

# SAMR in the Classroom

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Ruben R. Puentedura, Ph.D.

## Transformation

### **Redefinition**

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

### **Modification**

*Tech allows for significant task redesign*

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### **Augmentation**

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

### **Substitution**

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

## Enhancement

### 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

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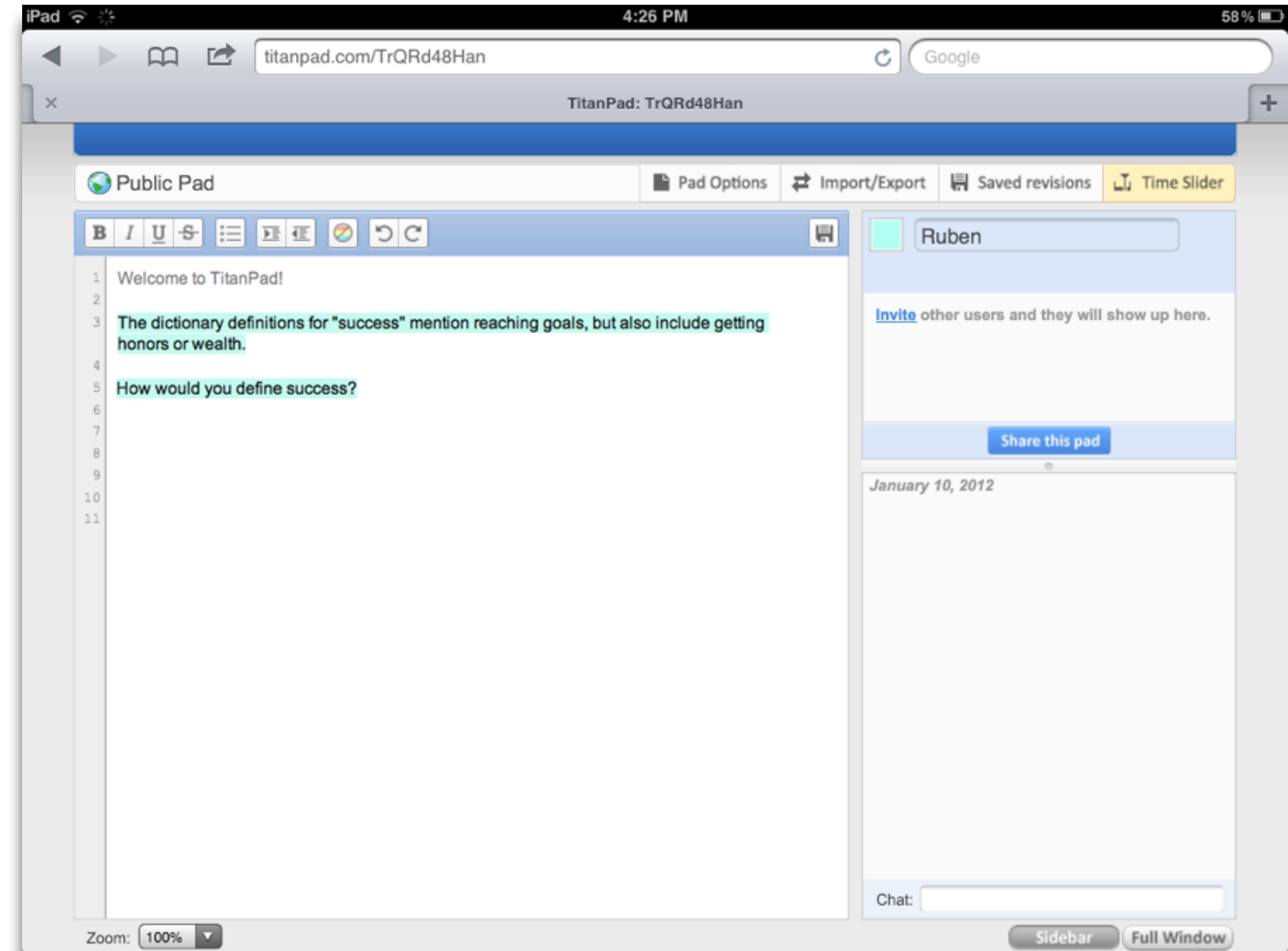
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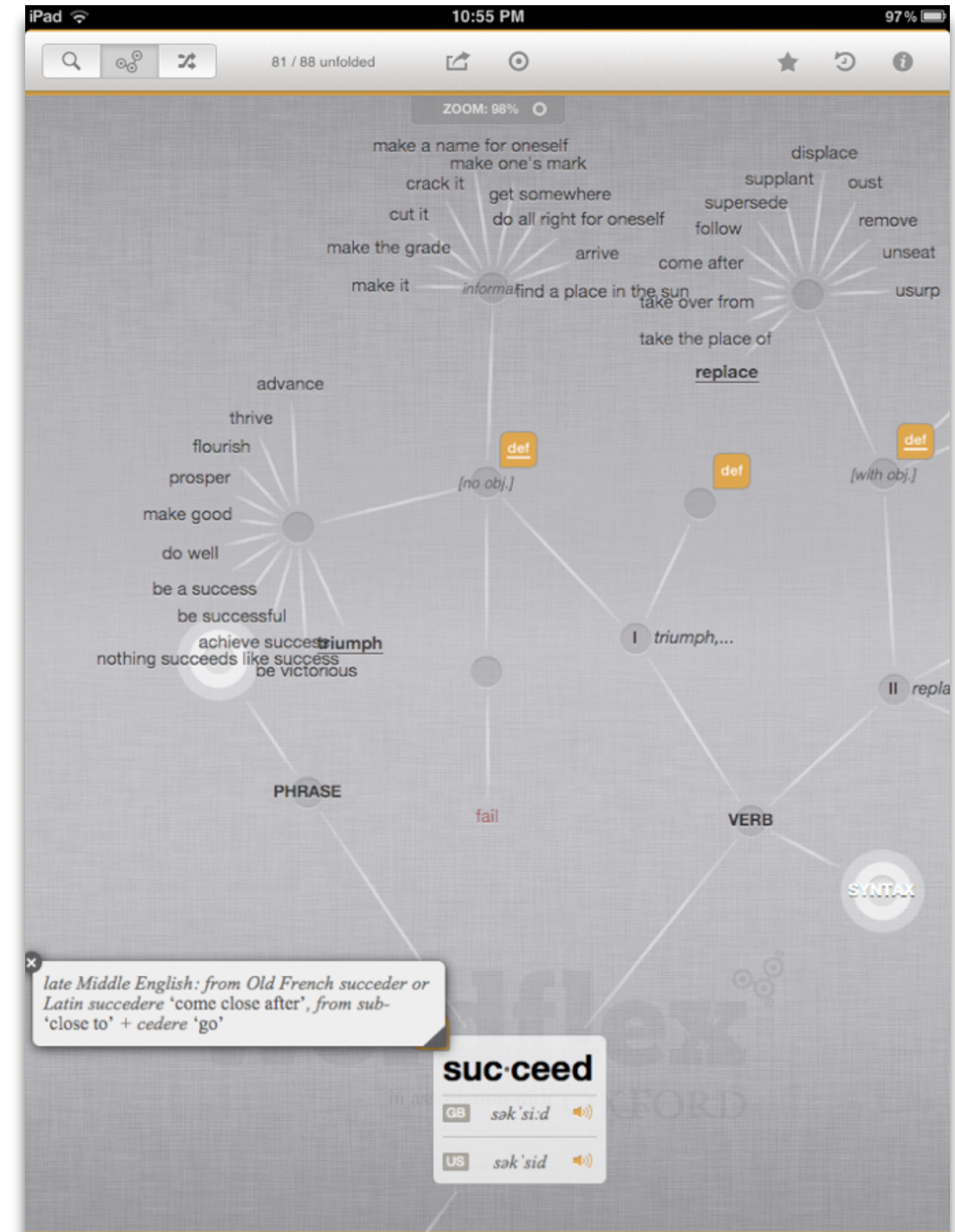
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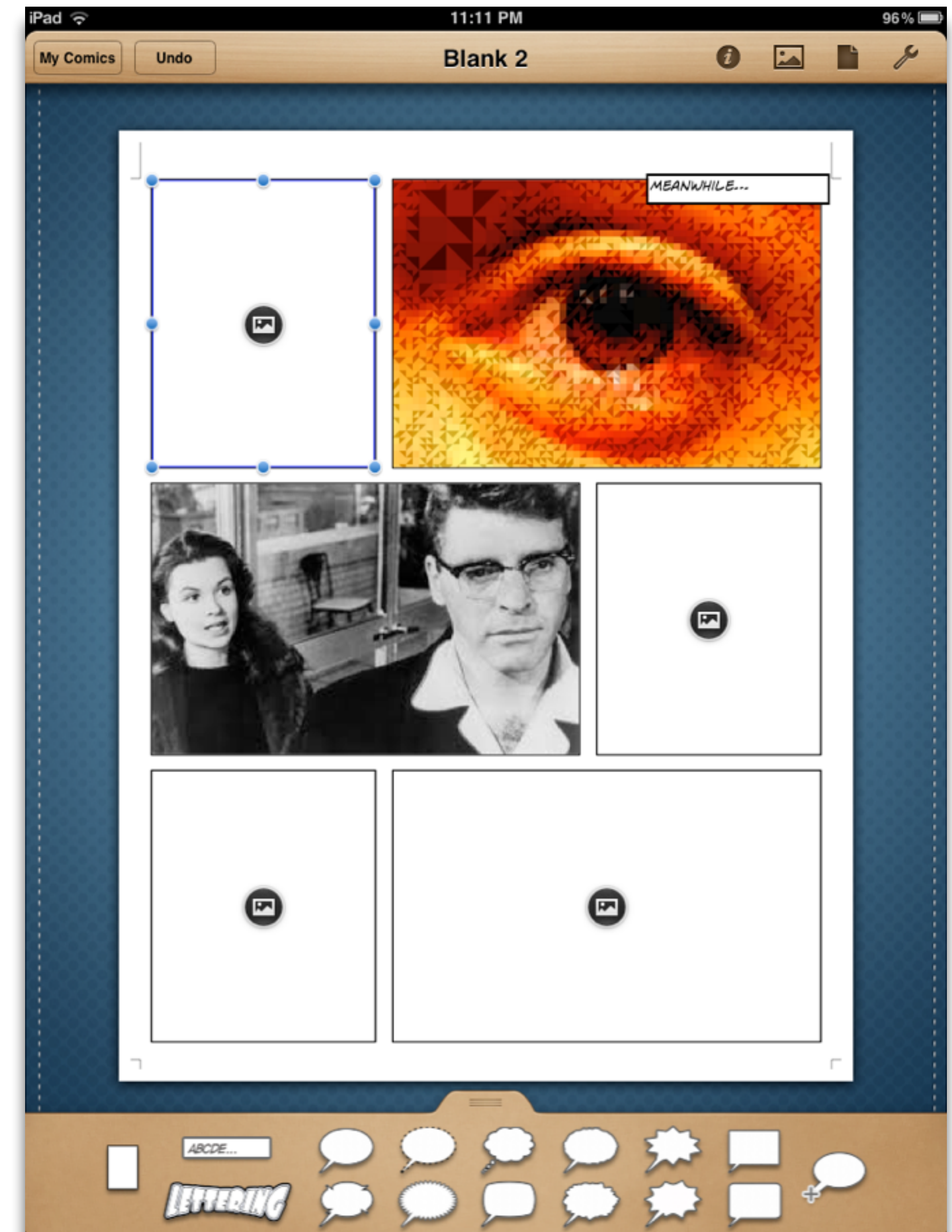
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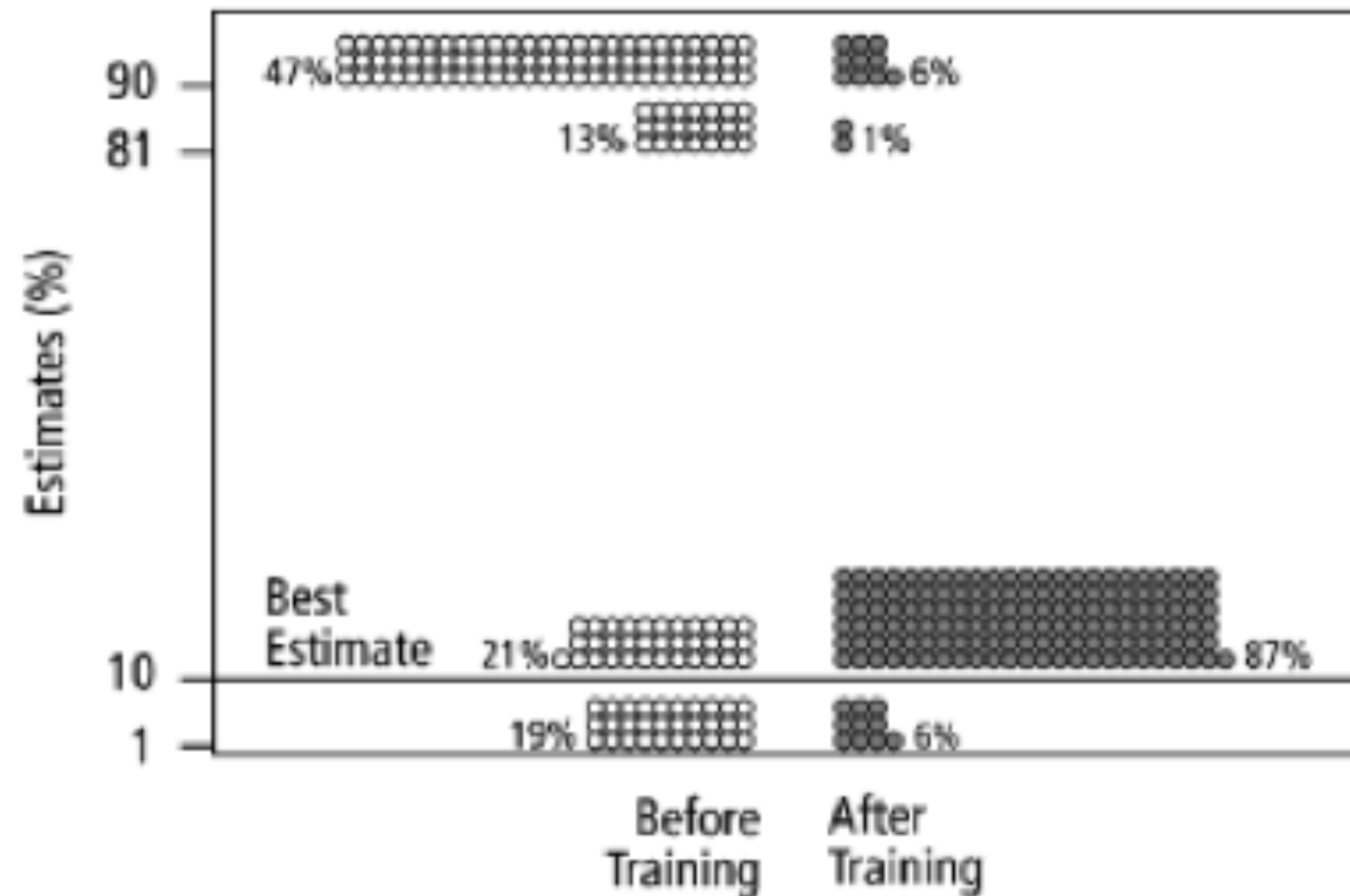
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Study	SAMR Level	Description	Effect Size
<b>Ligas (2002)</b>	<b>S</b>	CAI system used to support direct instruction approach for at-risk students.	<b>0.029</b>
<b>Xin &amp; Reith (2001)</b>	<b>A</b>	Multimedia resources provided to contextualize learning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



