

Operationalizing the Contingent Scaffolding of Human Tutors in an Intelligent Tutoring System

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Abstract

Studies of human tutoring and teacher guidance of small group work in the classroom have shown that the extent to which instructor support is contingent upon (i.e., tailored to) students' understanding and performance predicts student learning. This research, and efforts to guide teacher training and the design and development of adaptive tutoring systems, require operationalization of "contingent scaffolding"—that is, specification of what it means to provide the right level of support (LOS) to a student at just the right time. We review prior research that has proposed various frameworks to describe the levels of support observed during human tutoring and teacher-led discussions of peer group work and describe how these frameworks enabled us to specify decision rules to drive contingent scaffolding in RimaC, a natural-language tutoring system that we developed and are extending to support high school students' understanding of physics concepts.

Keywords: human tutoring, intelligent tutoring systems, natural-language dialogue systems, scaffolding, student modeling, physics education

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APA citation information

Katz, S., Albacete, P., Jordan, P., Lusetich, D., Chounta, I., & McLaren, B. M. (2018). Framework for the design of accessible intelligent tutoring systems. In S. D. Craig (Ed.). *Operationalizing the contingent scaffolding of human tutors in an intelligent tutoring system* (pp. 187-220). New York, NY: Nova Science Publishers.

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