School Leadership, SAMR, and TPCK

Ruben R. Puente dura, Ph.D.
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)
Pedagogy

Content

Technology

PK

PCK

CK

TPK

TPCK

TCK

TK

Step 1
The teacher provides a description, explanation, or example of the new term

Step 2
Students restate the explanation of the new term in their own words

Step 3
Students create a nonlinguistic representation of the term

Step 4
Students do activities that help them add to their knowledge of vocabulary terms

Step 5
Students are asked to discuss the terms with one another

Step 6
Students are involved in games that allow them to play with the terms
**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
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
**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.
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
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
**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
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
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
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.
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

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

**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

\[ y = 45x^2 - x + 2 \]
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
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
Tech acts as a direct tool substitute, with no functional change
Fig. 2. Estimates by 160 gynecologists of the probability that a woman has breast cancer given a positive mammogram, before and after receiving training in how to translate conditional probabilities into natural frequencies.
**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.
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
**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.
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
Scholarly Primitives

Discovering
- searching, browsing, accessing, collecting

Annotating
- categorizing, providing commentary, analyzing
- find differences, similarities and create meaning from them

Comparing
- linking, referencing

Referring
- selecting according to a criterion, showing relationships of items selected to the original set

Sampling
- showing an example, highlighting features within an example

Illustrating
- searching, browsing, accessing, collecting

Representing
- changing depiction mode, publishing
