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University students at work with mathematical machines to trace conics.

Lindmeier, Anke M. (ed.) et al., Proceedings of the 37th conference of the International Group for the Psychology of Mathematics Education “Mathematics learning across the life span”, PME 37, Kiel, Germany, July 28–August 2, 2013. Vol. 2. Kiel: IPN–Leibniz Institute for Science and Mathematics Education at the University of Kiel (ISBN 978-3-89088-288-8). 305-312 (2013).

Summary: This paper aims to investigate the way past experience with some tools to draw conics becomes part of the experience of designing a new drawer. In particular, it centres on the thinking processes of a group of university students who have the following task: to design a hyperbola drawer. The analysis is carried out using the perspectives of transfer of learning and instrumental approach, and focuses on utilization schemes and the interplay between scientific and technological aspects.

Classification: C35 G75 U75

Keywords: conics; hyperbolas; mathematical machines; hyperbola drawer; learning; instrumental approach; utilization schemes; thinking processes; university students