**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.



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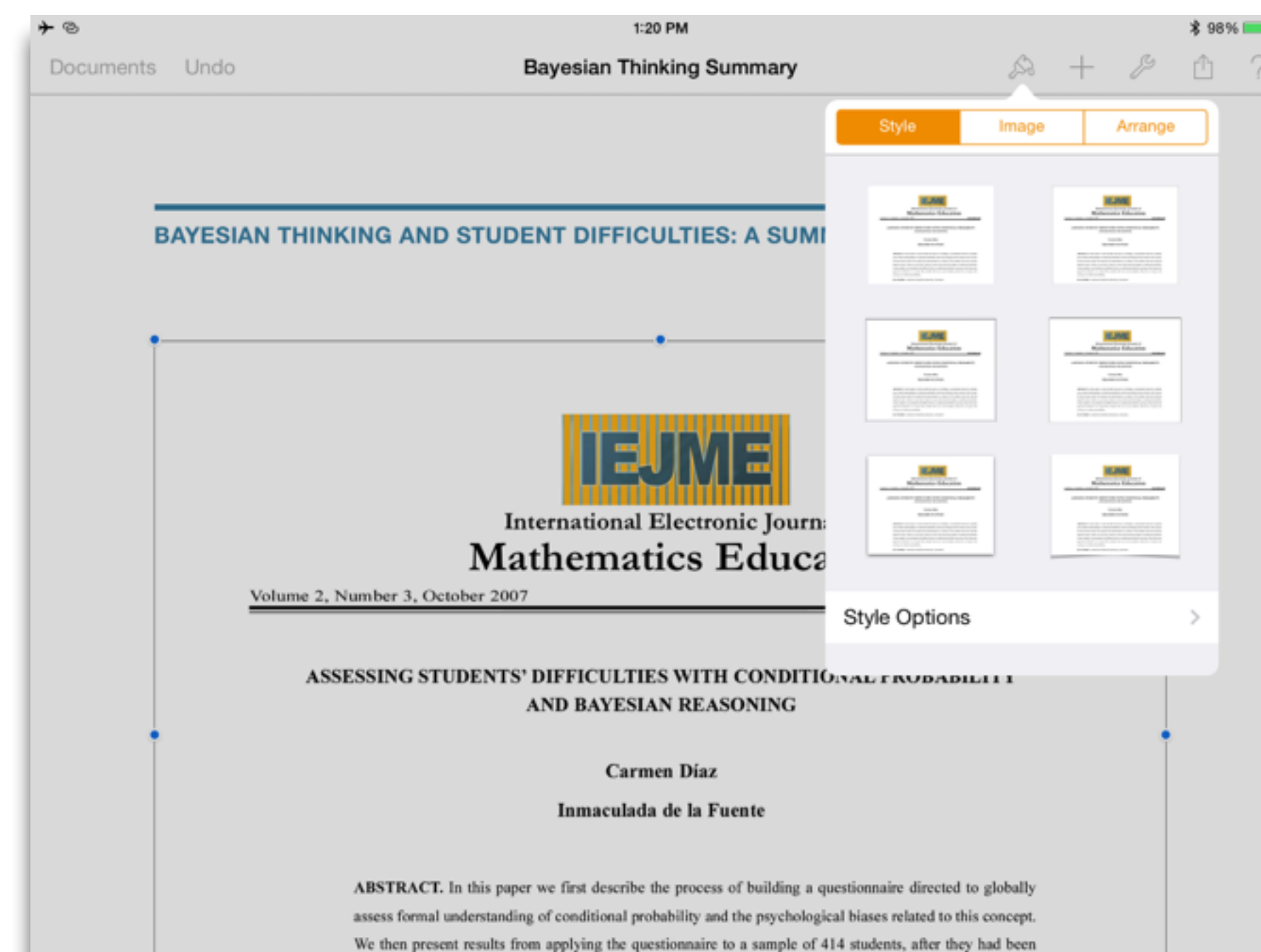
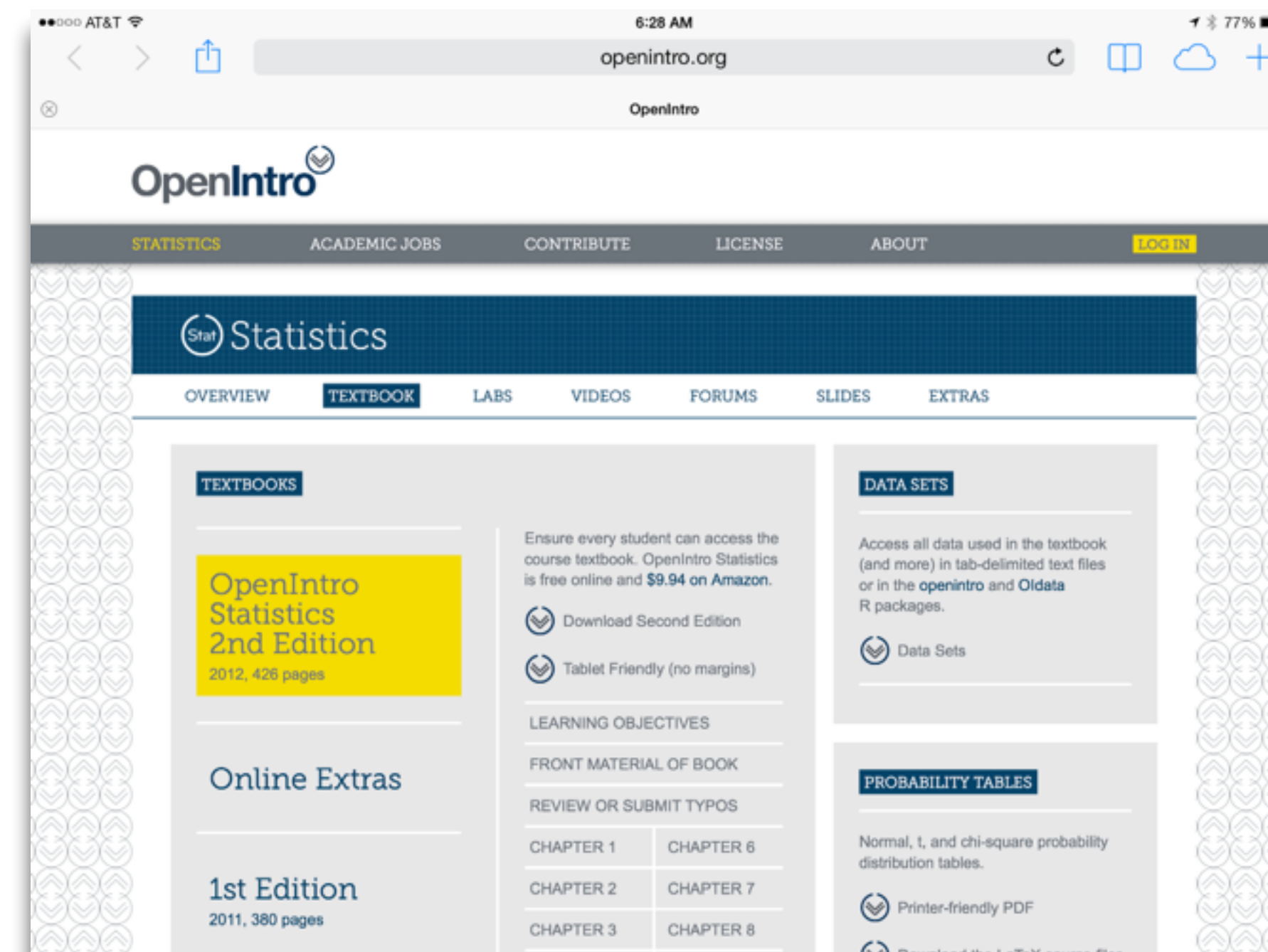
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Computing Not So Basic Probabilities from

DataSet = 2Seed = 64

in the table below, dosage calculations from a sample of 56 doctors are sorted according to whether the label on the drug bottle contained a concentration or a ratio, and whether the calculation was correct or wrong.

	Correct	Wrong	Row Totals
Concentration	22	6	28
Ratio	4	24	28
Column Totals	26	30	56

a) What is the probability that a calculation in the sample was based on a concentration or was correct?

☐ Check the box to see the answer to (a).

b) Given that a calculation in the sample was correct, what is the probability that the calculation was based on a ratio?

☐ Check the box to see the answer to (b).

Number

☐ ANm1 = 22

☐ ANm2 = 6

☐ ANm3 = 4

☐ APrb = 0.571

☐ ATot = 32

☐ BDnm = 26

☐ BNum = 4

☐ BOp = 0

☐ BPrb = 0.154

☒ DataSet = 2

☐ GrTt = 56

☐ OpANm1 = 1

☐ OpANm2 = 1

Input Bar

Apr 8, 2014, 1:26 PMEdit

age = 48

3 ENTRIES1 DAYS3 THIS WEEK3 TODAY

Timeline

3 >

Photos

1 >

Tags

0 >

Calendar

>

Starred

0 >

Years

>

Settings

age = 48

factor1 = 0.44

factor2 = 0.25

Line

a: y = 0.44x + 0.25

Trying to look at different ways of visualizing how different factors come together in determining the probability of the result - some questions are brought up by the diagram above, though:

Can you collapse multiple factors into one trivially? The graph would seem to imply that - but it isn't obvious from the equations.

