# Building Transformation: An Introduction to the SAMR Model

Ruben R. Puentedura, Ph.D.

Tech acts as a direct tool substitute, with functional improvement

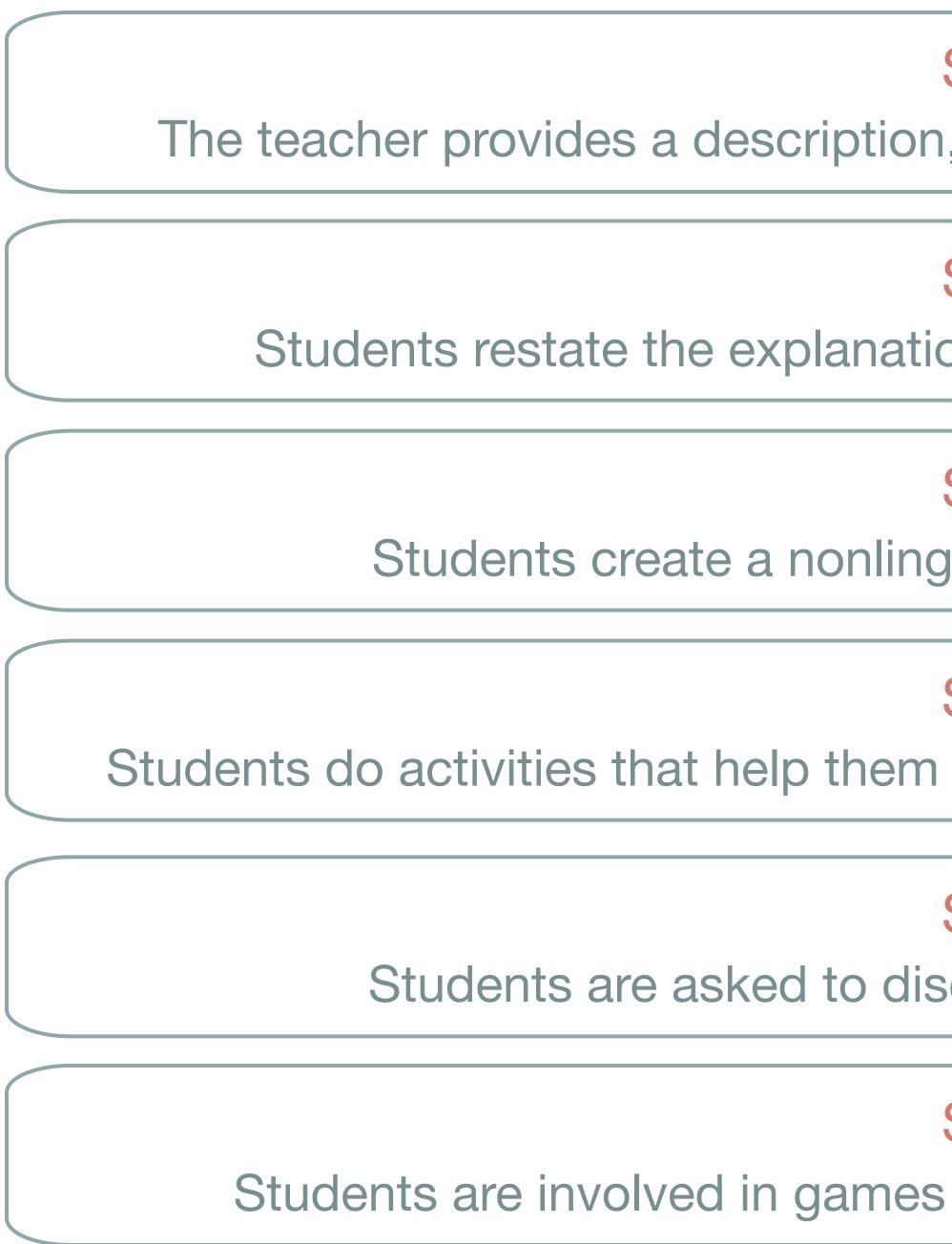
Substitution Tech acts as a direct tool substitute, with no functional change

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

Modification Tech allows for significant task redesign Transformation

# Augmentation

Ruben R. Puentedura, As We May Teach: Educational Technology, From Theory Into Practice. (2009)



R.J. Marzano. Building Background Knowledge for Academic Achievement: Research on What Works in Schools. Alexandria, VA: ASCD, 2004

## 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

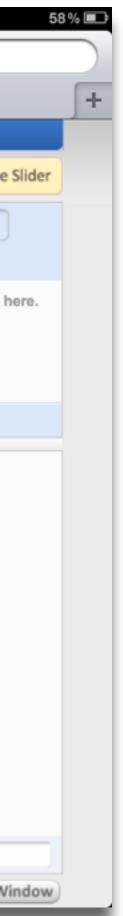
# Step 6 Students are involved in games that allow them to play with the terms

