

# IMAGING THE BRAINS OF STUDENTS STUDYING BRAIN IMAGING

When Neuroscience Meets the Class

 COLUMBIA | SOLER  
Science of Learning Research Initiative

 COLUMBIA UNIVERSITY  
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## OBJECTIVE

Adopting the neuroscience of education framework, we intended to bring the neuroscience laboratory inside the neuroscience classroom by studying the brains of students studying the brain.

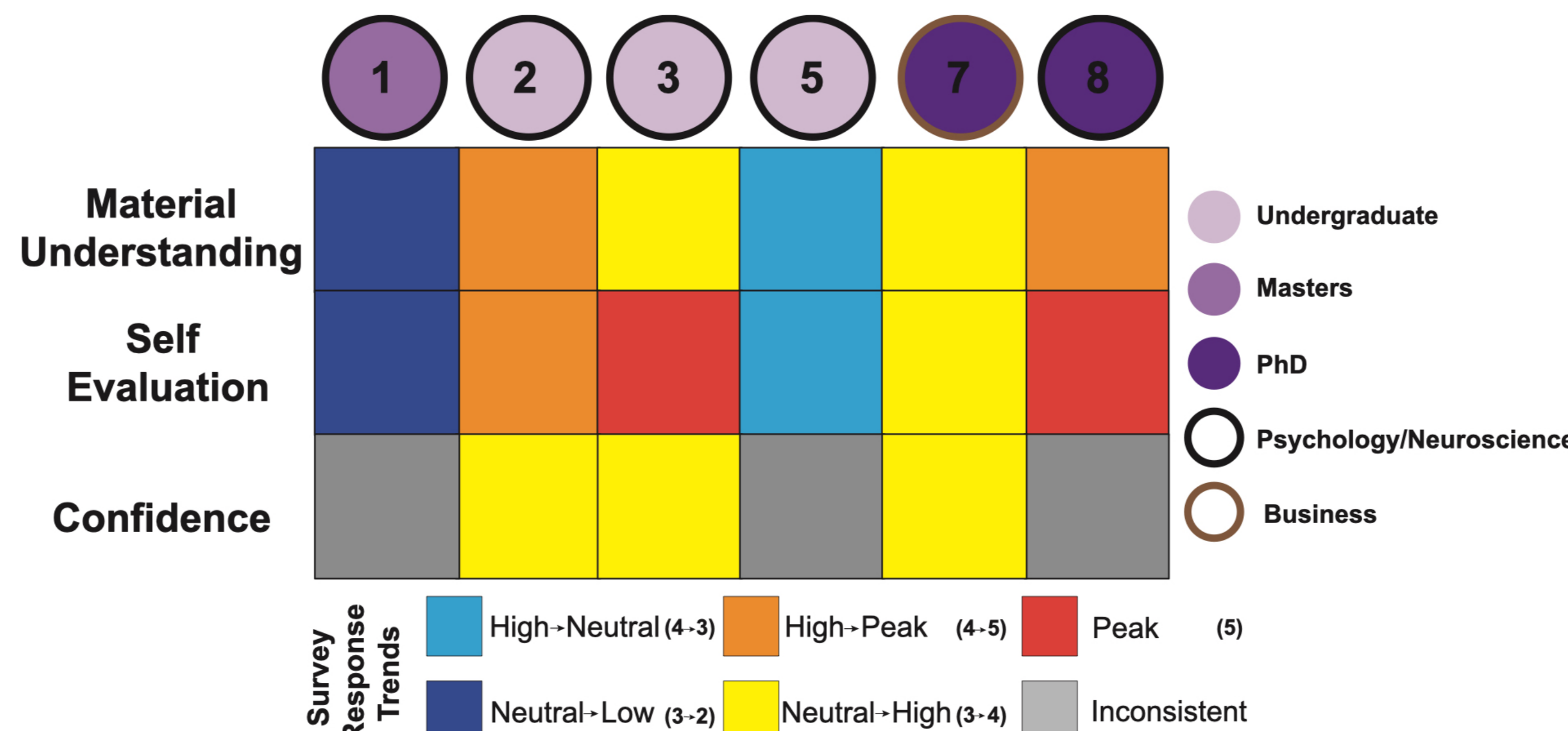
## GOALS

- 1 EXAMINE SUBJECTIVE ASSESSMENT OF LEARNING
- 2 EXAMINE RESPONSE ACCURACY TO IN-CLASS POLLS
- 3 EXAMINE GROUP LEVEL NEURAL MARKERS DETECTED IN-CLASS USING EEG
- 4 EXAMINE AUDIO/VISUAL RECORDINGS OF IN-CLASS ACTIVITIES & INSTRUCTION STYLE
- 5 IDENTIFY ASSOCIATIONS BETWEEN MEASURES (1 - 4) BY MEANS OF CORRELATION ANALYSES

