

FUTURE ELEMENTARY AND KINDERGARTEN TEACHERS' KNOWLEDGE OF STATISTICS AND OF ITS DIDACTICS

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This poster addresses prospective teachers and infant educators' knowledge of statistics and of its didactics. The poster presents the results of a pilot test made with a questionnaire given to two classes of students. Some results of the questionnaire are presented and some conclusions are made regarding the improvement of their training.

Keywords: statistical knowledge, professional development

INTRODUCTION

Most teachers do not feel able to teach statistics at the early years of schooling. Given their weaknesses in this field, they avoid teaching it or teach it in a superficial way. Nonetheless, in Portugal, the new mathematics curriculum indicates that statistics should be taught since the first years of school so that students can deal critically with the information around them. Therefore, there is a need to improve the professional development to prepare teachers to work accordingly to the curriculum. It is with this idea in mind that I propose to diagnose the prospective teachers' knowledge of statistics and of its didactics at the School of Education of Santarém.

The poster includes part of this investigation, since it regards only the results of a pilot test made with a questionnaire. 26 students in their 3rd and last year of the teachers' program answered the questionnaire. The questionnaire, composed by 14 questions, included both questions concerning statistical knowledge and concerning their knowledge of didactics of statistics, covering primarily the topics: organization of data, statistical measures and statistical investigations. A quantitative analysis of the answers to the questionnaire is presented and some conclusions are elaborated.

THEORETICAL FRAMEWORK

Prospective teachers usually have weak or no training in statistics (Batanero et al., 2004), as well as in statistical pedagogy (Froelich et al., 2008). However, as Shulman (1986) underlines, to teach, it is essential to master the subject and the way of teaching it. In his perspective, the knowledge needed to teach a certain subject – “pedagogical content knowledge” (PCK) – includes not only knowledge of the subject, but also examples, applications, models and representations, connections between topics, etc.. This particular poster uses the Curcio's (1987) components of graphic comprehension (reading the data, reading between the data and reading beyond the data), Mokros and Russel's (1995) conceptions of average (as mode, as algorithm, as reasonable, as midpoint and as balance), as well as Monteiro's (2009) different properties of average.

FINDINGS

A student answered, in average, to 70% of the questionnaire and left the other 30% blank. This can be related to the fact that it was the final of the year when they answered it or may be consequence of their statistical knowledge. Regarding the organization of different types of data, these students revealed more difficulty with the organization of quantitative continuous data. An interesting fact is that 7 students, when asked to make generalizations based on a graphic representation, used data from their own experience. Concerning the statistical investigation implementation in class, the majority of the students who answered this question stated a theme (recycling) and a survey or questions to be answered, which is probably related to their own experience in class as learners. Only one student was able to briefly discuss the class implementation of the statistical investigation. All the others connected the task to doing the investigation itself.

CONCLUSION AND FURTHER RESEARCH

The most interesting conclusion of this pilot test was that students are stuck to their own experience as learners when thinking about teaching. They are not able to go further on the planning of a lesson, stating only tasks that they did during their training. This may be an indication that students need more diverse experiences as learners, where afterwards they discuss its usefulness for students and its implementation in a classroom.

The actual poster presented at CERME7 may be obtained from the author by emailing her at raquelfms@gmail.com.

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