Who Plays Games?
Some Facts About Game Players

• The average videogame player is 35 years old
• 40% of all videogame players are women
• 69% of heads of households play videogames
• Among teens ages 12-17:
  • 97% play videogames (99% boys, 94% girls)
  • 80% play five or more different game types; 40% eight or more
  • 76% play games as a social activity:
    • 65% play with others in the same room; 27% online
  • Same-room game play relates positively to civic outcomes
  • Game-related social interaction relates positively to civic outcomes

The Educational Research
Effectiveness of Games in Education I
(Randel, Morris, Wetzel, and Whitehill)

- Meta-study of 68 studies from 1963-1991
  - Social sciences; mathematics; language arts; logic; physics; biology
- Most effective: language arts and mathematics
  - 12 out of 14 studies showed positive results
- Next most effective: social sciences
  - 13 out of 46 showed positive results
  - 33 out of 46 were as effective as traditional methods
- Game learning overall showed better retention than traditional learning
- Students showed greater interest in topics taught via games or simulations

Effectiveness of Games in Education II
(Fletcher and Tobias)

- Review of research from 1992-2005
  - 42 papers directly related to use of games in instructional settings
- Topics:
  - Transfer to Real-Life Tasks: 5 positive, 1 neutral, 1 mixed
  - Facilitating Performance, Learning, and Transfer: 4 positive
  - Transfer to Related Tasks or Domains: 8 positive, 1 neutral
  - Effects on Different Variables: 5 positive
  - Effects on Cognitive Processes: 9 positive
  - Team Characteristics of Game Players: 1 positive, 2 mixed
  - Motivational Effects: 3 positive, 2 mixed
Effectiveness of Games in Education III (Mayo)

Table 1. Learning outcomes of several games compared to lecture on same material.

<table>
<thead>
<tr>
<th>Game</th>
<th>Topic</th>
<th>Audience</th>
<th>N (study size)</th>
<th>Learning outcome over lecture</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimenxian/Evolver</td>
<td>Algebra</td>
<td>High school</td>
<td>193</td>
<td>7.2%</td>
<td>(37–39)</td>
</tr>
<tr>
<td>Geography Explorer</td>
<td>Geography</td>
<td>College</td>
<td>273</td>
<td>15 to 40%</td>
<td>(40)</td>
</tr>
<tr>
<td>NIU Torcs</td>
<td>Numerical methods</td>
<td>College</td>
<td>86</td>
<td>2x more time spent on homework, much more detailed concept maps</td>
<td>(10–11)</td>
</tr>
<tr>
<td>River City</td>
<td>Ecology/biology</td>
<td>Middle/high school</td>
<td>≈2000</td>
<td>15 to 18%, on average</td>
<td>(13)</td>
</tr>
<tr>
<td>Supercharged!</td>
<td>Electrostatics</td>
<td>Middle school</td>
<td>90</td>
<td>+8%</td>
<td>(41)</td>
</tr>
<tr>
<td>Virtual Cell</td>
<td>Cell biology</td>
<td>College</td>
<td>238</td>
<td>40%, on average</td>
<td>(40)</td>
</tr>
</tbody>
</table>

Two Examples
SAMR Substitution/Augmentation: 
*Dimenxian Evolver*

---

SAMR Modification/Redefinition: 
*River City*
**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

---

**Resources Cited**
• **Who Plays Games:**

• **The Educational Research:**

• **The SAMR Model:**
  - Puentedura, R.R. *As We May Teach: Educational Technology, From Theory Into Practice*. (2009)

• **Game Sources:**
  - *Dimenxian Evolver*: http://www.dimensionm.com/
  - *River City*: http://muve.gse.harvard.edu/rivercityproject/
Hippasus

http://hippasus.com/rrpweblog/
rubenrp@hippasus.com

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License.