### Modification Tech allows for significant task redesign

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

#### **Substitution**

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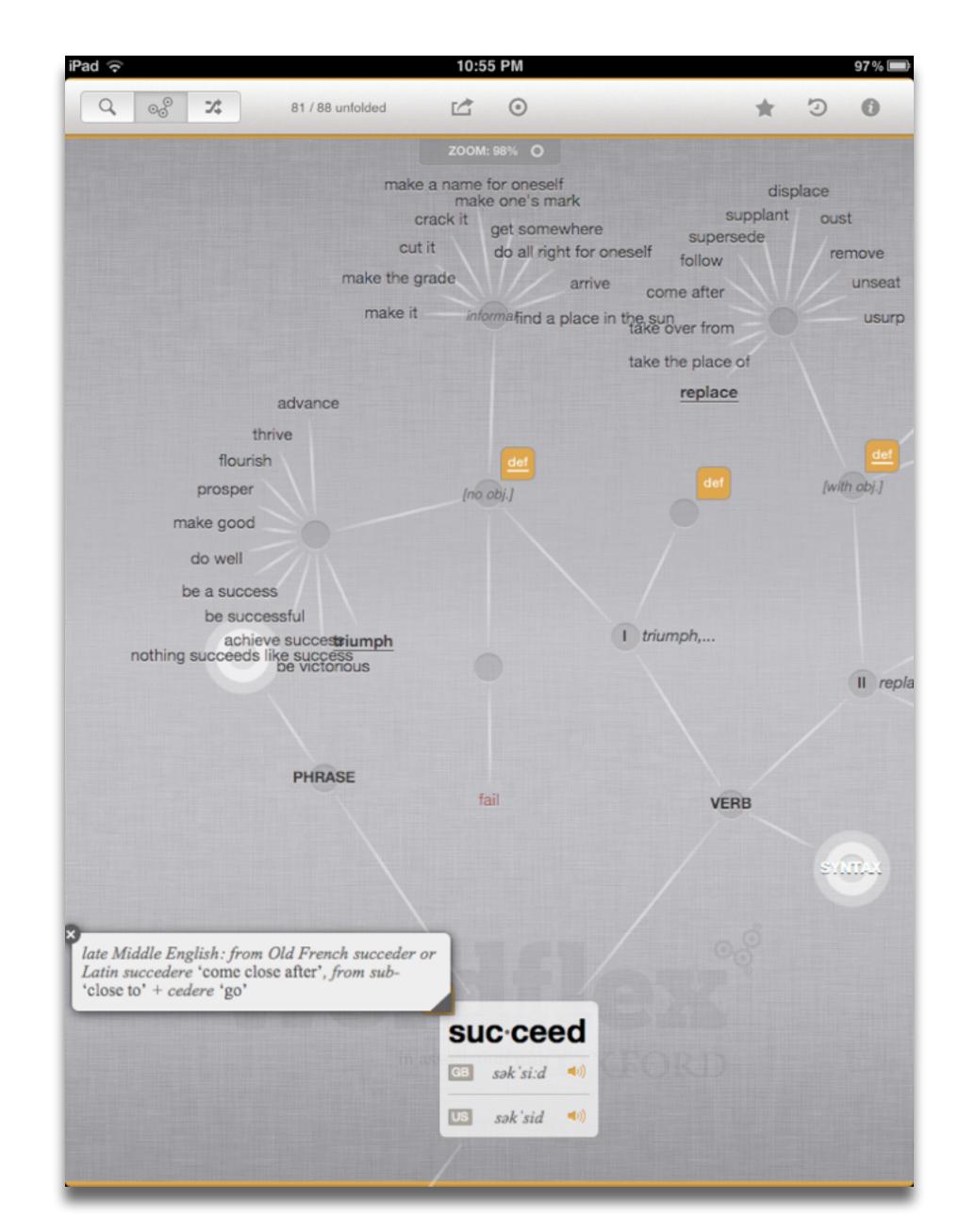


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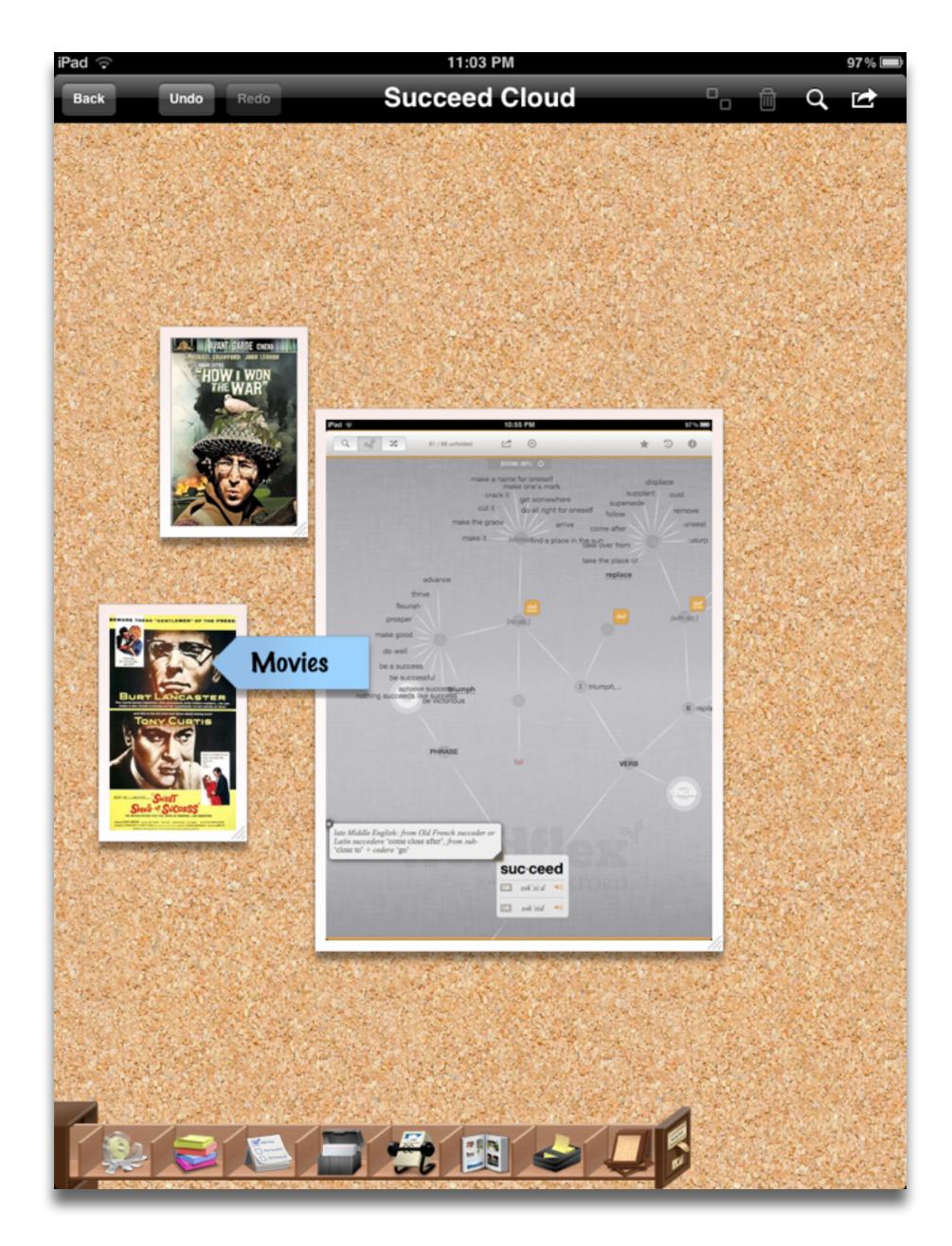
### Modification

