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Batanero, Carmen; Contreras, José M.; Díaz, Carmen; Sánchez, Ernesto

Prospective teachers' semiotic conflicts in computing probabilities from a two-way table.

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Summary: The aim of this research was to assess the common knowledge of elementary probability in a sample of 183 prospective primary school teachers using an open-ended task, where teachers had to compute simple, compound and conditional probability from data presented in a two-way table. We base on theoretical ideas from the onto-semiotic approach to perform a semiotic analysis, in which we describe the mathematical objects and processes involved in the solutions of the tasks. Participants in the sample showed a weak common knowledge to compute simple, compound and conditional probabilities from a two-way table: they confused simple, compound and conditional probability; exchanged condition and event in conditional probabilities; confused probability and frequency or the union of events with the intersection. The semiotic analysis is used to provide an explanation for these errors in terms of semiotic conflicts. This list of difficulties expands what was found in previous research and may be used to reinforcing the preparation of prospective teachers to teach probability.

Classification: K59

Keywords: probability theory; teaching; teacher education; primary school teachers; subject content knowledge; research; teacher knowledge; knowledge level; simple probability; compound probability; conditional probability; educational diagnosis; assessment; 2×2 tables; semiotics; semiotic conflicts
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