



SAN DIEGO STATE
UNIVERSITY

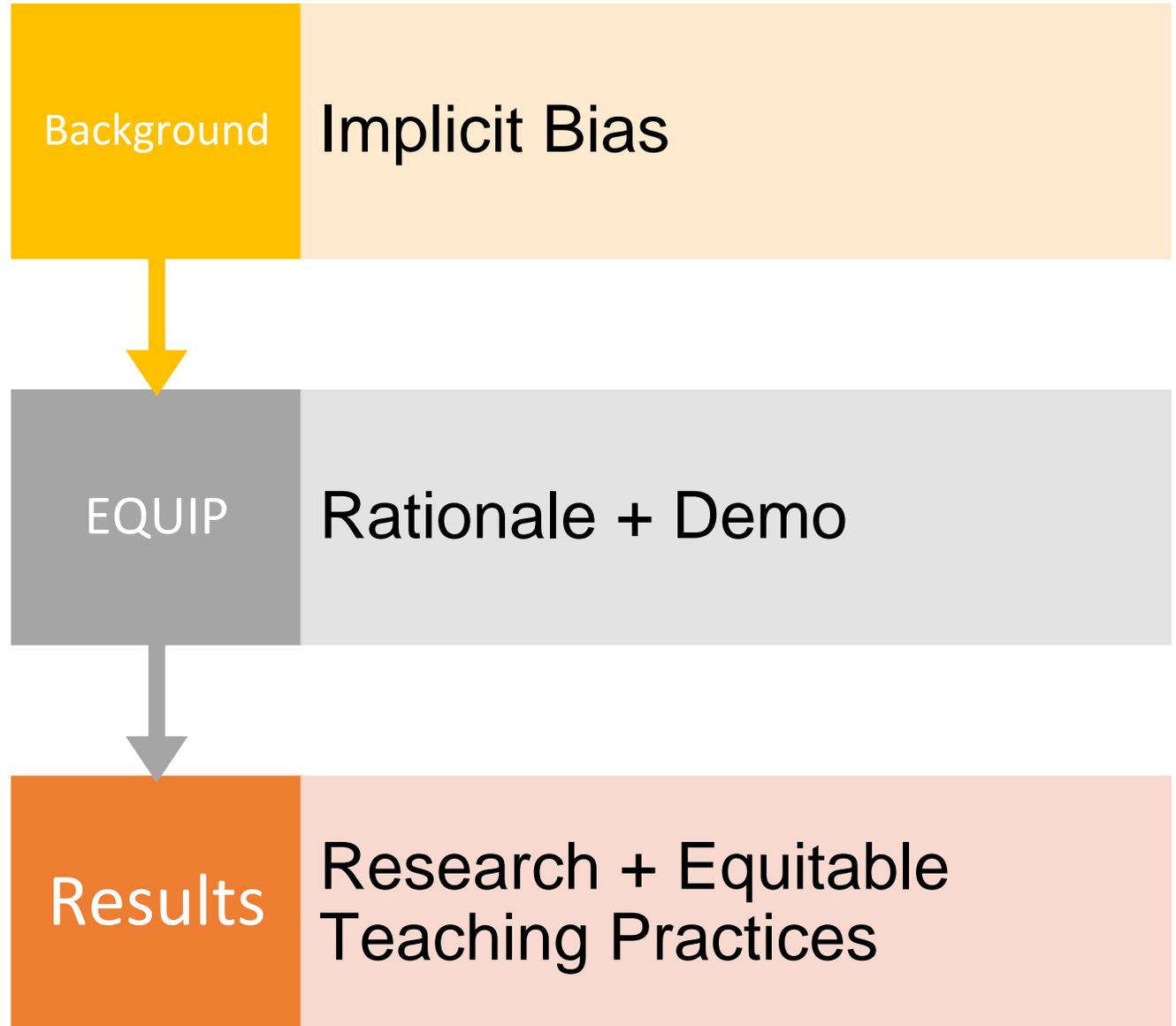
Introducing **EQUIP**

A Free Web App to Promote Equitable Teaching in Math/QR Classrooms

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Presentation Overview



Anonymous Poll

What **equity issues** are you working on in your teaching?

Section I:
Implicit Bias

Superhero

Anonymous Poll

Who do you think of when you think of a **super hero**?