Are there ways of simplifying the calculations for some limiting cases?

1:26 PM TUESDAY, APRIL 8, 2014

DAY ONE



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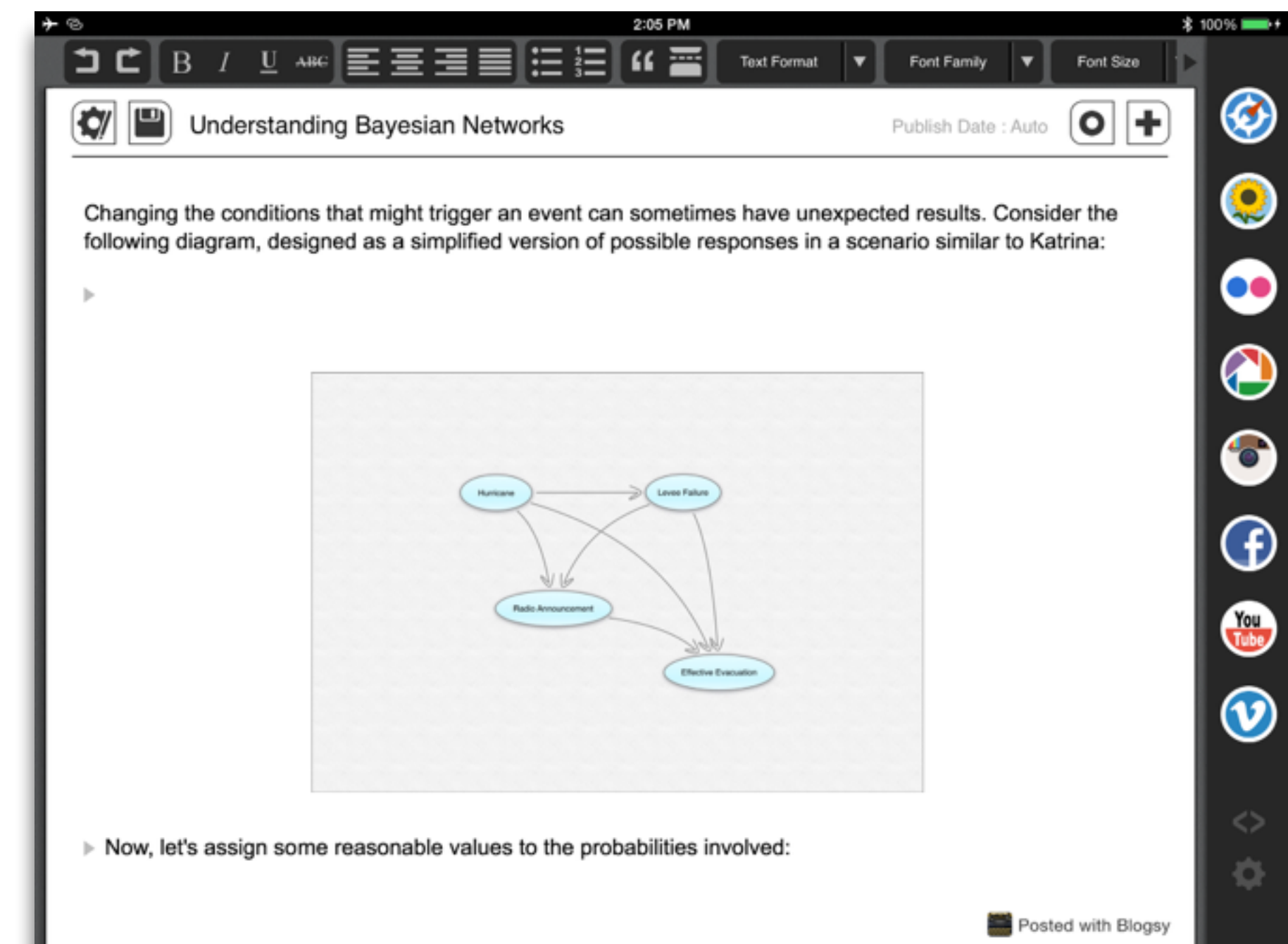
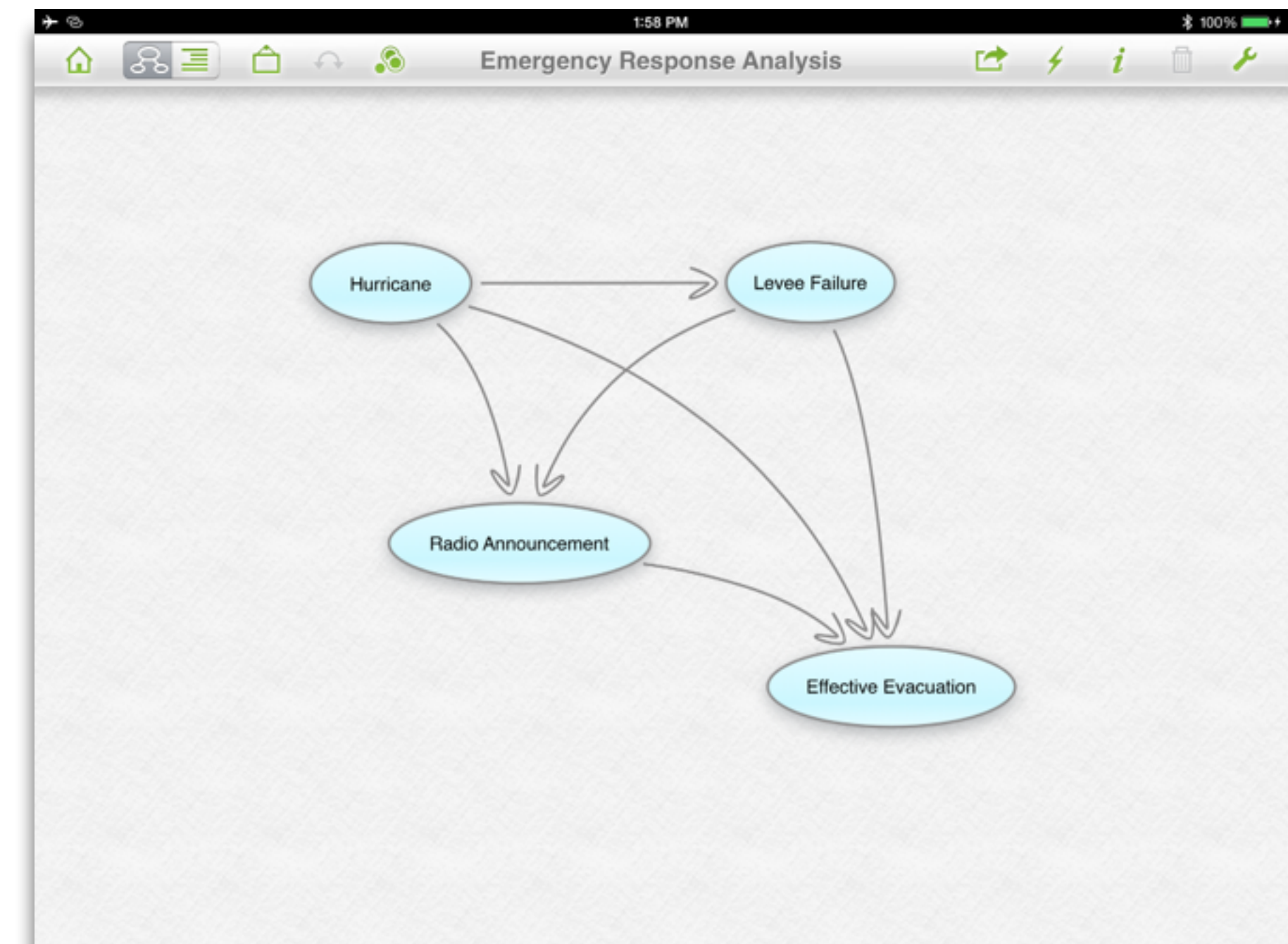
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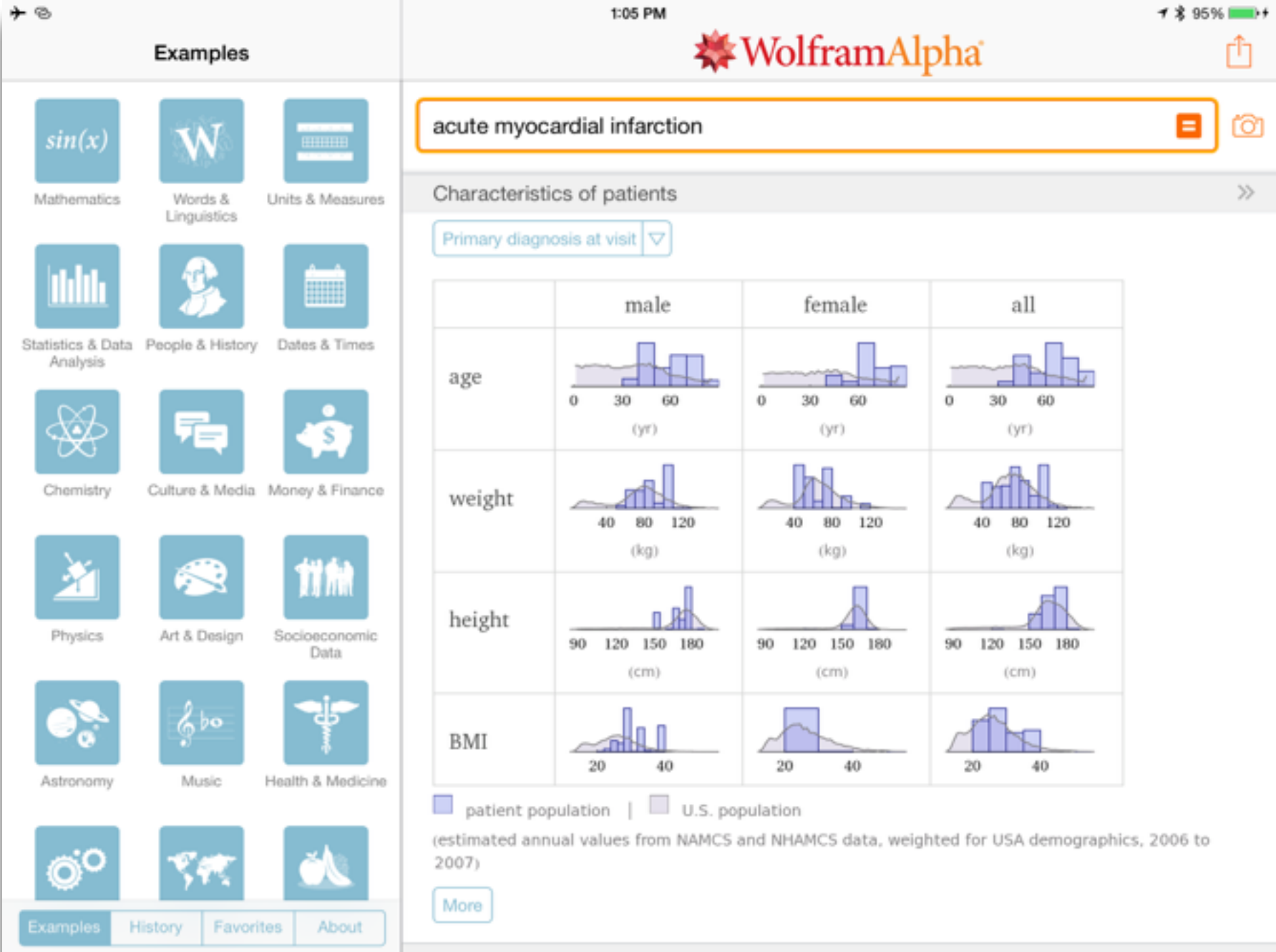
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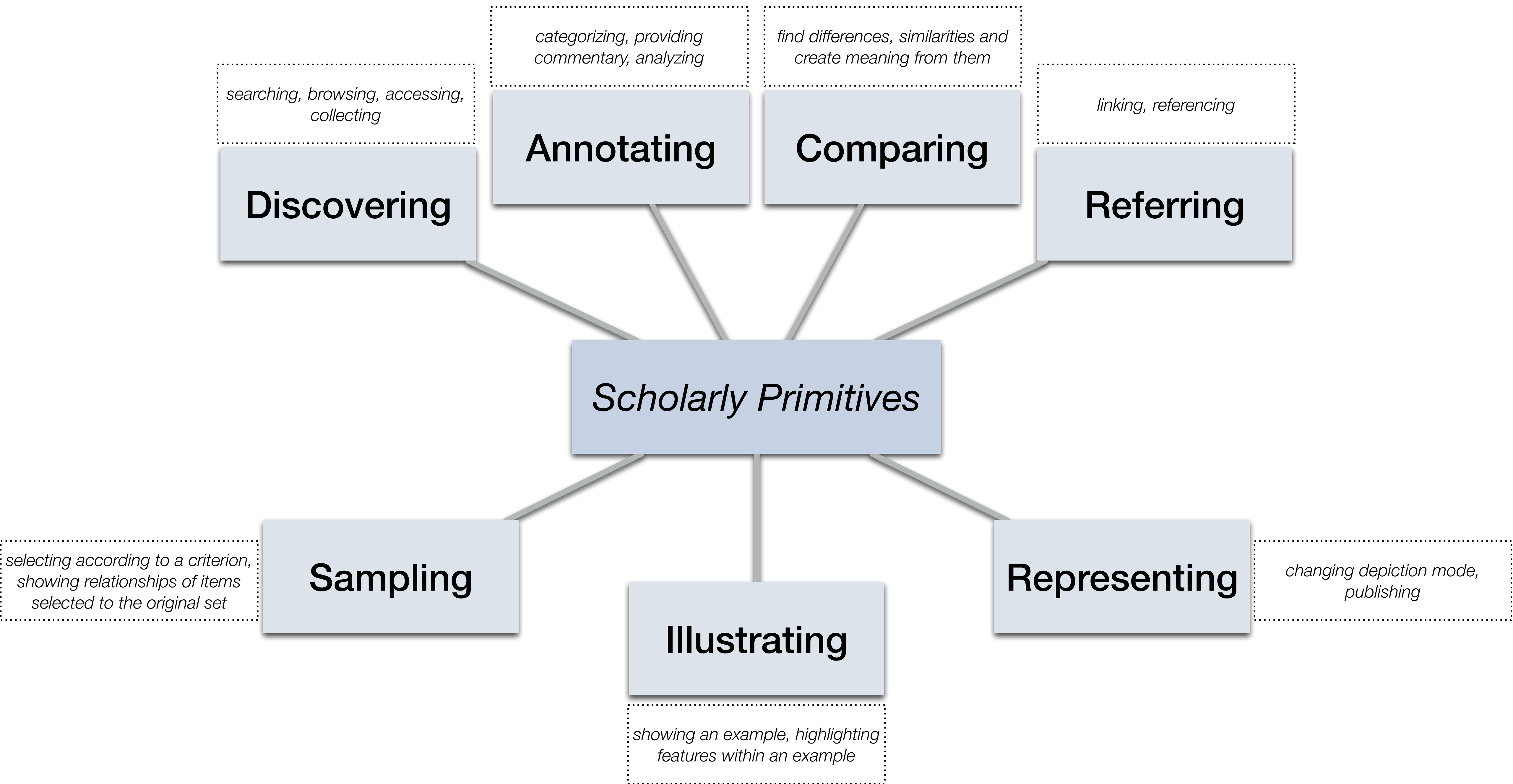
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AT&T 2:39 PM 40% Stent Policy Analysis

