

COMPARING THE INFLUENCE OF TASK CONTEXT ON THE PERFORMANCE AND MOTIVATION OF TALENTED AND ORDINARY STUDENTS

Carlos Segura, Irene Ferrando, and Jaime Castillo

Universitat de València

Motivation, seen as the preference for doing or not an activity, is a key element to be considered when designing mathematical tasks (Rellesman & Schukajlow, 2018). In the case of mathematically talented students, challenging tasks encourage them to develop deep mathematical reasoning (Benedicto et al., 2018). Modelling tasks are complex and formulated in a real context. These tasks are not common in activities aimed at talented students (e.g., IMO problems). We present part of a research that aims to study the influence of the task context on student motivation and performance, comparing mathematically talented students with a group of standard students.

We adapted Rellesman and Schukajlow (2018), with tasks with common mathematical content and diverse levels of connection to reality: intramathematical, verbal and modelling problems. We have collected the productions of 22 students participating in mathematical talent programme EstalmatCV (13,8 years old) and 29 productions of ordinary students (13,6 years old). This is a mixed study in which, first, the performance of the participants is studied from a qualitative analysis of the resolutions and, second, data is collected on affective factors related to motivation: enjoyment, boredom, interest and value. Results confirm a significantly better performance by the talented students on all tasks. For these students, modelling problems are the most difficult, while for ordinary students intramathematical problems are equally difficult. Motivation is significantly higher in the talented group than in the ordinary group only for modelling and intramathematical problems. Differences between groups are not significant in the verbal problems. We conclude that the ordinary students feel more motivated towards verbal problems (the most accessible), whereas those talented show more motivation for modelling problems, which are the most challenging ones.

Acknowledgement

MCIN/AEI/10.13039/501100011033 and ERDF: PID2020-117395RB-I00

References

- Benedicto, C., Gutierrez, A., & Jaime, A. (2018). Analysis of mathematically gifted students' answers to cognitively demanding school tasks. In T. Bergqvist et al. (Eds.), *Proceedings of PME42* (Vol. 5, p. 18).
- Rellesmann, J., & Schukajlow, S. (2018). Do students enjoy computing a triangle's side? Enjoyment and boredom while solving problems with and without a connection to reality from students' and pre-service teachers' perspectives. *Journal für Mathematik-Didaktik*, 39(1), 171-196.