Superman



Batman



Spiderman



Wonder Woman



She Hulk



Squirrel Girl

Say the color, NOT the word

blue yellow red
purple black

Say the color, NOT the word

blue yellow red
purple black

blue yellow red
purple black

Academic disciplines

Feminine

Masculine



Liberal arts

Sciences

Age

Race/ethnicity

Gender

Abilities

Sexual orientation

Social class

Professional status

Political orientation

Academic discipline

Nationality

Religion

Physical appearance

Implicit Biases

Expectations and evaluations about groups that operate outside of conscious control

Where do implicit biases come from?

- Media
- Interactions
- Verbal and non-verbal behaviors of others
- Beliefs and attitudes of people around us
- Observations (social roles, social value)

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Implicit biases = biases of “ordinary” (not “bad”) people !

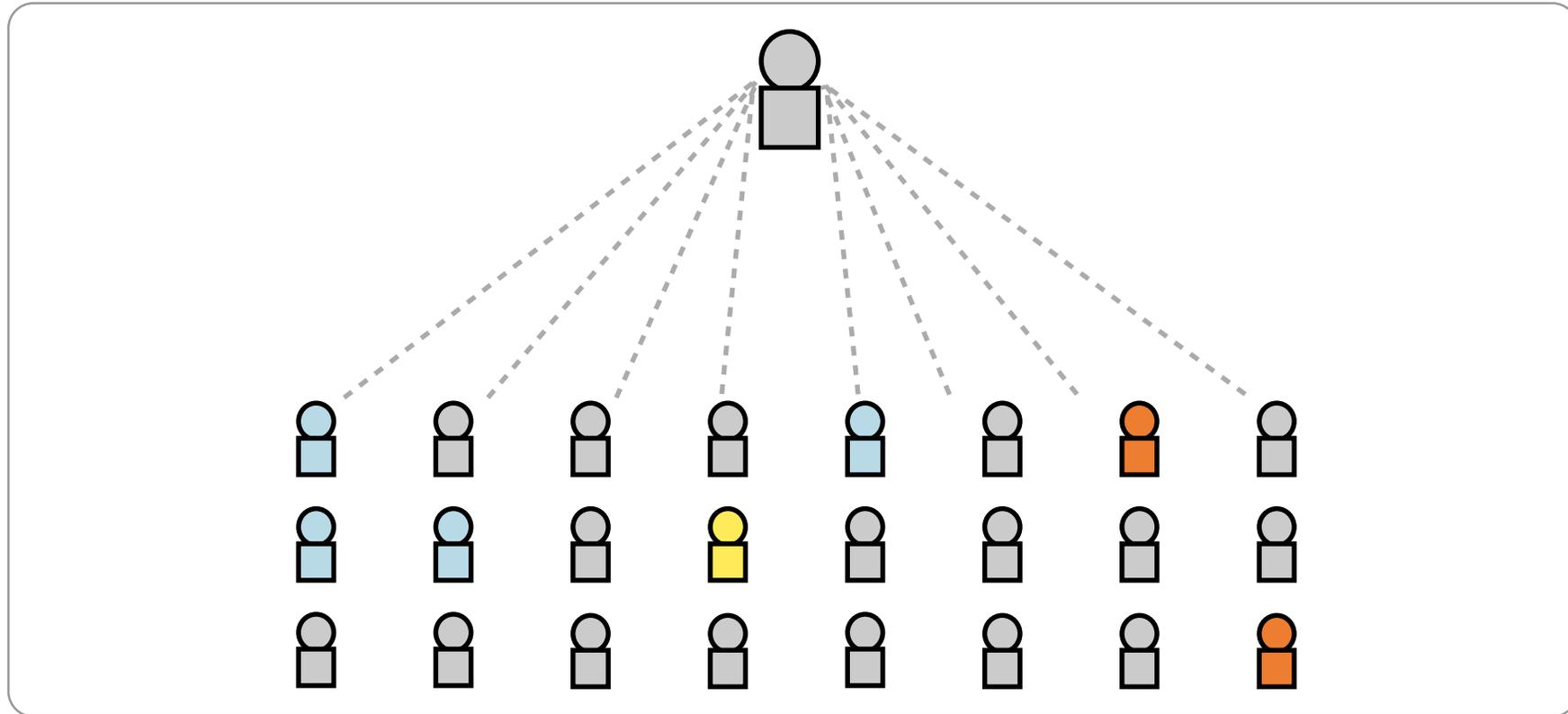
Impacts of Bias in Education

- Assumptions / Expectations
- Disciplinary Policies
- Facilitating Discussions
- Microaggressions
- Perpetuating Negative Stereotypes

Anonymous Poll

Do you require **participation** in your class? If so, why?

