

SAMR: A Contextualized Introduction

Ruben R. Puentedura, Ph.D.

Transformation

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
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Enhancement

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iPad 10:37 PM 85%

Library William Rosen The Most Powerful Idea in the World

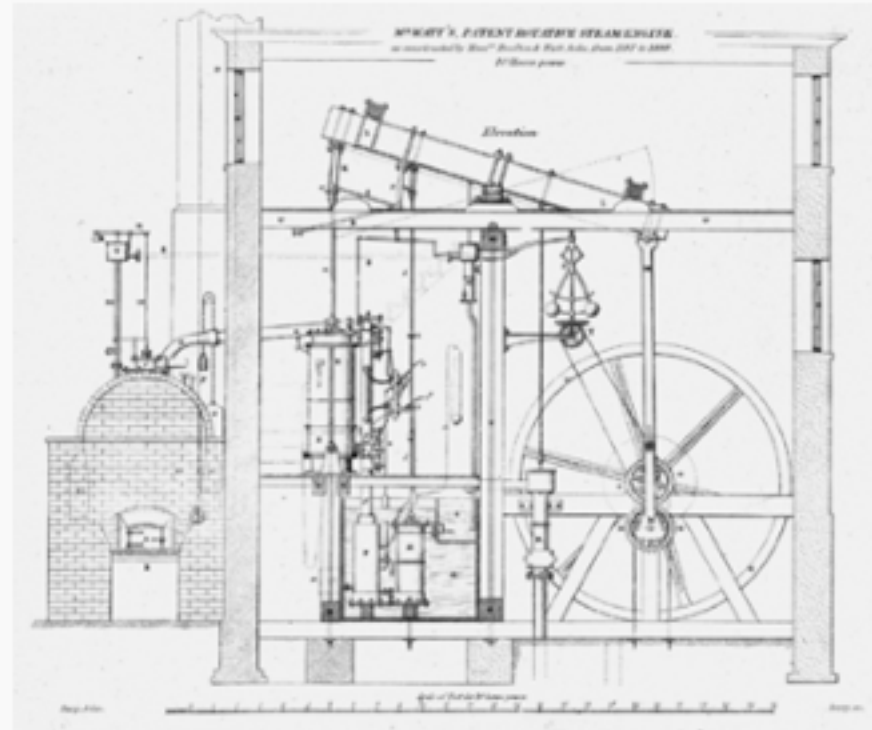


Fig. 5: The caption for this technical drawing reads "Mr. Watt's Patent Rotative Steam Engine as constructed by Messrs. Boulton & Watt, Soho, from 1787 to 1800. 10 Horse power." By 1787, the engine had evolved considerably from the earlier versions, using the sun-and-planet gear to drive the large wheel; the Watt linkage to connect the beam with the cylinder, on the left; and even Watt's feedback-driven flyball governor—the two balls hanging above and to the left of the large wheel—to control

the wheel's speed. *Science Museum / Science & Society Picture Library*

THE SUN-AND-PLANET (or, for that matter, the crank plus connecting rod, which was, after all, Watt's first choice for producing rotary motion, and would be everybody's after the Wasbrough patent expired in 1794) was a huge step toward the introduction of steam power into mills and factories, rather than pumps. But it was only a step. The lesson of the Wasbrough imbroglio was not merely to compare with later trends in patents issued per year?

Get data & graph this; how does this improve, but compare with later trends in patents issued per year?

Locke in the century preceding. Consider that from 1700 to 1740, fewer than five patents were issued in Britain annually; from 1740 to 1780, the annual number had

Back to page 10 440 of 850 441 of 850 10 pages left in this chapter

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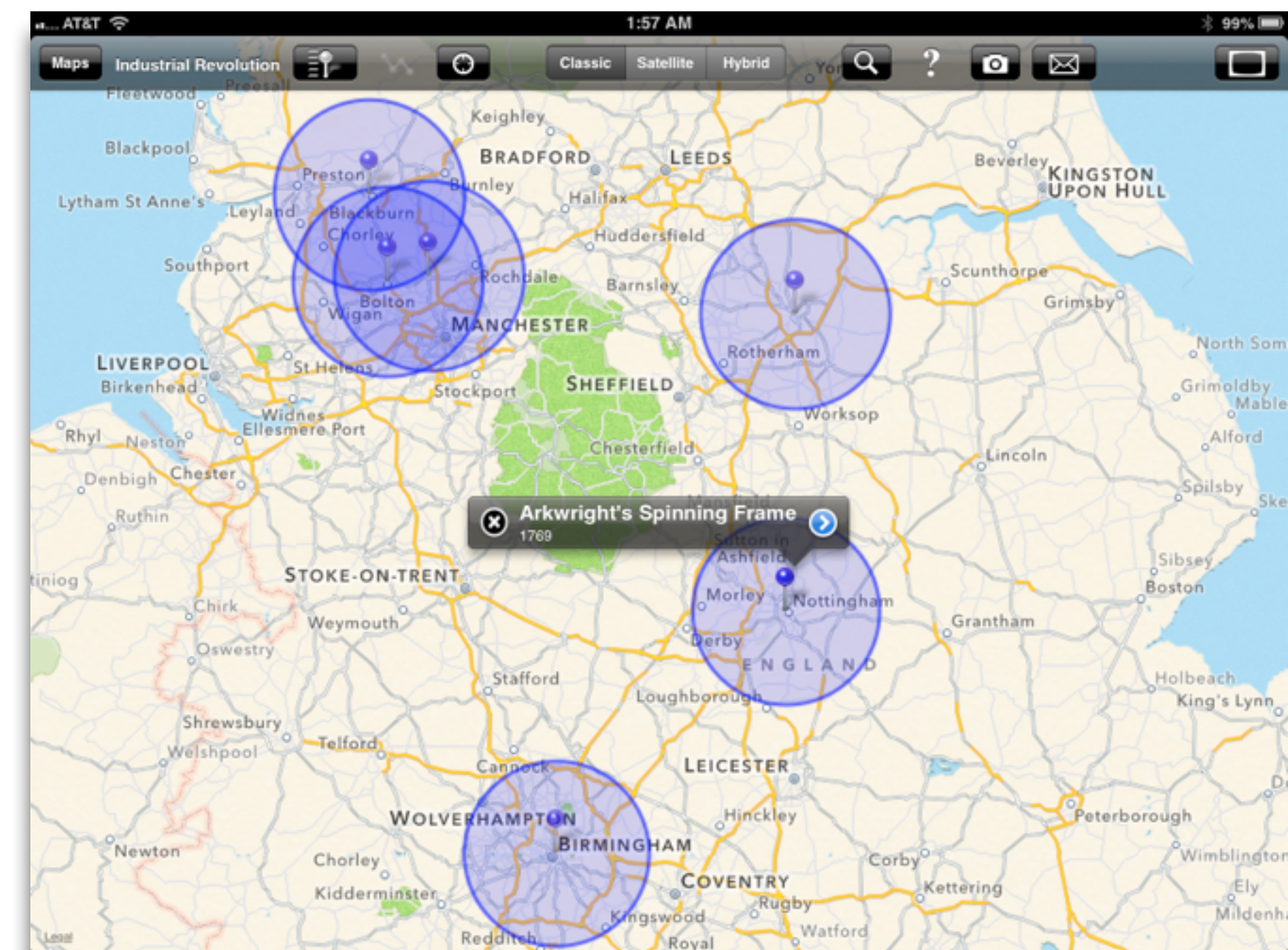
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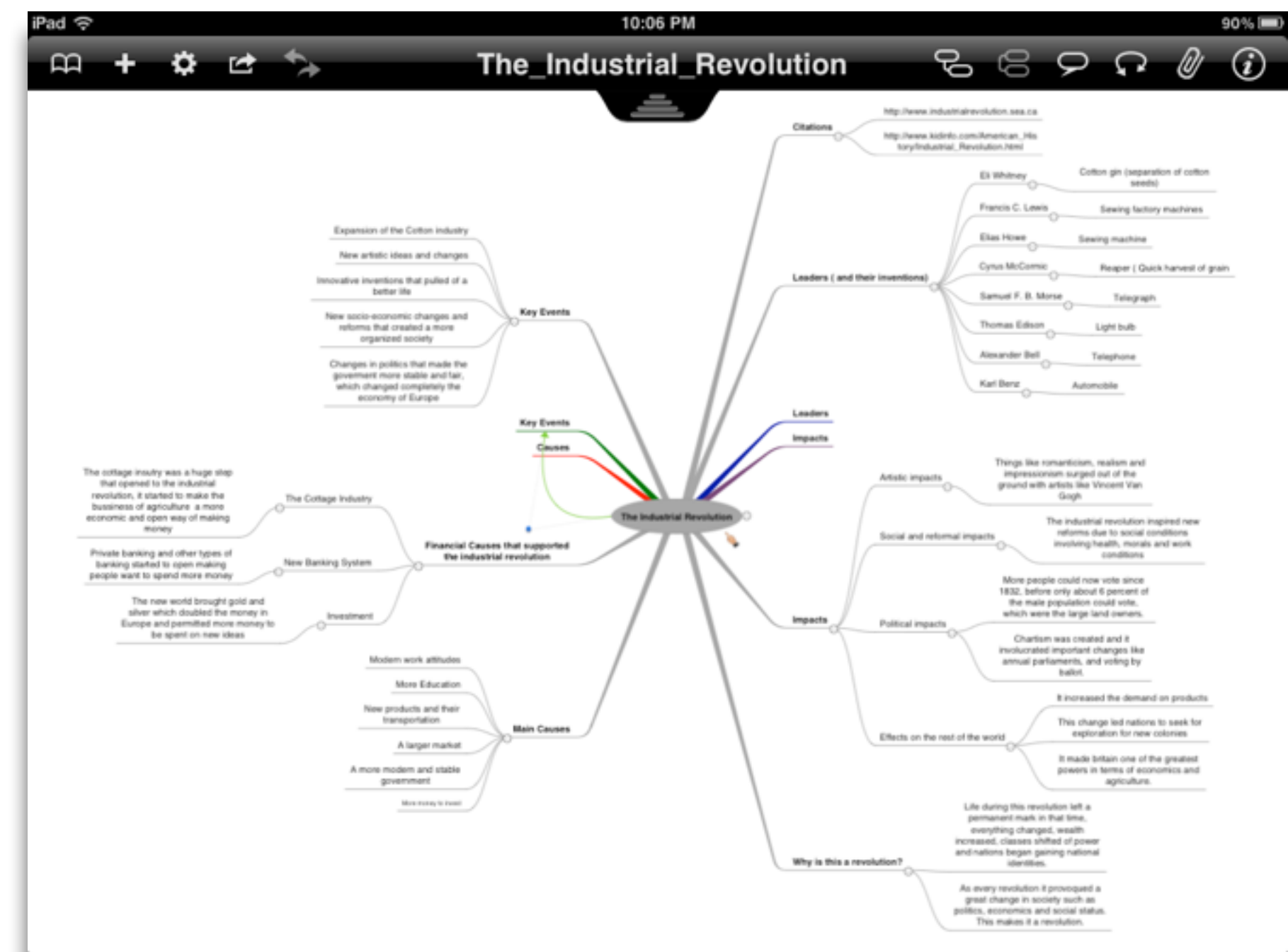
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The screenshot shows a mobile application interface. At the top, the title is "The Role of Steam in the Industrial Revolution" with a "Publish Date : Auto" indicator. Below the title, there is a paragraph of text: "The development by Matthew Boulton and James Watt of a firm to manufacture steam engines accelerated the adoption rate of the technology." Below the text is a photograph of a large industrial steam engine. At the bottom of the image, there is a caption: "(Image Source: <http://www.geograph.org.uk/photo/207521> - Photo by Chris Allen)". The interface includes a top navigation bar with various icons and a right-side sidebar with social media sharing options like Facebook, YouTube, and Twitter.



