Evidence of Interest-Driven Learning

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Introduction:
Informal Learning
Informal Learning Environments

• More than 2,000 community technology centers have opened in the United States, specifically to provide better access to technology in non-dominant communities (Beamish, 1998; Warschauer, 2004).

• Similarly, many models of informal, after-school programs have been set up as alternatives to school-based learning:
  • 5th Dimension (Cole et al., 2006)
  • Digital storytelling (Hull & Katz, 2006)
  • La Clase Magica (Vasquez, 2003)
  • Boys and Girls Clubs (Hirsch, 2005)
  • Computer Clubhouse (Kafai, Peppler, & Chapman, 2009)
Where does “informal learning” occur?

- **Curriculum**
  - Unstructured
  - Pick-up basketball
- **Setting**
  - Formal
  - Schools
  - Boys and Girls Clubs
  - Teaching with textbook
  - Informal
  - Museums and Libraries
  - Computer Clubhouses
  - Virtual Communities
  - Grassroots organizing

Focus of research
Prior work:

What do we know?
What do we know?

• Interest influences attention, goal setting, and levels of learning (e.g., Ainley, Hidi, & Berndorff, 2002; Harackiewicz et al., 2003; Alexander, 1997).

• Context, content, community, and culture matter in interest development.
  • Hidi & Renninger, 2006
  • Crowley, K., Barron, B.J., Knutson, K., & Martin, C., in press
  • Maltese & Tai, 2010
  • Ainley & Ainley, 2011

• Informal learning and choice play are important to interest-driven learning.
  • Azevedo, 2011, 2012
  • Engle & Conant, 2002
  • Ito et al., 2009
Current work:
What are we making good progress on?
What are we making good progress on?

- Moving out of the lab into the real world learning ecologies (Barron, 2006).

- Designing learning experiences at really any age to more authentically "meet the kid" at the interface of their interest and a readiness to learn.

- Measuring growth/learning at the individual, group, or program, and increasingly at the community levels (Falk & Needham, 2011, 2013; Falk, Dierking, & Penuel, 2012).
What evidence is there of learning in interest-driven activities?

Rock Band
Boys and Girls Club Context

demographics

54% male
46% female

22% african-american
57% caucasian
21% multi-ethnic

low to lower-middle class

52% 5-9 years
38% 10-12 years
10% teens

Sports activities
Computer lab
Art
Photography
Music lessons

Out-of-school

Traditional music assessment

Series of (1) sight-reading, (2) transcription, and (3) echoing tasks, informed by consultation with local music educators based on Kodály Method. Administered to all participants (N= 26) at the close of the study.

Level 1—Exercise 3 (excerpt)

Level 2—Exercise 3 (excerpt)
Results

Youths' Number of Game Plays by Traditional Music Assessment Score

Average score on traditional music assessment vs. Number of Rock Band game plays.
Qualitative Observations

When asked why he signed up, 11-year-old Deshawn, an African American male who joined the Rock Band Club because of his interest in videogaming, said, “I want to play guitar, and if I can do this [mimicking playing violin], then I can do this [mimicking playing the guitar].”
What evidence is there of learning in interest-driven activities?

Scratch
Computer Clubhouse Network

100+ Clubhouses worldwide

70 Clubhouses in 15 states and D.C.

37 Clubhouses outside the United States
Media-rich, visual **programming**
Inside the Computer Clubhouse

What were youth producing?

<table>
<thead>
<tr>
<th>Most Popular Creative Software</th>
<th>Number of Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scratch</td>
<td>541</td>
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<tr>
<td>2. Microsoft Word</td>
<td>461</td>
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<tr>
<td>3. Bryce5</td>
<td>270</td>
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<td>4. Kai’s SuperGoo</td>
<td>143</td>
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<tr>
<td>5. Movies/Animations</td>
<td>78</td>
</tr>
</tbody>
</table>

Random Numbers

Variable

Loop

Conditional Statement

Computational concepts in Scratch

Community Development

Graph demonstrating the change in the percentage of projects that used various programming concepts over time

**p < .001 *p < .05

What evidence is there of learning in interest-driven activities?

e-Textiles
“The most important thing about DIY is that it portrays the idea that you can learn to do anything.”

-Dale Dougherty, MAKE
Assessing understanding of **circuits**

**Traditional assessments**

A) No current in return path  
B) Clashing currents model  
C) Less current in return path  
D) Equal currents in both parts

**New assessments**
Learning about circuits

Pre-Test Results

Post-Test Results

Significant results

<table>
<thead>
<tr>
<th>Circuit Drawing Test</th>
<th>Mean</th>
<th>N</th>
<th>Standard Deviation</th>
<th>Significance 2-tailed</th>
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<tbody>
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<td>Current Flow Pre-Test</td>
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<td>17</td>
<td>.35</td>
<td>.004*</td>
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</table>

* = significant differences at the p<.05 level

Informal and interest-driven learning: Where do we go from here?
Open questions

• How do we encourage youth to work on problems that matter (i.e., powerful ideas), especially within an interest-driven landscape?

• How can we document and study the long-term effects of interest-driven learning? What can the long-term study of makers, informal learning programs, and online learning tell us about how interest develops into long-term college and career-readiness?

• How can we capture interest-driven learning phenomena that grow outwards in time, in community, and in sophistication of tool use?

• How do we identify and transform interest-driven learning experiences using cyberlearning technology to design interventions and engage interest?
Thank you!