

High school mathematics teachers' learning experiences during a professional development intervention aimed at improving their understanding of functions using *GeoGebra*

Mathematics is a compulsory high school subject in Namibia. Teaching and understanding the key concepts of the mathematics curriculum (specifically algebra), is a challenge due to various misconceptions and errors. Integrating the use of information and communication technologies (ICTs) will improve the understanding and teaching of mathematical functions. However, successful integration depends on providing teachers with learning opportunities in using ICTs.

This research investigated ten high school mathematics teachers' learning experiences of using *GeoGebra* to understand mathematical functions. The study was conducted in the Ohangwena region in Namibia and grounded on the interpretive paradigm. During five workshops of 2-3 hours, I guided the teachers in exploring different activities related to multiple representations of mathematical functions while they interacted with a set of *GeoGebra* activities. Multiple methods were used to collect data; namely, semistructured interviews, focus group interviews, audiotaped discussions, observations, and field notes.

A qualitative analysis of the data revealed that teachers benefited significantly from the use of *GeoGebra* as a mathematical digital boundary object (MDBO). The research also found that *GeoGebra* affords fast and consistent feedback and that teachers need more opportunities to distinguish between the practical and perceptual use of *GeoGebra* in i.a. linear and quadratic functions.

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