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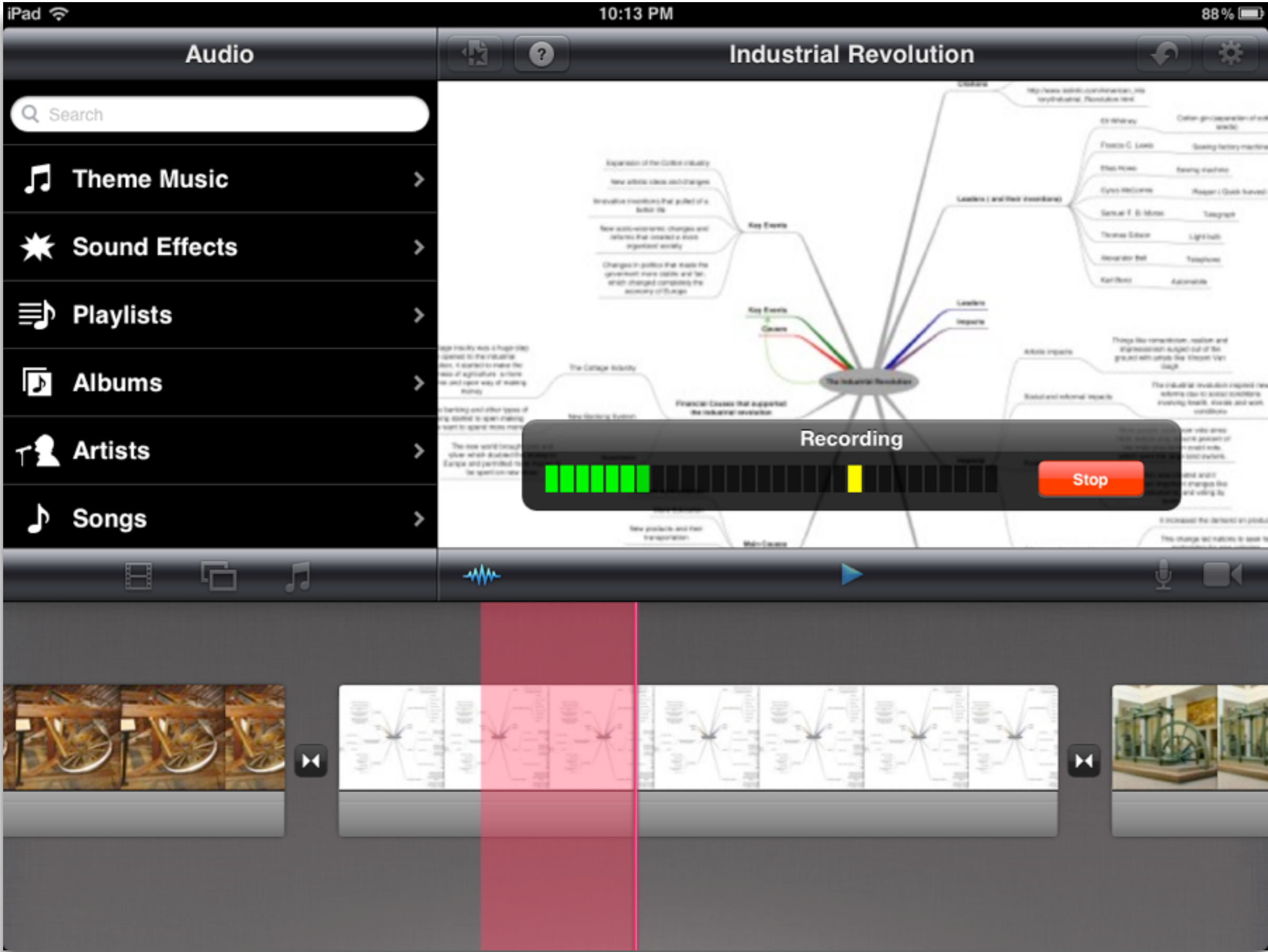
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Study	SAMR Classification	Description	Effect Size
<p align="center">Algebra I</p> <p><i>Effectiveness of Cognitive Tutor Algebra I at Scale</i>, by John F. Pane, Beth Ann Griffin, Daniel F. McCaffrey, Rita Karam</p>	<p align="center">S to A</p>	<p>S: Computerized algebra drills, some tied to real-world scenarios</p> <p>A: Tools for basic visualization; adaptive response to student progress</p>	<p align="center">≈ 0.2</p> <p>50th perc. → 58th perc.</p>
<p align="center">Earth Science</p> <p><i>Using Laptops to Facilitate Middle School Science Learning: The Results of Hard Fun</i>, by Alexis M. Berry, Sarah E. Wintle</p>	<p align="center">A to M</p>	<p>A: Interactive tools for concept exploration and visualization</p> <p>M: Narrated animation as final project</p>	<p align="center">≈ 0.6</p> <p>50th perc. → 73rd perc. (≈ 1.4 a month later) (50th perc. → 92nd perc.)</p>

Engaged Thinker

“I collaborate to create new knowledge.”

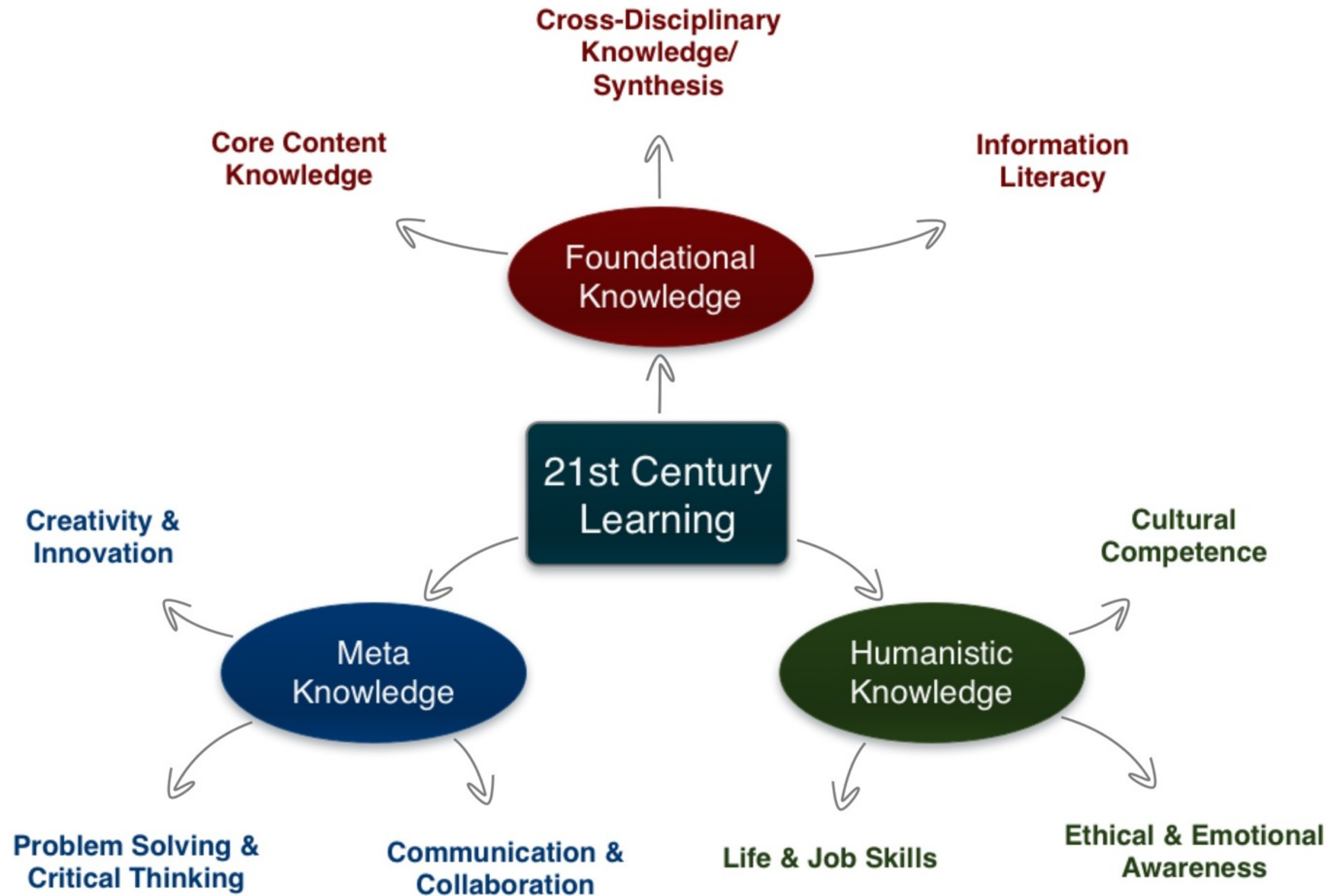
Ethical Citizen

“I do the right thing because it is the right thing to do.”

Entrepreneurial Spirit

“I create new opportunities.”

know how to learn
think critically
identify and solve complex problems
manage information
innovate
create opportunities
apply multiple literacies
communicate well and cooperate with others
demonstrate global and cultural understanding
identify and apply career and life skills



apply multiple literacies

**Cross-Disciplinary Knowledge/
Synthesis**

manage information

Information Literacy

Core Content Knowledge



21st Century Learning

Creativity & Innovation

demonstrate global and cultural understanding

Cultural Competence



innovate
create opportunities

know how to learn






think critically
identify and solve complex problems

Problem Solving & Critical Thinking

Communication & Collaboration
communicate well and cooperate with others

Life & Job Skills
identify and apply career and life skills

Ethical & Emotional Awareness

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

Marzano: Six Steps to Effective Vocabulary Instruction

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 Periodically Do Activities That Help Them Add to Their Knowledge of Vocabulary Terms

Step 5: Periodically Students Are Asked to Discuss the Terms with One Another

Step 6: Periodically Students Are Involved in Games That Allow Them to Play with the Terms