## WHAT WE DID & WHAT WE ARE DOING

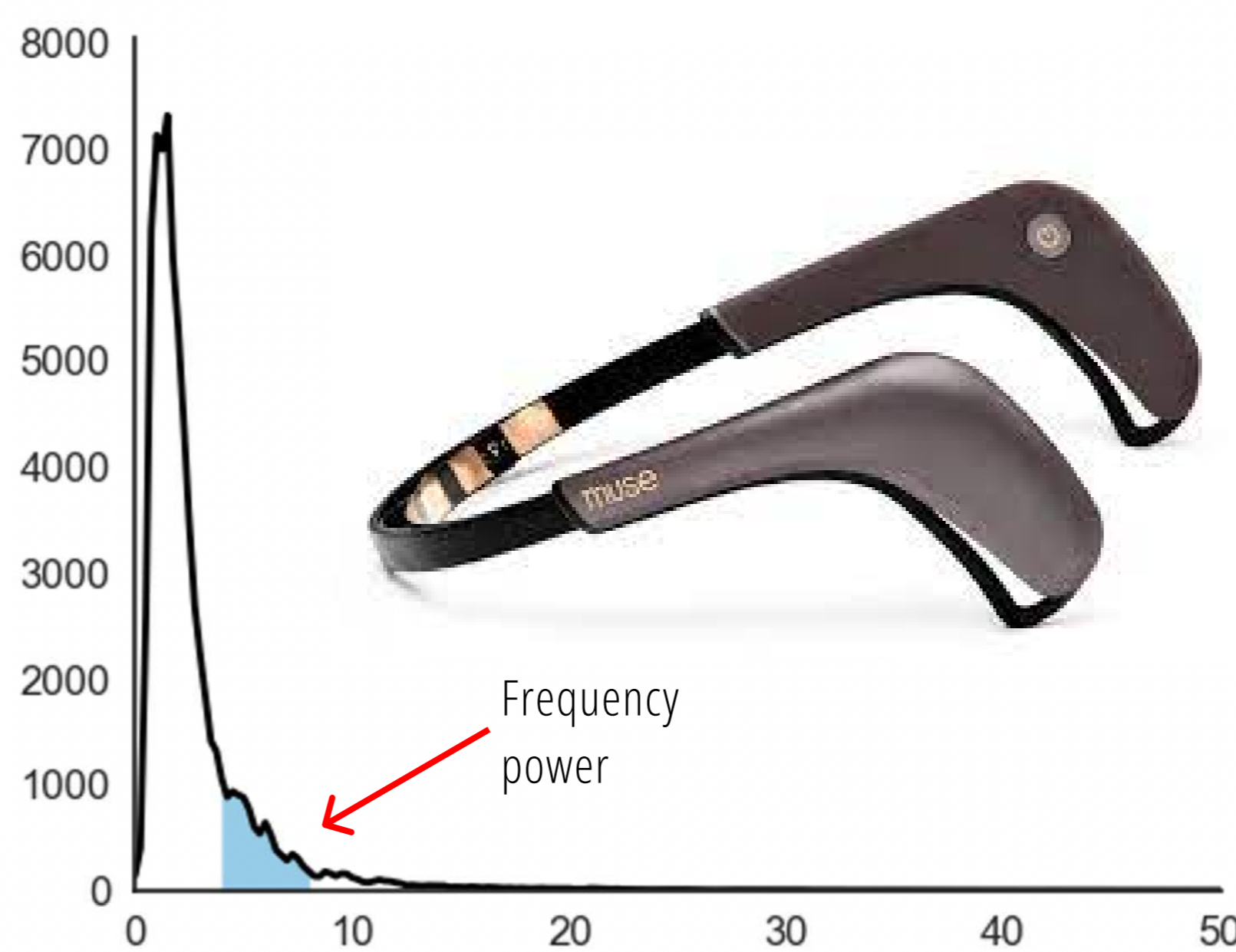
### Post-Class Subjective Assessment of Learning

