

Learning Conceptual Modeling: Structuring Overview, Research Themes and Paths for Future Research (Extended Abstract)

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Abstract: Research on learning and, correspondingly, teaching conceptual modeling forms a diverse body of knowledge involving foci on various learning theories and approaches, learning outcomes and barriers. This extended abstract reports on a review of literature on learning and teaching conceptual modeling identifying prevalent and emerging research themes, and presenting a structuring overview of contributions to the field. Based on a systematic and purposeful sampling of publications combining different search strategies, we compiled and analyzed 121 contributions published between 1986 and 2017 to initiate further discussion on framing the learning and teaching of conceptual modeling in the light of learning paradigms.²

Keywords: Conceptual modeling; Learning; Learning paradigm; Literature Review

1 Introduction

Conceptual modeling marks an essential activity during information systems development and organizational analysis [Fr99] and a learning task faced by most students of Business Informatics, Software Engineering, Information Systems and related programs. Viewed as a learning task, conceptual modeling involves an intricate array of cognitive processes and performed actions including abstracting, conceptualizing, associating, contextualizing, visualizing, interpreting & sense-making, judging & evaluating, and, in group settings, communicating, discussing and agreeing [Te19]. For investigating the learning and teaching of conceptual modeling, learning paradigms constitute a theoretical lens that enables us to build on the vast body of knowledge on learning [e.g., He76]. The literature study presented in [RTS19] reviews prior work on learning and teaching conceptual modeling published until January 2018, aiming at a structuring overview of the body of literature guided by learning paradigms as theoretical lens, identifying prevalent and emerging phenomena in the field and suggesting potential paths for future research. To achieve a comprehensive account of research on learning and teaching conceptual modeling, the literature retrieval is based on a systematic and purposeful sampling of publications combining different search strategies.

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² The work summarized in this extended abstract has been published in [RTS19].

2 Insights and Discussion

Identifying “only” 121 publications in a systematic literature retrieval strikes as surprisingly low given the evident importance of teaching and learning conceptual modeling and its accepted challenges. Analyzing prior work on learning conceptual modeling leads us to identify (i) learning tool support and (ii) feedback to learners as prevalent research themes, and (iii) learning analytics as well as (iv) gamification/serious games as emerging research themes in the scientific discourse in this field. It is noteworthy that reflections on underlying learning paradigms, learning theories, teaching methods or, more generally, assumptions about learning have surfaced surprisingly rarely in the analyzed literature. This is even more surprising as such reflections entail the opportunity to inform technical didactics and instructional design—education scientists have for long called for greater attention to underlying assumptions about learning [e.g., Bi99].

The findings of the literature review encourage further discussion on framing the learning of conceptual modeling in the light of learning paradigms and let us outline suggestions for future research providing the opportunity to tie in with a large body of literature in education sciences and instructional design research. Overall, the findings strongly suggest that the current discussion will benefit substantially from further contributions taking complementary angles and methodological stances on learning conceptual modeling involving theoretical, empirical and design science research to jointly advance our knowledge on learning (and teaching) conceptual modeling.

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