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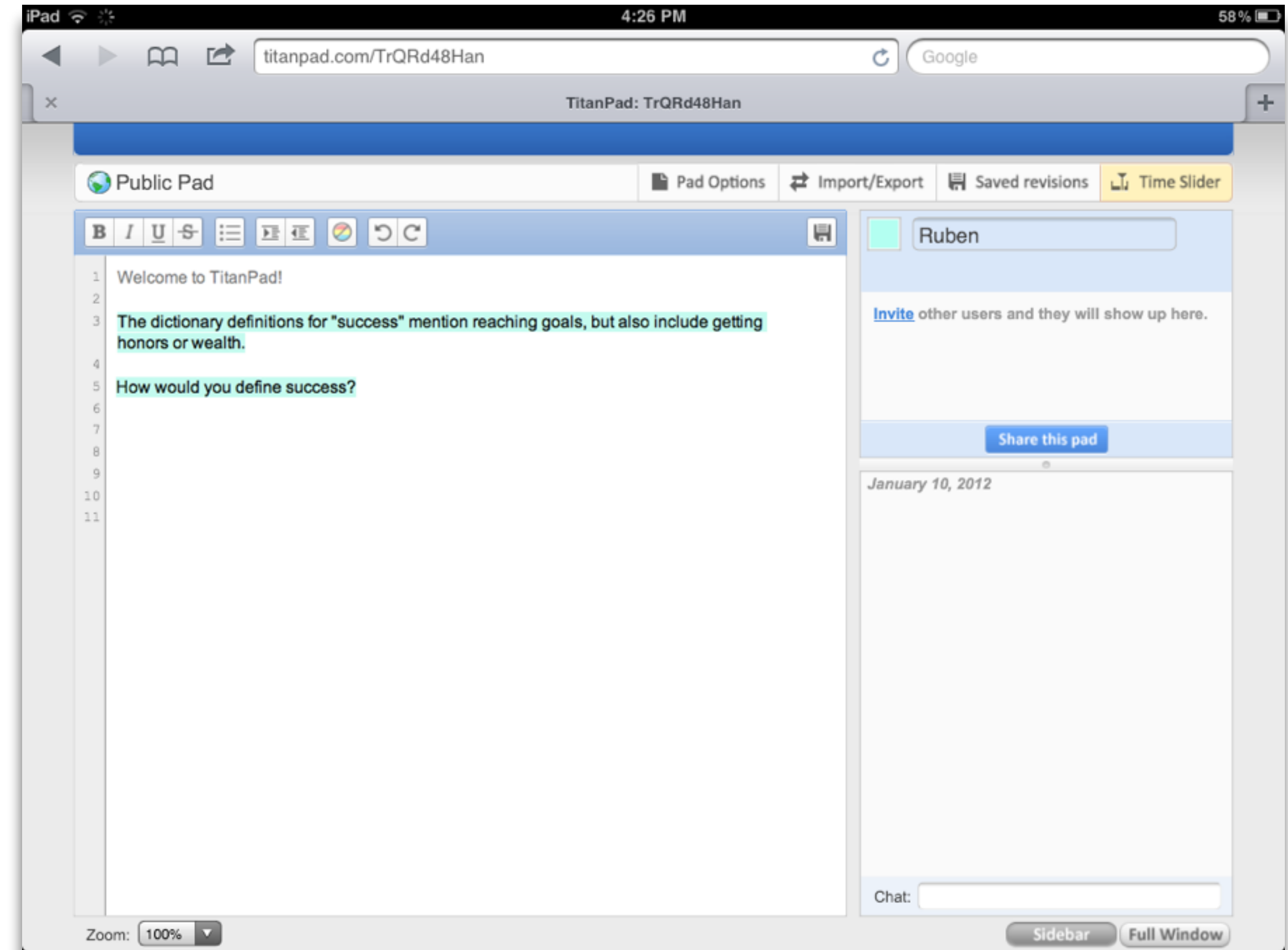
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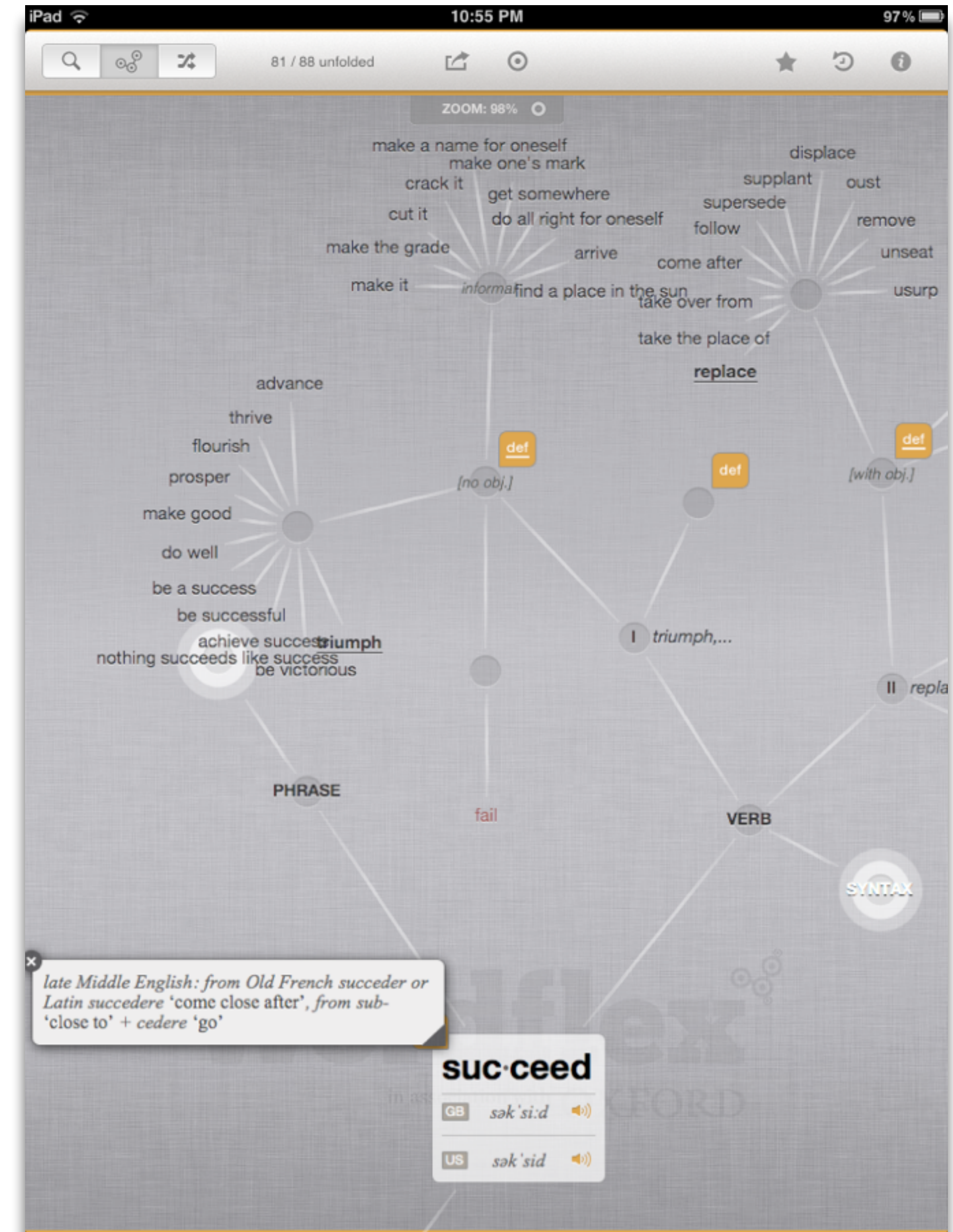
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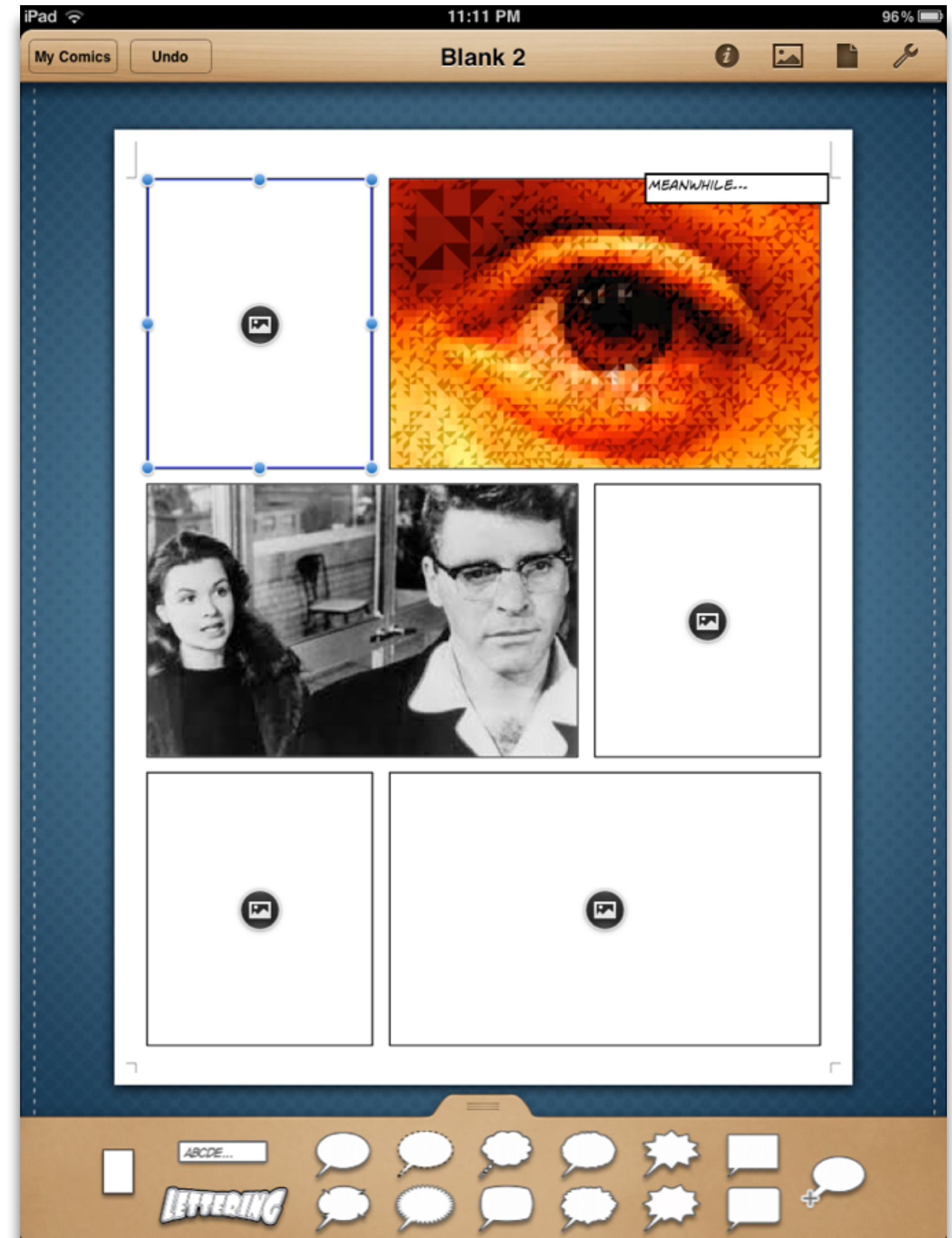
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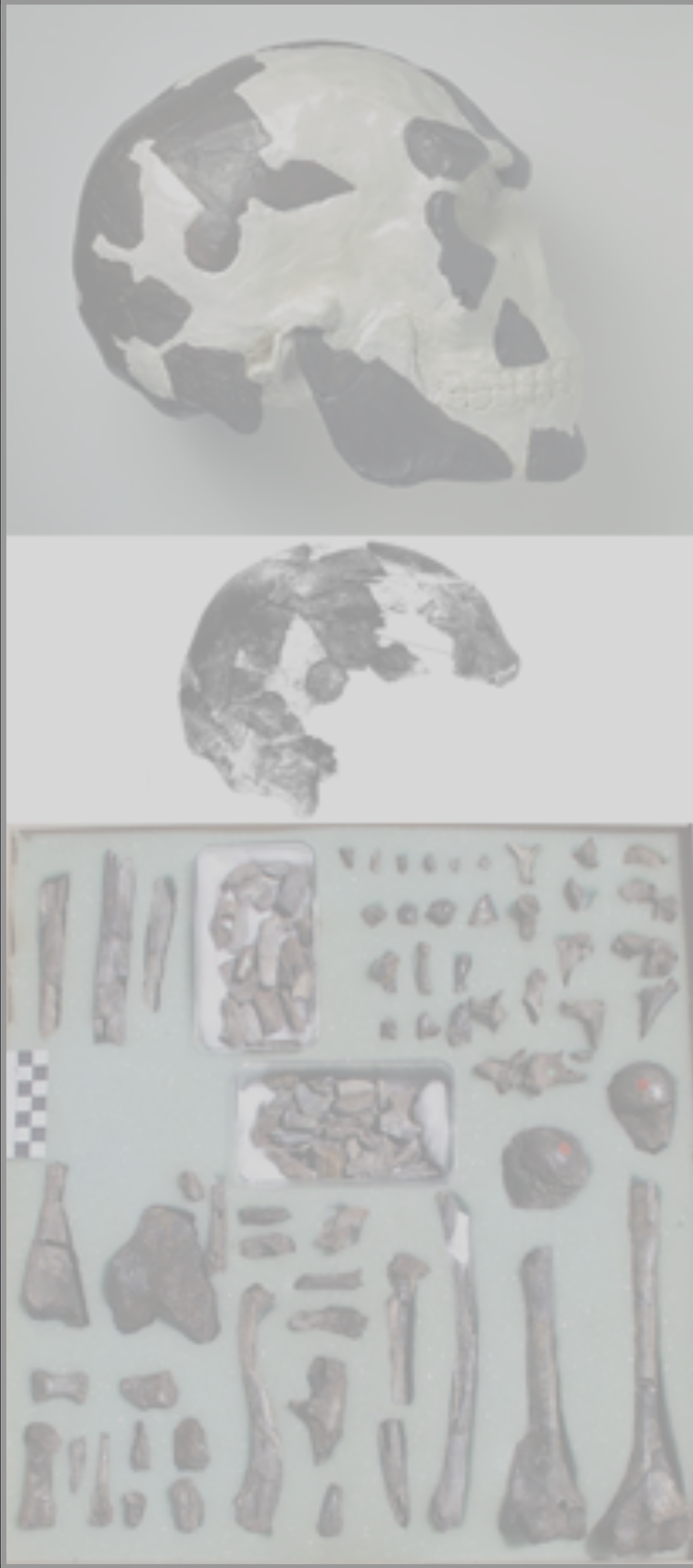

