Integrating digital resources into classroom instruction to enhance early mathematics and literacy teaching and learning

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EDC’s Center for Children & Technology
Are you...?

- an administrator/director?
- a teacher?
- a researcher?
- other?
Ready to Learn Initiative

U.S. Department of Education

Programming for 2–8-year-olds

Background on Literacy 2009 Study

10-week Intervention
80 Classrooms

Treatment Classrooms
(Literacy Intervention)

Comparison Classrooms
(Science Intervention)

398 Children
Background on Math 2013 Study

10-week Intervention
92 Classrooms

Treatment Classrooms
(Math + Tech Intervention)

Comparison Classrooms
(Tech only Intervention)

Control Classrooms
(Business as Usual)

966 Children
## Math Study: 3 Conditions

<table>
<thead>
<tr>
<th>Math &amp; Tech (Treatment)</th>
<th>Tech &amp; Media (Comparison)</th>
<th>Business As Usual (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 classrooms</td>
<td>30 classrooms</td>
<td>29 classrooms</td>
</tr>
<tr>
<td>10-week PBS KIDS</td>
<td>Math as usual</td>
<td>Math as usual</td>
</tr>
<tr>
<td>Supplement</td>
<td>IWB + laptops</td>
<td>Technology as usual</td>
</tr>
<tr>
<td>Selected PBS KIDS</td>
<td>Teacher selected</td>
<td>N/A</td>
</tr>
<tr>
<td>Videos</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Selected PBS KIDS</td>
<td>Teacher selected</td>
<td>N/A</td>
</tr>
<tr>
<td>Games</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Hands-on Materials</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Math + Tech training</td>
<td>Tech training and</td>
<td>Post hoc PD</td>
</tr>
<tr>
<td>and coaching</td>
<td>coaching</td>
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Sample Study Timeline
### Recommended Schedules

#### Warm-Up (5 minutes)
- **Monday:** Video Co-Viewing (25 minutes)
- **Tuesday:** Math Detective Journal (20 minutes)
- **Wednesday:** Math Circle Routine (10 minutes)
- **Thursday:** Challenge Game Play (25 minutes)
- **Friday:** Computer Center (~10 minutes per pair of children)

#### Focused Viewing (20 minutes)
- **Monday:** Computer Center (~10 minutes per pair of children)
- **Tuesday:** Guided Reading (15 minutes)
- **Wednesday:** Computer Center (~10 minutes per pair of children)
- **Thursday:** Computer Center (~10 minutes per pair of children)
- **Friday:** Computer Center (~10 minutes per pair of children)

#### Computer Games (10 minutes per each child)
- **Monday:** Hands-On Centers (~10 minutes per pair of children)
- **Tuesday:** Hands-On Centers (~10 minutes per pair of children)
- **Wednesday:** Hands-On Centers (~10 minutes per pair of children)
- **Thursday:** Hands-On Centers (~10 minutes per pair of children)
- **Friday:** Hands-On Centers (~10 minutes per pair of children)

#### Sample Schedule

<table>
<thead>
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<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
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<tbody>
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<td>Math Detective Journal (20 minutes)</td>
<td>Math Circle Routine (10 minutes)</td>
<td>Challenge Game Play (25 minutes)</td>
</tr>
<tr>
<td>Easy Game Play (10 minutes)</td>
<td>Guided Reading (15 minutes)</td>
<td>Computer Center (~10 minutes per pair of children)</td>
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**Key Findings**

- Technology, media, and digital games can be used as tools to teach and learn literacy and math

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>• Name letters</td>
<td>• Counting</td>
</tr>
<tr>
<td>• Recognize sounds associated with those letters</td>
<td>• Subitizing</td>
</tr>
<tr>
<td>• Understand basic concepts about stories and print</td>
<td>• Recognizing numerals</td>
</tr>
<tr>
<td>• Recognize the letters in their own names</td>
<td>• Recognizing, composing, and representing shapes</td>
</tr>
<tr>
<td></td>
<td>• Patterning</td>
</tr>
</tbody>
</table>
Technology in Your PreK Classroom
Tips for Using Tech in PreK Classrooms

• Integrate into existing classroom structures
  – Physical space
  – Schedules & Time
Tips

- Set the stage for using technology and educational media in the classroom
  - Introduce the technology
  - Create rules together
  - Allow children to touch and play
  - Set a tech routine
  - Facilitate the technology experience
Tips

• Find age-appropriate math and literacy content
  – Identify quality resources
Tips

• Be a technology ambassador
  – Preview and test new technologies
  – Troubleshoot first and then seek support
Tips

• Adult mediation is important!
  – Pause to ask questions
  – Model gameplay and think out loud as you play
• Technology and media are tools and do not replace good teaching!
Tips

• Encourage paired or small group gameplay
  – Model how to ask questions
  – Model how to talk about the game
  – Encourage children to talk to each other
Tips

• Connect digital activities to hands-on activities
Digital Learning Resources for Math & Literacy

- www.cct.edc.org/rtl
- www.pbskids.org/teachers
- www.pbskids.org/lab
- www.pbskids.org
- www.sesamestreet.org
- www.peepandthebigwideworld.org
- www.teachersdomain.org
Questions & Thank you!

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http://cct.edc.org/rtl