1. Introduction

- The teaching interview [1] aims to understand how interventions affect students’ thinking.
  - Intended to model natural teaching environment.
  - Researcher typically asks probing questions & provides scaffolding which shapes student thinking. In this study, interviewer facilitated activity but did not ask probing questions or offer scaffolding.
- 1 to 4 students working with researcher.
- Usually occurs in smaller room like an office.
- Video and audio recorded. Equipment is visible.
- We investigate the differences in student understanding as they complete an activity during a teaching interview as compared to a laboratory class.
- We look for implications that these findings have on classroom instruction.

2. Methodology

<table>
<thead>
<tr>
<th>Teaching Interview</th>
<th>Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=12</td>
<td>N=132</td>
</tr>
<tr>
<td>Paid $25 for participation</td>
<td>Part of normal laboratory</td>
</tr>
<tr>
<td>Two hour intervention</td>
<td>Two hour intervention</td>
</tr>
<tr>
<td>Alone or with partner</td>
<td>Groups of 3 or 4 students</td>
</tr>
<tr>
<td>Researcher facilitates</td>
<td>Researcher &amp; TA facilitate</td>
</tr>
<tr>
<td>Audio &amp; video recorded</td>
<td>No audio/video recording</td>
</tr>
</tbody>
</table>

- All students completed the pulley section of the CoMPASS curriculum [2].
- CoMPASS challenge: Design the best pulley setup to load a pool table into a van.
  1. Pre-test
  2. Brainstorm about challenge
  3. Use CoMPASS hypertext system
  4. Physical (or Virtual) Experiment
  5. Open-ended summary questions
  6. Mid-test
  7. Virtual (or Physical) Experiment
  8. Open-ended summary questions
  9. Post-test

Analysis:
- Quantitative: Performance on multiple choice test
- Qualitative: Phenomenographic analysis of written responses [3]

3. Pre, Mid and Post Results

- No statistically significant difference between the pre-test scores
- Teaching interview group scored significantly higher on the mid-test
- Teaching interview group scored significantly higher on the post-test

4. Post Test vs. Worksheet Summary Questions

- Looked at worksheet questions that tested the same content as pre/mid/post questions with largest difference between groups.
- Pre/Mid/Post Q9 = Worksheet Q4
- Pre/Mid/Post Q13 = Worksheet Q5
- Students in classroom did as well or better than teaching interview group on selected worksheet questions.

5. Teaching Implications

- Smaller focused work settings such as that of the teaching interview may help students gain more understanding than a classroom lab setting.
- Formative assessment questions answered during group work may not accurately predict individual understanding as measured by a mid or post-test. Strategies to help students individually construct knowledge during group work could help alleviate this problem.

References