

INSTRUMENTAL GENESIS OF GRADE 10 STUDENTS LEARNING TO USE DYNAMIC 3D GEOMETRY SOFTWARE

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Even for students who master dynamic plane geometry software, learning to use dynamic 3d geometry software (D3dGS) is not easy (Hugot, 2005). This is a quite recent type of software that has scarcely been approached from the instrumental genesis (Flores, 2009). We present part of the results of a research project aimed to investigate aspects of the learning of D3dGS by students while solving 3d geometry tasks. To analyze students' learning and actions, we adopted an instrumental genesis approach (Rabardel, 1999). Our research objectives are to identify and analyze i) difficulties of interpretation and use students have to manage points, lines, planes, and solids in Cabri 3D, ii) difficulties they have while dragging to manage those objects, and iii) possible schemes developed by students in these instrumented tasks.

The subjects were a classroom group of eleven grade 10 students using Cabri 3D to solve a set of tasks designed to help them learn to use the software. Our analysis of students' interactions with the software is based on the information that students produced while they were solving instrumented activities (audio recording of conversations and screen recording of actions on the computer).

Our main conclusions are that students have difficulties using Cabri 3D mainly when i) objects move out of the screen, ii) points cannot be dragged out of the base plane, iii) students have to change their viewpoint (glass ball), and iv) they do not take profit from on screen feedback (help and message windows), but iv) adequate instrumented tasks may help students to overcome their difficulties by developing schemes of use and inducing instrumentalization processes to take place.

References

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