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#### Redefinition

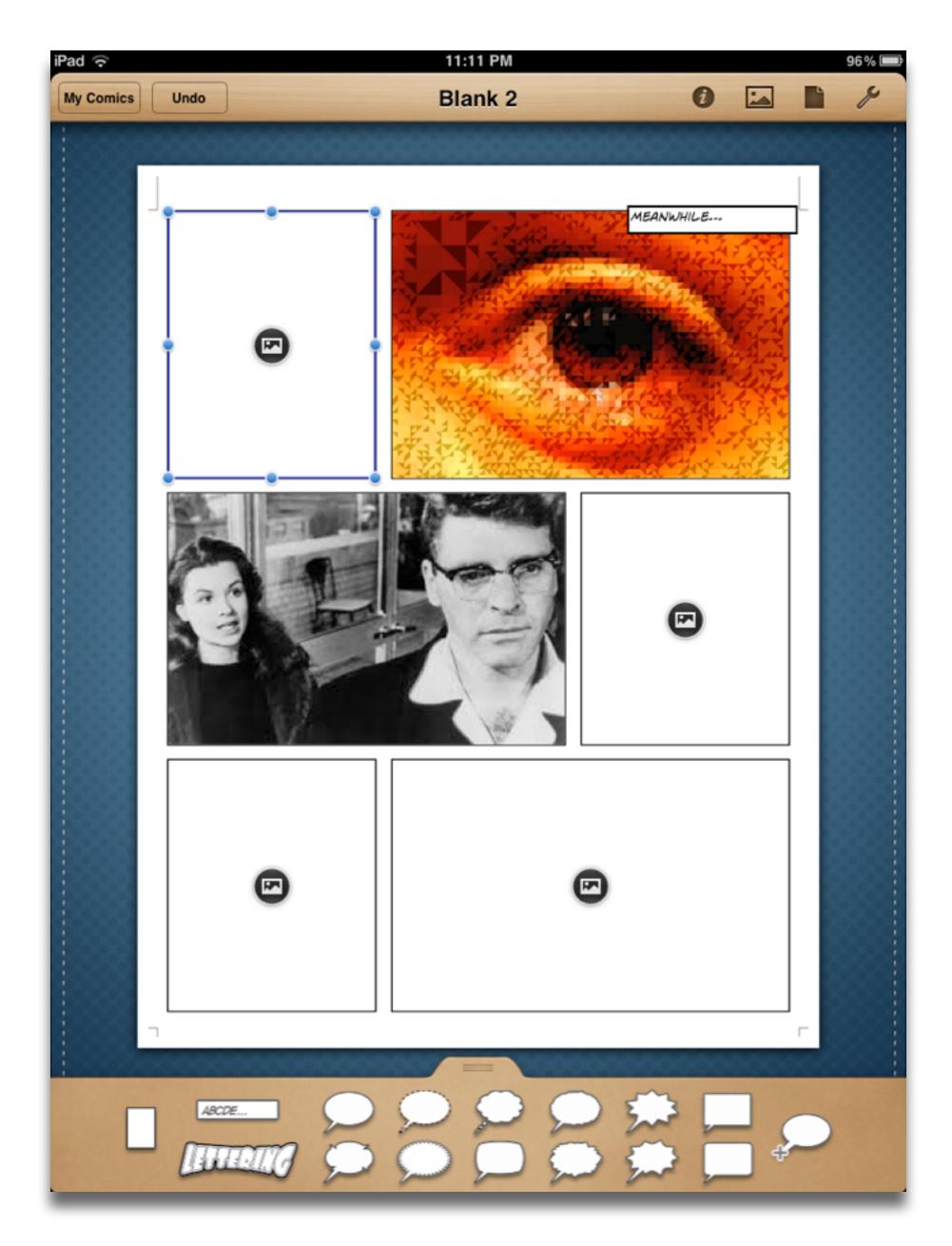
# Tech allows for the creation of new tasks, previously inconceivable

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Study	SAMR Level	Description	Effect Size
Ligas (2002)	S	CAI system used to support direct instruction approach for at-risk students.	0.029
Xin & Reith (2001) A		Multimedia resources provided to contextualize learning of word meanings and concepts.	0.264
Higgins & Raskind (2005)	Μ	Software/hardware used for text-to-speech, definitions, pronunciation guide for children with reading disabilities.	0.600
Salomon, Globerson & Guterman (1989)	R	Software presents students with reading principles and metacognitive questions as part of the reading process.	1.563



Research Article

# The Pen Is Mightier Than the Keyboard: **Advantages of Longhand Over Laptop Note Taking**



Pam A. Mueller<sup>1</sup> and Daniel M. Oppenheimer<sup>2</sup> <sup>1</sup>Princeton University and <sup>2</sup>University 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.



Psychological Science 1 - 10© The Author(s) 2014 Reprints and permissions: sagepub.com/journalsPermissions.nav DOI: 10.1177/0956797614524581 pss.sagepub.com