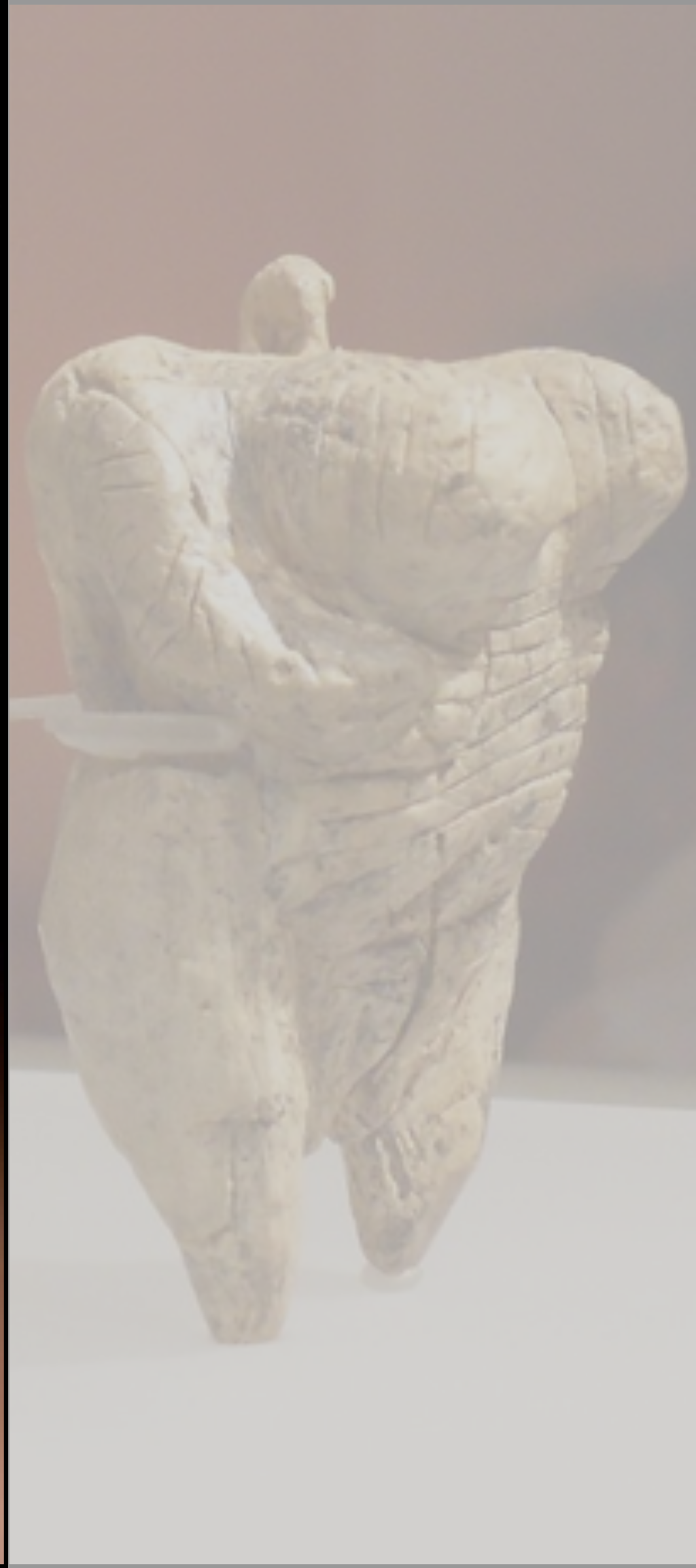


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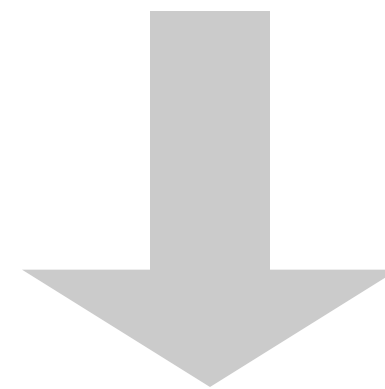
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Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
				

Class

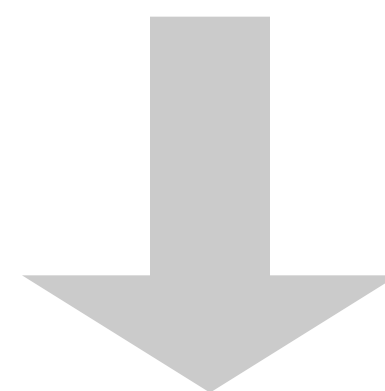
Homework



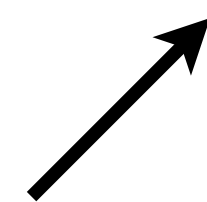
School

World

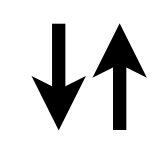
Home



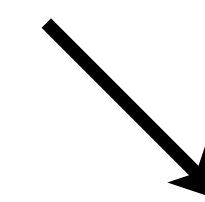
Learning Environments




Contextual Search
Augmented Reality

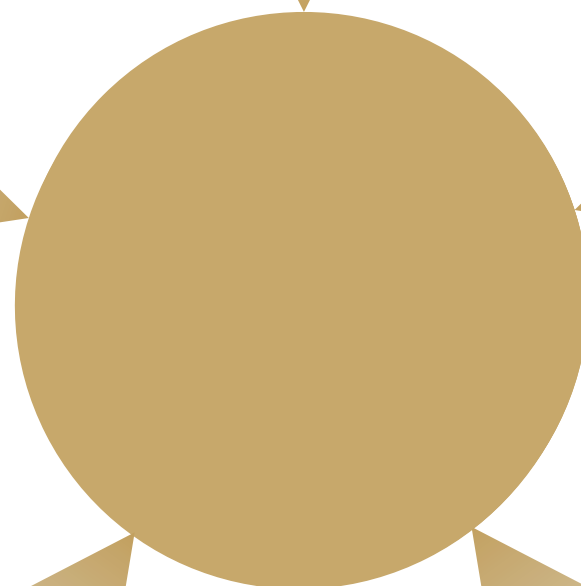
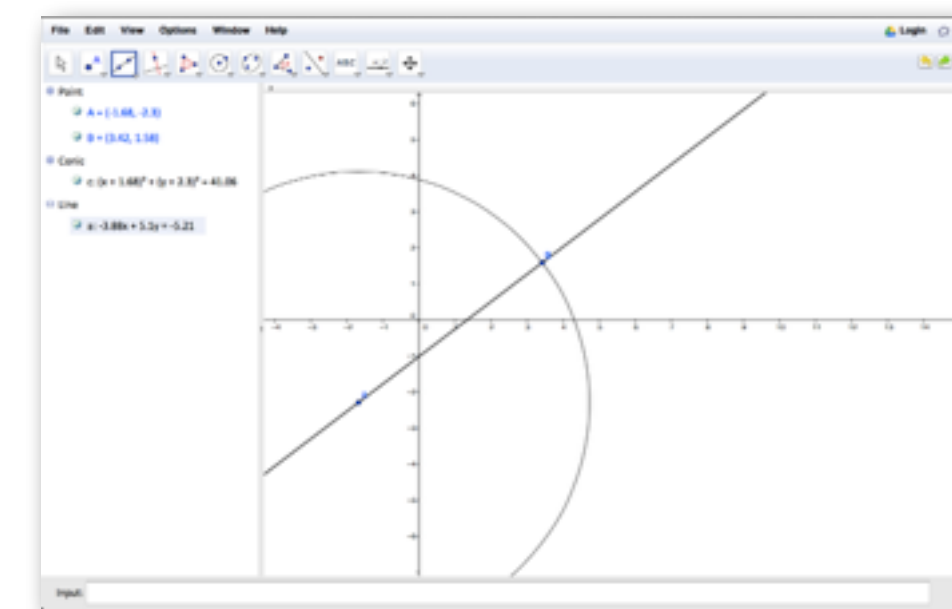
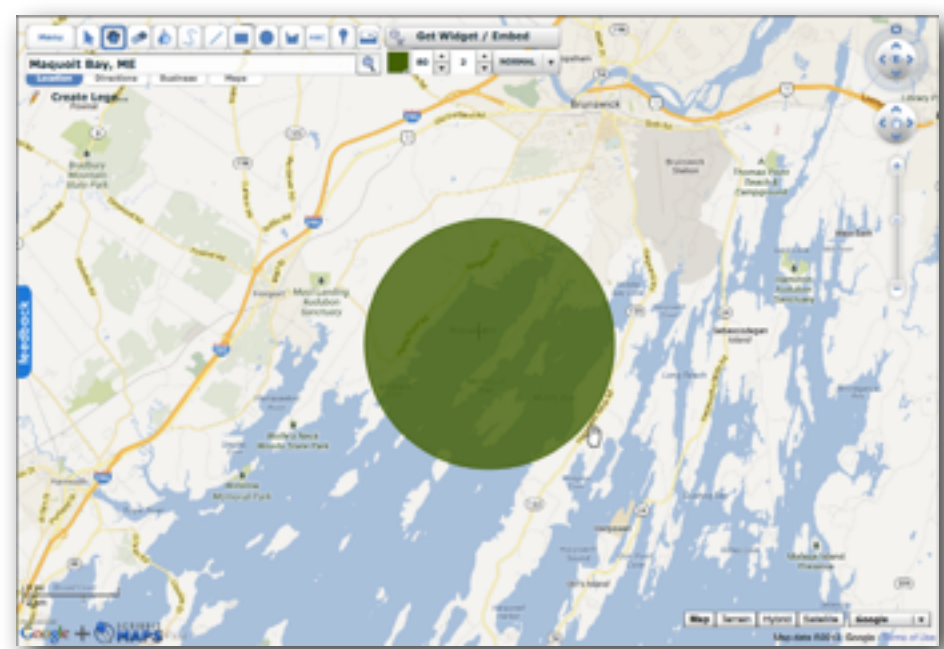
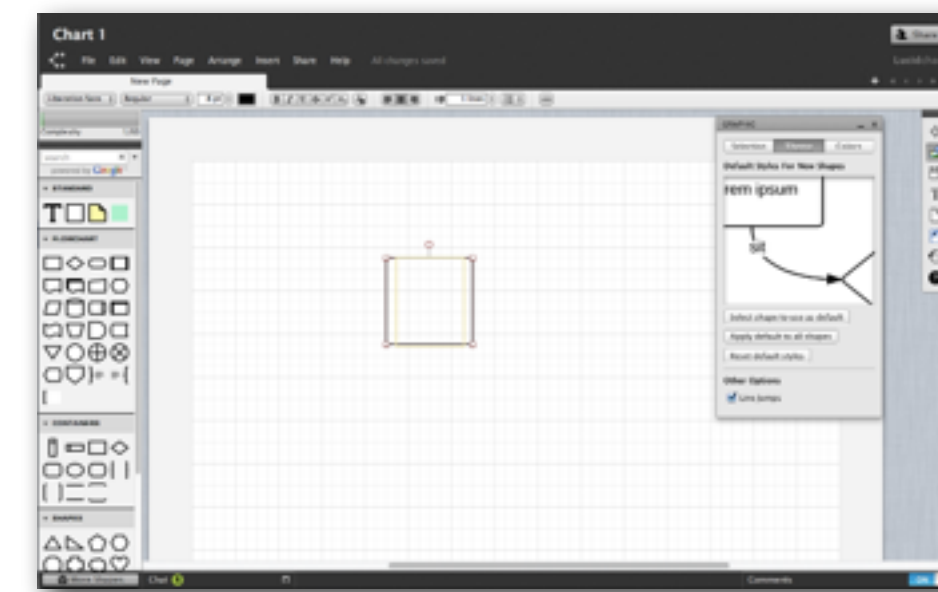
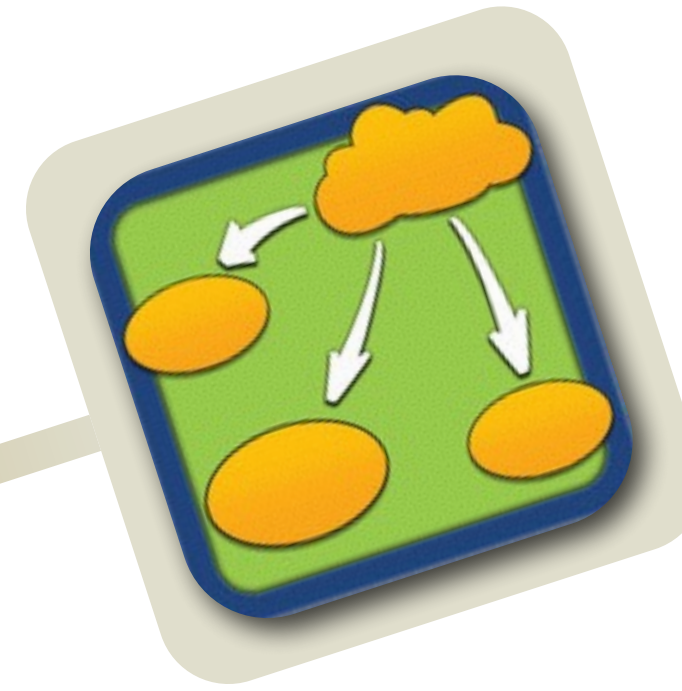