Independent Predictor	Hazard Ratio	95% CI	P Value
<b>30-Day Major Adverse Cardiac or Cerebrovascular Event</b>			
>1 vessel treated	1.416	1.138-1.762	0.0018
Urgent procedure	3.27	2.5-5.54	<0.0001
Female sex	1.464	1.03-2.07	0.0321
Chronic obstructive pulmonary disease	1.541	1.04-2.276	0.03
Hypertension	1.622	1.037-2.535	0.0339
<b>3-Year Survival</b>			
>1 vessel treated	1.252	1.072-1.462	0.0045
NYHA functional class III or IV	1.35	1.015-1.796	0.0389
Prior myocardial infarction	1.411	1.077-1.848	0.0047
Age >65 yr	2.182	1.663-2.864	<0.0001
Chronic renal insufficiency	1.963	1.481-2.602	<0.0001
Valvulopathy	1.641	1.183-2.277	0.0031
Family history of coronary artery disease	0.615	0.437-0.865	0.0039
Hyperlipidemia	0.66	0.518-0.841	0.0002
Congenital heart disease	2.312	1.692-3.16	<0.0001
Peripheral vascular disease	1.921	1.452-2.541	<0.0001

Will Stent Revascularization Replace Coronary Artery Bypass Grafting?  
James M. Wilson, MD





# 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

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DOI: 10.1177/0956797614524581

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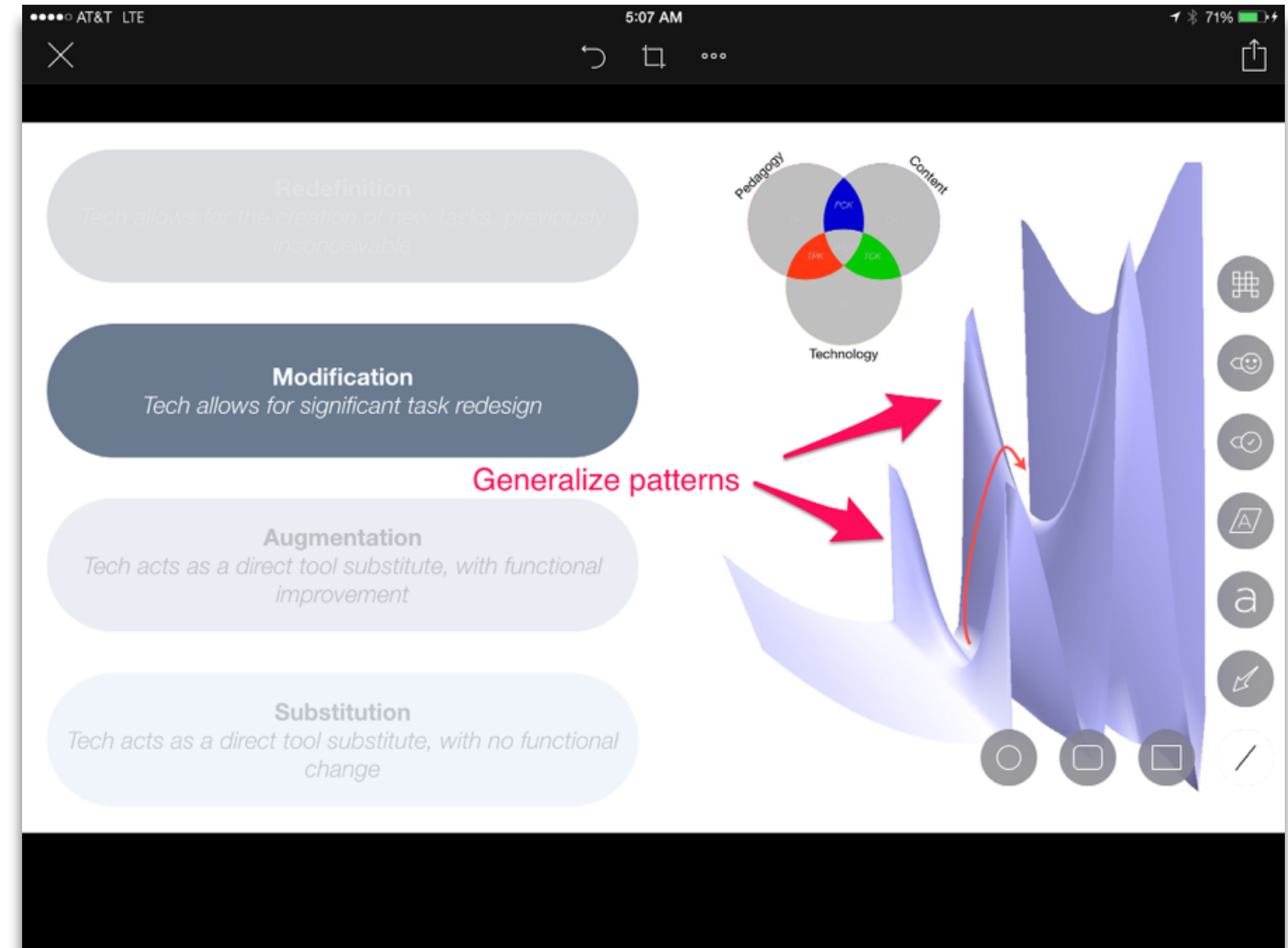
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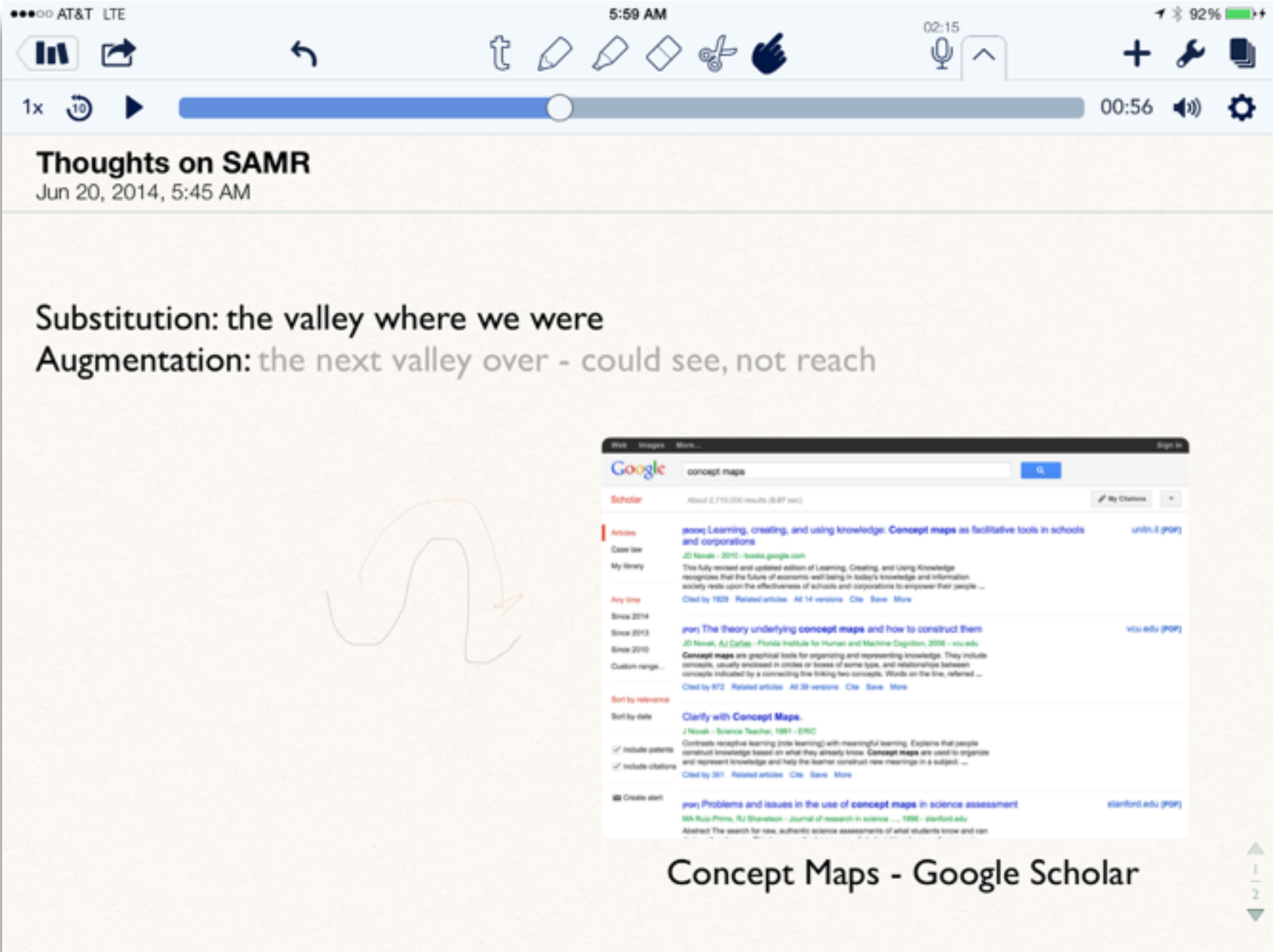
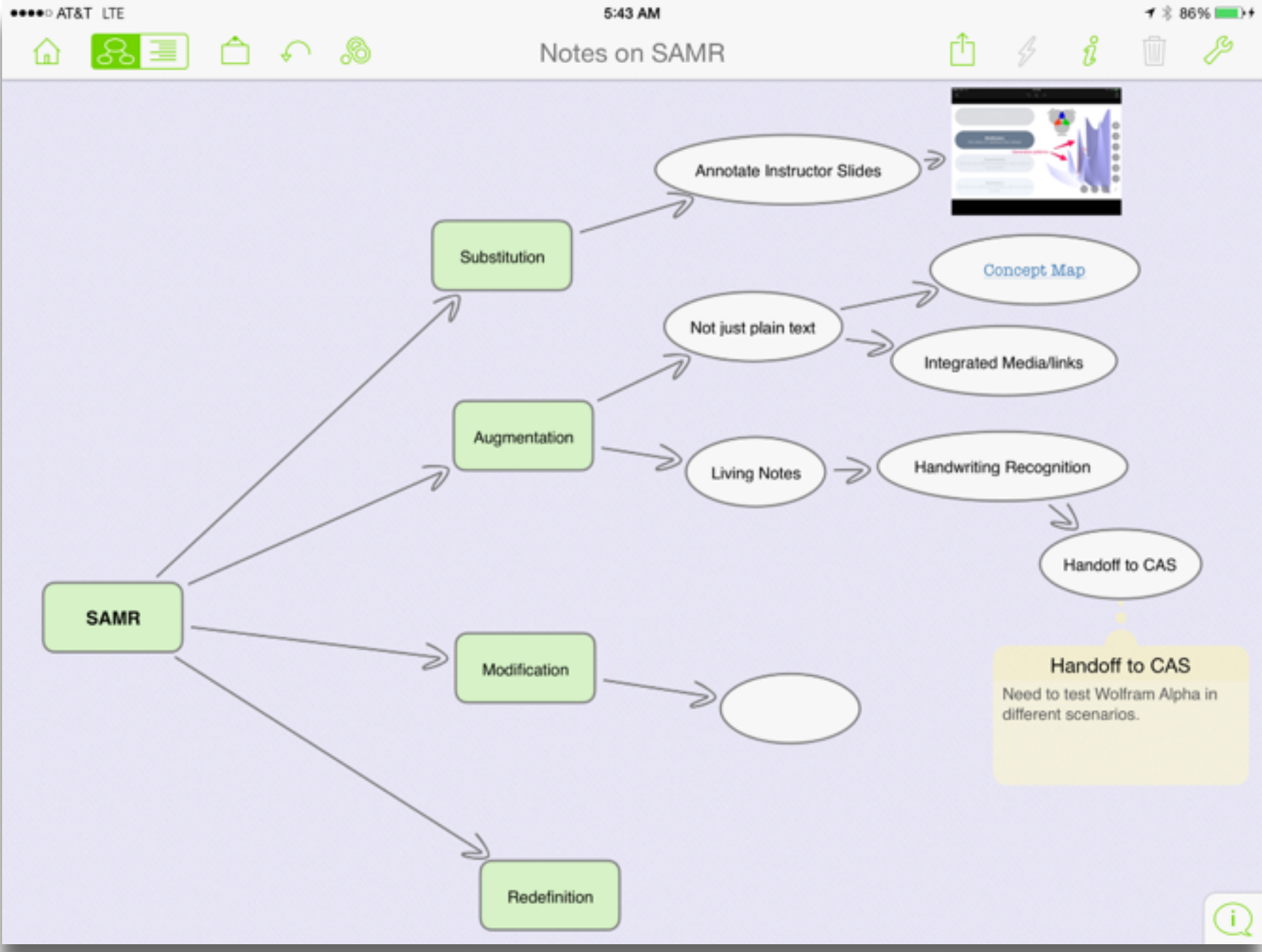


