Exploring diverse students' negotiation of lab roles through positioning
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Introduction
Research suggests that adding structure or explicit roles negotiation might improve equity in small group lab work (Freeman, Haak, & Wenderoth et al., 2011). Using positioning theory as a lens, we explored both implicit and explicit role assignments in a diverse group engaged in Hooke’s law activity within a non-traditional physics lab.

Research Question
How do participants position themselves in diverse group dynamics around roles during experiments in a non-traditional physics lab?

Methods & Context
A single case study of a group of 3 students (Matt, a White man, Zainab, a Black woman, & Eliz, a White woman). We analyzed discourses from two episodes of video of the group.

Theoretical Framework
Positioning pertains to students’ enactment of who they consider themselves to be in the knowledge-construction group centering around the roles they take on or not.

Data and Results

Episode 1: Implicit Role Assignment

Non-verbal and verbal discourse
Zainab installed the experimental setup and Matt loaded the masses onto the holder.

Through a subtle negotiation, Matt took over as data collector, positioning Zainab out of the equipment handling role.

This led to Zainab re-positioning herself as the critical thinker in the group as she sked questions that elicited deeper exploration:

Zainab: “What happens if we deform the spring?”

Episode 2: Explicit Role Assignment

Non-verbal and verbal discourse
Eliz explicitly assigned roles and split the group in two with Matt and Zainab each leading separate experiments.

Eliz: Okay, so, one person will check if the diameter of the spring changes the point at which it breaks down. And another person checks if the magnitude of the K changes where it breaks down. Okay, and I can do excel and if you guys check, I can just record the data.

Matt uses the existing apparatus while Zainab sets up a second apparatus, also connected to the lab desktop. Eliz helps Matt with his experiment.

Conclusions
Inequities seen in both implicit and explicit role assignments. Thus, more structured labs (Freeman, Haak, & Wenderoth, 2011) may not guarantee equity.

Different positioning dynamics cross the participants suggest greater inequity for the Black woman in the group.

Future Work
Explore more of same or similar groups through intersectionality lens.

References

American Association of Physics Teachers/Physics Education Research Conference, Grand Rapids, MI, ’22 moa28@cornell.edu