Associate subjective ratings of learning and engagement with accuracy of group responses



### In-Class EEG Data Recording

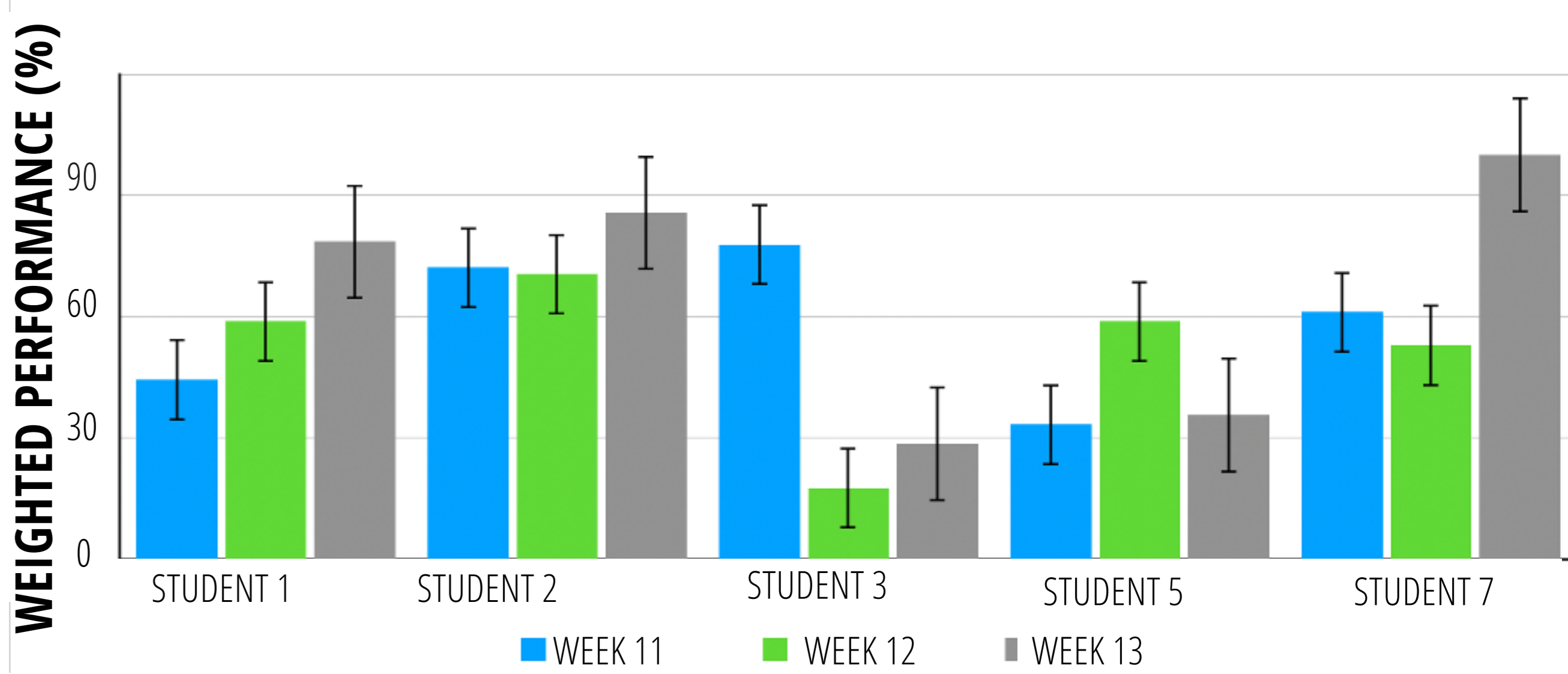
Associated EEG Markers with subjective ratings of learning and accuracy of responses