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

#### **Substitution**

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Technology

#### Modification Tech allows for significant task redesign

#### Generalize patterns

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

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



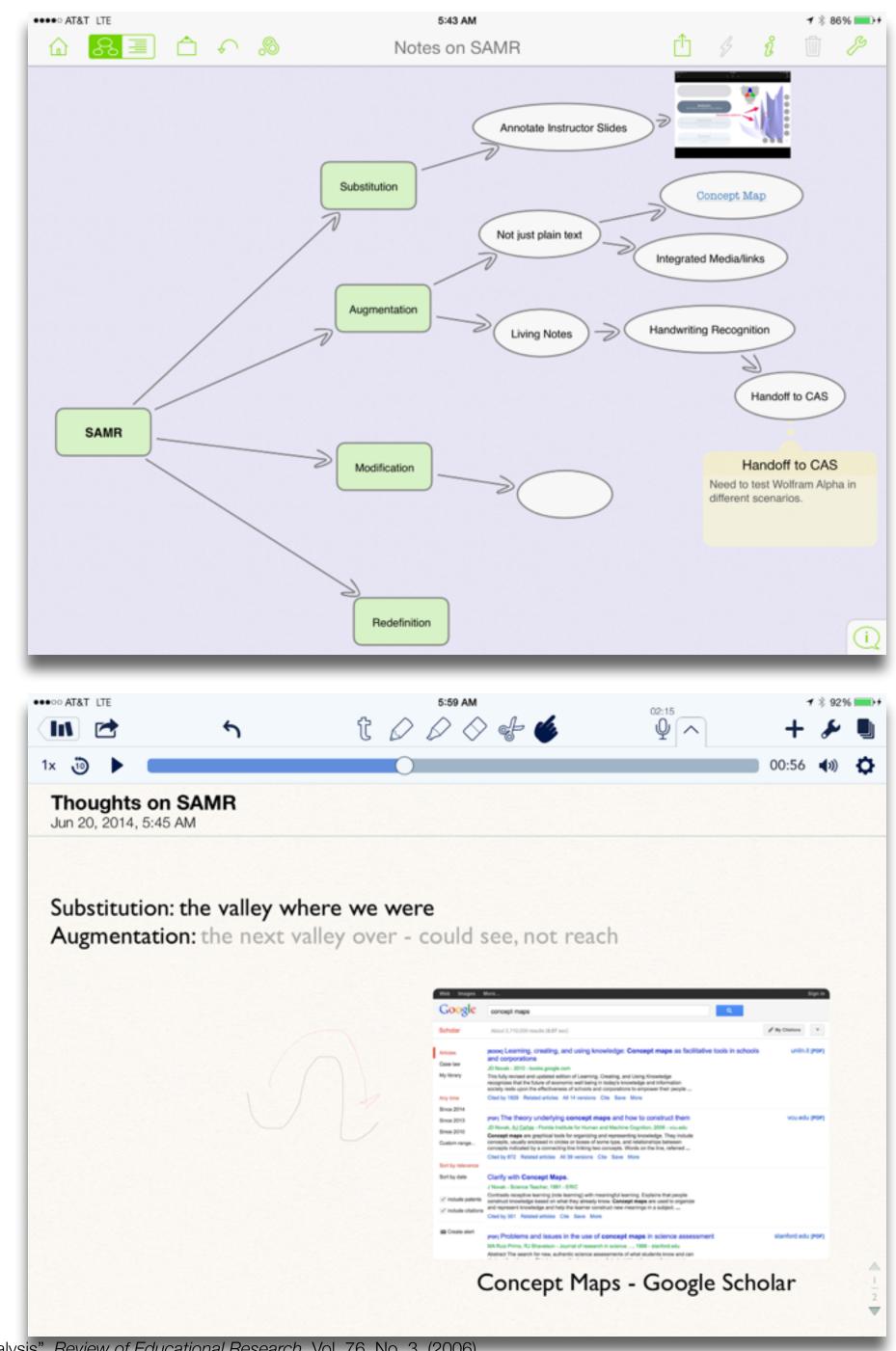
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John C. Nesbit and Olusola O. Adesope, "Learning With Concept and Knowledge Maps: A Meta-Analysis". Review of Educational Research, Vol. 76, No. 3. (2006)

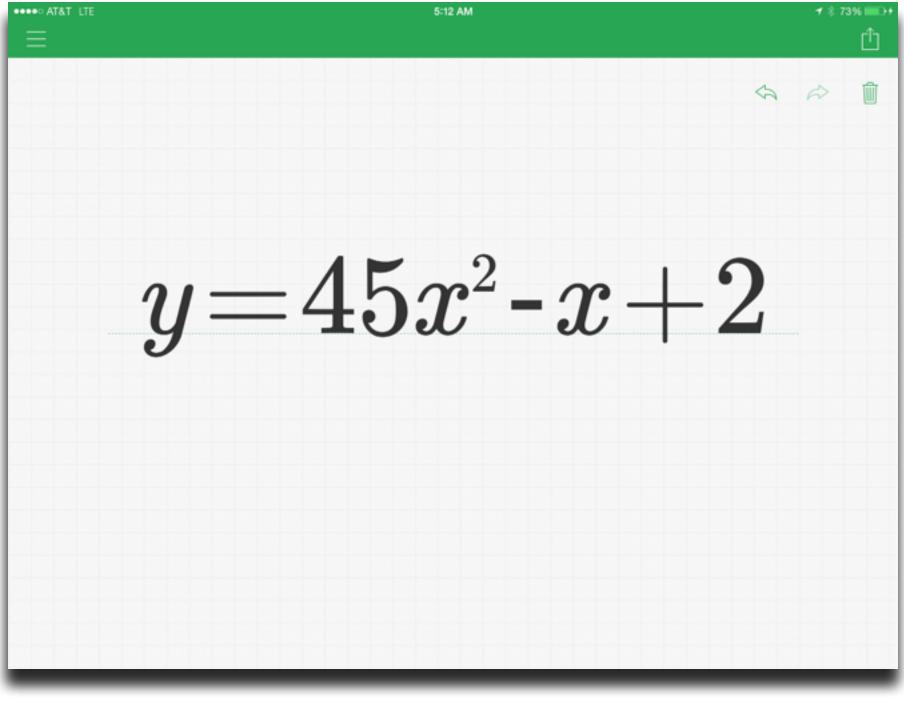


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#### Modification

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#### Ruben R. Puentedura #thoughtvectors Search Cindy Jennings @cljennings Sad to me: @ChristinaDEI noting that her father had to strive to Timeline 848 share his vision in ways that ppl wanted to hear it. #thoughtvectors Mentions Jon Becker @jonbecker Messages Watch @GardnerCampbell interview @ChristinaDEI, Doug Engelbart's daughter, LIVE youtube.com/watch?v=NBKjI0... #thoughtvectors 🛨 Favorites Q Search Profile Gardner Campbell @GardnerCampbell #thoughtvectors Hangout w Christina Engelbart i≣ Lists (@ChristinaDEI): youtube.com/watch?v=NBKjI0.... Join us there or G+ plus.google.com/events/ 1 Retweets csrjud5... Mute Filters o<sup>o</sup> Settings Gardner Campbell @GardnerCampbell Hangout w Christina Engelbart (@ChristinaDEI), discussing her work w #thoughtvectors at VCU. 4:30! plus.google.com/events/csrjud5... Cindy Jennings @cljennings Early mention of Maria Montessori has my attention! (2/2) #qepfdi #thoughtvectors 100 Tweets

