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3RD GRADE STUDENTS' CONCEPTUAL DEVELOPMENT PROCESS DURING THE APPLICATION OF INVERSION PRINCIPLE TO THE PROCESS OF SOLVING ADDITIVE PROBLEMS

ABSTRACT

Inversion or understanding inversion principle of the arithmetical operations forming the basis of the flexibility of the addition-subtraction, multiplication-division is important. For this reason, the principle of inversion and arithmetical strategies used in solving problems related to this principle is also important to explore to use inversion or not. In the development of mathematical thinking, children's understanding and use of the principle of inversion is significant relationships between different types of information. It's also a tool to understand the potential problems that are important for the pedagogy of mathematics.

In this context, the purpose of study, this is figure out third grade elementary school students with additive relationships (addition-subtraction) problems when applying the principle of reverse spend to investigate the mental processes of operation. The study sample includes two girls and two boys aged 9 from third grades from primary school in the central town of Izmir.

The study was done to investigate 2 girls, 2 boys and third grade students (4) in same elementary schools in İzmir. They were asked for their views. Although a qualitative research design was mainly used, quantitative data was also used to cover the results.

Sample was taken from teachers' opinions and students took WISC-R intelligence tests performed by the experts in Hatay Guidance and Research Center (RAM). The students participating in the study sample were determined to have normal intelligence with WISC-R Intelligence Test. Clinical interview method was used in the study. With this method, the students applying the principle of inversion problems of additive relations of mental processes and process information about how to construct the reverse was observed. In the analysis of this method the students' notes, research notes and video recordings were used. Questions used in clinical interview are divided into five groups as: concrete, semi-abstract, verbal

expression, symbolic and illustrated card problems. Questions in all groups were prepared in two types: standart($a + b - c$) and inversion problem ($a + b - b$). During these interviews, students were asked to explain what and why they thought during solving the problem prepared in five types. According to research results, by going concrete period to abstract period, the child exhibits reduction on reversal strategy.

Keywords: Arithmetic; Addition; Subtraction; Inversion; Problem Solving