Abduction – A logical view for investigating and initiating processes of discovering mathematical coherences.


Summary: According to theoretical concepts like constructivism, each learner has to build up knowledge on his or her own. The learner creates hypotheses in order to explain ‘facts’. Hypotheses do not guarantee certainty. They have to be verified. In this article, a theoretical framework will be presented which can help to understand and analyse the processes of creativity and reasoning. Peirce’s theory of abduction plays a decisive role in this framework. He elaborated abduction as the third elementary inference, besides deduction and induction. While abduction will be used to describe and analyse the process of discovering an explanatory hypothesis, deduction, induction and their combinations will be used to describe the different processes of verifying knowledge. Theoretical and empirical ways of discovering and verifying mathematical coherences will be presented and illustrated by fictive and empirical examples.

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