

VALIDATION OF AN INSTRUMENT TO MEASURE FUTURE TEACHERS' CONCEPTIONS OF MATHEMATICS TEACHING AND LEARNING

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Teachers' conceptions of mathematics teaching and learning have a significant impact on their knowledge and practices. Besides, given the increasing relevance of video analysis for teacher training, it becomes pertinent to determine whether pre- and in-service teachers' conceptions of mathematics teaching and learning bias classroom observations. Measuring teachers' conceptions still represents a challenge. Teachers find it difficult to describe their own conceptions, and inferences from external observations might result in glaring inconsistencies. Besides, existing instruments to measure future teachers' conceptions of mathematics teaching and learning have not been validated or have been used in empirical studies with small sample sizes.

Analysing teachers' conceptions of mathematics teaching and learning from their instructional tendencies is considered as a reasonable alternative. From this perspective, Climent (2005) developed the CEAM instrument (Spanish acronym of Conceptions about Teaching and Learning Mathematics) which consisted of a set of items aligned according to four instructional tendencies (traditional, technological, spontaneous, and investigative). This instrument has been recently adapted so it can be applied as a Likert-scale questionnaire and answered by individuals without teaching experience (Rodríguez-Muñiz et al., 2022).

Therefore, the original CEAM instrument was adapted to be applied to a large sample of future teachers and provided empirical evidence about their conceptions of mathematics teaching and learning. With another sample of undergraduate students from different bachelor's degrees: primary education, mathematics, and the education itinerary in psychology, a Confirmatory Factor Analysis validated the instrument and endorsed the assumption that future teachers' conceptions of mathematics teaching and learning can be described in terms of several combinations of instructional tendencies. This result also helped to thoroughly explore the multi-dimensionality of some of the items from the original instrument, and the complex nature of conceptions.

References

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