

Student Experiences of Groupwork In Middle Grade Mathematics

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Overview of our Study

To describe how middle-grade students reflected on their experiences of groupwork over two years.

Research questions

- (1) How did students see themselves and their peers through their experiences of working in groups?
- (2) To what extent did students' reflections on their groupwork experiences change over time?

Background Literature

- Prior research on students' groupwork experiences in mathematics classrooms and elsewhere has inspired this study.
- From Jansen's (2012) study we find that the teachers monitor, debrief, and evaluate student groupwork in different ways to benefit the groupwork processes.
- Our study created groupwork exercises using Complex Instruction (CI).
- CI addresses status inequalities among students through direct interventions, group roles, and "groupworthy" tasks.
- CI has also been widely implemented and studies have shown that students in CI have productive group interactions and positive math identities.

Data and Methods

Context of the study

- This project incorporates Complex Instruction (CI; Cohen & Lotan, 2014) to introduce groupwork activities in mathematics.
- Data collection ran from 2020-2022, with eleven 6th-7th grade students, who are predominantly Black/African American, participating from Ms. Ellis's class.
- 8 lessons from 7th grade math curriculum were undertaken.
- With the first author acting as a co-teacher to introduce group-role interventions and to study students learning processes within groupwork.

Participants and Data

- All students in the class participated in groupwork lessons.
- Eleven students participated, including nine from year 1 and two additional in year 2.
- We conducted three sets of interviews: at end of 6th grade, middle of 7th grade & end of 7th grade.
- All interviews were semi-structured with Interview set 1 being individual, set 2 being a mix of individual and group and set 3 was a group interview.

Pseudonym	Gender	Words Used to Describe Self
Ryder	Boy	funny
Donavan*	Boy	funny, laid back
Aaliyah	Girl	messy, responsible
Oneeka	Girl	responsible
Naryah	Girl	always laughing
DJ	Boy	talkative
Jay	Boy	chill
Isabella	Girl	disorganized
Joseph	Boy	likes to have fun
Turbo*	Boy	energetic
Nature	Girl	funny, clumsy

Note: Student name with (*) mark started as participants in year 2.

Analysis

- We used inductive coding to find common themes.
- We used a constant comparative method (Glaser & Strauss, 1967) to look for connections and contradictions in the interviews.
- Followed by identification of other related themes and overlaps.
- Finally, we organized the findings according to the research questions.

Findings

Summary of findings

- Following the theme coded from the scope of our research questions, we found the student responses fitting 3 themes broadly.
 1. Notions of Respect
 2. Student experiences of Help (exhibiting and receiving)
 3. Thoughts on Group Roles

Students had lot of thoughts about respect

When asked how students showed & perceived respect from their group members -

- Students had varied ideas of what constituted a sign of respect, or disrespect:

Isabella and Oneeka, the highest-achieving girls, characterized respect by staying on task. Isabella's view that "not doing work" constitutes disrespect persisted to the point where she didn't grasp that one might "be on task" and still be disrespectful. Exhibit -

I: What would it look like if someone was being disrespectful?

DJ: Umm, being mean when I ask for help or something like that.

I: Mm hmm.

DJ: When I asked Isabella, she was nice. Well like, it's like, if I was searching for help and she told me no, like, if we was on answers and I was at the restroom and I came back and I asked, can you tell me, like, what questions are we on and she didn't tell me.

I: That would be disrespectful.

- DJ's comment about receiving help was typical of students who struggled with math in the groupwork. Such students felt respected when their classmates responded in kind reciprocation of their needs.
- The notion of “playful” disrespect surfaced periodically among other students in the class as well. Exhibit -

Jay: Like, somebody, say somebody say, “oh, you dumb, ‘cuz you missed the answer.” They just say that ‘cuz like, friends, like just playing.

I: But do you, so are you saying you think some people would say that's disrespectful?

Jay: Yeah. Some people would think, like, oh they're being disrespectful. But, it's really not, ‘cuz they're like friends and they just say that to play around.

- Each student's definition of respect varied from staying on task to helping to understand a joke—it seemed to correspond to what they personally required from their peers.

