How equity and inequity can emerge in pair programming

Paper by Colleen Lewis and Niral Shah
Work Presented by Stephen MacNeil
How do we define equity?
How do we define equity? As Structural.

Access
Teacher, Books, School System

Which disproportionately favors
Gender, Race, SES
How do we define equity? And as social.

Social Interaction

discuss, build, share, critique

Which disproportionately favors?
Background for Research

Discursive benefits
- asking questions
- explaining thoughts
- adopting ideas

Pair Programming
- complementary dyads
The experiment

Middle School
Summer Session (12 days)

Aaron, Peter, Sam, Kim

Jason
Methodology

Ethnographic field notes (interpretation)

Coded audio recordings (identification)

Total Talk  Role-based  Commands  Questions
## Quant Results

<table>
<thead>
<tr>
<th></th>
<th>Aaron</th>
<th>Samantha</th>
<th>Kim</th>
<th>Peter</th>
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<tbody>
<tr>
<td><strong>Total Talk</strong></td>
<td>37%</td>
<td>49%</td>
<td>50%</td>
<td>35%</td>
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<tr>
<td>(N=772)</td>
<td>(N=526)</td>
<td>(N=419)</td>
<td>(N=311)</td>
<td></td>
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<tr>
<td><strong>Jason as Navigator</strong></td>
<td>50%</td>
<td>55%</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>(N=282)</td>
<td>(N=274)</td>
<td>(N=197)</td>
<td>(N=82)</td>
<td></td>
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<tr>
<td><strong>Jason as Driver</strong></td>
<td>33%</td>
<td>47%</td>
<td>46%</td>
<td>31%</td>
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<tr>
<td>(N=490)</td>
<td>(N=252)</td>
<td>(N=222)</td>
<td>(N=229)</td>
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## Quant Results

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</table>
| **Commands Issued** | 7%  
(N = 116) | 35%    
(N = 68) | 47%   
(N = 44) | 18%    
(N = 37) |
| **Questions Asked**  | 63%   
(N = 82) | 59%     
(N = 52) | 75%    
(N = 66) | 65%    
(N = 74) |
Hypotheses

Friendship – No Evidence to support

Task Content – Possible

Content Knowledge – No, equal differences in pairs

Collab. Preferences – Unclear

Beliefs about collaboration – Probable
**Bonus Hypothesis. Speed**

**Command-clarify sequences**

326 Peter: Not at the end!
327 Peter: Forward 1, RT 1.
328 Peter: Down there.
329 Peter: You’re doing it wrong, there’s another (unclear speech).
330 Jason: Here?
331 Peter: No, not that.
332 Jason: Here?
333 Peter: Yeah, basically.
**Bonus Hypothesis. Speed**

**Short Cuts**

- Jason describes Aaron’s corner cutting as cheating
- Aaron uploads untested code, Jason objects, Aaron: “I don’t care”
- Peter’s shape has wrong orientation, Jason Objects, Peter: “Whatever”, Jason: “Everything is whatever, whatever, whatever”
**Bonus Hypothesis. Speed**

**Peer Comparisons**

- Internal Competition (within dyad)
- External Competition (with other dyad)
Assuming their results are conclusive – how might we align student values (speed) w/ pedagogical patterns?

In what other pedagogical patterns do you see social inequity being a problem?

Do self-paced curricula encourage competitiveness and lead to social inequity?

“How students treat students is how they will treat co-workers” – what are the moral implications?
Conclusion

Structural Inequity has been studied in isolation; we should also consider other forms and emergent forms of inequity that may result from our pedagogical design choices.

If you want to talk more – find me. I just started a research project in this area and would love help.