

MULTIDIMENSIONAL ASSESSMENT OF FLEXIBILITY – AN APPROACH

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Creativity is usually measured in terms of fluency, flexibility and originality. For the operationalization of these components various suggestions can be found in the literature which all have in common the calculation of a summarizing numerical value (Levenson et al., 2018). At least for flexibility which describes the variety of solutions and approaches, this is accompanied by greater difficulties because this diversity is not always easily assessable and these assessments are not always binary decisions. This challenge can arise especially in (geometric) invention problems. In order to describe flexibility in dealing with such problems, we propose a multidimensional approach and concretize this idea for the invention of figural patterns.

In a recent study with 24 third graders, each student was asked during a semi-standardized individual interview to use cubes for inventing as many different figural patterns consisting of four figures as possible. The first figure should contain one cube, the second figure five cubes (Assmus & Fritzlar, 2022). To describe the diversity of the invented patterns, different dimensions could be identified using qualitative content analysis: Types of mathematical relations (e.g., constant increase), shapes (e.g., cross, bar), building principles (e.g., building in multiple layers), number of extension directions (e.g., extension in four directions), focus of the student's oral descriptions (e.g., number). For each interview, the number of different states was determined for every dimension. Based on these five values, a differentiated *flexibility profile* was created for the interviewed student and visualized in a radar chart (Figure 1). This representation facilitated a simultaneous consideration of all dimensions. The size, the shape and the position of the spanned area made it possible to draw conclusions about *the extent and the way* in which a student had shown flexibility in inventing figural patterns.

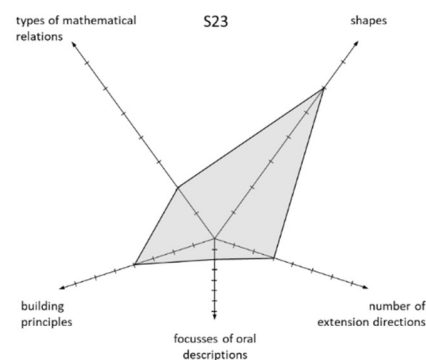


Figure 1: Radar chart

References

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