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#### Redefinition

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

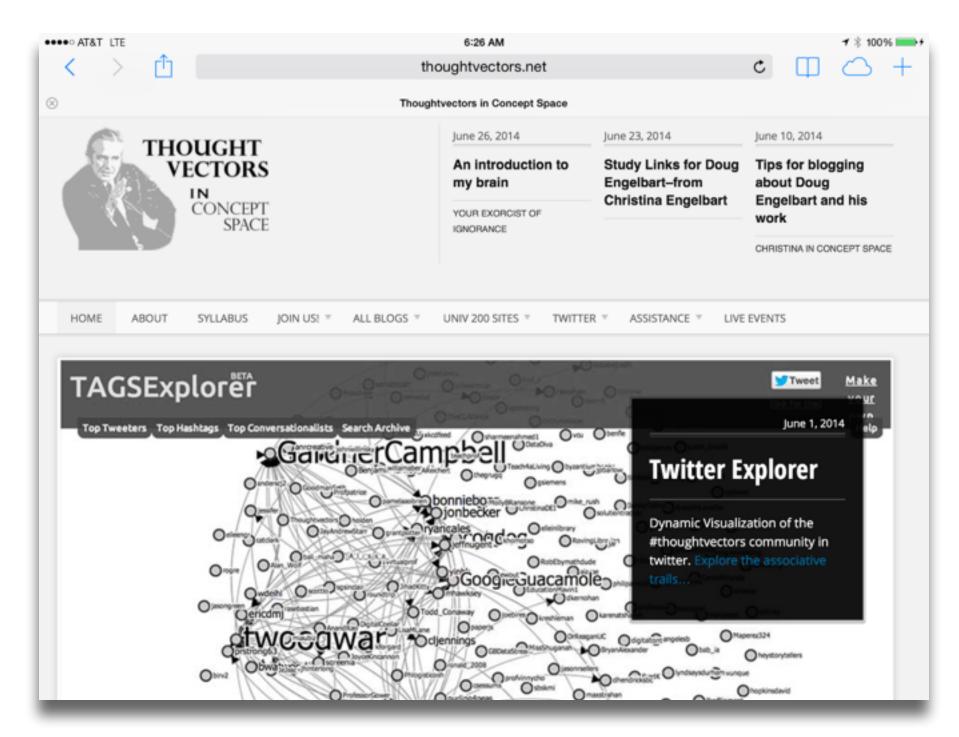
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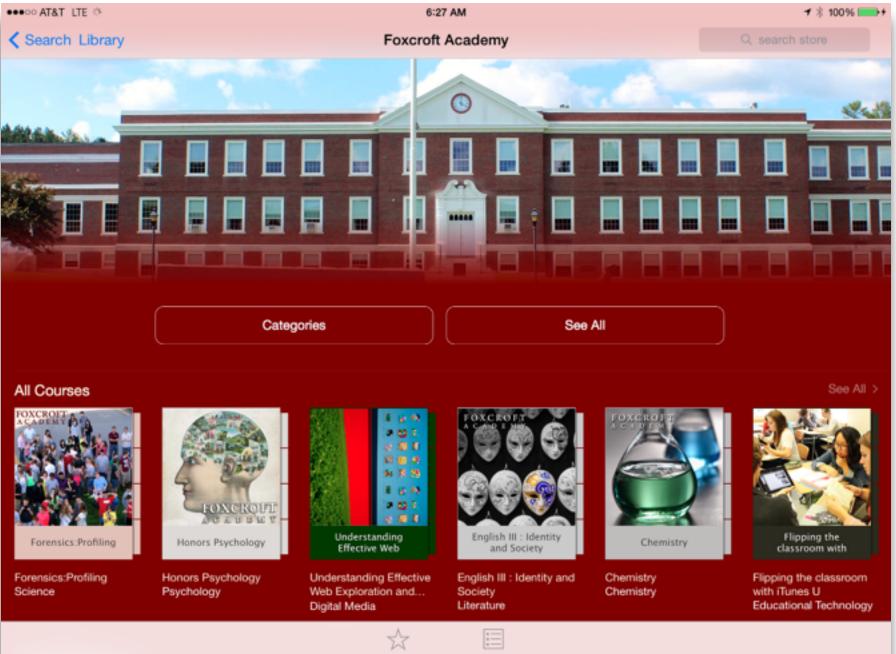
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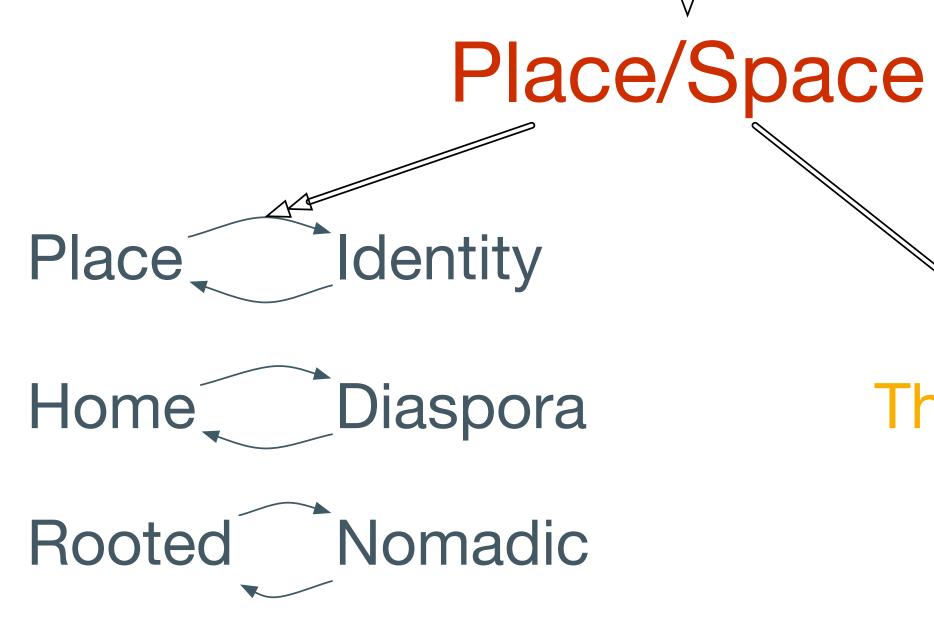




