Technology, Change, and Process

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TPCK and SAMR
TPCK (Mishra & Koehler)

- **PK**: Pedagogy
- **PCK**: Content
- **TPK**: Technology
- **TPCK**: Pedagogical Content Knowledge
- **TPCK**: Technological Pedagogical Content Knowledge
- **TCK**: Technological Knowledge
- **TPCK**: Technological Knowledge for Content Knowledge

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

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

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

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

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SAMR (Puenteedura)

- **Enhancement**
  - **Augmentation**: Tech acts as a direct tool substitute, with functional improvement.

- **Transformation**
  - **Redefinition**: Tech allows for the creation of new tasks, previously inconceivable.
  - **Modification**: Tech allows for significant task redesign.
The Individual Perspective

New Tools Involve Four Key Dichotomies
(Don Ihde, *Consequences of Phenomenology*)

- an **ampliative/reductive** aspect:
  - new tools make previously difficult or impossible tasks possible
  - however, they also involve tradeoffs
- a **fascination/fear** reaction:
  - fascination results from focus on the ampliative aspects of the technology
  - fear results from focus on the reductive aspects of the technology
- an **embodiment/otherness** component:
  - a skilled user comes to see the tool as an extension of their body or mind
  - an unskilled user sees the tool as an alien, non-intuitive element
- a **focus/action** shift:
  - how a task is visualized is affected by the aspects of a task that are made salient (or hidden) by a specific tool
  - how a task is executed is affected by the aspects of a task that are made easy (or difficult) by a specific tool
A Simple Example

- an ampliative/reductive aspect:
  - “With this stick, I can pick fruit that was previously out of reach.”
  - “The stick does not let me determine how ripe the fruit is beforehand.”

- a fascination/fear reaction:
  - “I’ll be able to pick the fruit that animals could not reach!”
  - “I’ll get a stomach ache from unripe fruit!”

- an embodiment/otherness component:
  - “The stick feels like it’s part of my hand.”
  - “I keep poking holes in the fruit - I can’t feel when I’m touching it.”

- a focus/action shift:
  - “The stick leads me to think about picking individual pieces of fruit, rather than a volume of fruit.”
  - “I use the stick to pick fruit visible in a straight line, but stay away from the more challenging fruit in between branches.”

A (Somewhat) More Modern Example

- an ampliative/reductive aspect:
  - “Google allows me to find many more resources than the card catalog!”
  - “Google does not list the books and journals in the college library.”

- a fascination/fear reaction:
  - “I can access many more up-to-date sources than ever before!”
  - “Those sources cannot compare with the reliability of the college library!”

- an embodiment/otherness component:
  - “I use Google as an “exomemory” for just about anything.”
  - “I’m overwhelmed by the volume of information I get from Google, and can’t do much with it.”

- a focus/action shift:
  - “With Google, I think about gathering first, organizing second.”
  - “I generally only look at the first page of results from Google, and leave the rest alone.”
The Group Perspective

How Innovations Spread
(Everett M. Rogers, *Diffusion of Innovations*)

The Technology Perspective

The Gartner Hype Cycle

Source: GartnerGroup
The Gartner Hype Cycle:
Phases and Adoption Types

- **Five Phases:**
  - *Technology Trigger:* a new technology generates significant press and industry interest;
  - *Peak of Inflated Expectations:* a flurry of well-publicized activity results in some successes, but more failures;
  - *Trough of Disillusionment:* the technology becomes unfashionable, and the press abandons the topic;
  - *Slope of Enlightenment:* focused experimentation and solid hard work lead to a true understanding of the technology’s applicability, risks, and benefits;
  - *Plateau of Productivity:* the real-world benefits of the technology are demonstrated and accepted.

- **Three Adoption Types:**
  - *Type A:* technologically aggressive organizations.
  - *Type B:* technologically low risk organizations, focused on maintaining competitiveness.
  - *Type C:* technologically cautious organizations, focused on cost reduction.

The Toolkit
The Horizon Report
(http://www.nmc.org/horizon)

7 Things You Should Know About…
(http://www.educause.edu/7Things)
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