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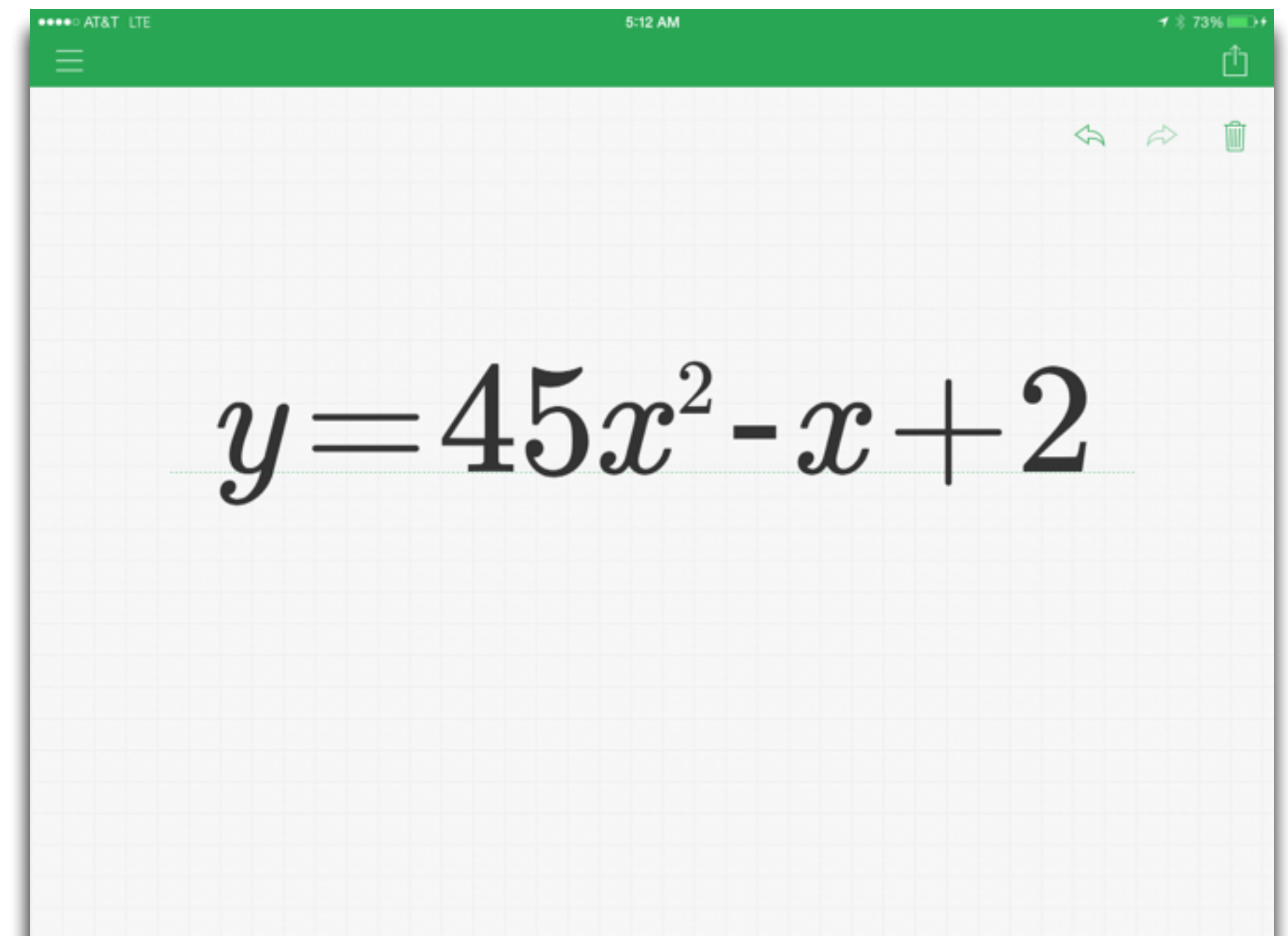
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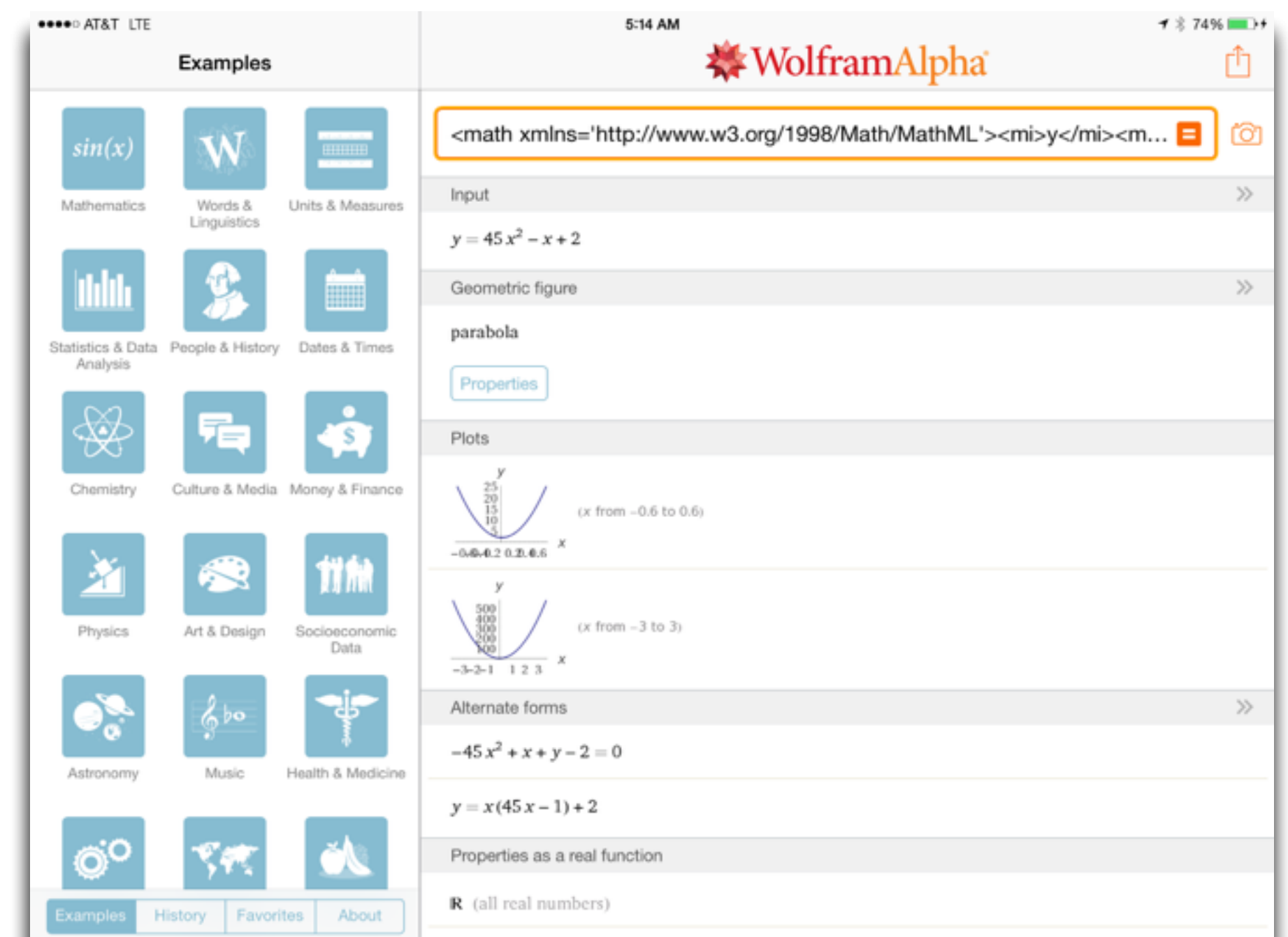
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A screenshot of a mobile application interface with a green header bar. The main area is a light gray grid. In the center, the quadratic equation  $y = 45x^2 - x + 2$  is displayed in a large, black, serif font.