Featured

Top Charts





#### Condition

Mix of natural & artificial features that give meaning to a location

Links Connections between places

Formal Region Group of places with similar conditions

Functional Region Group of places linked together by a flow

## Ż **Theatrical Space**

Helen Nicholson. Theatre & Education. Palgrave Macmillan. (2009)

Shigeru Ban - Log House, Kobe – Photo by Forgemind ArchiMedia



Shigeru Ban - The Nomadic Museum – Photo by weird tramp

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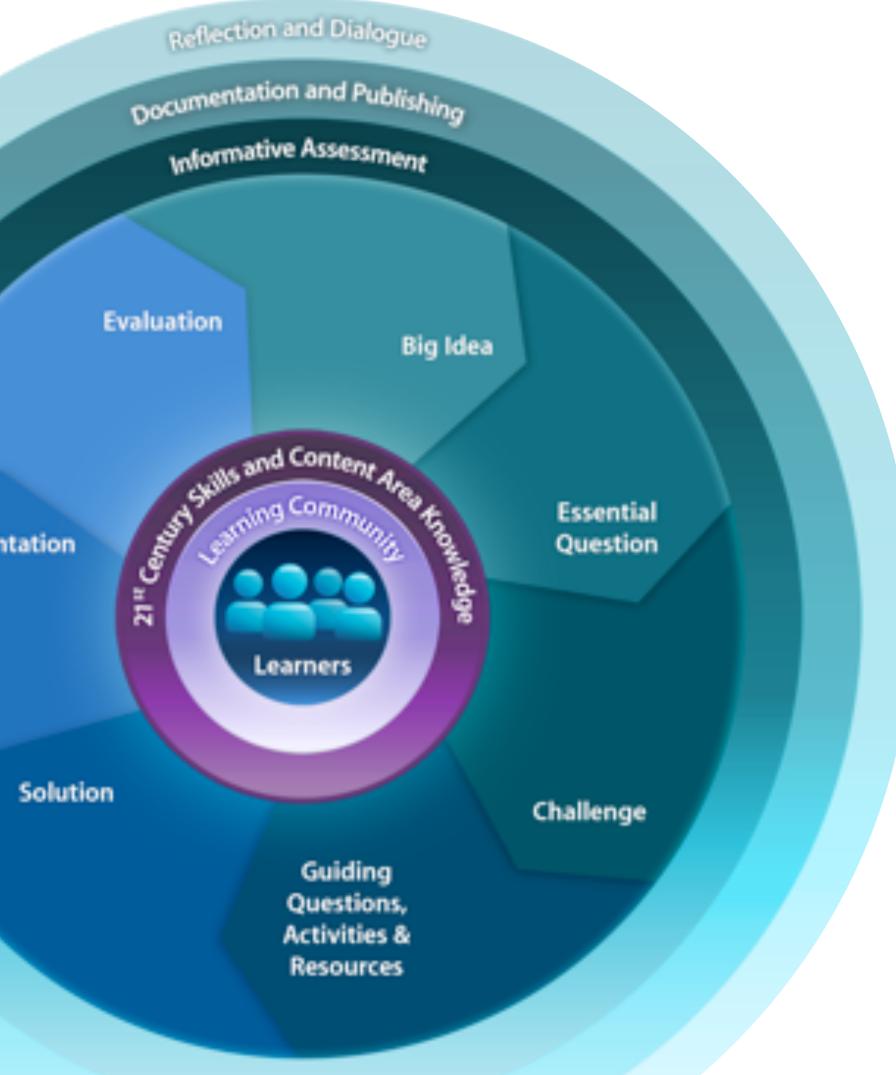
#### Evaluation

Implementation



Solution

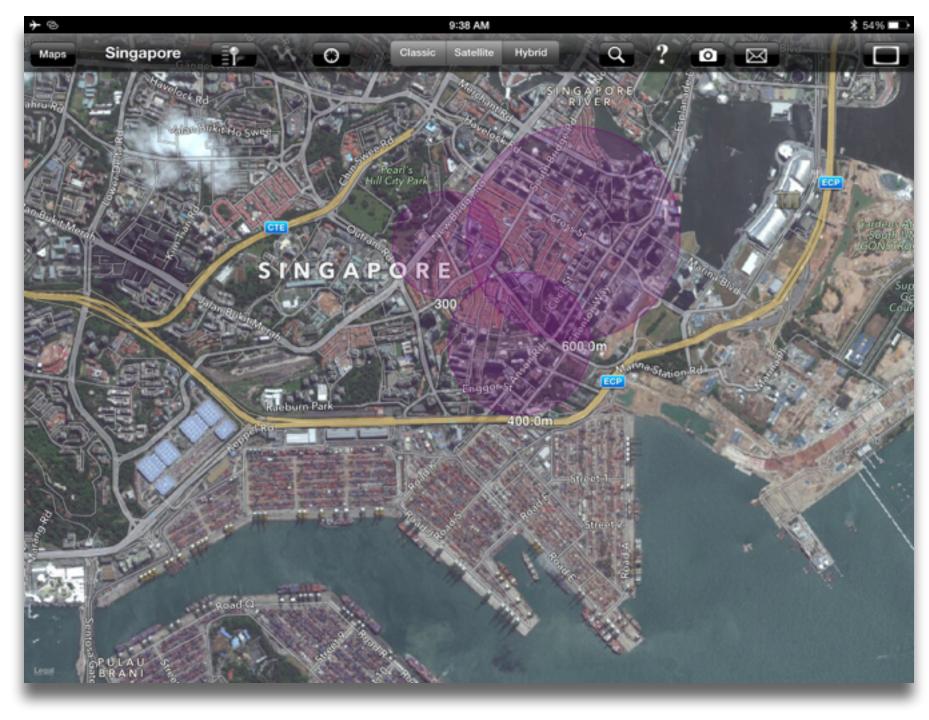
Challenge Based Learning - About CBL (2011)

