

A theory-driven, AI-based platform for real time assessment, scaffolding, and alerting on students' science competencies

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The main goal of this presentation is to describe how theoretical frameworks from the Learning Sciences and Science Education, rigorous assessment design frameworks, and new computational techniques can be used to develop assessments for 21st century skills needed for STEM. Specifically, I will describe Inq-ITS (Inquiry-Intelligent Tutoring System) and its accompanying teacher dashboard Inq-Blotter, which are technology-based systems designed expressly to assess and support students' competencies at doing science practices and support teachers' pedagogical practices related to the assessing and providing instruction for these. I will discuss how literature on how people learn science was used to design Inq-ITS and guide the development of knowledge-engineering, educational data mining, and natural language processing algorithms in order to analyze data from students' log files and open-responses in Inq-ITS, as well as provide teachers with fine-grained formative assessment data, alerts, and TIPS (Teacher Inquiry Practice Supports) to support real time instruction of science competencies.