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GRADE 3 AND 4 STUDENTS' DIFFERENT WAYS OF DISCERNING NUMBER PATTERNS

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Students understanding of number sequences and visual patterns have previously been described in different reports. The problems encountered have been characterized as lack of different strategies for finding structures in various patterns (Hargreaves, Shorrocks-Taylor, Threlfall, 1998) and difficulties to describe the visual patterns (Warren & Cooper, 2007). However there are only a few studies in the early grades which focus on what pattern in number sequences and visual patterns the students really discern. The aim of this study is therefore to describe young students' qualitatively different ways of discerning number sequences, and to identify features critical for them being able to generalize the patterns.

In a set of 50 students (grade 3 and 4) a pen-and-paper test on different number patterns were used to select the informants. Nine students with qualitatively different answers to the test were then selected for semi-structured video-recorded interviews. The interviews were verbatim transcribed and analysed in two stages. The analysis was made within the framework of phenomenography and variation theory (Marton & Booth, 1997). In this process, a variation in what aspects had been discerned and focused on emerged. Based on the results, the qualitative differences between the perceptions helped identify the aspects critical for discerning number patterns.

In brief, six qualitatively different categories could be discerned from the data. These are described in detail on the poster. As an example, one of the categories "Relationship between some parts" shows that one way the students find a pattern in a sequence is to focus on *some* of the numbers, or parts, but not the entire given pattern. In addition, critical feature of discerning patterns could be identified as differences between the different ways of discerning the patterns. These results have implications for what learners in a teaching situation need to be able to discern, in order to develop a more comprehensive and differentiated way to describe number patterns.

References

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