## Data Collection & Analysis Structure

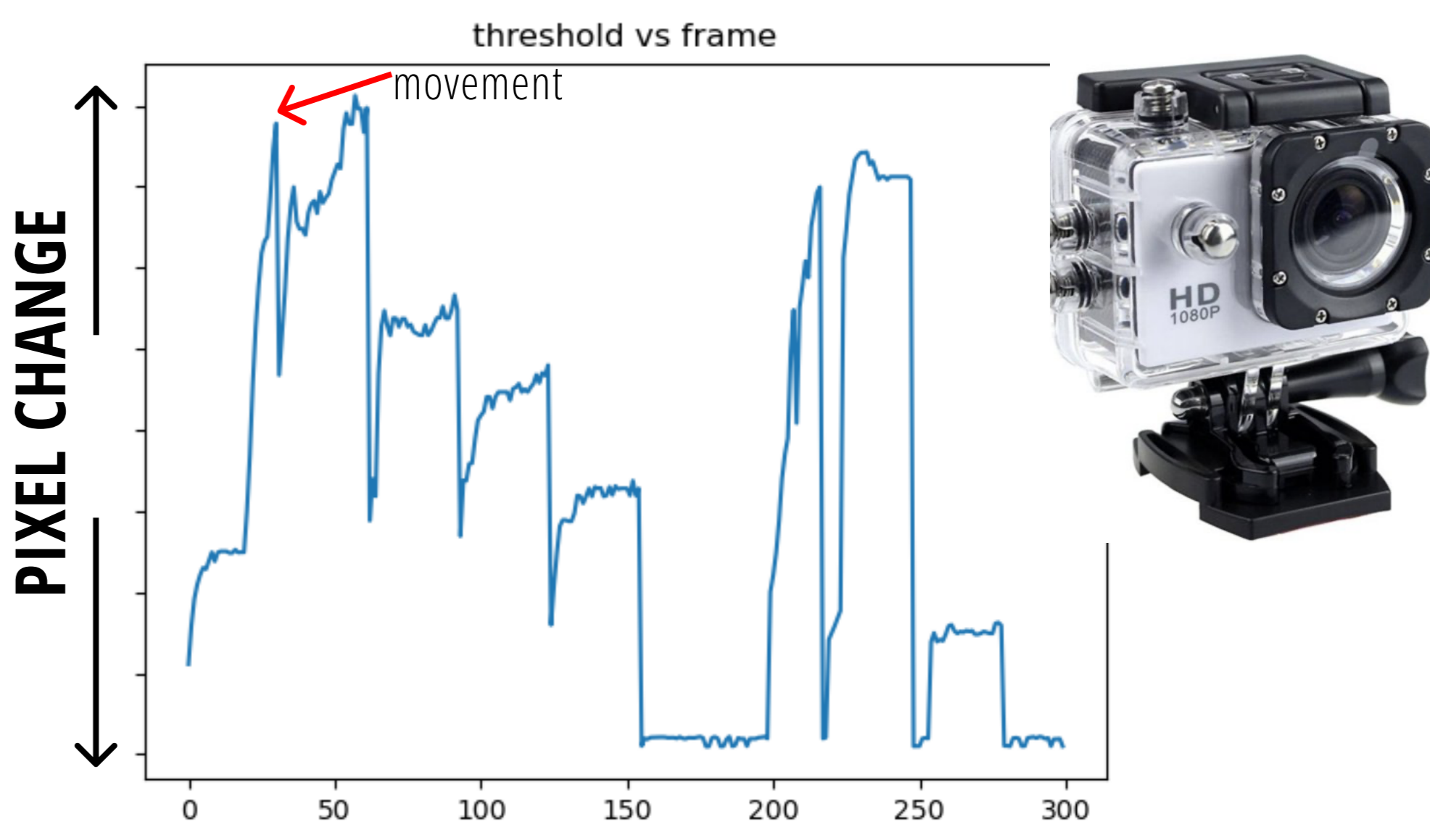
### In-Class Accuracy of Responses to Polls

Associate objective measures of learning with neural markers of engagement.



### In-Class A/V Recordings

Characterize effects of student motion on EEG data and examine engagement.



We show the feasibility of bringing the neuroscience laboratory into the classroom to measure subjective and objective markers of learning and engagement and examine their relationships.

- Preliminary evidence:** combining subjective and objective measures of student engagement and attention can be leveraged to improve pedagogy.
- Neuro-DBER:** This project is the first step in the development of Discipline-Based Evidence Research inflected in Neuroscience that holds the potential to provide new insights into the quality of instruction and students engagement.

**Funding:** 2020 DSI Collaboratory Grant; 2021 Provost's SOLER Seed Grant.

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**ACKNOWLEDGMENTS**