Contribution of a computer algebra system (CAS) in the solving of problems in geometry with the help of an emerging tutorial system

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This communication aims at showing how geogebraTUTOR, an interactive tutorial system that is destined to support the learning of geometry at a high school level, would benefit from the use of a CAS within its tutorial actions for the solving of proof problems in geometry. Our matter starts by situating the actions of the tutor in regards of the Learners Iterative Model (LIM) in order to mobilize two different sources of discursive messages. The first compares the actions of the student to a group of structured reasoning processes and the second rests on classic algebra reasoning methods. Thus, the notion of discursive expansion, which consists of calculations and of verbal reasoning within the learners strategies, generalizes itself to a mode of expansion that admits figural expansion in unison with the significant actions at the interface of the tutorial system. Moreover, thanks to the possible bridge between a CAS and an Automatic Deduction System (ADS), we tackle the idea that all creation of a formal geometry model is likely to support the tutorial system in its management of the valid shortcuts within the LIM.