RUTGERS–NEW BRUNSWICK
Graduate School of Education

Minding & Mending the Gap: Leveraging Inq-ITS' AI to Provide Equitable, Real Time Support to Students' Learning in STEM

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12:00pm–1:00pm
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Connect with colleagues during this <u>in person</u> presentation at the GSE (Room 124).
<u>Lunch will be provided</u>! Can't attend the person? Join us remotely via <u>Zoom!</u>

In response to American students' poor STEM performance, we developed Inq-ITS (Inquiry Intelligent Tutoring System;, which uses AI, including knowledge-engineering, supervised machine learning, and natural language processing to automatically assess middle and high school students' NGSS (2013) competencies based on their log data and open responses in real time while they conduct investigations with virtual science labs. A pedagogical agent, Rex, also driven by AI-algorithms, jumps in to support students' learning when the algorithms detects that the student is struggling. To support teachers, our AI algorithms alert teachers in real time via a dashboard, Inq-Blotter, that identifies students who need help and on what aspects (subpractices) they are struggling. Inq-Blotter also provides empirically-tested TIPS (**T**eacher **I**nquiry **P**ractice **S**upports) derived from teachers' discourse using Epistemic Network analysis that guide teachers' data-driven instruction to the whole class, to small groups (providing differentiated instruction), or to individual students, in order to support a broad range of learners. I will give an overview to the system and how it was designed, and our algorithms and how they mitigate bias. Lastly, I will provide an overview of the efficacy data we have on how Inq-ITS supports those who struggle in STEM and those for whom English is a second language.

Dr. Janice Gobert *was trained as a Cognitive Scientist at the University of Toronto (Ph.D.,) and McGill University (M.A.). She has extensive expertise in the design of educational technologies, and the analyses of quantitative data (logfiles and classical assessment data) and qualitative data (think alouds, students' explanations & models/drawings). Gobert is the lead inventor on 3 patents on Inq-ITS' underlying algorithms and methodology. Her expertise on AI in Education has been recognized in many ways. She recently received an Innovation award for Inq-ITS from the University of Toronto (her alma mater). She was a panelist on the AI and future of skills committee for Organisation for Economic Co-operation and Development (OECD), the United States White House Office of Science and Technology (in Oct 2016 & Aug 2022), and was called to testify to the UK Parliament on the validity of AI for students' university placement at the onset of COVID (since students were unable to do their university-placement exams).*