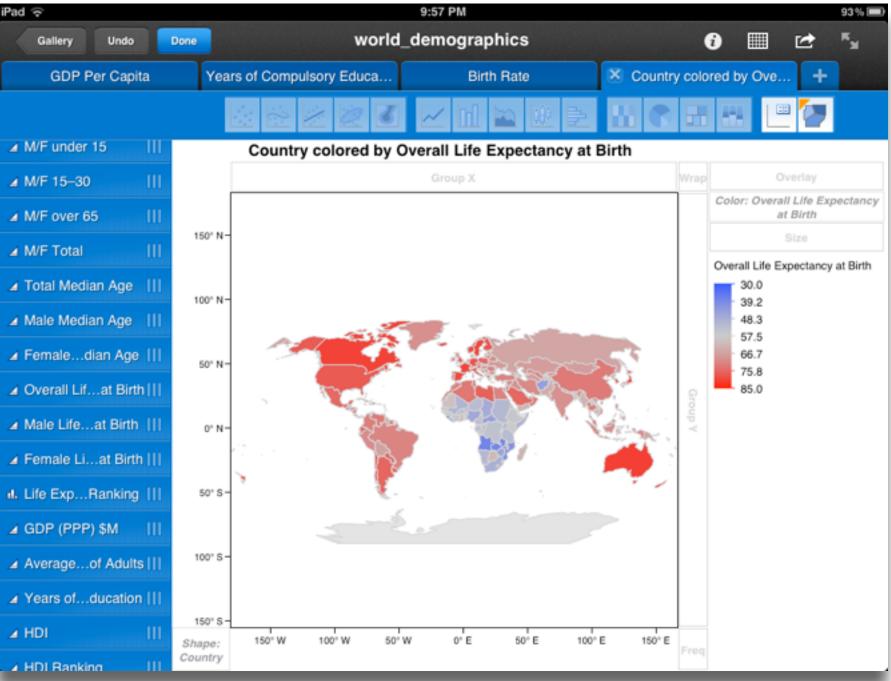


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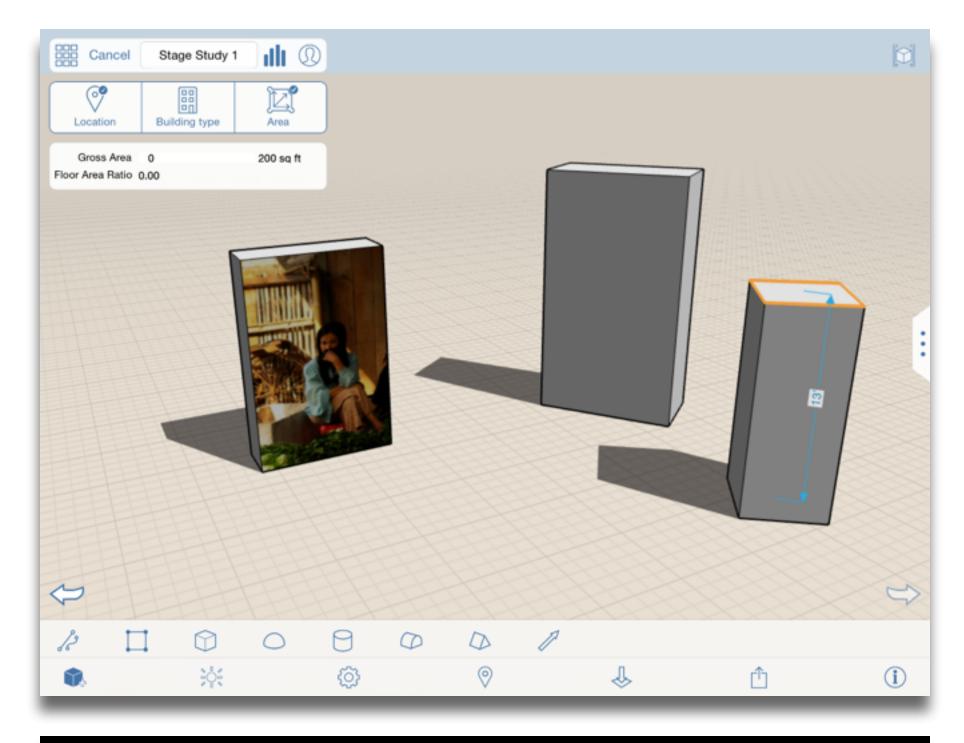
### Modification

