INQ-ITS

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Digital science inquiry assessments to support teachers' instruction and students' learning

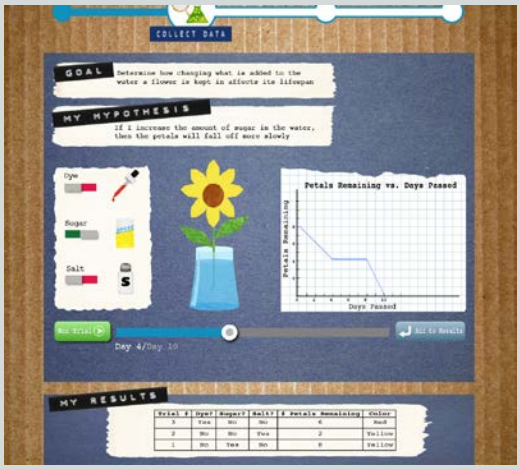
Inq-ITS (**I**nquiry **I**ntelligent **T**utoring **S**ystem) is an online educational environment for science. Students conduct inquiry using virtual lab simulations aligned with NGSS standards for Physical Science, Life Science, and Earth Science; the system hones students' scientific inquiry skills and provides educators immediate formative metrics on their students for these skills. Unlike other online labs, Inq-ITS uses computer science-based algorithms that *automatically assess and tutor students' authentic inquiry* skills including hypothesizing, experimenting, analyzing data, etc. Help is given by a pedagogical agent, a cartoon figure that provides support when it detects a student is off-track. The system generates reports for educators on each inquiry skill, summarizing individual student and classroom-wide performance. In brief, while students "show what they know", educators get real-time, actionable data they can use to tailor their instruction.

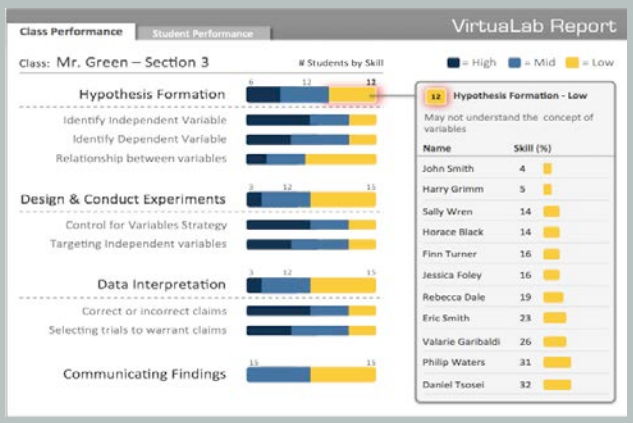
①Inquiry starts by forming a testable hypothesis

All Inq-ITS activities have a similar look-and-feel to guide students through the inquiry process: hypothesizing, collecting data, analyzing their data, and communicating.

②Students design and run their own experiments, collecting data to test their hypothesis

Inq-ITS uses data-mined models to determine, for example, when students do not design controlled experiments or collect data to test their hypotheses, important inquiry skills.





③Automatic assessment reports allow educators to see trends in their classroom and identify struggling students

Inq-ITS' real-time assessment enables teachers to quickly tell how the class is progressing, and how each individual student is progressing, on each inquiry skill and sub-skill.

④Real-time alerts help educators focus their efforts when and where it matters most

Since timely feedback is critical to deep learning, a mobile alert system is being developed for teachers' smartphones and tablets so they will always know who needs help the most, and on which specific inquiry skills.