Student or Teacher? A look at how students facilitate public sensemaking during collaborative group work

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Introduction

• feature of equitable classrooms is the equitable distribution of authority and agency among students

• **Authority**: amount of “given opportunities to be involved in decision-making” including “establishing priorities in task completion, method, or pace of learning” (Gresalfi & Cobb, 2006, p. 51)

• **Agency**: ability to carry out self-made decisions on a mathematical task
• Authority & agency enhanced through public *sensemaking* (Ruef, 2016)
  • students participate in discourse as an active member of the classroom
  • seeks opportunities to understand & acknowledge other’s ideas, take risks by sharing, present arguments, and grapple with mistakes (Ruef, 2016)
Conceptual Framework

• **Positioning theory**: utilizes speech & action to locate someone’s rights, obligations, and duties (Van Langenhove & Harré, 1999)

• **Interactive positioning** happens when students position one another in relation to each other (Davies & Harré, 1999)

• **System of negotiation & moves**:

<table>
<thead>
<tr>
<th>Negotiation Move</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Knower (K1)</td>
<td>Provides information.</td>
<td>“Area is length times width.”</td>
</tr>
<tr>
<td>Secondary Knower (K2)</td>
<td>Requests information.</td>
<td>“What’s the formula for area of a rectangle?”</td>
</tr>
<tr>
<td>Primary Actor (A1)</td>
<td>Provides an action.</td>
<td>[reads the problem out loud]</td>
</tr>
<tr>
<td>Secondary Actor (A2)</td>
<td>Requests for an action.</td>
<td>“Can you read the problem out loud?”</td>
</tr>
</tbody>
</table>

• K1, A2 moves hold more agency and authority (Berry, 1981)
Conceptual Framework (Cont.)

• Types of positioning
  • **Expert**: Often deferred to (mathematically), given authority to decide whether work was correct
  • **Novice**: Deferred to an expert (positioning themselves as less competent), often receiving help from others
  • **Facilitator**: Regulates group activity/participation from group members, actively gets group members to contribute to joint problem solving

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<th>Negotiation Move</th>
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<tr>
<td>Primary Knower (K1)</td>
<td>Expert</td>
</tr>
<tr>
<td>Secondary Knower (K2)</td>
<td>Novice</td>
</tr>
<tr>
<td>Primary Actor (A2)</td>
<td>Facilitator</td>
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</tbody>
</table>

DeJarnette & González, 2015; Esmonde, 2009
Research Questions

1. How are students positioned during mathematical group work in public sensemaking classrooms?

2. How does interactive positioning impact the distribution of agency and authority?
Methods

Context

- 60 sixth grade students, primarily Latinx, attending public magnet school with focus on STEM and health sciences
- Ms. Mayen (teacher) is Latina
  - trained in facilitating public sensemaking

Data Sources

- Set of existing classroom video footage from Dr. Ruef

Qualitative Data Analysis

- Videos were transcribed & coded with MAXQDA software using a priori and emergent codes
*Brooklyn (top left), Kazaly (top right), Flor (bottom left), and Elena (bottom right) discuss how to find the area of the trapezoid (without formulas!).

*pseudonyms
Findings

Code Frequency of Negotiation Moves

<table>
<thead>
<tr>
<th>Code System</th>
<th>Elena</th>
<th>Brooklyn</th>
<th>Kazaly</th>
<th>Flor</th>
<th>SUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>2 (11%)</td>
<td>5 (29%)</td>
<td>2 (11%)</td>
<td>8 (47%)</td>
<td>17</td>
</tr>
<tr>
<td>K2</td>
<td>7 (19%)</td>
<td>13 (35%)</td>
<td>7 (19%)</td>
<td>10 (54%)</td>
<td>37</td>
</tr>
<tr>
<td>K1</td>
<td>25 (16%)</td>
<td>82 (54%)</td>
<td>14 (9%)</td>
<td>31 (20%)</td>
<td>152</td>
</tr>
<tr>
<td>A2</td>
<td>9 (28%)</td>
<td>17 (53%)</td>
<td>2 (9%)</td>
<td>3 (9%)</td>
<td>32</td>
</tr>
</tbody>
</table>

Duration of video footage: 26:52 over two days

- Brooklyn is positioned as expert-facilitator on the team; no clear novice
Evidence of Distributing Agency

Transcript

Elena: which one should we do?

Flor: Brooklyn, which one should we do?

Brooklyn: You guys are going up there, so you guys decide but remember you still have to count the little ones.

• Brooklyn distributes agency to Elena and Flor by letting them choose which method to present
Evidence for Distribution of Authority

Transcript
Brooklyn: I think you guys should do this one - and then explain - remember it's half? Half of two is one?
Elena: I don't know how to explain that. Or you should go.
Brooklyn: I'm not going!
Flor: I'll go up with you, Brooklyn.
Elena: Yeah.
Brooklyn: I don't want to go.
Elena: Everybody goes.
Brooklyn: I'm trying to show you.

- Brooklyn acknowledges others’ ideas
- Elena refrains from risk-taking
- Flor demonstrates risk-taking
- Brooklyn redistributes authority to Elena and Flor
Conclusions

1. How are students positioned during mathematical group work in public sensemaking classrooms?
   - Clear expert-facilitator, no clear novice

2. How does interactive positioning impact the distribution of agency and authority?
   - Brooklyn redistributes authority & agency to other students by “refusing to be the source of authority” (Ruef, 2016), mimicking the role of Ms. Mayen
   - Encourages risk-taking for Elena and Flor
   - Maintains equitable groupwork through temporary positioning
Limitations/Next Steps

• Limitations: Did Brooklyn consciously distribute agency and authority? What were her motivations?
• Interview students about why they performed certain actions
• Next steps: analyze different groups of students, add additional negotiation moves to represent complexity of interactions


Questions?

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Thank you!

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