EXPLORING PRESERVICE TEACHERS’ UNDERSTANDING OF MEASURES OF CENTRAL TENDENCY (154 pp.)

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The purpose of this study was to gain a better understanding of Preservice Mathematics Teachers’ (PSMTs’) mathematical knowledge of Measures of Central Tendency (MOCT), and construct models of their conceptions and non-conforming understandings related to MOCT. Conceptions refer to deeper understanding of mathematical concepts, and relate to previous knowledge or understanding. On the other hand, non-conforming understandings refer to type or types of conception(s) that do not conform to those typically accepted by the discipline as mathematically valid. For this study, I developed a web based virtual manipulative, and used it as a mathematical model during the teaching experiment. Teaching experiment is a type of research methodology that is often used in mathematics education; it helps researchers to understand the mathematical concepts and operations of participants. The virtual manipulative is a number-line web application, and I call it Interactive Statistical Number-Line (ISNL). The ISNL is used here as Specialized Content Knowledge (SCK) to help participants of this study to understand the concepts of MOCT and deepen participants understanding. I used an individual teaching experiment to guide the research study. The research consisted of 9 episodes, 2 participants, and an observer-researcher whose role was to observe, document, and analyze each teaching episode. Specifically, I explored participants’ Common Content Knowledge (CCK) and Specialized Content Knowledge (SCK) related to MOCT and modeled their understanding using the ISNL.