NUMERICAL METHODS

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ABSTRACT

This work is based on the theoretical framework of Godino and collaborators' Ontosemiotic Approach (OSA), analyzing the didactic adequacy of a didactic intervention in the learning of the themeedson.cruz@ifpa.edu.br "Curve fitting and interpolation" in a class of 4th-year students of higher education in Mathematics (14 boys and two girls) of the Federal Institute of Education of Pará —IFPA, Campus Belém (Brazil).

In the first stage, the students' errors and difficulties (semiotic conflicts) were identified in works described in the literature, and an initial didactic intervention was remote teaching. In the second stage, a didactic intervention was implemented using a script designed for learning numerical calculation with technologies (free computer software - Octave, spreadsheet, and free Android apps for cell phones and tablets).

This work presents an implementation of the didactic intervention in a numerical calculus course. A qualitative perspective and an interpretive paradigm were used to detect the didactic intervention's didactical suitability.

Based on the students' results analysis, the didactic suitability of the didactic intervention carried out in the Mathematics degree class was characterized. It was concluded that there was high didactic suitability for the epistemic (problem situations, language, rules, arguments, and relationships), emotional (attitudes, affections, and motivations), and interactional (dialogues, interactions, and communications) components, medium/high didactic suitability for the cognitive (proximities) and mediational (resources - guiding task and technologies, as well as time) components and, finally, the didactic suitability for the ecological facet (adequacy of the curriculum, in particular) was medium.

In short, the overall didactic suitability of the "Curve fitting and interpolation" classes was considered high since they managed to overcome many semiotic conflicts detected in this topic, both in the previous remote intervention and the literature.

The epistemological and cognitive components were balanced in these presential classes. In addition, the face-to-face environment favored observations of the students' gestures (emotions and attitudes) in these presential classes, access to technological tools, the intense dialogue between students and student/teacher in explanations and carrying out tasks (individual and group) contributed to improvements in the affective, interactional and emotional components.

We also observed the good relationship and interest of the students in the class with the objects of the subject under study and their technological applications (scientific and technological), which highlighted the mediational facet and, indirectly, boosted other components.

***K*eywords** Numerical Analysis · Technology · Ontosemiotic approach · Didactic suitability

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