

# Technology, Change, and Process

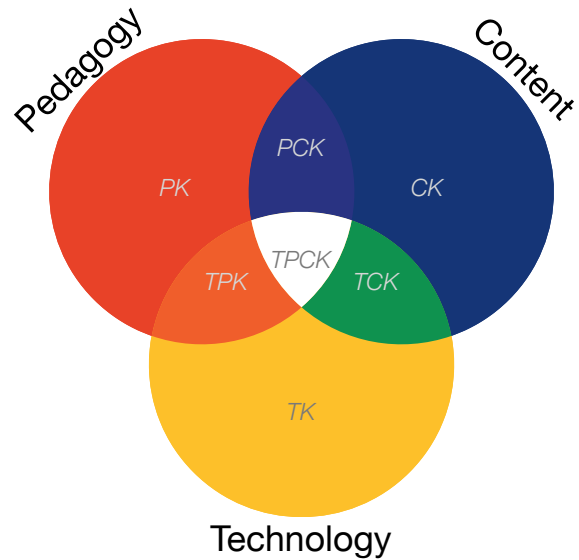
---

Ruben R. Puentedura, Ph.D.

TPCK and SAMR

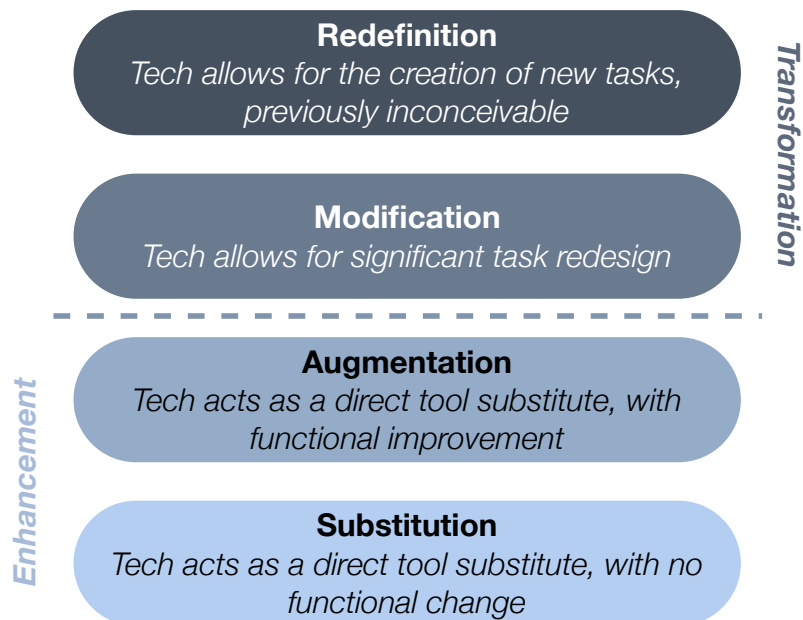
## TPCK (Mishra & Koehler)

---



## SAMR (Puentedura)

---



## 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.”

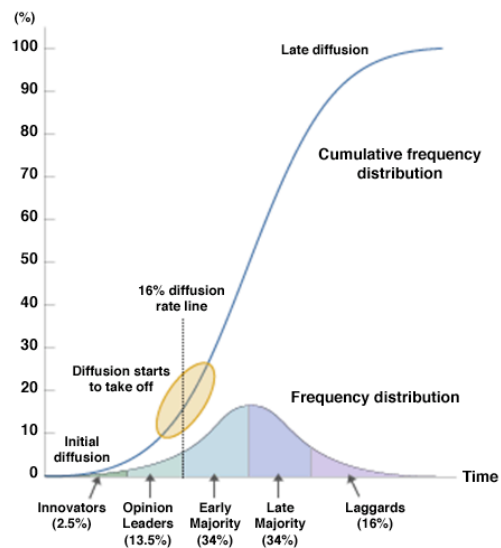
## A (Somewhat) More Modern Example

---

- 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

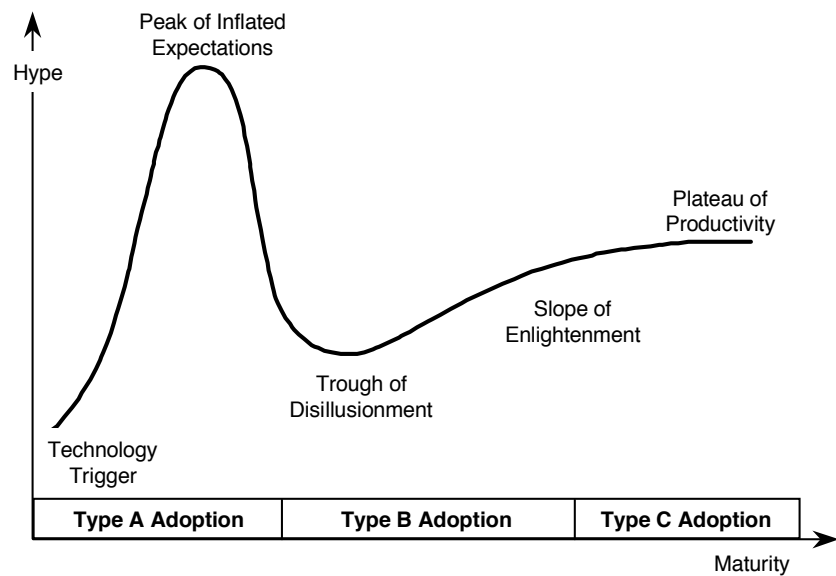
## How Innovations Spread (Everett M. Rogers, *Diffusion of Innovations*)



Source: *The Innovator Theory*. Online at <http://www.mitsue.co.jp/english/case/concept/02.html>

## 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...

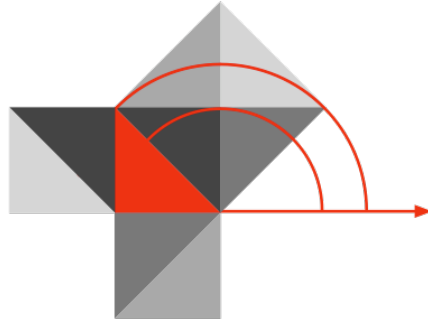
(<http://www.educause.edu/7Things>)

The screenshot shows the Educause Learning Initiative website. At the top, there is a navigation bar with the logo 'EDUCAUSE Learning Initiative' and the tagline 'ADVANCING LEARNING THROUGH IT INNOVATION'. Below the navigation bar, there are several menu items: 'Major Initiatives', 'Resources', 'Professional Development', 'Community', and 'About EDUCAUSE'. The main content area is titled '7 Things You Should Know About...'. It includes a brief description of the series and a list of topics: 'What it is', 'How it works', 'Where it is going', and 'Why it matters to teaching and learning'. There are also links to 'Get the 2009 HORIZON REPORT', 'GET INVOLVED', and 'Stay in the Know'. The page is numbered '1 of 3' and shows the first item, '7 Things You Should Know About Collaborative Annotation (Oct 2009)'. The description for this item states: 'Collaborative annotation tools expand the concept of social bookmarking by allowing users not only to share bookmarks but also to digitally annotate web pages. Rather than simply pointing to particular web pages, collaborative annotation lets users highlight specific content on a web page and add a note explaining their thoughts or pointing to additional resources. Students who use...'. The second item, '7 Things You Should Know About Telepresence (Sep 2009)', is partially visible below.



# Hippasus

---



<http://hippasus.com/rrpweblog/>  
[rubenrp@hippasus.com](mailto:rubenrp@hippasus.com)

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

