

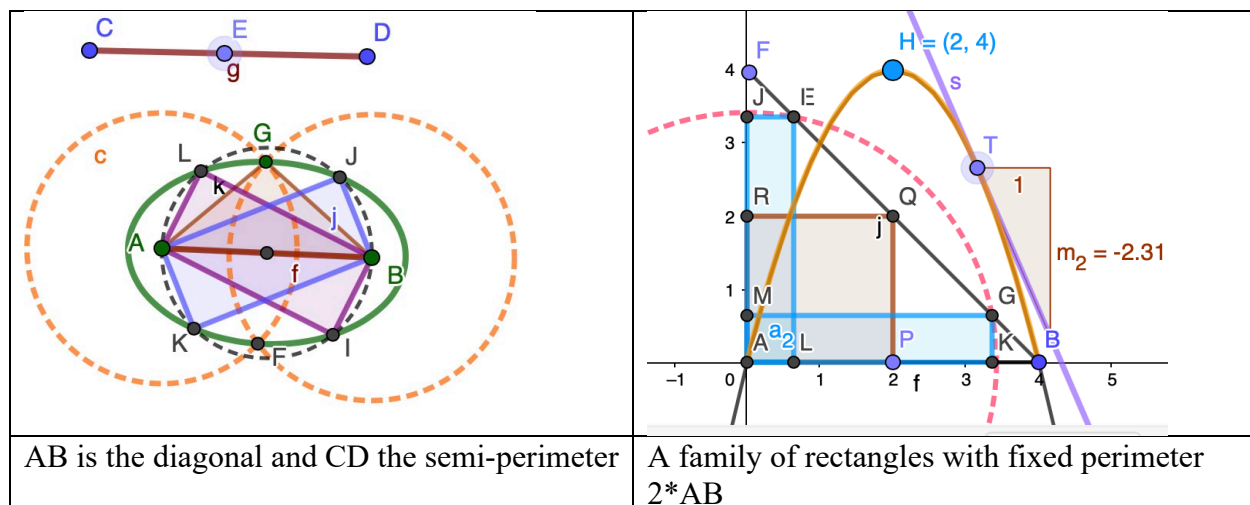
Characterizing and Supporting Hybrid Learning Scenarios to Foster Students' Development of Mathematical Concepts and Problem-Solving Competencies

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Abstract

The social confinement that was imposed worldwide to control the spread of the pandemic COVID-19 led individuals to rely on digital technologies to carry out both daily activities and school tasks. What changes in mathematics curriculum and learning scenarios are important to support a flexible learning environment that combines remote students' work and face-to-face interaction? I propose a conceptual framework to structure a problem-solving approach that integrates the coordinated use of digital technologies and an online supporting system for students to work and discuss mathematical tasks. To introduce the framework, a task that involves the construction of a rectangle based on its given perimeter and its diagonal will be discussed to illustrate that a dynamic model of the task might lead students to explore concepts related to the study of calculus and analytic geometry.



Manuel Santos-Trigo is a Professor at the Mathematics Education Department, Centre for Research and Advanced Studies, Cinvestav-IPN, Mexico. He teaches graduate courses and does research in mathematical problem solving. His area of interest involves analysing and characterizing teachers and students' systematic and coordinated use of digital technologies in understanding mathematical concepts and developing problem-solving competencies. He completed his BSc in mathematics at the National Polytechnic Institute in Mexico and a doctorate in mathematics education at the University of British Columbia, Canada. He did a post-doctorate research as a visiting scholar at the University of California, Berkeley. He has been a visiting professor in several institutions including Purdue University, l'université d'Orléans, and la Universidad de la Laguna (Spain). He has supervised doctoral and master students in mathematics education in México and abroad.