

SAMR: Context and Applications

Ruben R. Puentedura, Ph.D.

The SAMR Model and the EdTech Quintet

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
functional change*

Enhancement

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

Bloggging



Wikis

Telepresence



File Sharing

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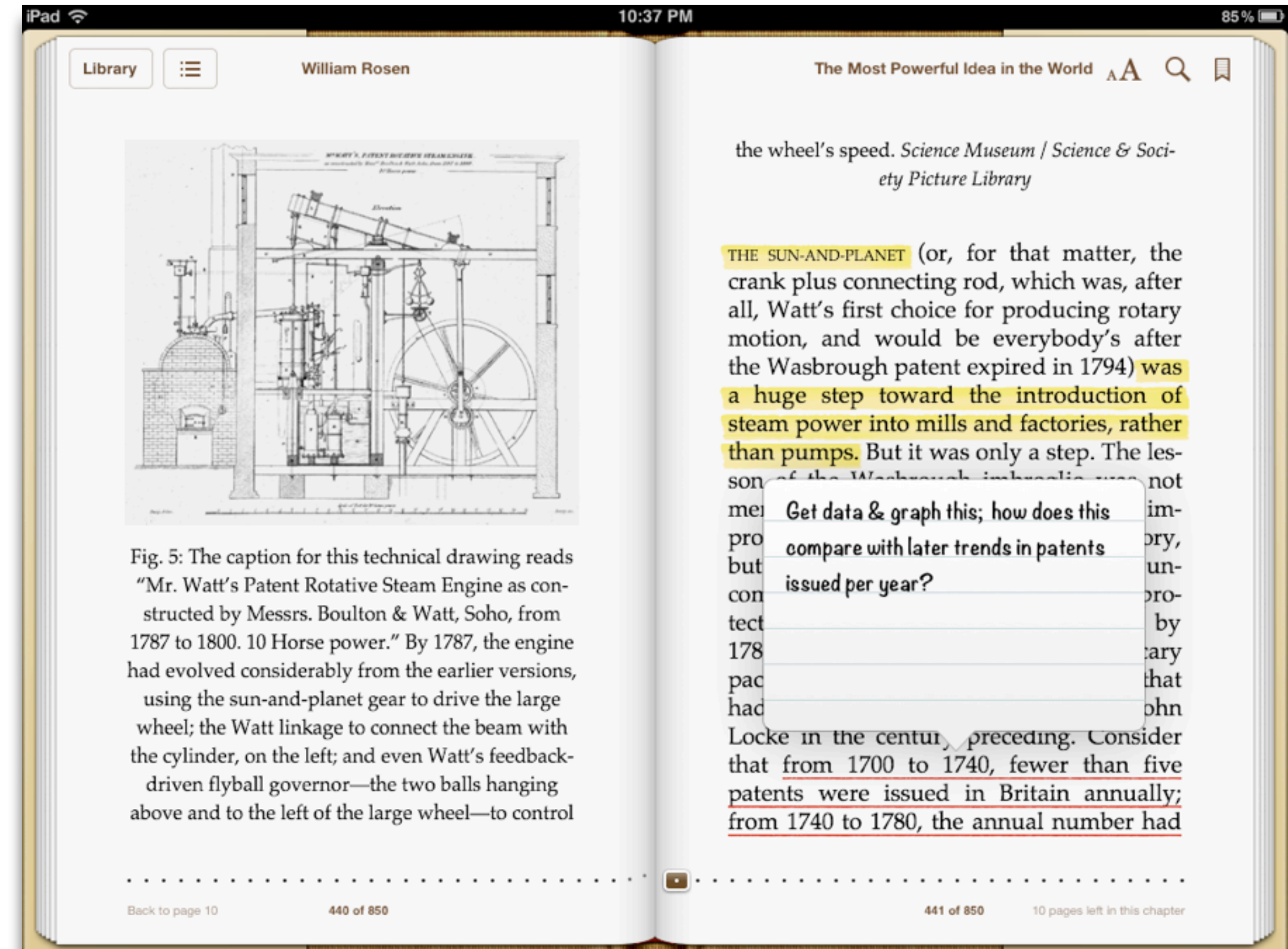
