

Teaching and Learning Informatics for Novices

Theory based design and evaluation of an instructional design for object-oriented technologies in secondary schools

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In this thesis a teaching concept for introducing 16-year old students to informatics was developed and evaluated. The concept aims to teach object oriented modeling and programming by emphasizing the use of UML-based visualizations. A general understanding of object-oriented technologies should be achieved by concentrating teaching topics on interactions between objects.

The concept is based on the information-centered and the system-oriented approach in didactics of informatics, on cognitive apprenticeship and - because of rare data about teaching and learning informatics in school - on empirical studies in mathematical and science education.

For the empirical study the lessons were filmed and analyzed, students interviewed and their use of the tools captured and evaluated.

Results: Students were able to work in groups to solve a programming problem by learning to 'think in object structures'. The concept supports learning through a combination of teaching methods, tool usage, modeling methods and usage of visualizations.