

THE INSTRUMENTAL GENESIS IN THE DEMONSTRATION OF THE PYTHAGOREAN THEOREM

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Using the graphing calculator, we developed a teaching experiment that allowed to demonstrate the Pythagorean Theorem by two processes: through the similarity of triangles and later with the area of the squares built on the sides and the hypotenuse of a triangle rectangle.

We seek to understand the instrumental genesis (Rabardel, 1995) played by the mediating artifact, graphing calculator, in the student activity system (Engeström, 2001), developing use schemes and instrumented action schemes (Drijvers & Trouche, 2008).

Using a methodology of qualitative research of an interpretive nature, the experiment was realized in the school year of 2017/18, in an 8th year class, with 23 students. In this communication we will discuss the performance of two students. The techniques used to collect the data were based on students' written reports, direct observation by the researcher and images of the graphical representations of the calculator.

The dragging technique inherent in the dynamic geometry software of the graphing calculator facilitated the construction of mathematical knowledge because it allowed the students to verify that their conjectures were confirmed in other triangles and squares of different dimensions. In resolving the tasks, the students showed use schemes and instrumented action schemes. In some situations, the instrumented action schemes created by students later became use schemes for these same students (Rabardel, 1995). In the presentation, further results will be discussed in detail.

References

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