Remembering The Future: A Game With Learning Mirrors

Ruben R. Puenteedura, Ph.D.
1. Black Swans
Black Swan Events

• Cannot be predicted ahead of time
• Have a major effect
• Can be rationalized retrospectively

The shocking, cruel reality of Europe's refugee crisis

The Guardian

Rhys Williams

Correction: We can't wholly apply people fleeing to a war zone

The Guardian

Rhys Williams

Correction: We can't wholly apply people fleeing to a war zone
AFTER THE DEVASTATION, A DAUNTING RECOVERY

Pakistan cricket board wants India to be its "home ground"

Hot wave declared as Delhi sizzles at 44.5°C

Fires close in on city

Hazards air 29 days in the past two months

Business as Usual → Black Swan Event → Antifragility, Resilience, Near-Term Risk, Existential Risk
Diana Laurillard, “Pedagogical forms of mobile learning: framing research questions.” In N. Pachler (Ed.), Mobile learning: Towards a research agenda. (2007)
<table>
<thead>
<tr>
<th>Teacher</th>
<th>Where the learner is going</th>
<th>Where the learner is</th>
<th>How to get there</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clarifying, sharing and understanding learning intentions</td>
<td>Engineering effective discussions, tasks, and activities that elicit evidence of learning</td>
<td>Providing feedback that moves learners forward</td>
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<tr>
<td>Peer</td>
<td></td>
<td></td>
<td>Activating students as learning resources for one another</td>
</tr>
<tr>
<td>Learner</td>
<td></td>
<td></td>
<td>Activating students as owners of their own learning</td>
</tr>
</tbody>
</table>

Dylan Wiliam, *Embedded Formative Assessment*. Solution Tree (2011)
• How do I make this unit of instruction antifragile?
• How do I make this course antifragile?
• How do I make this degree antifragile?
• How do I make this institution antifragile?

• How do I make this student learning antifragile?
2. SAMR, the EdTech Quintet, and Antifragility
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)
<table>
<thead>
<tr>
<th>Social</th>
<th>Mobility</th>
<th>Visualization</th>
<th>Storytelling</th>
<th>Gaming</th>
</tr>
</thead>
<tbody>
<tr>
<td>200,000 years</td>
<td>70,000 years</td>
<td>40,000 years</td>
<td>17,000 years</td>
<td>8,000 years</td>
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<tr>
<td>Social</td>
<td>Communication, Collaboration, Sharing</td>
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<tr>
<td>Mobility</td>
<td>Anytime, Anyplace Learning and Creation</td>
</tr>
<tr>
<td>Visualization</td>
<td>Making Abstract Concepts Tangible</td>
</tr>
<tr>
<td>Storytelling</td>
<td>Knowledge Integration and Transmission</td>
</tr>
<tr>
<td>Gaming</td>
<td>Feedback Loops and Formative Assessment</td>
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**Substitution**
Tech acts as a direct tool substitute, with no functional change

**Modification**
Tech allows for significant task redesign

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

**Redefinition**
Tech allows for the creation of new tasks, previously inconceivable

**Infrastructure**
Primary Focus: EdTech Baseline
Implement shared tools and practices
Substitution
Tech acts as a direct tool substitute, with no functional change

Modification
Tech allows for significant task redesign

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

Redefinition
Tech allows for the creation of new tasks, previously inconceivable

Amplification
Primary Focus: System Dynamics
Enhance selected leverage points
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<td>Substitution</td>
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<td>Redefinition</td>
<td>Tech allows for the creation of new tasks, previously inconceivable</td>
</tr>
<tr>
<td>Integration</td>
<td>Primary Focus: Networks. Create people/practice networks</td>
</tr>
</tbody>
</table>

![Diagram of networks and thinking process](image-url)
**Redefinition**
*Tech allows for the creation of new tasks, previously inconceivable*

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

**Modification**
*Tech allows for significant task redesign*

**Substitution**
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**Differentiation**
*Primary Focus: Agents*
*Develop learner/community agency*
3. Mirrors
3.1 Collaboration Structures
Structuring Collaboration
Visualizing Collaboration
3.2 The Thinking Sidecar
Informe sobre la evolución de la epidemia de covid-19 en Chile

