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Unifying computer-based assessment across conceptual instruction, problem-solving, and digital games.

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Summary: As students work through online learning systems such as the reasoning mind blended learning system, they often are not confined to working within a single educational activity; instead, they work through various different activities such as conceptual instruction, problem-solving items, and fluency-building games. However, most work on assessing student knowledge using methods such as Bayesian knowledge tracing has focused only on modeling learning in only one context or activity, even when the same skill is encountered in multiple different activities. We investigate ways in which student learning can be modeled across activities, towards understanding the relationship between different activities and which approaches are relatively more successful at integrating information across activities. However, we find that integrating data across activities does not improve predictive power relative to using data from just one activity. This suggests that seemingly identical skills in different activities may actually be cognitively different for students.

Classification: U50

Keywords: Bayesian knowledge tracing; educational activities; learning environments; transfer; online learning systems

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