Toward Defining Digital Literacy in Early Childhood

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http://scratch.mit.edu/projects/EtcherPlay/78813
OUTLINE

- Background
- Digital Literacy
- Early Childhood Development
  - Concepts & Theories
- Proposed Model
- Two “Best” Current Models
  - ScratchJr
  - Scratch Pilot Examples
- In Sum
- Questions
Technology Use

Computers
Common Sense Media, 2011

- 90% of 5 to 8 years used
  - 53% 2 to 4 year olds
- 46% 5 to 8 years olds – once/week
- Average 1\textsuperscript{st} use = 3.5 yrs old

“Smart” Devices & Apps

- 52% of 0 – 8 yr olds have access to a “smart” device
  (Common Sense Media, 2011)
- 29% of parents downloaded apps for kids
  (Common Sense Media, 2011)
- 72% of the top-selling ED apps target PreK or elementary
  (Shuler, 2012)
Comparisons of Low-Income & High-Income Digital Device Use

Data from (Common Sense Media, 2011)
Digital Natives
A Few Examples:

- Technology Literacy
- ICT Literacy
- 21st Century Literacy
- New Media Literacy
- Computer Literacy
- Fan Fiction Writing
- Video Gaming
- Blogging
- Social Networking
- Chat Rooms & Message Boards

Knobel & Lankshear, 2007; Coiro, Knobel, Lankshear, & Leu 2008; Jenkins, 2006
DEFINITIONS OF DIGITAL LITERACY OVER TIME

Digital literacy is...

“The ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers (Paul Gilster, 1997, p. 1).”

“A set of habits through which children use computer technology for learning, work, socializing, and fun (Ba, Tally, Tsikalas, 2002, p.1).”

“Different ways of using digital tools within different sorts of sociocultural practices (James Paul Gee, 2010, p. 172).”
DEFINITIONS OF DIGITAL LITERACY

“Digital and media literacy for young children means having critical viewing, listening, and Web-browsing skills (NAEYC, 2012, p. 9).”

Digital literacy is “an evergrowing assortment of technical, cognitive, and sociological skills that are necessary in order to perform and solve problems in digital environments. (Eshet-Alkalai & Amichai-Hamburger, 2004).”
DIGITAL LITERACY

“The discourse on this important subject has been practice-oriented, and lacks a sound integrative framework and theoretical foundation (n.p.).”
~ Aviram and Eshet-Alkalai (2006)
DEVELOPMENTAL CONCEPTS & THEORIES TIED TO DIGITAL LITERACY

A Conceptual Model of Digital Literacy
Yoram Eshet-Alkalai & Colleagues

Cognitive
- Photovisual Literacy
- Reproduction Literacy
- Branching Literacy
- Information Literacy
- Socio-Emotional Literacy
- Real-time Thinking Skills

Positive Technological Development
Marina Bers

Personal-Social/Social-Cultural
- Competence
  - Content Creation
- Confidence
  - Creativity
- Character
  - Choices of Conduct
- Caring
  - Collaboration
- Connection
  - Communication
- Contribution
  - Community Building

References
- Eshet-Alkalai, 2004
- Eshet-Alkalai & Amichai-Hamburger, 2004
- Aviram & Eshet-Alkalai, 2006
- Eshet-Alkalai & Chajut, 2009

References
- Bers, 2007; 2010; 2012
- Bers, Lynch, & Chau, Forthcoming
- Lerner, et. al, 2005
MIT Lifelong Kindergarten + Tufts DevTech + Playful Invention Company

Goals
Developmentally appropriate interface
Embedded library of curricular modules
Online resources and community

Targeted Outcomes
Foundational Knowledge
Problem-Solving Skills
Discipline-Specific Knowledge

Current State
Regular Scratch Assessment in ECE – Fall 2011
Initial ScratchJr Interface in development - Ongoing
Fall 2011 Pilot

- Lab School
- 8 - PreK, 19 - K, 16 - 1st/2nd
- 4 – 30 min sessions (3 PreK)
- Evaluate interface use across multiple dimensions (0 – 5 scale)
- Example:

<table>
<thead>
<tr>
<th>Session 2</th>
<th>PreK1</th>
<th>K2</th>
<th>1st/2nd</th>
<th>Item Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the mouse to target and click</td>
<td>3.11</td>
<td>3.68</td>
<td>3.90</td>
<td>3.57</td>
</tr>
<tr>
<td>Click and drag to snap blocks together</td>
<td>1.00</td>
<td>3.38</td>
<td>4.00</td>
<td>2.79</td>
</tr>
<tr>
<td>Click and drag to separate blocks</td>
<td>1.33</td>
<td>3.14</td>
<td>3.77</td>
<td>2.75</td>
</tr>
<tr>
<td>Highlight and retype a parameter</td>
<td>2.00</td>
<td>3.50</td>
<td>3.75</td>
<td>3.08</td>
</tr>
<tr>
<td>Find a given block (by its text label)</td>
<td>--</td>
<td>0.83</td>
<td>3.27</td>
<td>2.05</td>
</tr>
<tr>
<td>Find a given palette</td>
<td>--</td>
<td>0.60</td>
<td>3.40</td>
<td>2.00</td>
</tr>
<tr>
<td>Drag &amp; drop a block onto workspace</td>
<td>--</td>
<td>2.83</td>
<td>3.57</td>
<td>3.20</td>
</tr>
<tr>
<td>Block-action correspondence</td>
<td>4.00</td>
<td>4.00</td>
<td>3.00</td>
<td>3.67</td>
</tr>
<tr>
<td>Use knowledge of number size</td>
<td>--</td>
<td>3.60</td>
<td>3.40</td>
<td>3.50</td>
</tr>
<tr>
<td>Use different blocks to program the cat</td>
<td>1.11</td>
<td>3.62</td>
<td>3.50</td>
<td>2.74</td>
</tr>
<tr>
<td>Make multi-step programs</td>
<td>1.50</td>
<td>3.29</td>
<td>3.50</td>
<td>2.76</td>
</tr>
<tr>
<td>Use the start block instead of Run button</td>
<td>--</td>
<td>2.55</td>
<td>4.00</td>
<td>3.27</td>
</tr>
<tr>
<td>Identify the programmable object</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Understanding the uses of various areas</td>
<td>2.27</td>
<td>2.94</td>
<td>4.00</td>
<td>3.07</td>
</tr>
<tr>
<td>Grade-Average</td>
<td>2.26</td>
<td>3.00</td>
<td>3.65</td>
<td>3.03</td>
</tr>
</tbody>
</table>
EXAMPLE: TOOL USE
EXAMPLE: PERSONAL RELEVANCE
EXAMPLE: HOLIDAY INTEGRATION
EXAMPLE: MYSTERY SPRITE EXPLOSION
Example: Grow/Shrink
EXAMPLE: BIG NUMBERS
IN SUM...
COMMENTS, QUESTIONS, FEEDBACK

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THANK YOU!
REFERENCES


References Continued

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