- **Students' views on respect for peers matured over two years. Students started talking about respect from their peers' perspectives and depicted a stock of their own actions.**

Oneeka: I liked it more that I liked it last year, because I told you I didn't like being the leader.

I: Yeah.

Oneeka: But it was better this time. Being with...since I had different people. But Joseph was still in my group. I told you he was the main problem. But it was easier.

I: What made it easier, do you think?

Oneeka: He actually listened sometimes.

I: Okay, he listened to you when you were the leader. Do you feel like you've changed since last year?

Oneeka: Yeah.

I: How so?

Oneeka: I would get mad. And I would yell at him.

I: And you don't get as mad this year?

Oneeka: Yeah.

Students have lot of thoughts about receiving help from their peers.

Students' thoughts about help came up in response to questions about respect, group roles, groupwork, and conflict

- students tended to feel differently about help depending on whether they were in a position to need help or to provide help.

Naryah: Some, you gotta help. Like if the people don't know it, and they're acting slow. They, it seems like they just kinda get the answers and they like, trying to just sit there and wait for the answers, for somebody to tell them the answers.

- Overall, we saw that students were generally happy to offer help to their classmates, but they were not happy when there was an expectation of help.

- Students took more nuanced views as they progressed through the years of the project.

Donavan: During groupwork, how can I say this. Well, during groupwork, I kind of just like chill or anything sometimes. Um, most of the time I try and find the answer to help people out and stuff, but sometimes I'm just laid back and chill, don't talk and just watch people work. And that's all.

Isabella: I do not like when the other people aren't understanding, and then they expect me to be able to help them. But sometimes I don't even understand it, but they expect me to know how to do it, 'cuz I'm so smart or whatever they think. And plus, even when I do have it, I don't really want to help nobody else cause I'm trying to focus on my own work, but everybody think I need to help them. But I'm really trying to help myself.

- Giving help or not, and receiving it appropriately, were shows of respect.

Students have lot of thoughts about group roles

- We assigned Group Roles to each group in the class. It included leader, materials manager, question asker, and, respectively, mediator.
- Despite that, Students shared complicated experiences of the group roles throughout the study. Because Group roles take time to establish.

We asked students whether they felt it was possible for anyone to learn to perform any role within the group.

Jay: No, I don't think everybody can, you know, that's just not how everybody is, so I don't think everybody can do every job. Cause you know, that'd be something bad. They won't, they might not be leading, or they might not be a good, like, leader. They probably wouldn't like question asking, cause, they wouldn't know what to say, or mediator because they wouldn't know how to problem solve.

I: So, is it about what people like or don't like, or is it about some skills that you have or don't have, do you think?

Jay: It's really both, because you can like it, but you still, I don't know. You might not be able to put it into words.

When asked how can the group roles could be made better-

Isabella: Um, [groupwork is] different, 'cuz there's like, it was only one person to a job and like, it seemed like in a good group it would be everybody doing the job and the one wouldn't really be a leader, because that's kind of weird. It's like followers and leaders.

I: Mm hmm.

Isabella: So, like, we do use the jobs, but it's not assigned to a person. A certain person is just like everybody, and then there is no leader because we're all just together. It's not like one person is the leader like in movies. It's not like one person's the leader and we all just behind them. We're all together.

Discussion

- We identified three overarching themes in students' experiences of groupwork - feeling individually respected, the act of helping was closely tied to how students experienced respect, and students' experiences of the group roles were complicated throughout the project.
- Group roles and group-worthy tasks are intended to shift responsibility for managing a group's work from the teacher to the students, but students may choose to resist or reject the use of these structures.

- Dismantling what is currently known as school math can disrupt notions of help and the status differences help implies, but more radical questions of epistemology may be needed to truly shift how students relate to one another around math.
- Gender and race are factors that influence the students' experiences of groupwork - girls had distinct experiences of groupwork from the boys, and the context of students' groupwork was limited by their choice of school.
- Reframing math learning as something done in community with people rather than in service of a product can create space for students to think about help in new terms.

Thank you for paying your valuable attention!

We would love to get feedback from you or answer
any questions that you may have.