Model of University-Community Science Partnerships to Engage K12 Students

Laurel M. Mayhew\textsuperscript{1,2} and Noah D. Finkelstein\textsuperscript{2}

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\textsuperscript{1} JILA NSF Physics Frontier Center for Atomic, Molecular, and Optical Physics
\textsuperscript{2} Department of Physics, University of Colorado, Boulder
Why Informal Science Education?

• Reach under represented populations
• Complement school activities
• Provide opportunities to engage undergrads/grads in education
Benefits to Univ. of Colorado:
1. University mission of service
2. Educate grad/undergrad (University Educators)

Study of Benefits To Children
Goals, Environment, Activities

Case Study:

- **Goal**: Understand 1-D acceleration
- **Environment**:
  - 2 remote video, 1 live sessions
  - 1 Univ. of Colorado science Univ. Educator
  - 2 Univ. of California social science Univ. Educ.
  - “Karl”, African American 3rd Grader
- **Activities**: Stop Action Motion* (SAM) movies

* www.samanimation.com
### Rubric for Evaluation

Successfully makes a SAM movie of:

<table>
<thead>
<tr>
<th>Level</th>
<th>Successfully makes a SAM movie of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Unsuccessful &lt;&lt;&lt; “Karl” started here</td>
</tr>
<tr>
<td>1</td>
<td>Object moving</td>
</tr>
<tr>
<td>2</td>
<td>Object moving with constant speed</td>
</tr>
<tr>
<td>3</td>
<td>Object moving with incr. / decre. speed</td>
</tr>
<tr>
<td>4</td>
<td>Object moving with constant acceleration</td>
</tr>
</tbody>
</table>
“Constant speed … is about anything going…it stays the same speed. It doesn’t speed up. It doesn’t go slower. It stays at the same speed.”
- “Karl”, session 2

Findings:
1. Karl described constant speed in his own words
2. Karl produced movie of constant speed
3. Karl used markings to show that his cut out moved in equal increments
Findings:
1. Karl produced movie of increasing and decreasing speed when shown how.

2. Karl could not make such a movie in subsequent sessions without being shown how again.
Findings:
1. Karl produced movie of constant speed:
   - New background / cutouts
   - No guiding lines
   - No Univ. Educator telling him how
   - No remote session
2. Similar results under different conditions
3. Karl used “skin” feature of SAM
   - superimposed previous frame
   - to make cutout move equal distance
Conclusions

- Third grader demonstrated constant motion
- Reached underserved populations
- Supported underprivileged youth
- Demonstrated new tools for education and evaluation
- Scalable => justifies expense
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New Media and Models for Engaging Under represented Students in Science

L. Mayhew\textsuperscript{1,2} and N. D. Finkelstein\textsuperscript{1}

\textsuperscript{1}Department of Physics, University of Colorado at Boulder
\textsuperscript{2}JILA NSF Physics Frontier Center for Atomic, Molecular, and Optical Physics