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**From calculus to dynamical systems through DGS and CAS.**

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Summary: Several factors have motivated the use of CAS or DGS in the teaching-learning process, such as: the development of new technologies, the availability of computers, and the widespread use of the Internet, among others. Even more, the trend to include CAS and DGS in the curricula of some undergraduate studies has resulted in the instruction of the software that must be used in the teaching process. The purpose of this paper is to explore the possibilities of the use of CAS and DGS in higher education. We propose a new approach presenting four possible uses in and out of the classroom, in order to encourage teachers and students to use them in some topics related to variational thinking: (i) to assist in the mathematical reasoning to identify mathematical expressions; (ii) as an aid to understand concepts; (iii) as a didactic resource for self-learning; and (iv) as a facilitator for the recognition of data from 3D drawings. Based on Piaget's and Bruner's cognitive theories, we suggest the use of apps which could be employed to improve the comprehension of selected mathematical topics, to allow students to acquire the mathematical competencies to better understand the concepts involved in them, as well as to promote the development of variational thinking.

*Classification:* U70 I10

*Keywords:* use of technology; dynamic geometry software; computer algebra system; calculus; variational thinking

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