Interpretations and Uses of Data for Equity in Computing Education

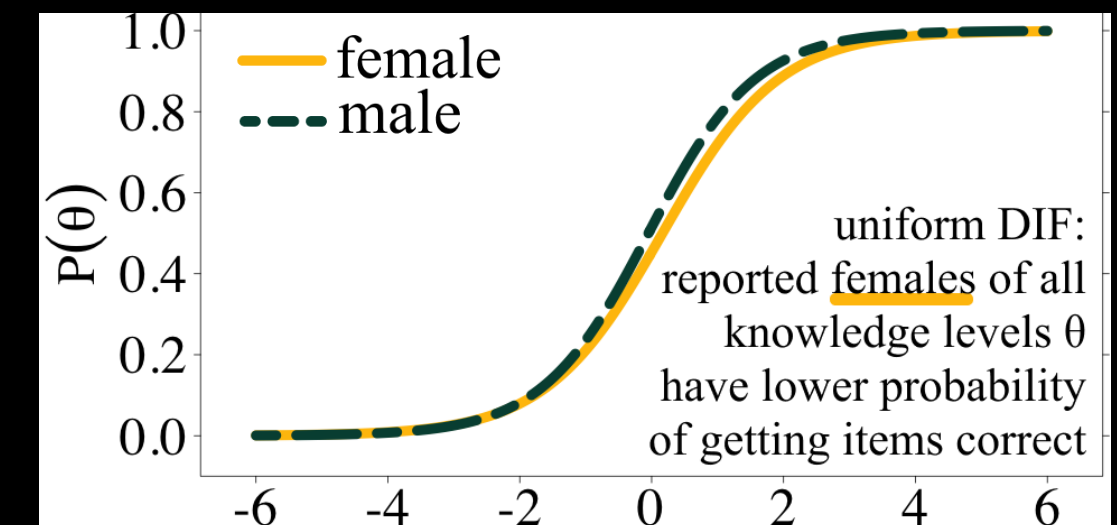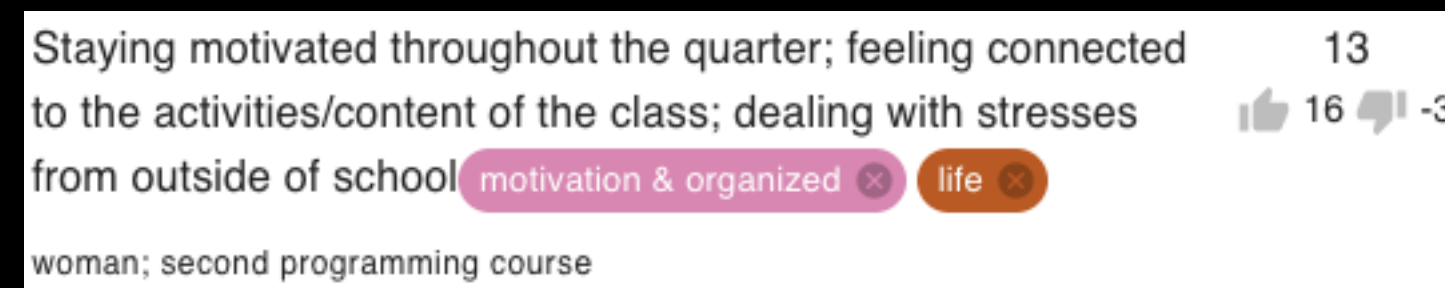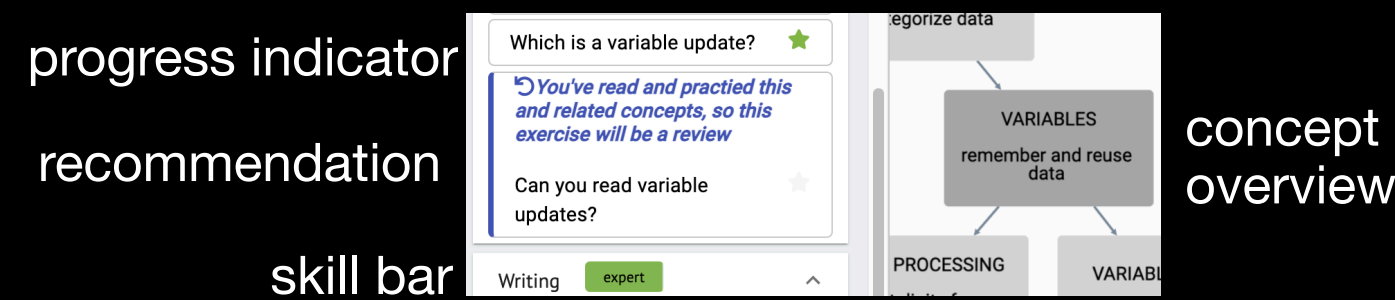Benjamin Xie (he/him) | bxie@uw.edu | 🐦 @benjixie | benjixie.com/icer21

We can support **informed, timely, and equitable action** by designing interactions with data that enable stakeholders to **connect** their interpretations of **data with their domain-expertise**.
To do so, we must consider **prior knowledge**, **perceptions of power relationships**, **cultural competency**.

students ⟷ teachers ⟷ designers

Codeitz.com
informed agency in online learning

progress indicator
recommendation
skill bar
concept overview

- **RQ**: How to afford & inform agency to support online learning?
- **method:** Designed 3 version of tool that varies agency & info. Measure w/ post-test & log data
- **findings:** Conditions had no effect on learning, self-efficacy & prior knowledge did. High agency did more practice

agency must be an informed option, but it can be unfamiliar

StudentAmp.com
amplifying voices of minoritized groups

Staying motivated throughout the quarter; feeling connected to the activities/content of the class; dealing with stresses from outside of school   motivation & organized ⊗   life ⊗   👍 16 👎 -3   13
woman; second programming course

- **RQ**: How can contextualizing student feedback w/ identity inform teachers of equity issues?
- **method:** designed Student Amp and deployed in large courses, interviews w/ students & teachers
- **findings:** students shared challenges beyond course; teachers used contextual info to consider minoritized identities

contextualizing feedback w/ identity provides benefits, privacy risks

DIF (Differential Item Functioning)
interpret test bias w/ domain expertise

uniform DIF: reported females of all knowledge levels θ have lower probability of getting items correct

- **RQ**: How do domain-experts interpret data on test bias by gender and race?
- **method**: DIF to identify empirical evidence of bias, workshop w/ designers
- **findings**: Designers consider bias relative to test design, curriculum design, broader systemic issues

judgement of domain experts enables richer interpretations of data on bias