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<td>(2005)</td>
<td></td>
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<td>Roblyer, Castine, and King (1988)</td>
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</tbody>
</table>

a. Converted to Cohen’s d.
The Research: 1,097 Studies, 25 Metastudies, 19 Years

SAMR and the Use of Technology to Enhance Reading Performance in Middle School

SAMR and the Use of Tablets in Education

S: 14 Studies
A: 7 Studies
M: 4 Studies
R: 2 Studies

Effect Size

<table>
<thead>
<tr>
<th>Social</th>
<th>Mobility</th>
<th>Visualization</th>
<th>Storytelling</th>
<th>Gaming</th>
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<tr>
<td>200,000 years</td>
<td>70,000 years</td>
<td>40,000 years</td>
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Class

School

World

Home

Learning Environments

Contextual Search/Augmented Reality
Sensors/Recorders
Mobile Tools
Cloud Resources

The Curiosity Amplifier

The Lively Sketchbook


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.”

<table>
<thead>
<tr>
<th>The EdTech Quintet – Associated Practices</th>
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</table>
Location
Position in space

Condition
Mix of natural & artificial features that give meaning to a location

Links
Connections between places

Formal Region
Group of places with similar conditions

Functional Region
Group of places linked together by a flow
<table>
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<tr>
<th>Spatial Thinking Skills</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Comparison</strong></td>
<td>How are places similar or different?</td>
</tr>
<tr>
<td><strong>Aura</strong></td>
<td>What is this place’s influence on nearby places?</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td>What nearby places are similar to this one?</td>
</tr>
<tr>
<td><strong>Transition</strong></td>
<td>How do things change between two places?</td>
</tr>
<tr>
<td><strong>Hierarchy</strong></td>
<td>What larger area is this area inside? What smaller areas are inside it?</td>
</tr>
<tr>
<td><strong>Analogy</strong></td>
<td>What places have similar conditions?</td>
</tr>
<tr>
<td><strong>Pattern</strong></td>
<td>What distinctive arrangements can you see on a map?</td>
</tr>
<tr>
<td><strong>Association</strong></td>
<td>Are these patterns similar?</td>
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Enhancement
Transformation

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Shared Practices
Some Useful Shared Practices

• Augmented Note Taking and Annotation

• Visualization Methods:
  • 5 Primary Domains: Space, Time, Networks, Text, Number

• Simple Blogging

• Simple Digital Storytelling Video

• Flipped Classroom:
  • Materials Creation
  • Peer Discussion/Instruction Methods

• Simple Interactive Fiction

• LMS Practices
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The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking

Pam A. Mueller¹ and Daniel M. Oppenheimer²
¹Princeton University and ²University of California, Los Angeles

Abstract
Taking notes on laptops rather than in longhand is increasingly common. Many researchers have suggested that laptop note taking is less effective than longhand note taking for learning. Prior studies have primarily focused on students' capacity for multitasking and distraction when using laptops. The present research suggests that even when laptops are used solely to take notes, they may still be impairing learning because their use results in shallower processing. In three studies, we found that students who took notes on laptops performed worse on conceptual questions than students who took notes longhand. We show that whereas taking more notes can be beneficial, laptop note takers' tendency to transcribe lectures verbatim rather than processing information and reframing it in their own words is detrimental to learning.
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Choosing the First SAMR Ladder Project: Three Options

- **Your Passion:**
  - If you had to pick one topic from your class that best exemplifies why you became fascinated with the subject you teach, what would it be?

- **Barriers to Your Students’ Progress:**
  - Is there a topic in your class that a significant number of students get stuck on, and fail to progress beyond?

- **What Students Will Do In the Future:**
  - Which topic from your class would, if deeply understood, best serve the interests of your students in future studies or in their lives outside school?
A SAMR Ladder-Building Exercise

- Using one of the three options listed previously, select a unit of instruction you would like to transform; (5 minutes)

- Spell out exactly why you would like to transform this unit, and outline the goals you would like to accomplish as a result of this transformation; (10 minutes)

- Using the SAMR model, draw up a rough progression for how you plan to transform it, indicating at each level what you used to do and what you now wish to do; (20 minutes)

- Using the EdTech Quintet, refine your rough progression into a full SAMR ladder, specifying the tool type and practice to be used at each stage, and indicating if you expect this to be a shared practice. (25 minutes)
Universal Design for Learning – Guidelines

1. Provide Multiple Means of Engagement
   • Provide options for recruiting interest
   • Provide options for sustaining effort and persistence
   • Provide options for self regulation

2. Provide Multiple Means of Representation
   • Provide options for perception
   • Provide options for language and symbols
   • Provide options for comprehension

3. Provide Multiple Means of Action and Expression
   • Provide options for physical action
   • Provide options for expression and communication
   • Provide options for executive functions
