Teacher Scaffolding in Collaborative Small-Group Discussion: A Comparative Case Study

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INTRODUCTION

There are 3 main areas of research regarding student collaborative learning:

1. Social dynamics
2. Intellectual collaboration
3. Teacher scaffolding.

Little work to date has looked at these processes simultaneously.

KEY PROCESSES / MEASURES

Social Dynamics

- **Relational equity:** how students show respect and consideration for one another's ideas and learning (Boaler, 2008).
- **Participatory equity:** how students are able (or unable) to access the conversational floor (Shah & Lewis, 2019).
- Counted conflicts for the floor and invitations to speak.
- Collaborative conflicts: two students speak simultaneously and one yields OR interrupter stops and waits.

Intellectual Collaboration

- **Building knowledge** through engagement with others' ideas has been linked with student learning, as has explaining one's own ideas (Ing et al., 2015; Webb et al., 2014).
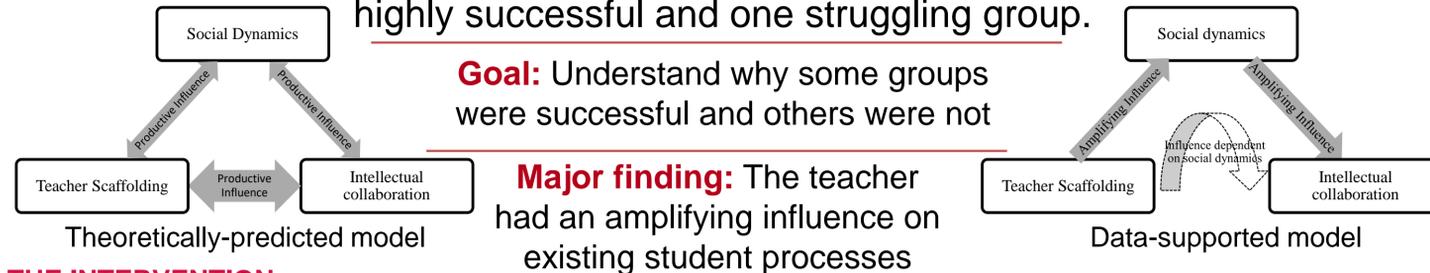- Counted knowledge building and ideas generation.

Teacher Scaffolding

- Teacher intervention in the learning process that support students' communication, sense-making, or engagement (Belland, Kim & Hannafin, 2013, Boyd & Markarian, 2011).
- Critical element seems to be the depth of conceptual understanding being supported (Boyd & Markarian, 2011).
- High-level: asking open questions, modeling reasoning, playing devil's advocate, and providing hypotheticals.
- Low-level: asking individuals to speak, vocab/story support, and clarifying questioning.

For more information on these measures, please see Kraatz et al. (under review)

OVERVIEW

We analyzed social dynamics, intellectual collaboration, and teacher scaffolding in one highly successful and one struggling group.

Theoretically-predicted model

Data-supported model

Goal: Understand why some groups were successful and others were not

Major finding: The teacher had an amplifying influence on existing student processes
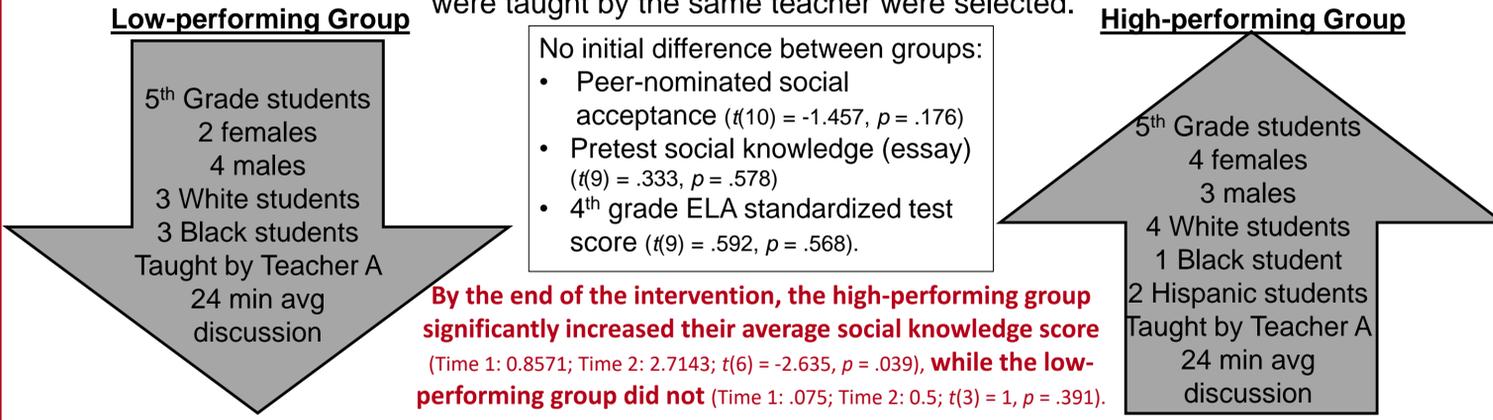
THE INTERVENTION