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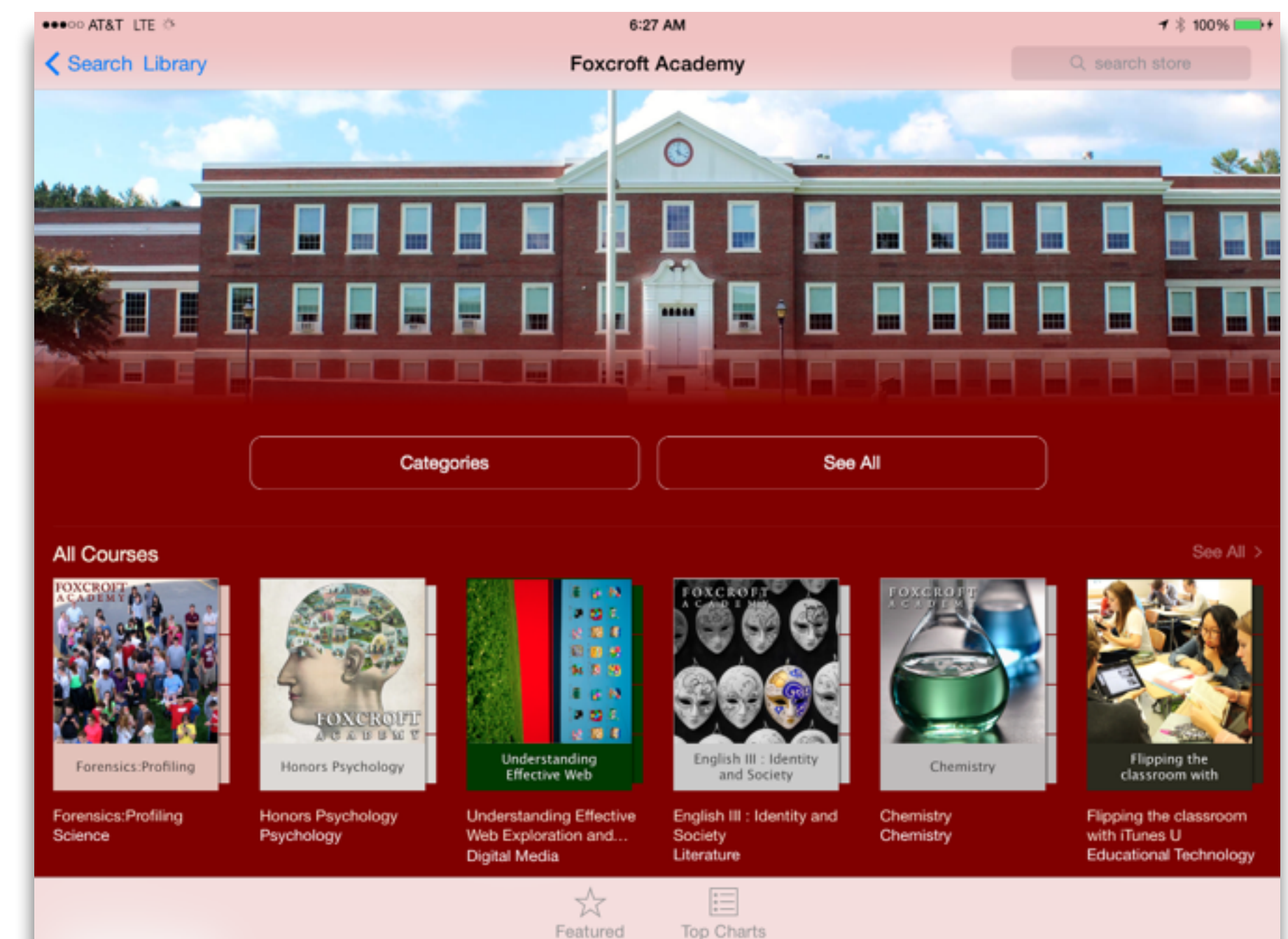
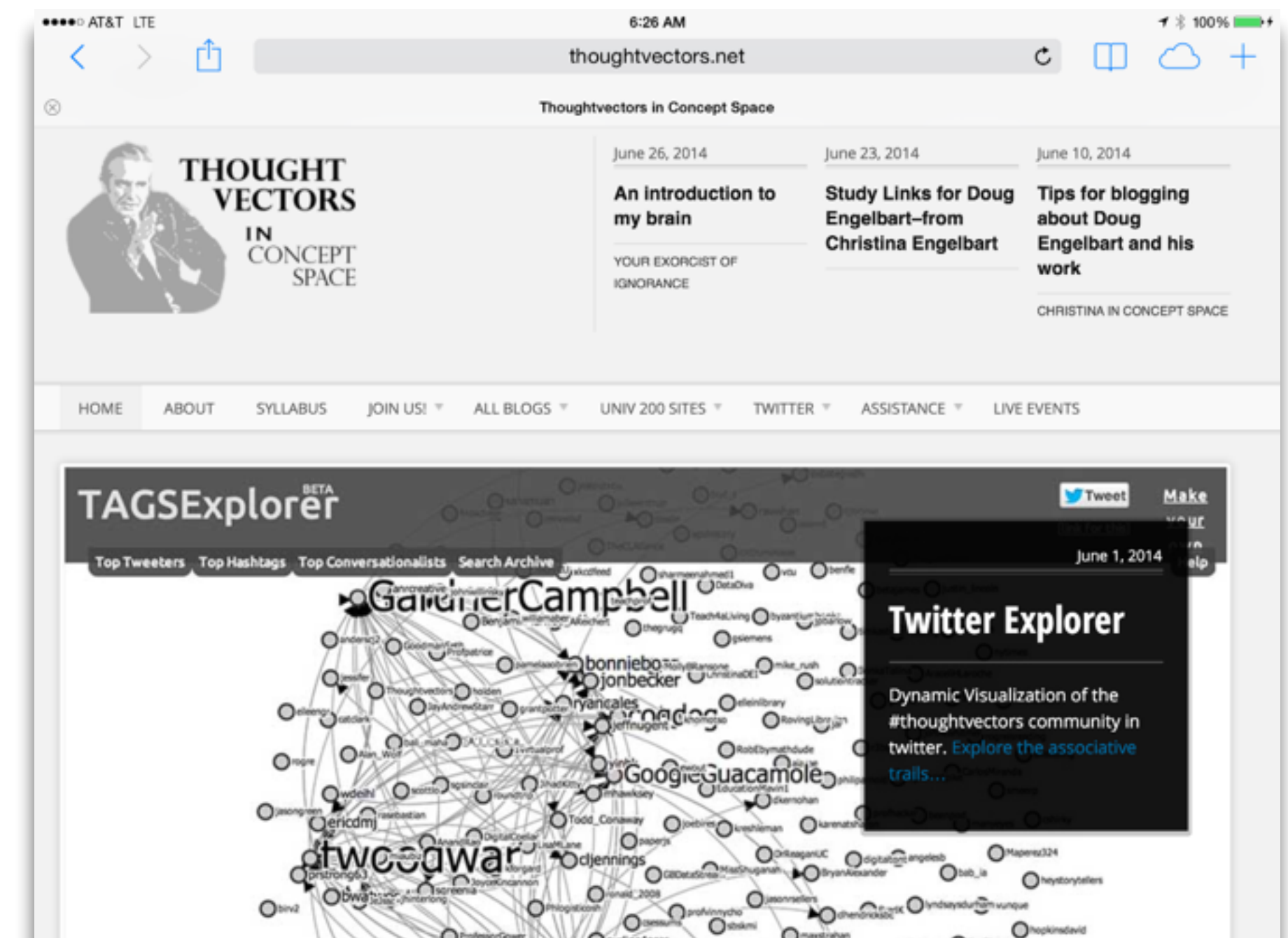
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Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
				



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Bookmarks



RSS Feeds

Discussions



Microblogging

Blogging









Wikis

Telepresence



File Sharing

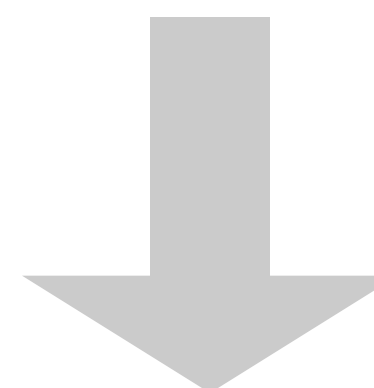


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Class

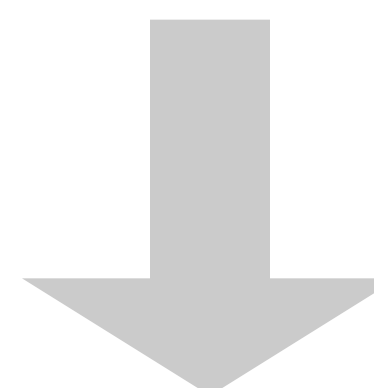
Homework



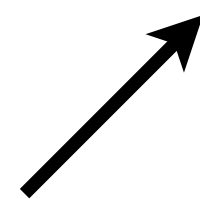
School

World

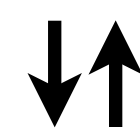
Home



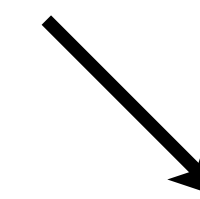
Learning Environments



*Contextual Search*  
*Augmented Reality*






*Cloud Resources*  
*Mobile Tools*

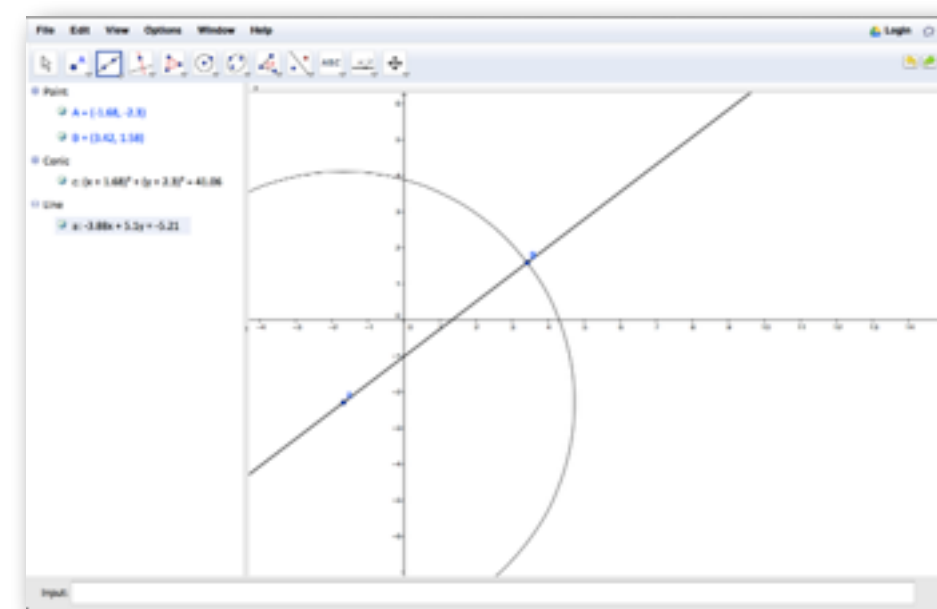
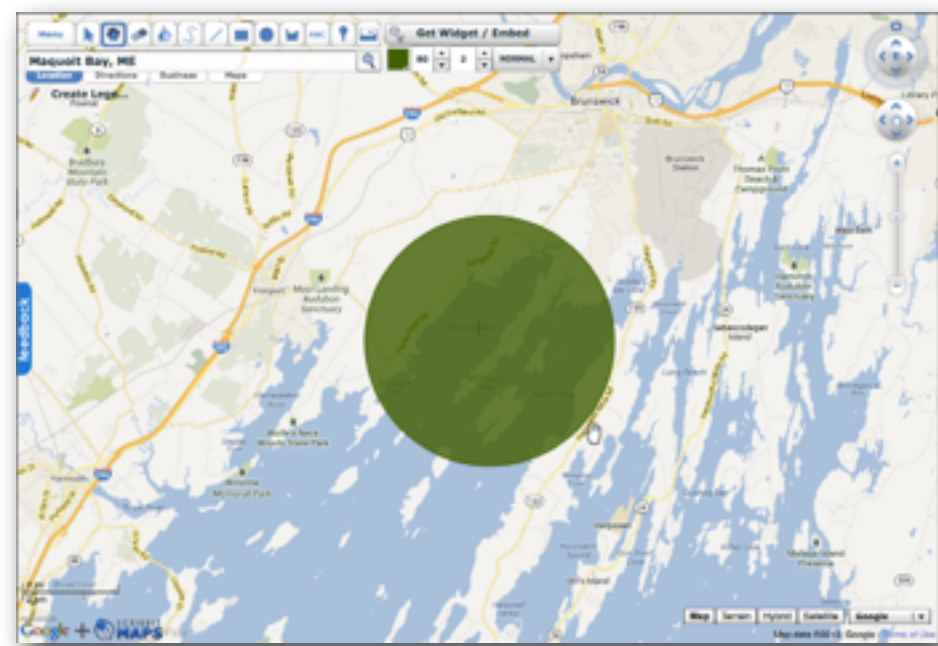
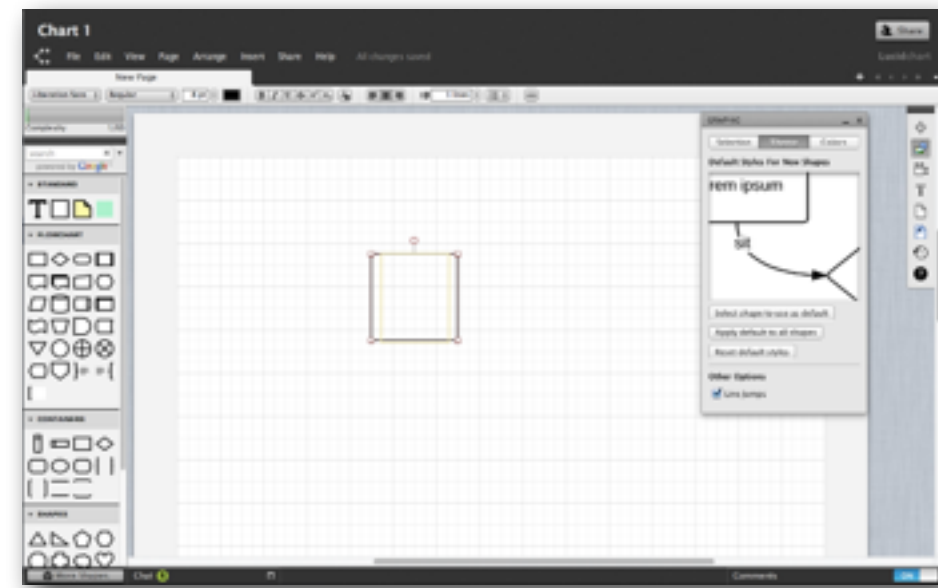