Cloud Resources
Mobile Tools



Sensors
Recorders

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



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1:15 PM 85%

Aquatic Biomes

Aquatic biomes cover 75 percent of the surface of the Earth. The aquatic and terrestrial biomes are similar in some ways

bi•ome | 'bī, ōm |
noun Ecology
a large naturally occurring community of flora and fauna occupying a major habitat, e.g., forest or tundra.

ORIGIN early 20th cent.: from **BIO-** 'life' + **-OME**

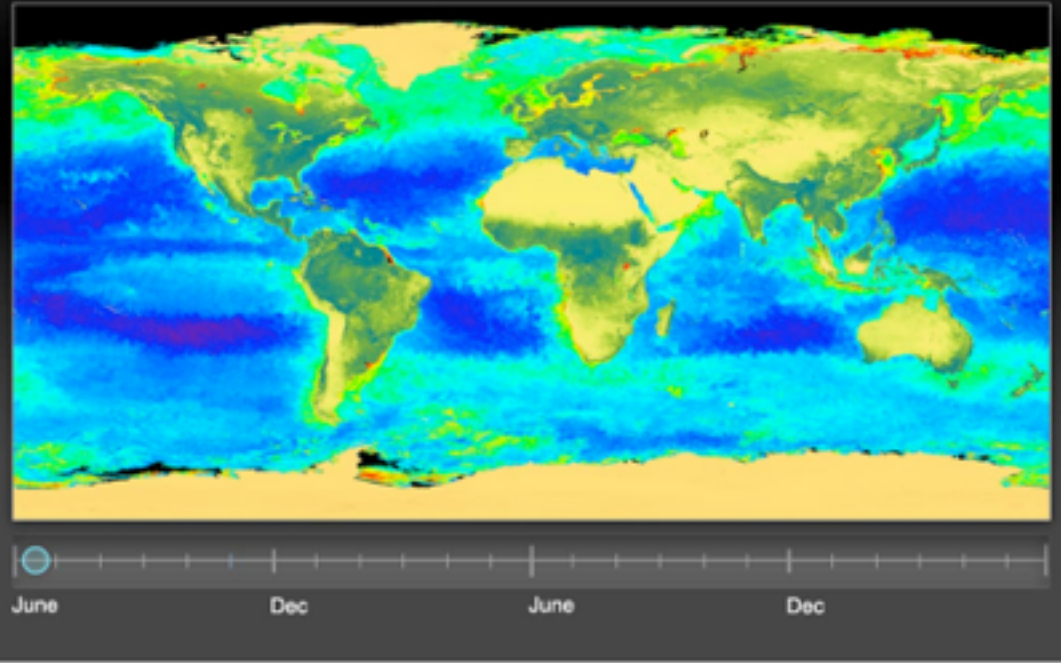
[Search Web](#) [Search Wikipedia](#)

Some aquatic organisms are adapted to both conditions for parts of their lives, such as salmon and some eels, but it

is more common for organisms to be confined to one of the two environments.

Aquatic environments have less variation globally than those on land. Taking a broad view (the lumpers' perspective), there are four kinds of aquatic biomes: surface waters, deep waters, shores, and bottoms. Within these categories are a variety of distinctive marine and freshwater life zones that are frequently designated as separate biomes.

Worldwide Photosynthetic Activity



Interactive The latitudes of peak photosynthesis change with the seasons.

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EURASIAN COLLARED DOVE

Streptopelia decaocto
Locally common, exotic

12½–13 in. (32–33 cm)

Recent colonizer of N. America from Caribbean but native to Eurasia; rapidly increasing and spreading. Slightly chunkier than Mourning Dove, *paler beige*, and with *square-cut tail*. Note *narrow black ring on hindneck*. *Grayish undertail coverts*. Three-toned wing pattern in flight.

SPOTTED DOVE

Streptopelia chinensis
Uncommon, local, exotic

12 in. (30–31 cm)

Note *broad collar of black and white spots* on hindneck. A bit larger than Mourning Dove; tail rounded with much white in corners. *Juvenile*: Lacks collar, but can be told by shape of spread tail.

ROCK PIGEON (ROCK DOVE, DOMESTIC PIGEON)

Columba livia
Common, exotic

12½ in. (32 cm)

Typical birds are gray with *whitish rump*, *two black wing bars*, and *broad, dark tail band*. Domestic stock or feral birds may have many color variants.



