**Reading the Chat: What AI Conversations Can and Cannot Tell Us About Student Learning**

Generative AI is rapidly becoming part of university students' everyday work. One response has been to ask students to submit their AI conversations alongside assessed work, making aspects of their interaction with AI visible to the instructor. But what can such records actually tell us about student learning—and what remains beyond what the chat can establish?

This presentation examines that question through an exploratory study in Operations Research at the University of Iceland. Students investigated an open mathematical modelling problem involving puzzle generation, uniqueness, optimisation and difficulty. They were encouraged to question, interpret and test AI output, but were not required to follow a prescribed dialogue structure. The analysis uses 13 submitted AI-chat records.

The qualitative analysis follows connected modelling episodes and asks who identifies the issue, supplies the reason, checks a claim and draws the consequence. Rather than treating the sophistication of the conversation as evidence of student understanding, each episode is examined for what the student visibly contributes, what AI supplies, how contributions are subsequently used, and what remains uncertain.

The conversations show different forms of student participation: questioning proposed measures, maintaining requirements when AI suggests simplifying them, selecting between alternatives, requesting checks, and in some cases articulating mathematical arguments. They also illustrate the limits of inference from chat records. A question may itself contain substantial reasoning; an AI explanation cannot automatically be credited to the student; prior AI assistance does not invalidate subsequent student reasoning; and the absence of a recorded explanation or check does not establish that no evaluation occurred.

The study does not measure learning gains or independent modelling ability. Instead, it asks what submitted AI conversations can legitimately contribute to evidence about student learning. As universities adapt assessment to widespread AI use, the challenge is not simply to make AI-assisted work visible, but to interpret that visibility without confusing the reasoning present in a conversation with what has been demonstrated by the student.