PROSPECTIVE MIDDLE SCHOOL TEACHERS' KNOWLEDGE ABOUT DATA ANALYSIS AND ITS APPLICATION TO TEACHING

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ABSTRACT

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The purpose of the study was to identify the important aspects of statistical knowledge needed for teaching at the middle school level and to assess prospective teachers' conceptions and misconceptions of statistics related to teaching data analysis. An analytic study of the current literature, including state and national standards, was conducted to identify the important aspects of statistical knowledge for teaching. A written assessment instrument was developed and administered to a sample of 42 prospective middle school teachers. The purpose of the instrument was to gather data in order to describe teachers' conceptions for teaching data analysis and statistics. A subset of the sample (n = 7) was interviewed to provide deeper insight into their conceptions and to assure reliability of the instrument.

Results show that state and national standards differ greatly on their expectations of what students and teachers should know about data analysis and statistics. The variation is also large for the emphasis or importance given to the content. The average emphasis of all the documents reviewed is given to the selection and proper use of graphical representations of data, and measures of center and spread. Important aspects of knowledge applied to teaching are proper selection and use of teaching strategies and inferring students' understanding from their work and discourse.

Prospective teachers that participated in this study performed better at the level of pure statistical knowledge than at the level of application of this knowledge to teaching.

In particular, they showed abilities on reading, interpreting, and constructing graphical representations, and computing measures of center and spread. Difficulties were shown in judging students' comments and identifying students' mistakes.