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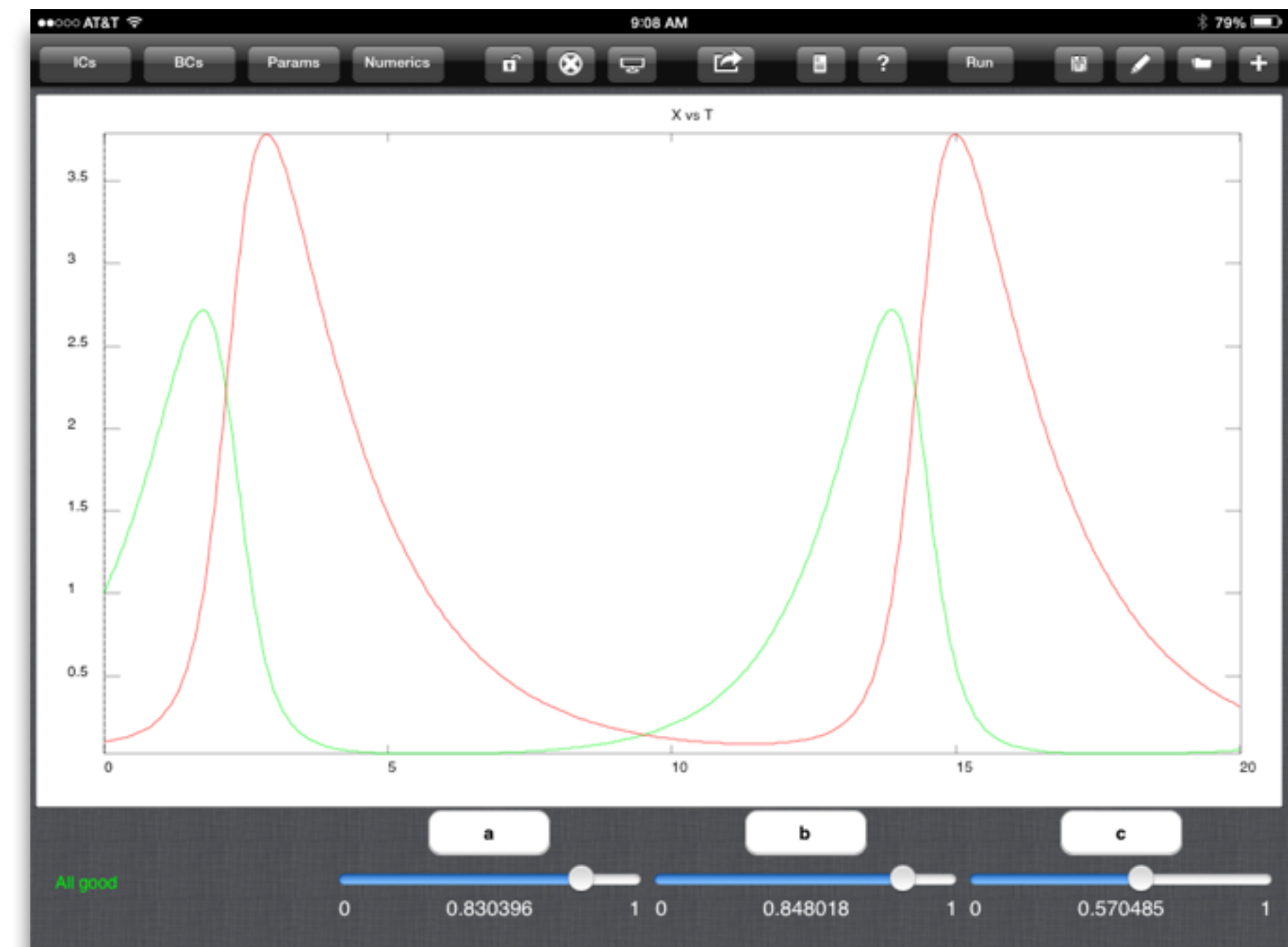
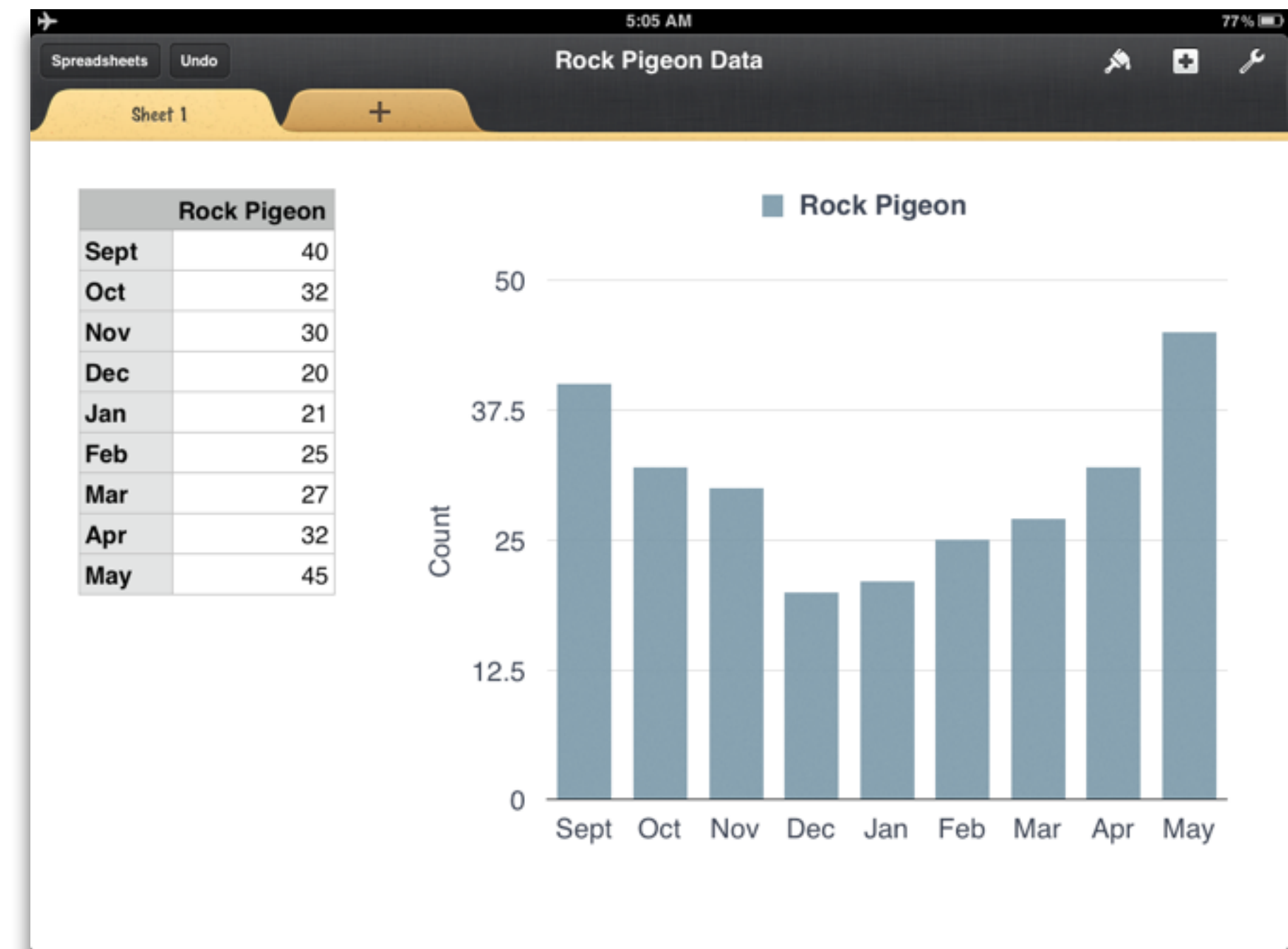
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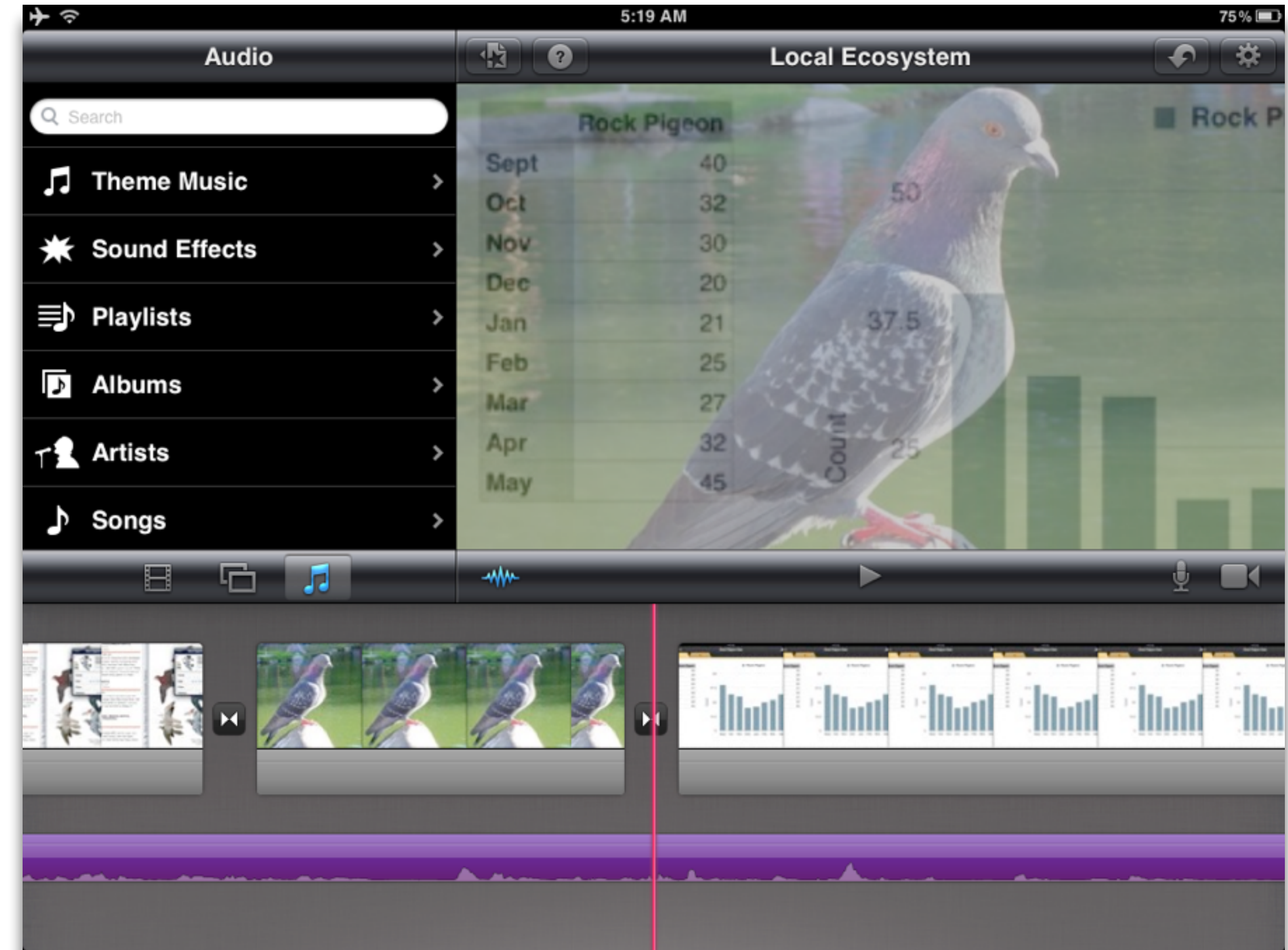
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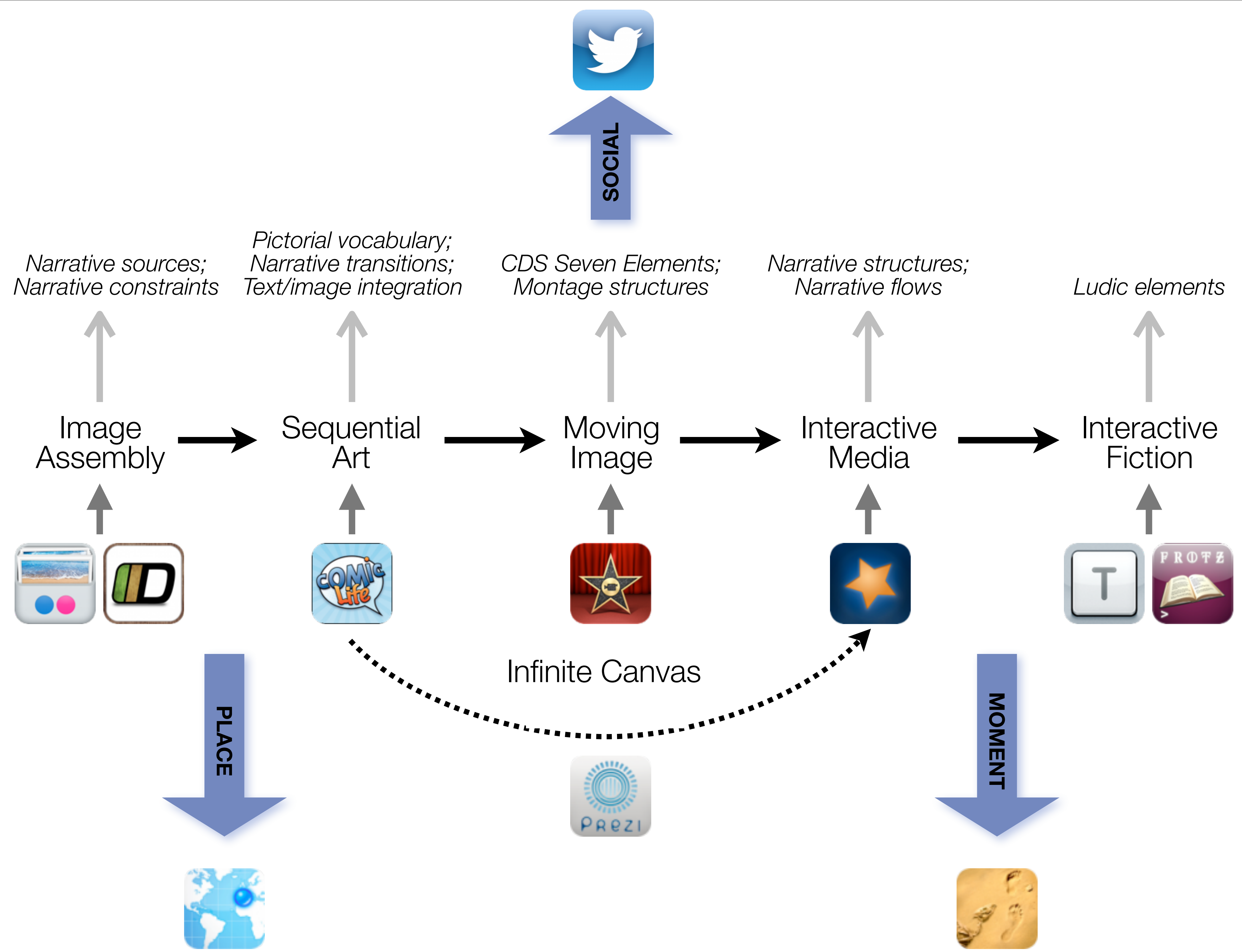
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Formal Definition of **Game** (Salen & Zimmerman)

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

Gersmehl: Teaching Geography – Four Cornerstones

- Location
 - Position in space
- Condition
 - Mix of natural & artificial features that give meaning to a location
- Links
 - Connections between places
- Region
 - Formal region: group of places with similar conditions
 - Functional region: group of places linked together by a flow

