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Rethinking representation registers and communication when teaching mathematics with symbolic calculators

The possibility of easily combining numerical, graphical and symbolic representations has contributed to legitimise the use of symbolic calculators in the teaching of mathematics. Professors who integrate these tools in their teaching recognize the value of multiple representations for supporting conceptual understanding. Yet, when it comes to problem solving by students, some of these teachers set up mechanisms that impede the use of registers other than the symbolic, or that result in the masking of technical work done with the tool in written solutions.

Based on examples taken from the first calculus course at École de technologie supérieure, we will present situations which illustrate and explain some of the tensions and paradoxes that are generated by the introduction of symbolic calculators in mathematics classes. We will then propose strategies which make it possible to move beyond these oppositions towards a greater control in the development of an instrumented mathematical practice.