Camila Arroyo, Eduardo Engel, Diego Poncelli y Pablo Simoni

15 de junio de 2020

Positividad: indicador epidemiológico clave

Un entrevista en El Mercurio: el día de hoy, el ministro Paulo Arntz advirtió que: “El promedio de positividad para los ensayos PCR en los últimos días en todo Chile es de 35% con un pico en la Región Metropolitana de 40% y Araucanía de 35%. De hecho, el 40% de los positivos que se hacen en el estudio son positivos, uno en 5-10 de los 50 que se realizan por persona, que es un dato excelente”. A los reportes epidemiológicos no les gusta el índice de positividad, y por ejemplo, en Independencia se llegó a tener 30% de positividad y ahora está en 14%. En las Regiones del Sur, coronado en 30%. En la Región de Arica y Parinacota, de 62% a 48% (es un dato que hay que entender y se van haciendo indicadores, pero se han bajado también). Cuando bajamos realmente los índices de positividad se le dan los resultados PCR van a poder estar más tranquilos”. El ministro indica que el aporte al sector para seguir haciendo la positividad estabilizada o incluso ir en la dirección opuesta es, esencial para que se pueda degradar la situación, la transmisión y el cumplimiento de las vacunas, comentando el número de veces y acortar el periodo de espera de los resultados.

Las declaraciones anteriores son de gran importancia. La autoridad al incorporar la positividad como uno de los principales indicadores a escala nacional, confiere la relevancia de la evolución de la epidemia. También en relación a que cada caso de positividad, a nivel nacional, tiene el potencial de significar la cantidad de personas que podrían estar en el estado de infección inmunológica, ya que podrían contribuir a la mayor baja de características de las personas que encuentran en estas condiciones excepcionales indicios que conducen a la infección de los demás. También es un indicador útil para medir el impacto de las acciones de la dinámica epidemiológica.

CBG: Census Block Group
POI: Point of Interest
S: Susceptible
E: Exposed
I: Infectious
R: Removed
The Math Sidecar
3.3 Tangibility
Maker Tools
The Internet of Things
3.4 The Next Work/Life Place
AI
Introducing SIFT

So it may seem like things to think about why read things come, how are we getting better at sorting truth from fiction from everything in between?

Our solution is to give students and others a short list of things to do when judging a source, and mock with all these things to occur in real life but web techniques. Let all the things is a tool which will have a list of them.

Step
The first move to the project, STOP reminds you of the things.

4 C’s of Participation

Besides introducing the new media literacies, the 2006 white paper “Confronting the Challenges of Participatory Culture: Media Education for the 21st Century” identified four basic forms of participatory culture:

1. Affiliations (e.g., belonging to a community, such as Classroom 2.0).
2. Expressions (e.g., producing new creative forms, such as Sylvia’s Super-Awesome Maker Show, a video channel created by an 8-year-old to introduce Arduino activities to her peers).
3. Circulations (e.g., engaging in activities that shape the flow of media, through, for example, passing along links to the Kony 2012 video).
4. Collaborative problem solving (e.g., working together to develop new knowledge, such as contributing to fan forums for World of Warcraft).

These four forms of participatory culture were briefly outlined in this white paper’s Executive Summary without further elaboration or clarification. As we’ve worked to
Additional Resources

- **SAMR and the EdTech Quintet:**
  - For an overview of both models in one location, this video covering the basics is probably the best place to start:
  - One particularly accessible and concise introduction focusing exclusively on the SAMR model was codeveloped with Common Sense Education:
    - How to Apply the SAMR Model – [https://youtu.be/ZQTx2UQQvbU](https://youtu.be/ZQTx2UQQvbU)
    - The Impact of the SAMR Model – [https://youtu.be/SWU0Dzz6gs0](https://youtu.be/SWU0Dzz6gs0)
  - The EdTech Quintet has a rather interesting set of connections to older - much older - technologies, as discussed in this presentation:
  - Finally, for those wishing to dig a little deeper, a conversation between Dr. Bebell and Dr. Puenteedura has more of the inside story on the research:
    - Demystifying SAMR – [https://youtu.be/L9h9ePoXgS8](https://youtu.be/L9h9ePoXgS8)

- **Black Swan Thinking:**
  - Dr. Puentedura’s ongoing project, sponsored by ASU under its ShapingEDU umbrella:
    - Of Swans, Dragons, and How to Tell Them Apart (Without Getting Singed)
    - Session 1: Why The Little Dutch Boy Was The Little Doomed Boy
    - Session 2: How The Leopard Didn’t Get Its Spots
    - Session 3: Who Framed The Narrative Of Cock Robin?
    - Black Swan Thinking Foundations
Hippasus

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