*Sensors*  
*Recorders*



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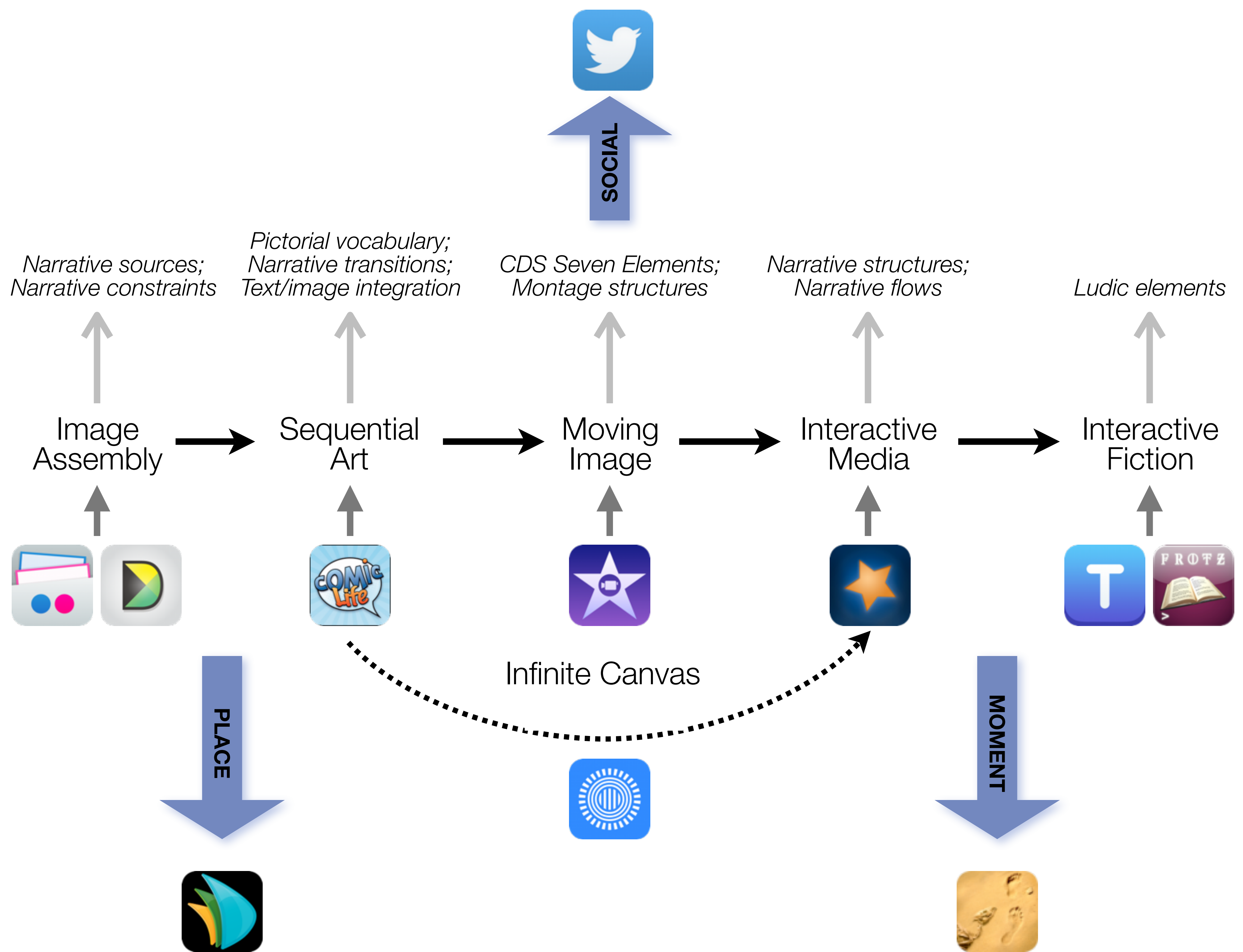






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## Formal Definition of **Game** (Salen & Zimmerman)

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“A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.”

## The EdTech Quintet – Associated Practices

Social	Communication, Collaboration, Sharing
Mobility	Anytime, Anyplace Learning and Creation
Visualization	Making Abstract Concepts Tangible
Storytelling	Knowledge Integration and Transmission
Gaming	Feedback Loops and Formative Assessment

