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**The use of technology with a calculator for improving mathematical thinking in learning and teaching mathematics – a study of students' mathematization using technology.**

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Summary: This article provides how to implement the use of Realistic Mathematics Education (RME) in teaching function at a school to improve students' mathematization for their mathematical thinking using technology. This study was planned to get research results using the mixed methodology with quantitative and qualitative methodologies, 120 middle school students participated in the study to bring us data about their mathematical achievement and disposition. Through the data analysis used ANCOVA, the students with the experiment of the mathematization and technology excelled the other groups of students who were not provided with technology or both of them. In analysis of the questions of the achievement lest, the problems for vertical mathematization were presented harder for the students than the other problems for horizontal and applicative mathematization. The technology environment might have helped students manipulate the application of real-life problems easier. This means that teachers can put more careful assignment on vertical mathematization using technology. We also explored that learning and teaching under RME using technology encouraged students to refine and develop their informal functional concept and pursue higher thinking of formalization. The study results in a lot of resources for teachers to use into their teaching mathematics for improving students' mathematical thinking.

*Classification:* U70 C73 C30
*Keywords:* concept formation; functions; empirical investigations; educational diagnosis; analysis of learning outcomes; achievement; teaching aids; graphics calculators; media technology; educational media; vertical mathematization; horizontal mathematization; mathematical model building; cognitive objectives