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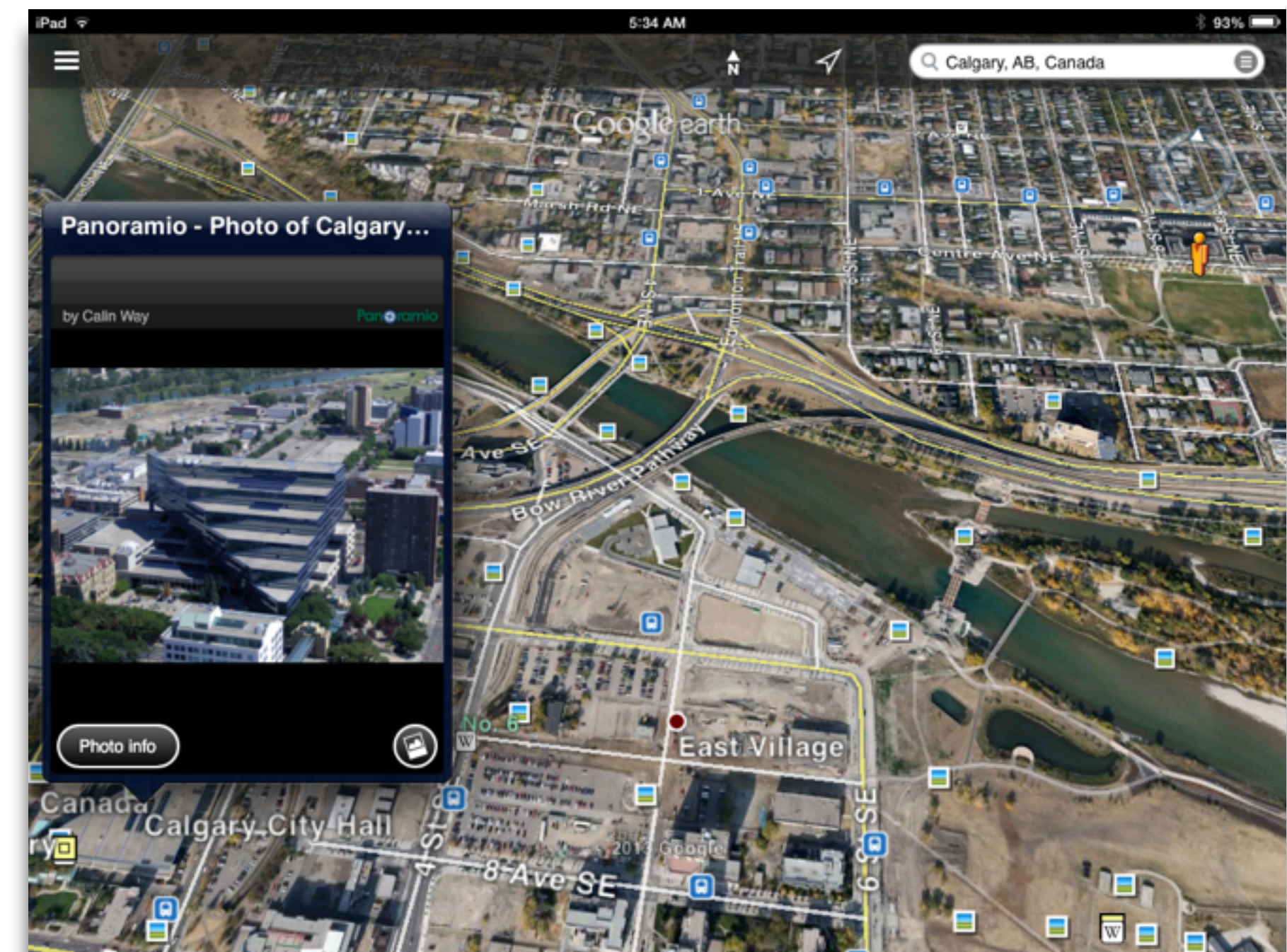
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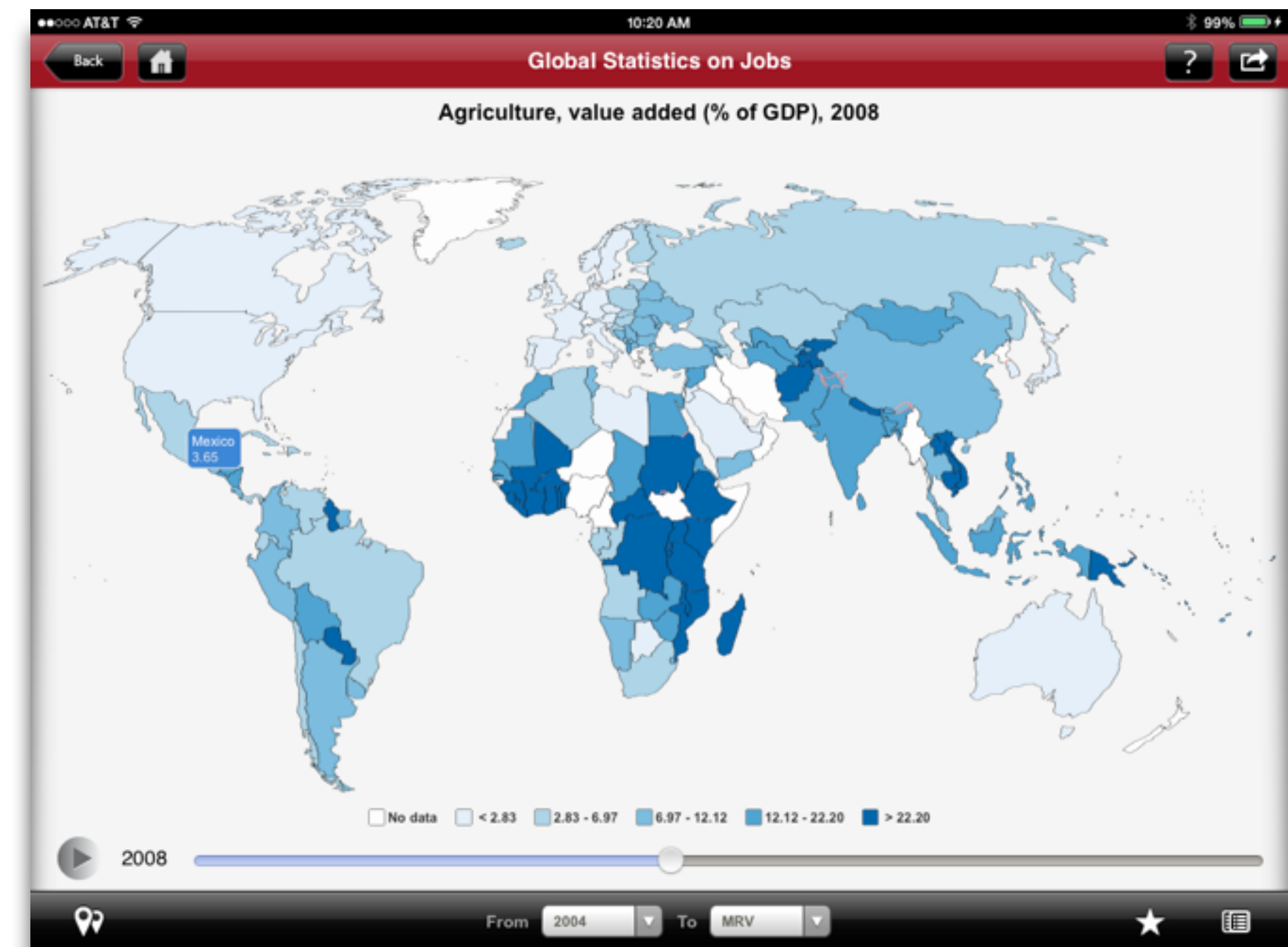
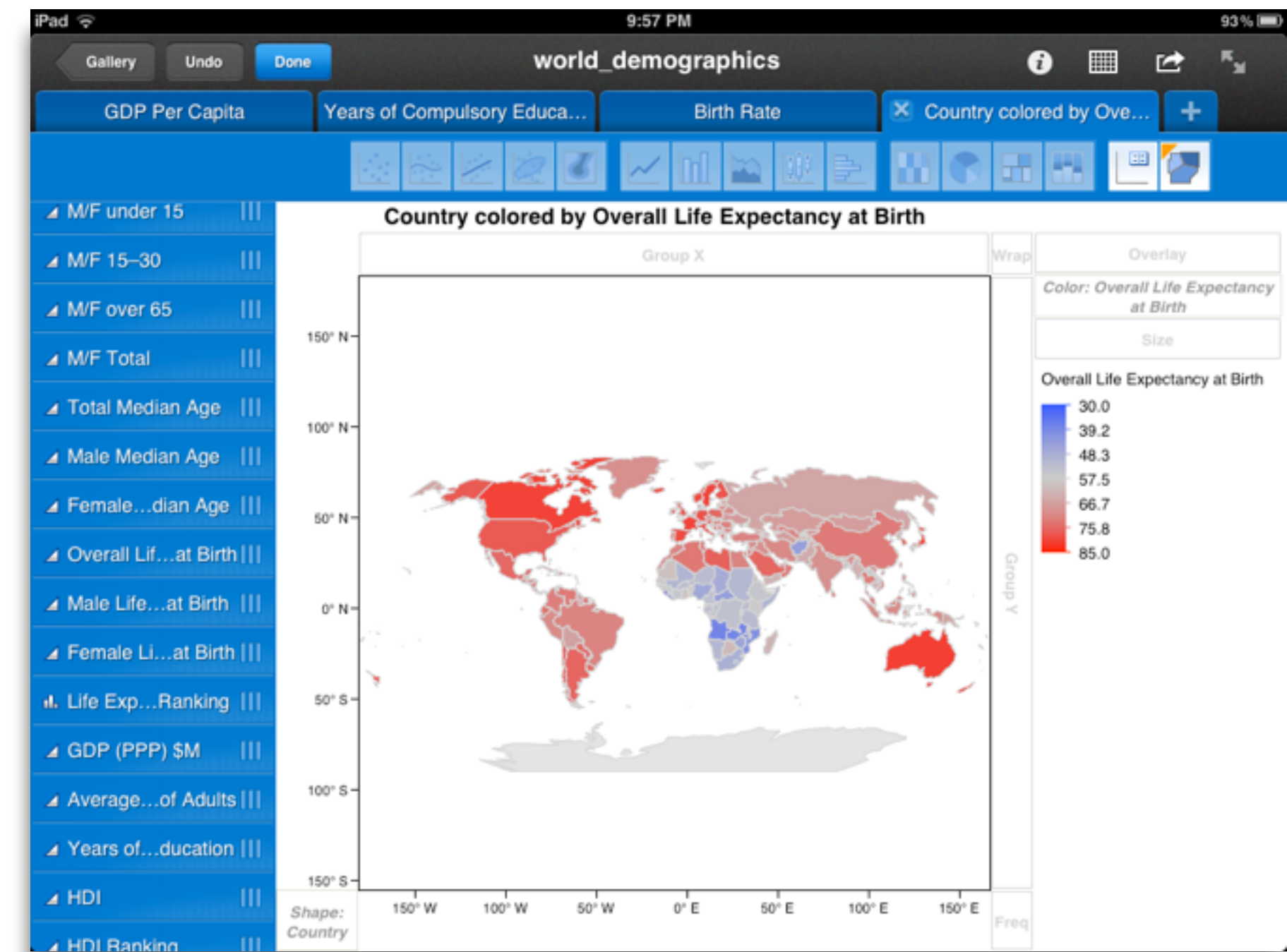
