Technology In Education: An Integrated Approach

Ruben R. Puente urge, Ph.D.
1. SAMR & TPCK
Redefinition
Tech allows for the creation of new tasks, previously inconceivable

Modification
Tech allows for significant task redesign

Augmentation
Tech acts as a direct tool substitute, with functional improvement

Substitution
Tech acts as a direct tool substitute, with no functional change

Ruben R. Puentedura, As We May Teach: Educational Technology, From Theory Into Practice. (2009)
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2. Educational Technology and Outcomes
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<thead>
<tr>
<th>Meta-analysis</th>
<th>Number of studies</th>
<th>ES type</th>
<th>Mean</th>
<th>SE</th>
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<td>Blok, Oostdarn, Otter, and Overmaat (2002)</td>
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<td>Hedges’s $g$</td>
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<td>Christmann and Bädgett (2000)</td>
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<td>Glass’s $\Delta$</td>
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<td>Goldberg, Russell, and Cook (2003)</td>
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<td>Hedges’s $g$</td>
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<td>Koufogiannakis and Wiebe (2006)</td>
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<td>Pearson, Erdig, Blomeyer, and Moran (2005)</td>
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<td>Roblyer, Castine, and King (1988)</td>
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<td>Rosen and Salomon (2007)</td>
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a. Converted to Cohen’s $d$. 

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<thead>
<tr>
<th>Study</th>
<th>SAMR Level</th>
<th>Description</th>
<th>Effect Size</th>
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<tbody>
<tr>
<td>Ligas (2002)</td>
<td>S</td>
<td>CAI system used to support direct instruction approach for at-risk students.</td>
<td>0.029</td>
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<tr>
<td>Xin &amp; Reith (2001)</td>
<td>A</td>
<td>Multimedia resources provided to contextualize learning of word meanings and concepts.</td>
<td>0.264</td>
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<tr>
<td>Higgins &amp; Raskind (2005)</td>
<td>M</td>
<td>Software/hardware used for text-to-speech, definitions, pronunciation guide for children with reading disabilities.</td>
<td>0.600</td>
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<tr>
<td>Salomon, Globerson &amp; Guterman (1989)</td>
<td>R</td>
<td>Software presents students with reading principles and metacognitive questions as part of the reading process.</td>
<td>1.563</td>
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<td><strong>Algebra I</strong>&lt;br&gt;<em>Effectiveness of Cognitive Tutor Algebra I at Scale</em>, by John F. Pane, Beth Ann Griffin, Daniel F. McCaffrey, Rita Karam</td>
<td>S to A</td>
<td>S: Computerized algebra drills, some tied to real-world scenarios&lt;br&gt;A: Tools for basic visualization; adaptive response to student progress</td>
<td>$\approx 0.2$&lt;br&gt;50th perc. → 58th perc.</td>
</tr>
<tr>
<td><strong>Earth Science</strong>&lt;br&gt;<em>Using Laptops to Facilitate Middle School Science Learning: The Results of Hard Fun</em>, by Alexis M. Berry, Sarah E. Wintle</td>
<td>A to M</td>
<td>A: Interactive tools for concept exploration and visualization&lt;br&gt;M: Narrated animation as final project</td>
<td>$\approx 0.6$&lt;br&gt;50th perc. → 73rd perc.&lt;br&gt;($\approx 1.4$ a month later)&lt;br&gt;(50th perc. → 92nd perc.)</td>
</tr>
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</table>
3. The EdTech Quintet
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<tr>
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Learning Environments

- Contextual Search
- Augmented Reality
- Cloud Resources
- Mobile Tools
- Sensors
- Recorders
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Narrative sources; Narrative constraints

Pictorial vocabulary; Narrative transitions; Text/image integration

CDS Seven Elements; Montage structures

Narrative structures; Narrative flows

Ludic elements

Image Assembly → Sequential Art → Moving Image → Interactive Media → Interactive Fiction

SOCIAL

PLACE

MOMENT

Infinite Canvas
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[Images of artifacts and timelines]
Formal Definition of **Game** (Salen & Zimmerman)

“A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.”
4. A Vygotskyan Connection
Zone of Proximal Development (ZPD):
Region between:
- what a learner can accomplish independently (the Zone of Current Development, ZCD)
- what they can accomplish with assistance from a “more knowledgeable other” (MKO)

“…what a child can do with assistance today she will be able to do by herself tomorrow.”

This is an iterative process:
- The ZCD and ZPD change over time;
- Independent practice is required to close the loop.
Alone

With MKO

ZCD

ZPD


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<th>The EdTech Quintet – Associated Practices</th>
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</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
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<tr>
<td>Provides diversity to the ZPD</td>
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<td><strong>Mobility</strong></td>
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<td>Creates the context for the process</td>
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<tr>
<td><strong>Visualization</strong></td>
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<tr>
<td>Aids in the creation of ZPD “leaps”</td>
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<tr>
<td><strong>Storytelling</strong></td>
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<tr>
<td>Aids in the integration of the ZPD</td>
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<td><strong>Gaming</strong></td>
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<td>Provides frameworks for independent practice</td>
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5. The Shape of Things to Come
Say hello to Watson

Meet IBM Watson, a cognitive system that enables a new partnership between people and computers that enhances and scales human expertise.

Explore Watson
Museums Morph Digitally
The Met and Other Museums Adapt to the Digital Age

By STEVE LOHR  OCT 23, 2014

For the Metropolitan Museum of Art, a turning point came in 2011. Down went the signs imploring visitors to stow their cellphones. The Met revamped its website, tailoring it for viewing on smartphone screens. The museum was not only allowing visitors to use their mobile phones while browsing the artworks, but encouraging it.

The digital experience was embraced and meant to enhance the physical experience of exploring the museum. The trend has only accelerated since, at the Met and across the museum world. At first glance, it might seem like a capitulation, giving in to the virtual enemy when museums are so essentially physical spaces.
The Collection Online / 402,349 records

Ways to browse

ARTIST / MAKER / CULTURE  OBJECT TYPE / MATERIAL  GEOGRAPHIC LOCATION  DATE / ERA  DEPARTMENT

Leonardo da Vinci
Claude Monet
Achaemenid
Velázquez
THE FUTURE OF MUSEUMS CONFERENCE

/// TWIN MUSEUM EVENTS

The New Media Consortium and Learning Revolution held twin events about the future of museums on July 23rd & 24th, 2014. Both events were focused on four main themes from the NMC Horizon Report > 2013 Museum Edition:
- Bring Your Own Device
- Location-Based Services
- Crowdsourcing
- Makerspaces

July 23rd - The NMC Virtual Symposium on the Future of Museums was an exclusive symposium for you, the curators, creators, innovators, museum professionals, and educators. In this limited-space event, participants engaged with panels on these topics and helped shape the conversation around the future of museums.
More information at go.nmc.org/future-museums

July 24th - The Learning Revolution

/// WELCOME!

The Future of Museums Conference was held from 10am - 5pm US-Eastern Time on July 24th, 2014, and featured keynote speakers and crowdsourced presentations by your peers.

The conference was a collaborative global conversation about technology, museums, and the future. A welcome letter with the conference strands is here.

To be kept informed of future conference news and updates, please join this network!

/// KEYNOTES

/// 2014 CONFERENCE

Conference
- Welcome & Information
- Agenda & Schedule
- Chat
Sign in to chat!
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