Classroom Discussions: Inequitable Participation



Section II:

EQUIP

Equity **QU**antified **I**n **P**articipation (**EQUIP**): Rationale

Equity **QU**antified **I**n **P**articipation (**EQUIP**): Rationale

Are mostly White and Asian boys participating?

What % of high-level questions are going to Black students?

Are emergent multilingual students getting adequate wait time?

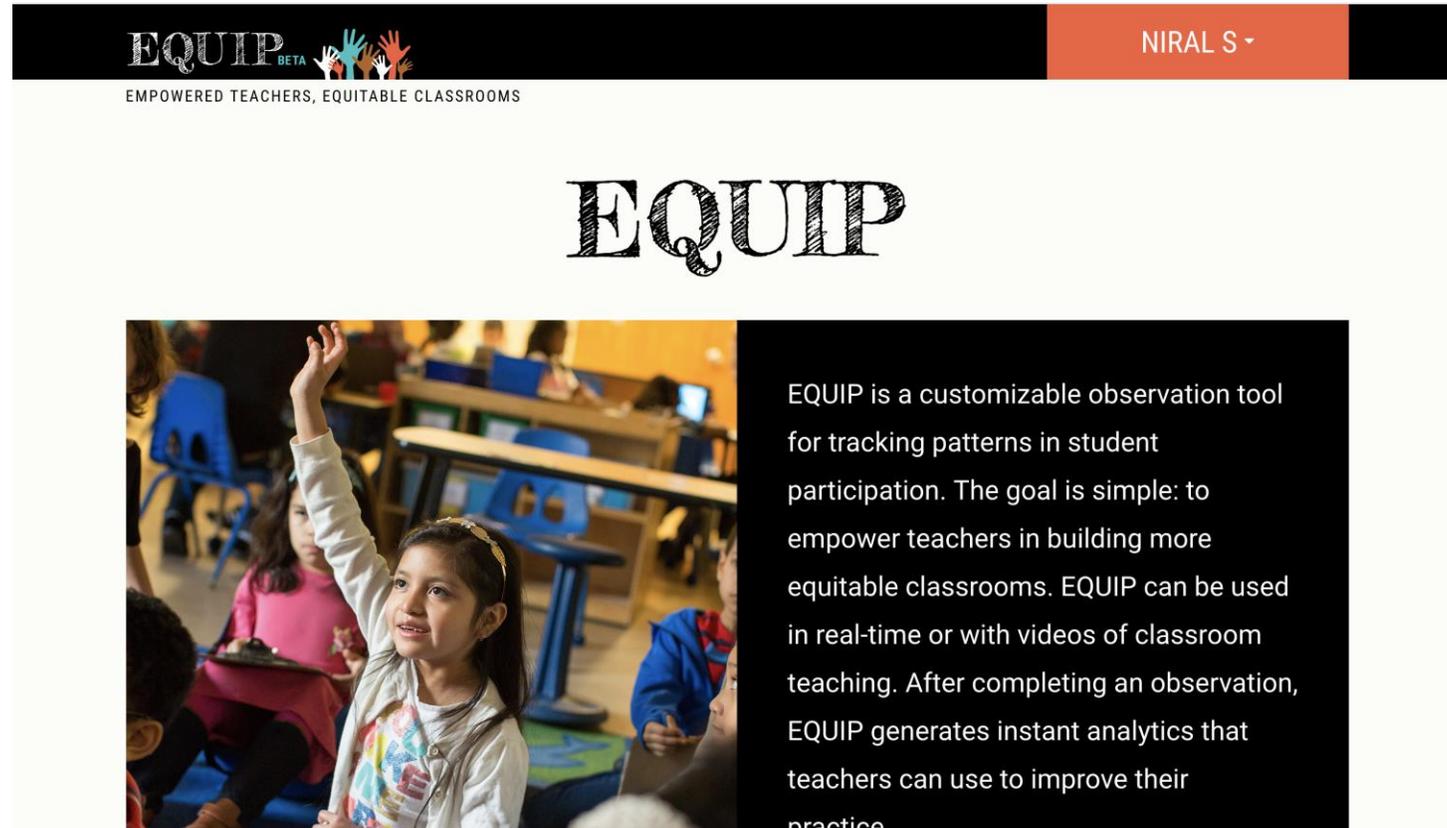
EQUIP: Analytics

- **Quantitative analytics** on participation patterns / distribution of participation opportunities
 - Intended to **complement qualitative approaches** to studying (in)equity
- Capture the **low-hanging fruit** (lower-inference, high leverage)
- Provide **actionable** data to instructors to improve their practice

Equality, Equity, and Justice

- **Equality:** Providing the “same” opportunities to each student.
- **Equity:** Providing “fair” opportunities (i.e. giving students what they need).
- **Justice:** Removing systemic barriers that oppress some students.

