparation (Sanders, 2012). Among the main objectives of STEM training, is to motivate disciplinary and transferability domain in other areas; likewise, encourage (them) to build their own knowledge of the world around them and to foment reflective decision-making based on critical thinking. This experience uses the marshmallow challenge (Coakley *et al*, 2014) that was proposed to be integrated as an experience during the students' basic and secondary education. Therefore, prospective teachers will have various strategies to teach mathematics to their students, under the construction of joint hypotheses. For example, what polygon may they use at the base of the tower is a square or a triangle? What relationships exist between the number of spaghettis arranged at the base and the height of the tower? In this case, the interpretive specialized knowledge of the mathematics teacher intervenes, since it is from here that the construction of an advanced repertoire of questions begins, which will be nourished more and more as these types of experiences become part of their daily training as future teachers. If we deprive math teachers, or any of the STEM areas, of STEM experiences, we will be able to continue reproducing the model that mathematics is an arid subject that is made up of small islands that respond to the thoughts indicated in curricular standards and we will continue reproducing the knowledge segmentation model (Acevedo-Rincón, 2018).On the other hand, it is not unknown that the mathematical knowledge of a mathematics teacher must be solid because only in this way they will be able to find internal relationships between mathematical knowledge, which will be planned and rethought when transforming them into concepts typical of school mathematics. In the latter, it is where the STEM training is located, where it is evident, not only mathematics that serves the other areas but feeds on them to provide tangible experiences to students in the school stage.

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