

USING IMMERSIVE VIRTUAL REALITY WITH NEOTRIE TO PROMOTE STUDENTS' CONCEPTUALIZATION OF QUADRILATERALS

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Current trends in geometry teaching and learning are emphasizing spatial reasoning, the geometry of transformations and the active construction of meaning, including the composition-decomposition of figures, spatial orientation, and the mental comparison and manipulation of two- and three-dimensional figures (Sinclair & Bruce, 2015). In this regard, the recent development of three-dimensional dynamic geometry immersive virtual reality software (3D DGS IVR) opens new interest focus on how to enhance these aspects, although more empirical studies are still lacking (Rodríguez et al. 2021).

This research aims to examine the contextualization of quadrilaterals by primary school children using a 3D DGS IVR called Neotrie. We are carrying out a teaching experiment with 17 students (2 fourth graders, 7 fifth graders and 8 sixth graders). Five lessons have been designed to study quadrilaterals from projections of a variety of prisms, which children need to choose and manipulate in order to identify and analyse the different types of quadrilaterals. In one hour and a half lessons, the students work with Neotrie in small groups. All sessions are being videotaped. To assess the students' quadrilaterals conceptualization, we use a pre-post-test and a qualitative observation.

The early results show that the students' motivation has been increased, as well as their development of figural, instrumental and discursive genesis (Kuzniak et al., 2016). Consequently, it appears that 3D virtual immersion has a positive impact on the development of a complete and rich geometrical work on the conceptualization of quadrilaterals. In any case, lesson design and instruction need further research. Further results will be discussed in detail in the presentation.

Acknowledgement

This research was funded by Junta de Andalucía grant PIV-055/21

References

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