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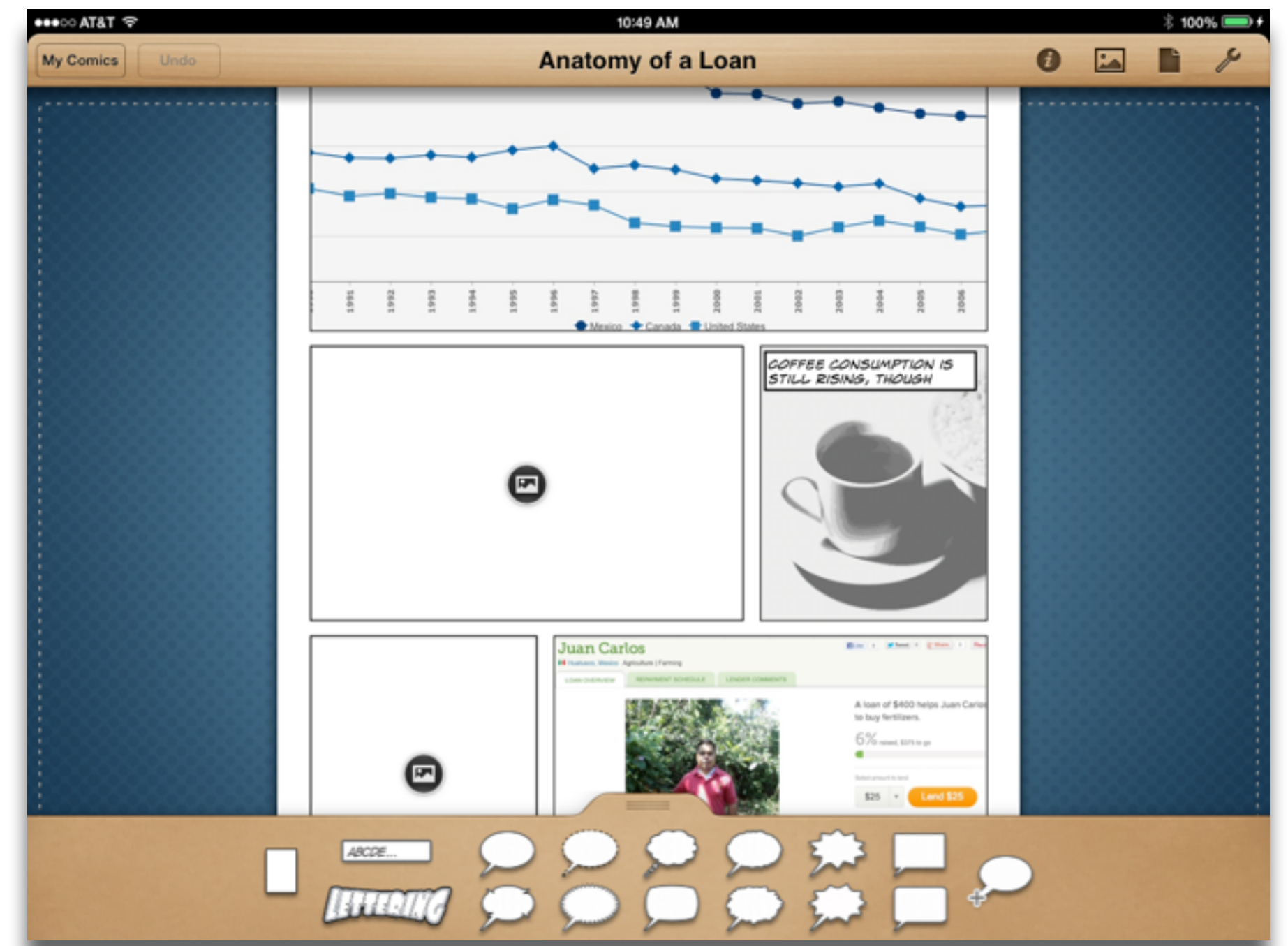
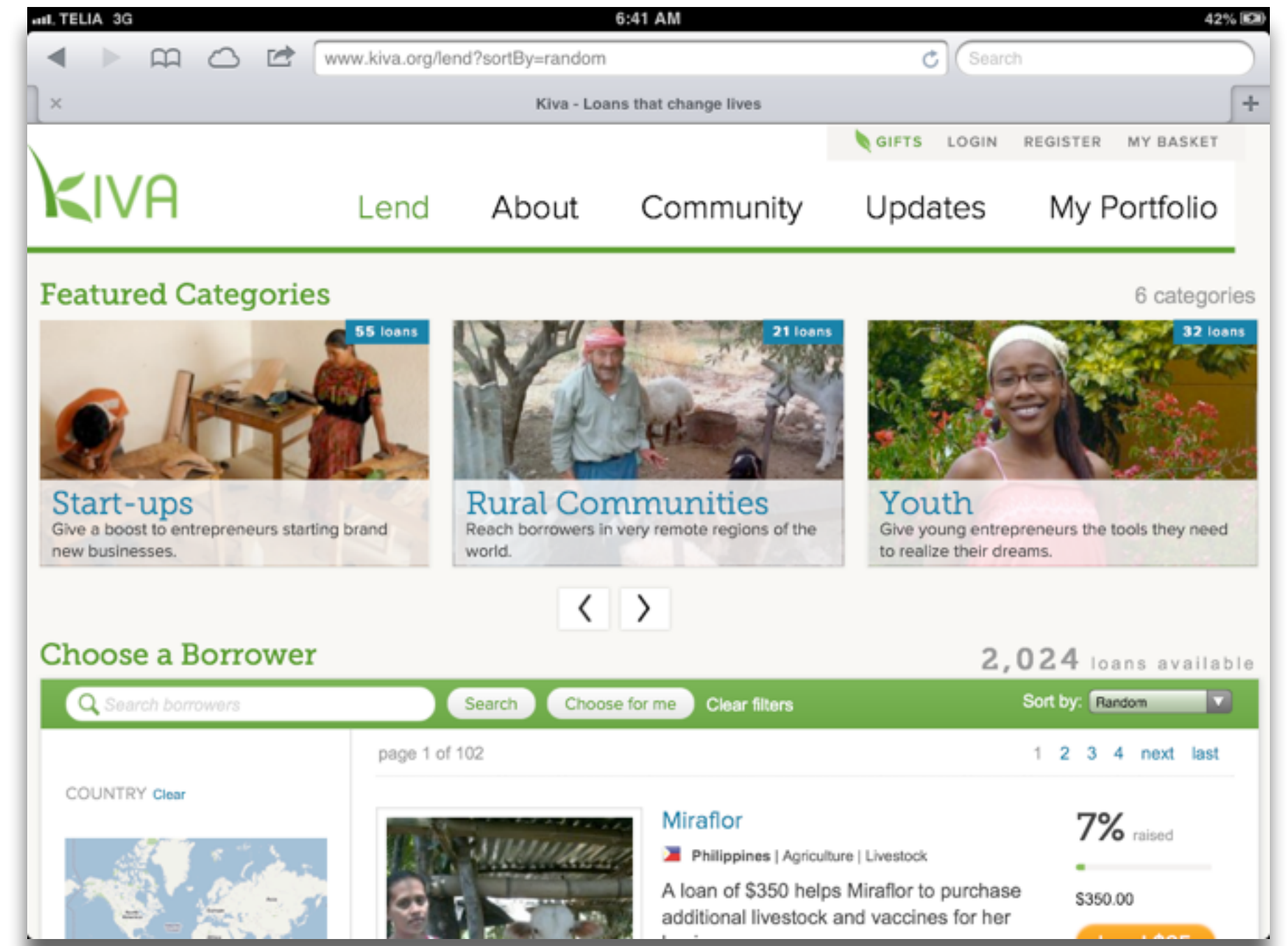
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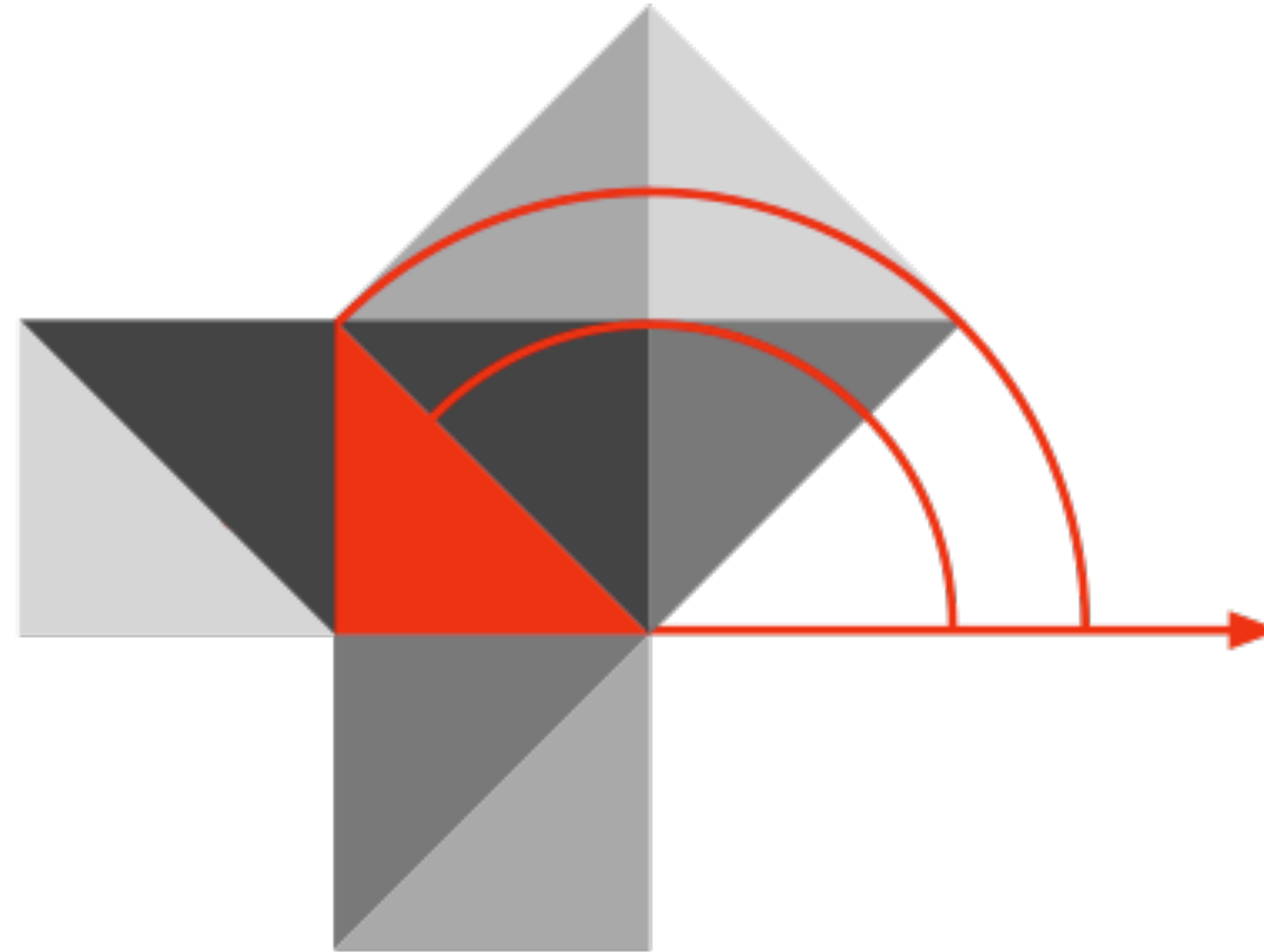
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