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The potential of CAS in promoting changes in teachers' mathematical knowledge, practices and conceptions

This presentation will discuss a study aimed at providing plausible answers to the following questions:

- In which ways do middle school mathematics teachers take advantage of the algebraic transformation facilities offered by a CAS?
- In which ways does the use of CAS influence teachers' mathematical knowledge?
- In which ways do mathematics teachers change their practices as a result of using CAS in their teaching?

From the beginning of the study the teachers seemed to be convinced of the potential of CAS facilities to stimulate their students to explore, put forward and test mathematical conjectures. At this point it seemed interesting for the aims of this study to investigate why they also seemed to be reluctant to use those CAS facilities to carry out algebraic transformations. During the interviews it was found that teachers' reluctance was due to the value they gave to students' learning of algebraic transformation rules by paper-and-pencil techniques. However, they acknowledged that most of their students learn the algebraic algorithms meaninglessly.

I will discuss how teachers changed their view during the study and found how to take advantage of CAS in order to help their students learn in a more meaningful way such notions as how to simplify similar terms within an algebraic expression, the laws of exponents, and some non-conventional strategies to factor polynomial expressions "without making their students become key pushers".