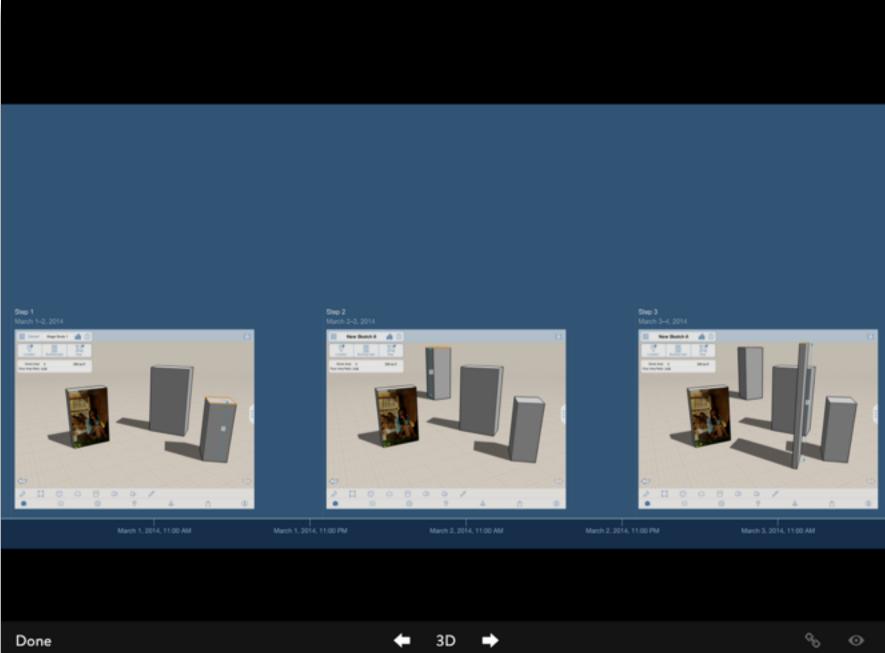
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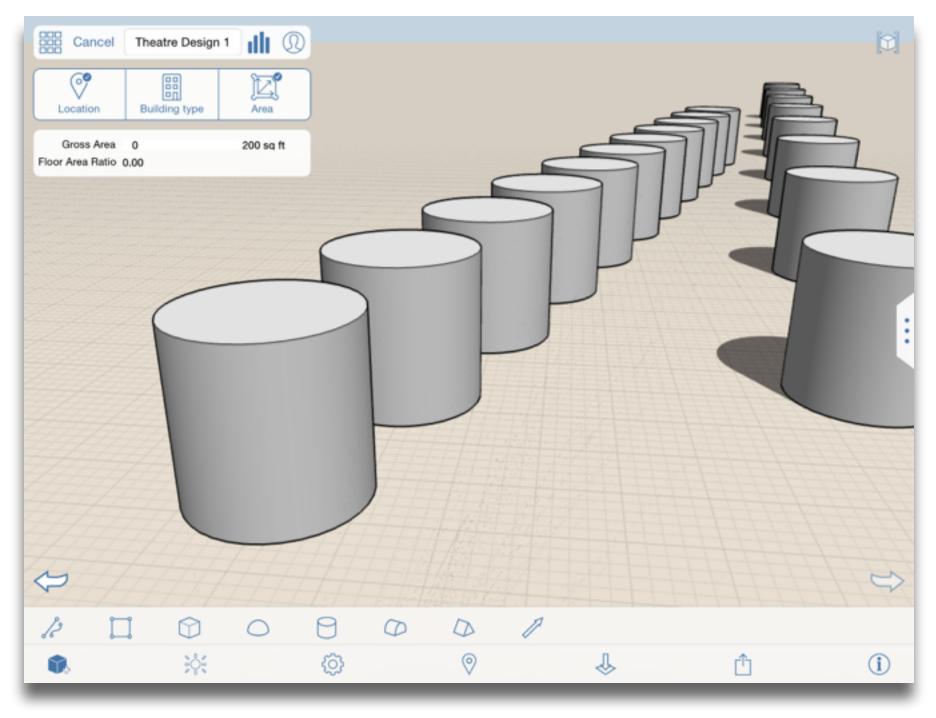
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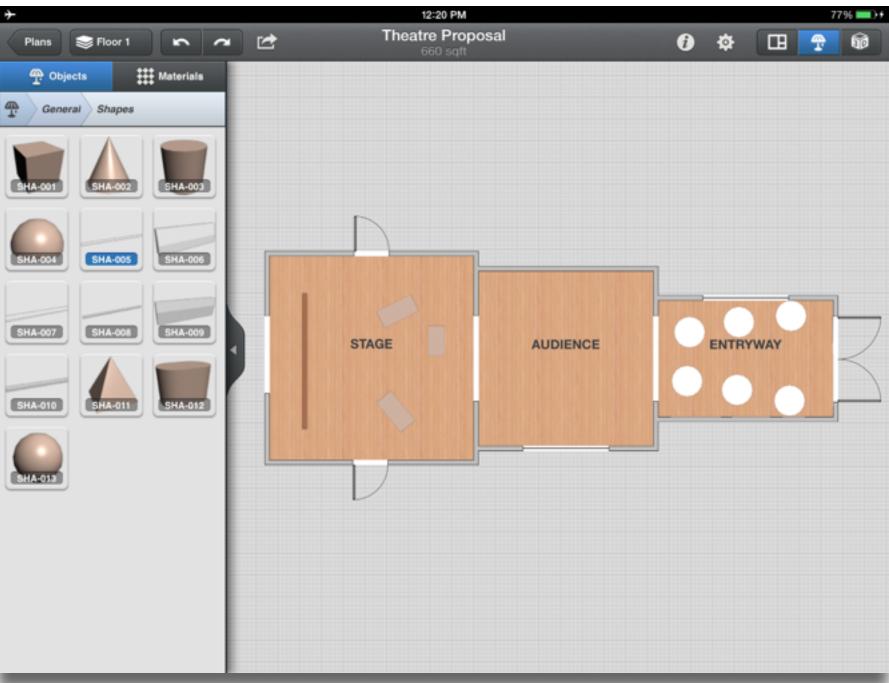
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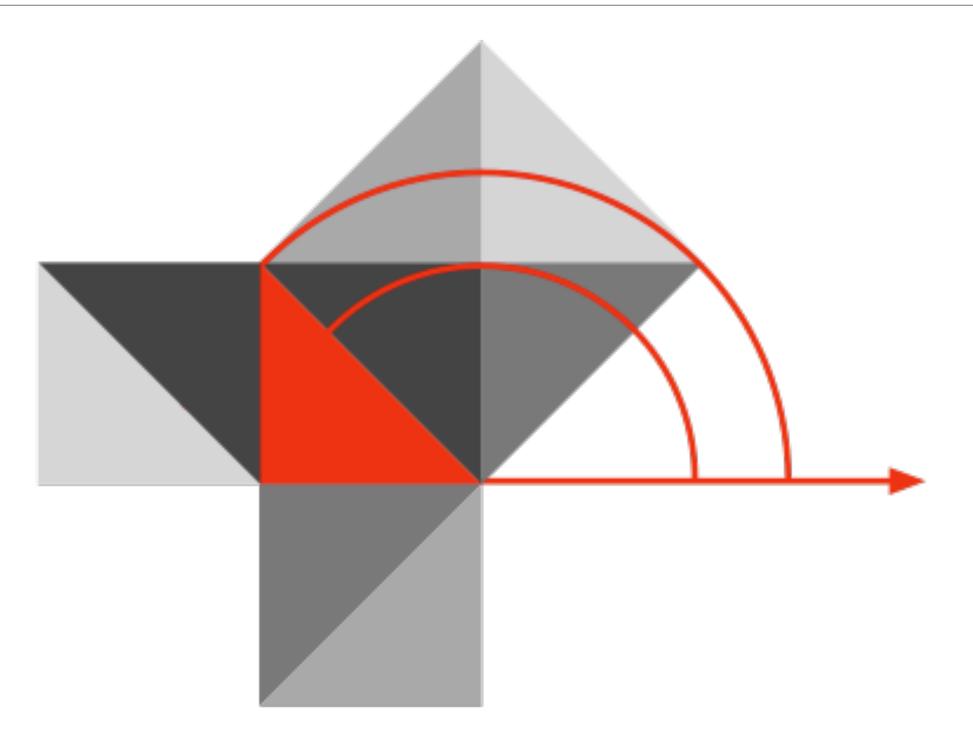
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