Collaborative Social Reasoning (CSR; Lin et al., 2019)

Each week for 6 weeks: Students read a short story → Small groups engage in collaborative discussions

CASE SELECTION

Two small groups of students engaging in a dialogic intervention were selected. Week 6 (final) discussion videos were used to identify high- and low-performing small groups. Two unanimously-identified groups that were taught by the same teacher were selected.

Low-performing Group

5th Grade students
2 females
4 males
3 White students
3 Black students
Taught by Teacher A
24 min avg discussion

No initial difference between groups:
- Peer-nominated social acceptance ($t(10) = -1.457$, $p = .176$)
- Pretest social knowledge (essay) ($t(9) = .333$, $p = .578$)
- 4th grade ELA standardized test score ($t(9) = .592$, $p = .568$).

High-performing Group

5th Grade students
4 females
3 males
4 White students
1 Black student
2 Hispanic students
Taught by Teacher A
24 min avg discussion

By the end of the intervention, the high-performing group significantly increased their average social knowledge score (Time 1: 0.8571; Time 2: 2.7143; $t(6) = -2.635$, $p = .039$), **while the low-performing group did not** (Time 1: .075; Time 2: 0.5; $t(3) = 1$, $p = .391$).

FINDINGS AND CONCLUSIONS

- Teacher did not necessarily serve to increase productive interactions in the groups, but instead **amplified existing norms**.
- In the group with poor collaborative skills and turn taking, she increased control of turn taking and encouraged students to respond to her questions directly, rather than to peers. This **reduced relational equity and intellectual collaboration.**
- In the group with strong collaborative abilities, the teacher engaged with student ideas at high conceptual levels, **further improving the relational and participatory equity within the group.**
- More research is needed to see if this is found in other settings and with wider populations.

Key
- Decreasing
- Increasing
- Constant

EXCERPTS AND CODING EXAMPLES

High Group, Week 4

Jaymie: I think he's thinking about his car more than his kids.

Spencer: I think that like, what Elliot said. I think he's more caring about himself [1] [1] than his kids because he's technically harming them in a way because he's, my point is starting to change. {Idea building, relational equity}

Elliot: [1] Yeah. [1]

Teacher: But is he loving them by having them have their rights too? Because some people might say that by him going down south he's loving them because he's giving them [1] [1] their rights to drive wherever they want. {Playing devils advocate}

Low Group, Week 6

Jordan: It's like... If you were a person who gets to choose for not doing anything but the other person does it, and you're really about to go to jail, would you be curious, "Why am I going to jail?"

Ryan: But the guy's already dead. {Idea building}

Jordan: Yeah, but the person killed him and blamed him, and then your sister would tell someone. Would tell that dude and that person that she told on would get mad or upset because he didn't do anything. And then when YOUR sister would go to Amos and ask, "Did you kill Parnell?" and she says, "Yes." and she'll just, "Oh man, I told him the wrong person."

Ryan: But she didn't really tell them the wrong person because they found the body. {Idea building}

Summary of Findings	Interruptions -Count- (Week 2, 4, 6)	Collaborative conflicts/total -Ratio- (Week 2, 4, 6)	Relational Equity -Count- (Week 2, 4, 6)	Invitations to share -Count- (Week 2, 4, 6)	Idea-building /minutes -Ratio- (Week 2, 4, 6)	Ideas generated per group member -Average- (Week 2/week 6)	High-level scaffolding -Count- (Week 2/week 6)	Low-level scaffolding -Count- (Week 2/week 6)
Low-Performing Group	60, 16, 15	.2, .31, 0	3, 0, 2	11, 0, 6	1.38, 0, .29	20.4 / 12.5	3 / 7	2 / 15
High-Performing Group	6, 8, 6	.83, .63, .67	3, 6, 16	1, 4, 1	.62, 1.28, 1.16	5.5 / 25.4	6 / 21	1 / 2