EQUIP: Demo (<https://www.equip.ninja>)



EQUIP
BETA

EMPOWERED TEACHERS, EQUITABLE CLASSROOMS

NIRAL S ▾

EQUIP

EQUIP is a customizable observation tool for tracking patterns in student participation. The goal is simple: to empower teachers in building more equitable classrooms. EQUIP can be used in real-time or with videos of classroom teaching. After completing an observation, EQUIP generates instant analytics that teachers can use to improve their practice.



Section III:

Research

Research Across K-16 STEM Settings

- Grade 5: Race/Gender (Reinholz & Shah, 2018)
- Grades 6-8: Race/Gender (Herbel-Eisenmann & Shah, 2019)
- Grades 12-13: Race/Gender (Reinholz, Wilson, & Stone-Johnstone, 2019)
- Grades 15-16: Professional Development (Reinholz, Bradfield, & Apkarian, 2019)
- Grades 15-16: Gender (Ernest, Reinholz, & Shah, accepted)

Forthcoming

- User's guide for professional development
- EQUIP for Physics / Computing
- Characterization of ~200 middle school / undergrad math classes

Short-Term: Code and Reflect

Teach a
Lesson

Observe:
Whole-Class
Discussion

Observe:
Small Group
Work

GOAL: Becoming **Aware** of Implicit Bias

- In class: use EQUIP to code video of example teaching
- In the field: use EQUIP to code video/live data

Longitudinal: Iterative Improvement



GOAL: **Attenuating** Implicit Bias

- Cycles of action research
- Simple, concrete changes to teaching practice

Reflections from a math professor*

Having data is way more useful than I ever imagined. Without it you can tell whatever story you want. You can focus on whatever student interactions were positive, and that can be your whole premise for measuring your effectiveness when it comes to equity issues in the classroom.

*Quote shortened for readability

Reflections from a math professor (part 2)*

We can talk about equity all day, but it's a different level to re-evaluate your own practice and step down from that pedestal that as faculty members we like to sit on. There's a lot of room for growth for everyone, no matter where you are in your practice. It's hard to not see more people taking that mindset.

*Quote shortened for readability

Equitable Teaching Practices

Setting the Tone

1. Co-create explicit classroom norms with students. Emphasize the importance of equity and inclusion.
2. On syllabus (“I care for you as a student and a person. I welcome conversations about any issues you are having, in class or beyond.”)
3. Signature in email (include pronouns)
4. Bring your whole self. Don’t be an “academic robot.” Talk with students before/after class. Talk about “real life.”

Avoid unspoken rules / implicit messages

1. Syllabus says no late homework but (unstated) exceptions given to individuals w/“legitimate” reasons
2. Office hours are “always available, stop by anytime.” The term “office hours” has its own connotation.
3. Diversity in course materials / authors. Cost of materials.

Use of Language

1. Use gender-inclusive language (“you all” vs. “you guys.”)
2. Normalize struggle (avoid “this is easy, obvious, clearly.”)
3. Ask “what questions do you have?” rather than “do you have any questions?”

Soliciting Participation

1. **Think** (1 minute) - **Pair** (2 minutes) - **Share** (2 minutes).
2. **Wait time.** Wait at least 5 seconds before calling on students. Wait at least 5 seconds after a student provides a response before you answer.
3. **Require hands.** Tell students “I’ll wait for at least 3 hands before calling on someone.”
4. Tell students you are explicitly looking for a diversity of views.

Peer Interactions

1. **Partner and group discussions.** Break the class session into multiple different modalities.
2. Provides time for students to process outside of whole-class presentation.
3. Share group/peer ideas. “What is something interesting a peer said?” Identify who will share out. Who takes notes. Mind gender roles.



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Thank You

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<https://www.equip.ninja>

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