Qualitative data analysis of specialized knowledge –
The MTSK Model - Numbers in Infant Education

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Abstract. A cross-sectional study of qualitative typology aims to unveil the knowledge of teachers of early childhood education about the formation of the number concept according to the MTSK model - The Mathematics Teacher’s Specialized Knowledge (Carrillo et al, 2017) adopted as the data analysis instrument in mathematics teaching. The data were produced from a focus group (collective interview) with audio recordings sessions with 4 teachers. In Brazil the infant education teacher is usually not a graduate in mathematics; their training takes place during the exercise of the profession in the form of continuing education. The MTSK model divides the specialized knowledge of the mathematics teacher into six sub-domains grouped into two domains: didactic knowledge and knowledge of the mathematical content itself; From mathematical knowledge: i) KoT (of topics); ii) KSM (structure of mathematics); iii) KPM (practice of mathematics); and didactic knowledge of the contents: iv) KFLM (features of learning mathematics); v) KMT (knowledge of mathematics teaching) and iv) KMLS (mathematics learning standards); recently the model included a third domain which covers teachers’ beliefs about mathematics and its teaching and learning, even though this third domain is not of interest in this research. The MTSK is used in the perspective of Bardin’s Content Analysis – AC (Bardin, 2016), including a priori categorization, in said domains and subdomains. This study examines whether, in this particular case, the answers of the teachers when asked in the focus group - since classes and other situations can be object of analysis - have signs\trace (I), Opportunities (O) or Evidence (E) of specialized Didactic Knowledge and/or mathematics proper. The focus group consisted of 3 basic questions and a writing that dealt with the means they used to teach numbers, situations, necessary preconditions and description of activities. In this communication we intend to present results of this research, whose theoretical is based on renowned authors of mathematics teaching, as well as current neurosciences. The present research analyzes the concept of number and how much it has been a fundamental element in the development of logical-mathematical thinking in the first years of schooling according to the analysis of the Specialized Knowledge of the teacher. As results we find that the teachers demonstrated a certain fragility in terms of the domain of mathematical knowledge itself. We only find signs\trace (I) of KoT (knowledge of mathematical themes); signs\trace (I) of knowledge of the mathematical structure - KSM; and signs\trace (I) of KMT (knowledge of the teaching of mathematics - games), and only the latter refers to the didactic knowledge of the area.

Keywords: Qualitative method of Analysis; Mathematics Education; Teaching; Numerization
References