## Location

*Position in space*

## 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*



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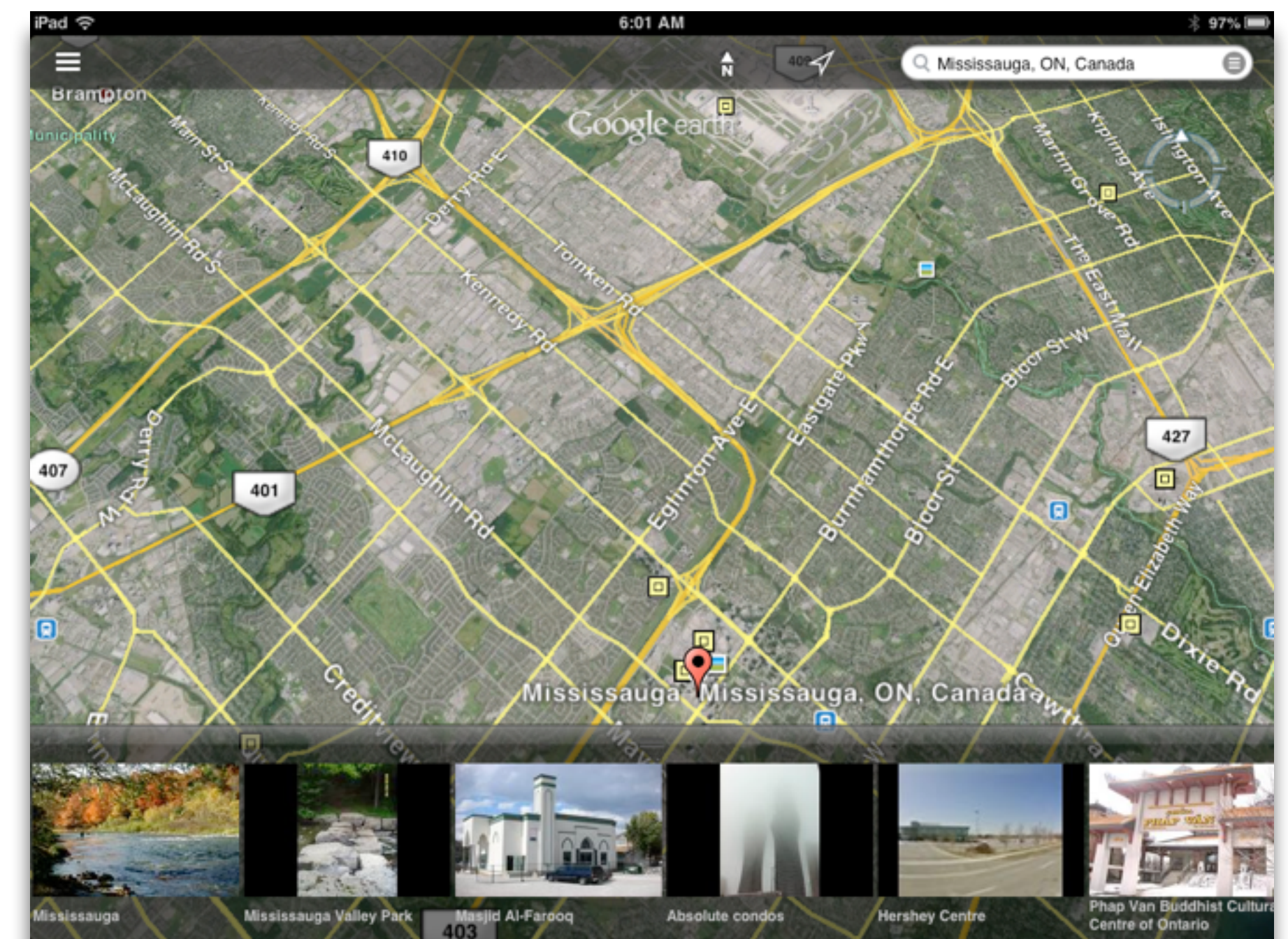
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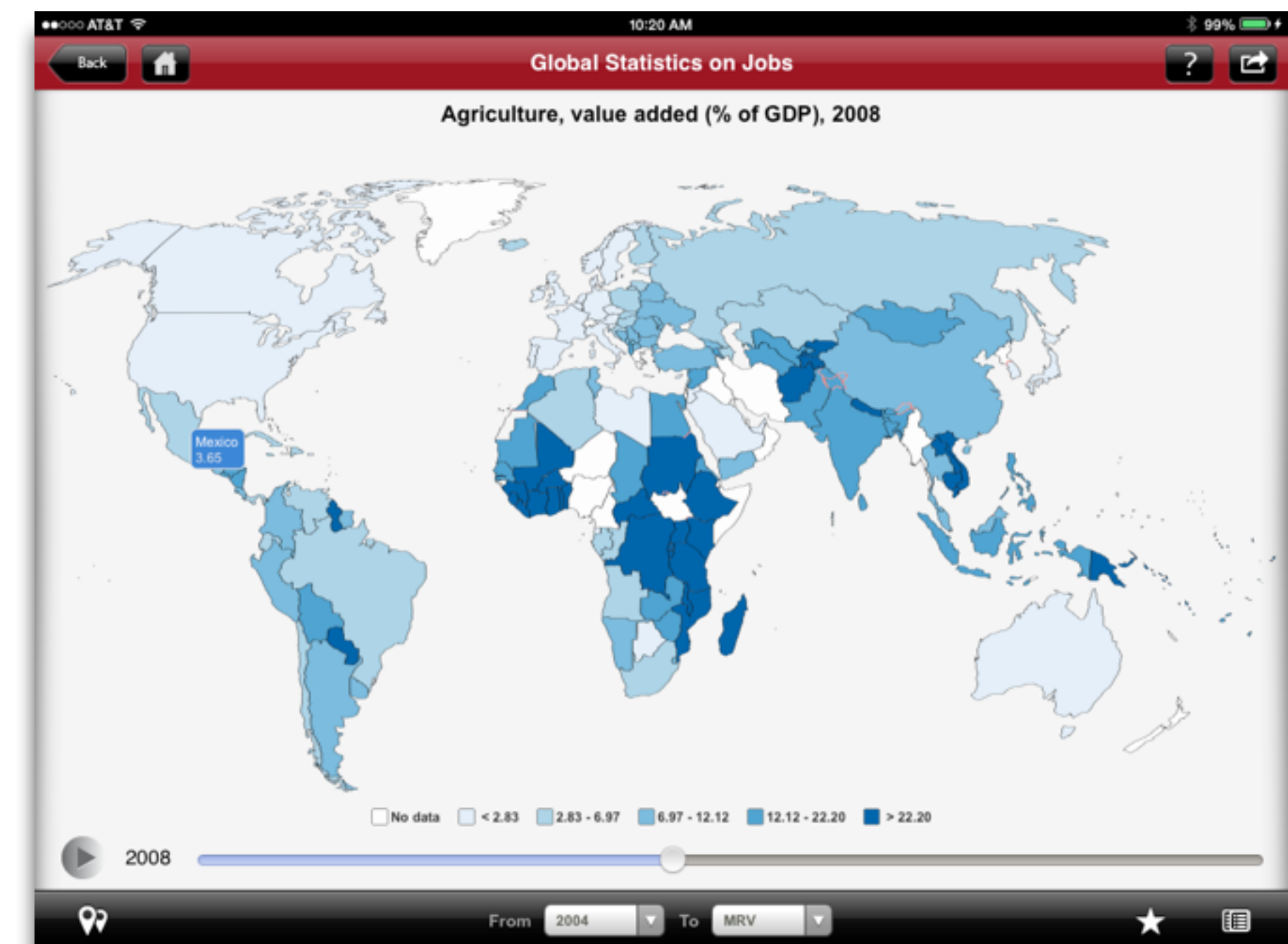
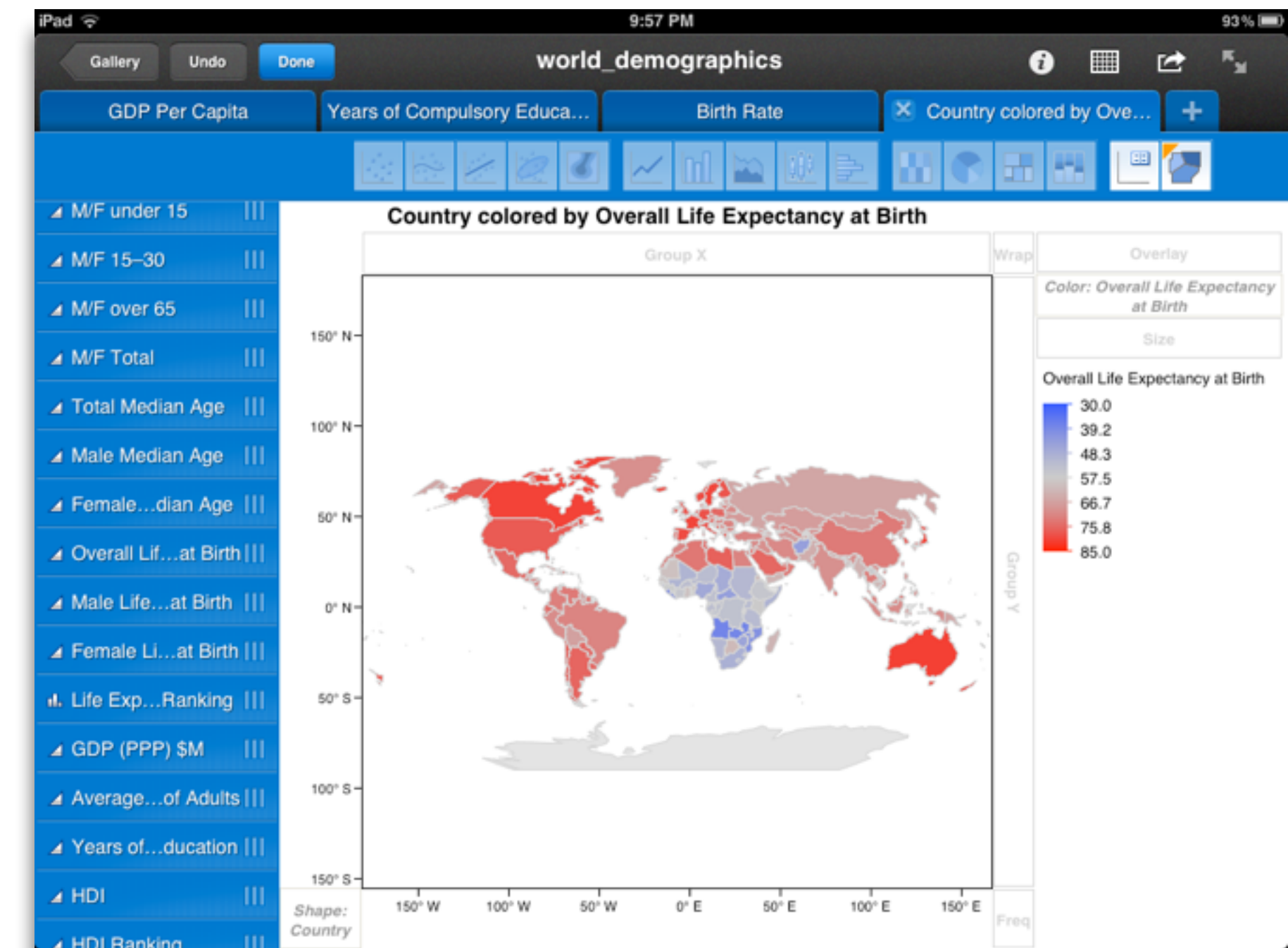
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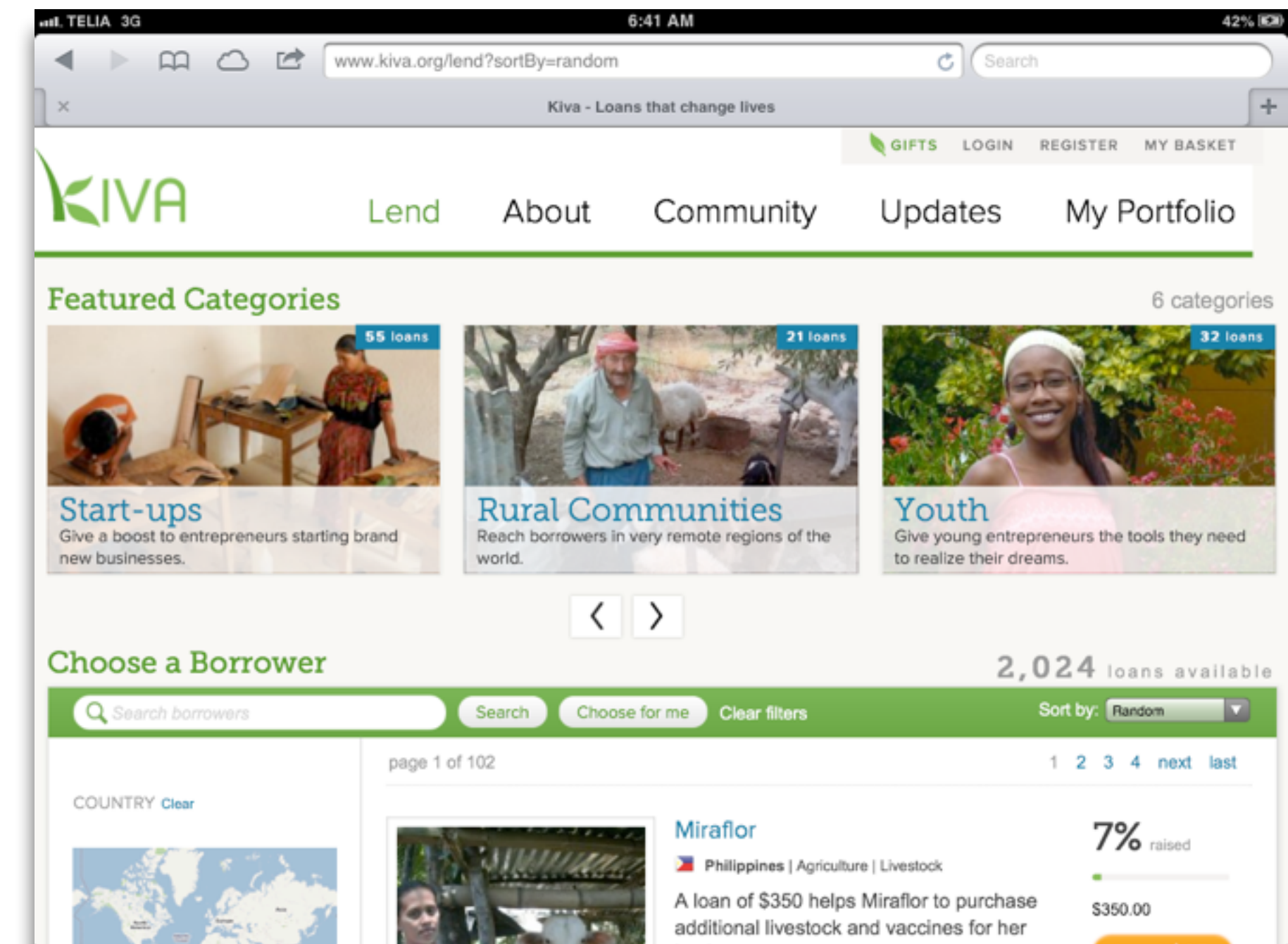
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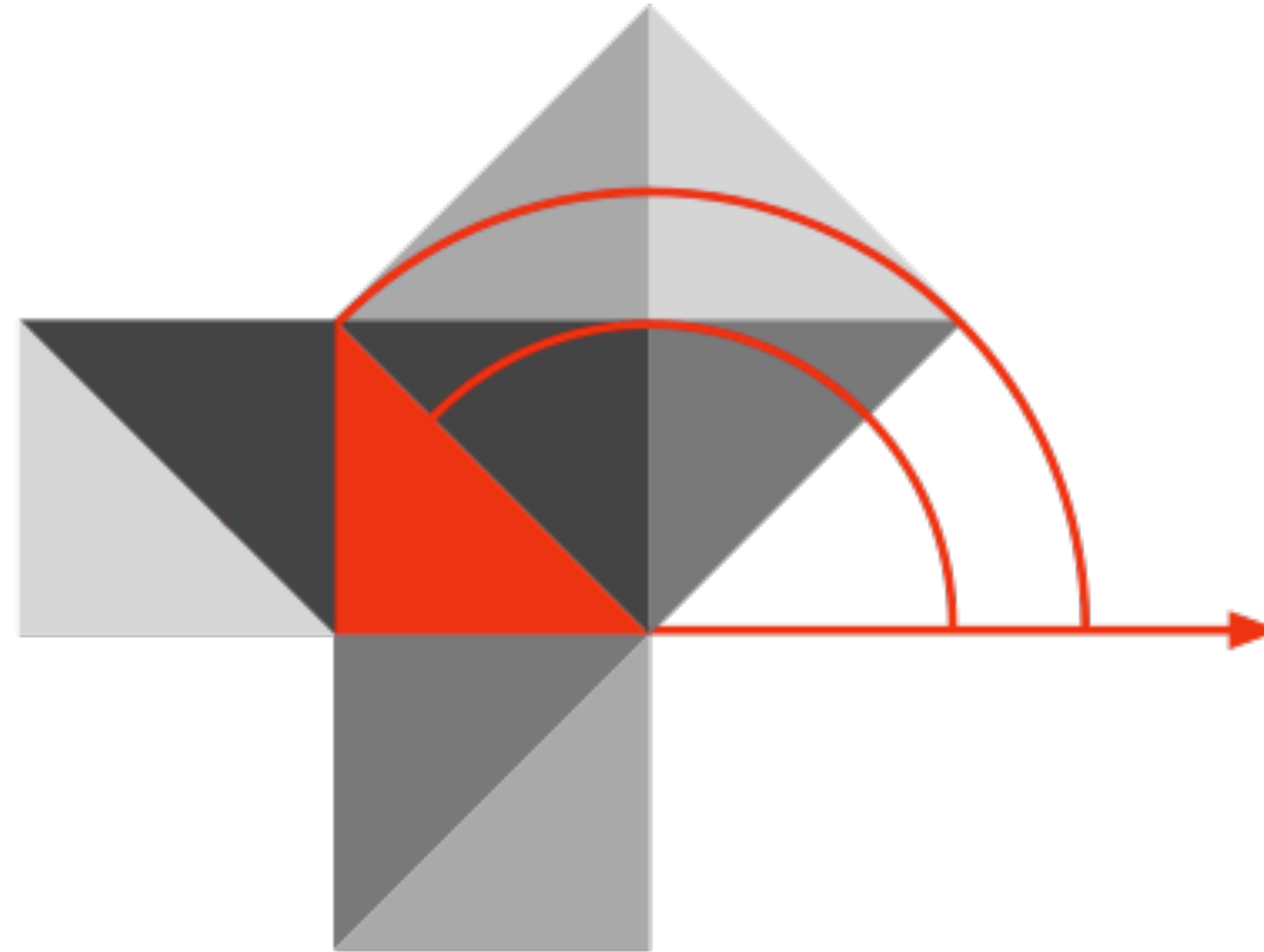
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# Hippasus

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