

THE DEVELOPMENT OF THE PROVING PROCESS WITHIN A DYNAMIC GEOMETRY ENVIRONMENT

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TÓM TẮT:

In this paper we classify student's proving level and design an interactive help system corresponding with these levels in order to investigate the development of the proving process within a dynamic geometry environment. This help system was also used to provide tertiary students with a strategy for proving and to improve their proving levels. The open-ended questions and explorative tasks in the interactive help system make a contribution to support students' learning of proving, especially during the processes of realizing invariants, formulating conjectures, producing arguments, and writing proofs. This research wants to react on the well-known students' difficulties in writing a formal proof. The hypothesis of this work is that these difficulties are based on the lack of students' understanding the relationship between argumentation and proof. Therefore, we used Toulmin model to analyze student's argumentation structure and examine the role of abduction in writing a deductive proof. Furthermore, this paper also provides mathematics teachers with three basic conditions for understanding the development of the proving process and teaching strategies for assisting their students in constructing formal proofs.