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Didactic and theoretical-based perspectives in the experimental development of an intelligent tutorial system for the learning of geometry.

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Summary: This paper aims at showing the didactic and theoretical-based perspectives in the experimental development of the geogebraTUTOR system (GGBT) in interaction with the students. As a research and technological realization developed in a convergent way between mathematical education and computer science, GGBT is an intelligent tutorial system, which supports the student in the solving of complex problems at a high school level by assuring the management of discursive messages as well as the management of problem situations. By situating the learning model upstream and the diagnostic model downstream, GGBT proposes to act on the development of mathematical competencies by controlling the acquisition of knowledge in the interaction between the student and the milieu, which allows for the adaptation of the instructional design (learning opportunities) according to the instrumented actions of the student. The inferential and construction graphs, a structured bridge (interface) between the contextualized world of didactical contracts and the formal computer science models, structure GGBT. This way allows for the tutorial action to adjust itself to the competential habits conveyed by a certain classroom of students and to be enriched by the research results in mathematical education.

Classification: D30 G40 U50 U70 R20 C30

Keywords: mathematical education (didactics of mathematics); intelligent tutorial system; mathematical competencies; computer science models (informatics); geometry learning; dynamic geometry software; student-milieu cognitive interactions

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