

ZMATH 2016f.00791

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Bridging the gap between graphical arguments and verbal-symbolic proofs in a real analysis context.

Educ. Stud. Math. 93, No. 2, 155-173 (2016).

Summary: We examine a commonly suggested proof construction strategy from the mathematics education literature – that students first produce a graphical argument and then work to construct a verbal-symbolic proof based on that graphical argument. The work of students who produce such graphical arguments when solving proof construction tasks was analyzed to distill three activities that contribute to students' successful translation of graphical arguments into verbal-symbolic proofs. These activities are called elaborating, syntactifying, and rewarranting. We analyze how engaging in these activities relates to students' success in proof construction tasks. Additionally, we discuss how each individual activity contributes to the translation of a graphical argument into a verbal-symbolic proof.

Classification: E50

Keywords: proof; graphical argumentation; Toulmin scheme

doi:10.1007/s10649-016-9698-3