GRAPHIC REPRESENTATION AND INFINITE PROCESSES: THE DEVELOPMENT OF ASYMPTOTE NOTION

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When thinking about academic learning it is possible to distinguish in a learning episode how well a didactic structure is posed to represent an important factor in learning outcomes on the one hand; but on the other, just as important as the former, the cognitive engagement type: how tough is a learning task considered by a student. Their epistemic beliefs, learning and collaborative skills are other essential group of factors that will determine the effective learning quality. So, in a time when academic success is an imperative development issue for individuals just like for social groups, it becomes a major task to understand interactions between cognitive, communicative and social aspects involved in academic development. So, it has turned out to be of major importance to shed some light on how cognitive, communicative and social factors interact in educational processes, so that students become active agents of their own development, making things happen the way they want intentionally (Bandura, 1999). Thus, in order to evaluate the way agentive attitudes of economy students of Chapingo University in Mexico take place while solving calculus problems with the help of a graphic tool in GeoGebra, we evaluate the metacognitive process of conceptualising asymptotes in theoretical approaches to practical solving problems. This graphic tool allows students to change through sliders settled in the screen the parameter values of functions of the type: f(x)=(ax^2+bx+c)/(dx+f) in an interactive manner, so they can explore interaction between parameter and graphic representation, algebratic solutions and how these solutions are represented in the graphic model, so they could inspect every element of theoretical approach to the problem presented. Therefore, research interests were conducted in two directions: the first one was to assess the didactic tool in the way that allows students investigate the rightness of their own conceptions and try new ones, and the other one was to assess the students' learning agency in terms of self-organizing, proactive, self-reflective and self-regulative skills through collaborative and experimental learning tasks, searching to answer theoretical questions about the meaning and utility of concepts around asymptotes and the limit of a function. In order to do this, 14 pair of economy students were asked to participate in solving two realistic tasks where the limit notion was involved, and aside to the numeric solution, they had to explain how asymptote and limit conception participate in these specific problem solutions. They were also asked to answer one self-reported learning skill and one epistemic belief inventory. We will describe how some pairs argued that the computational tool allowed them to understand in a different way their theoretical approach to the practical specific solution in the task. In addition, in relation to academic agency we will describe interaction between test data, task development and pair discussions and arguments.