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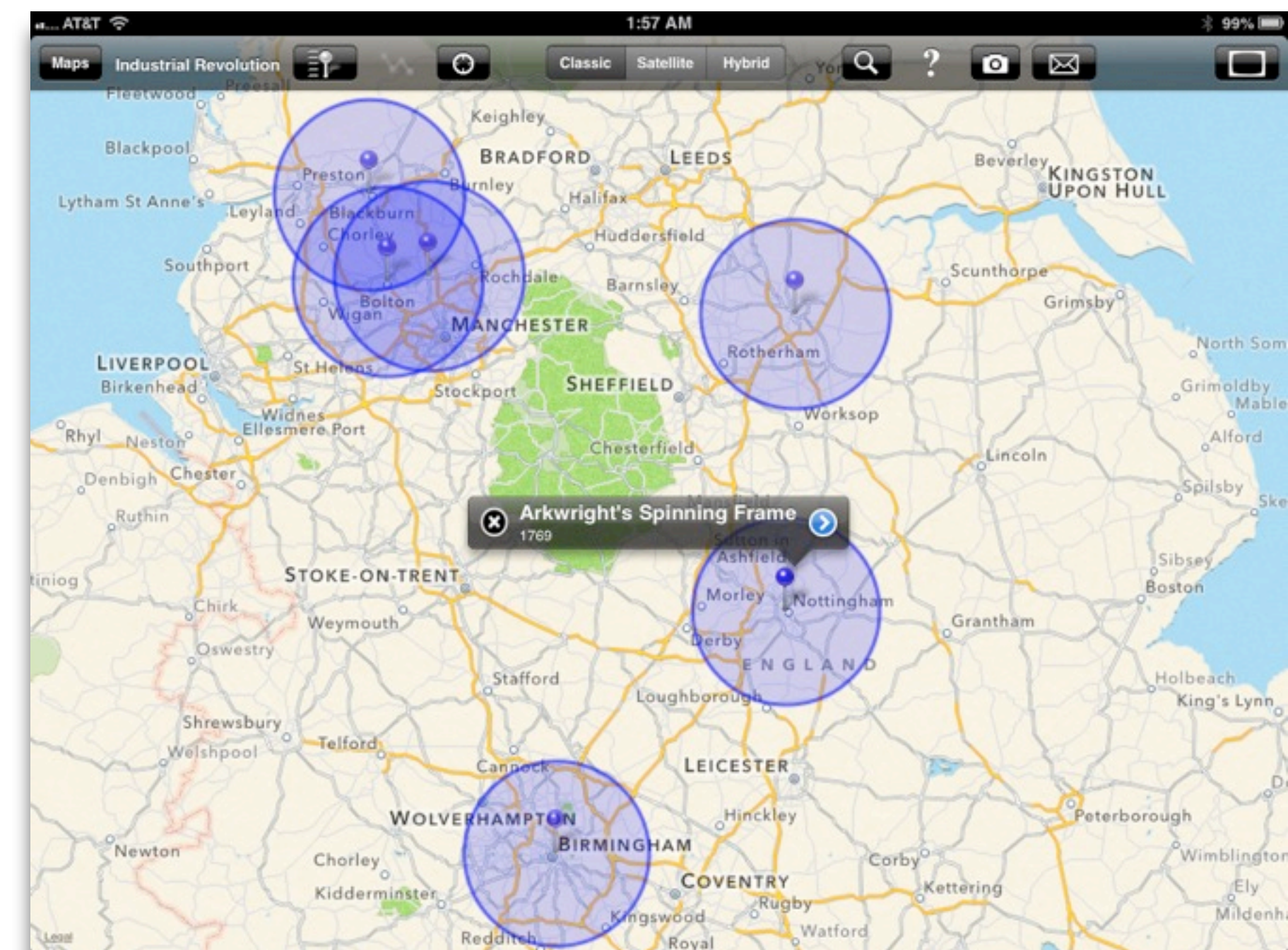
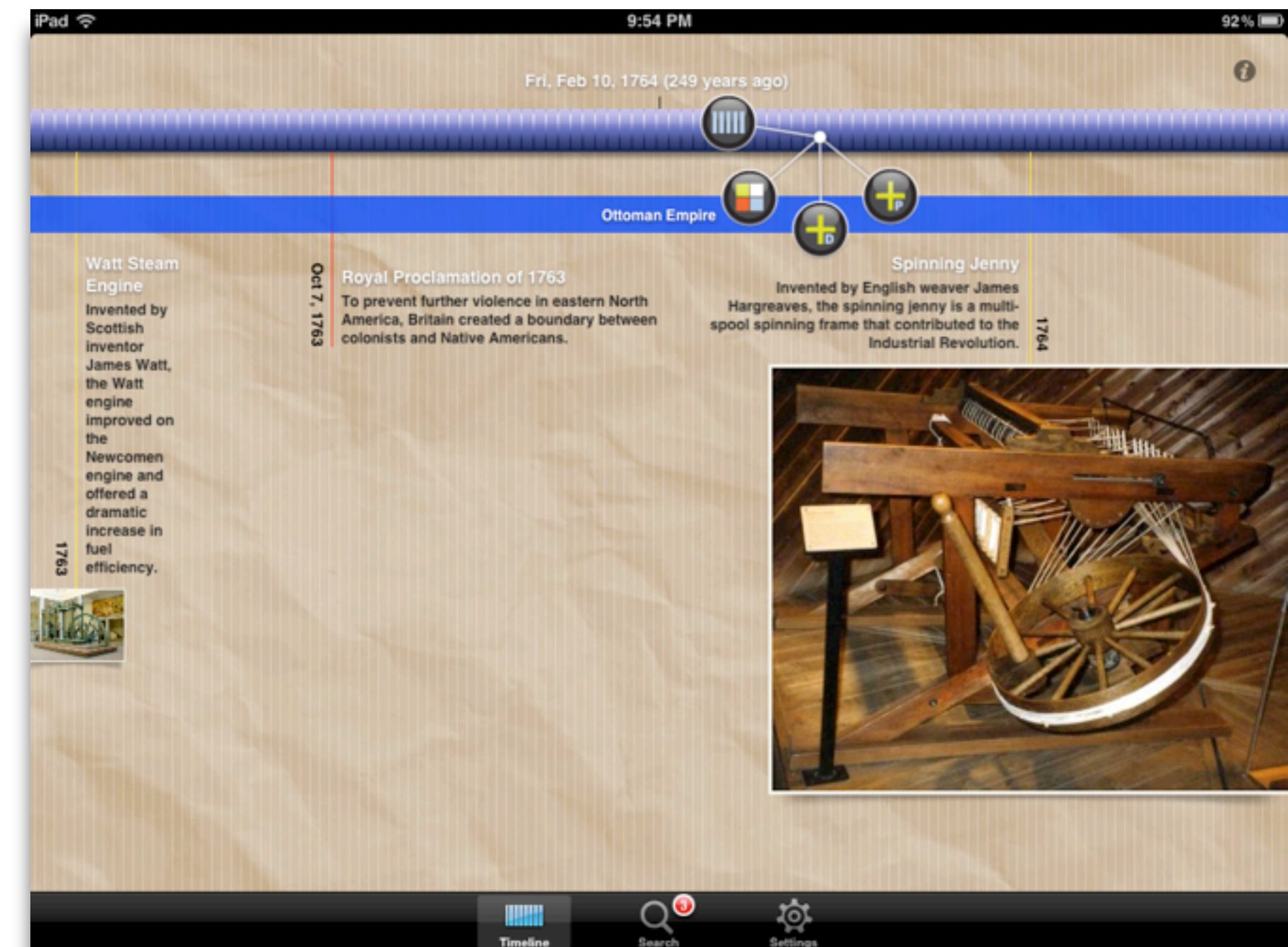
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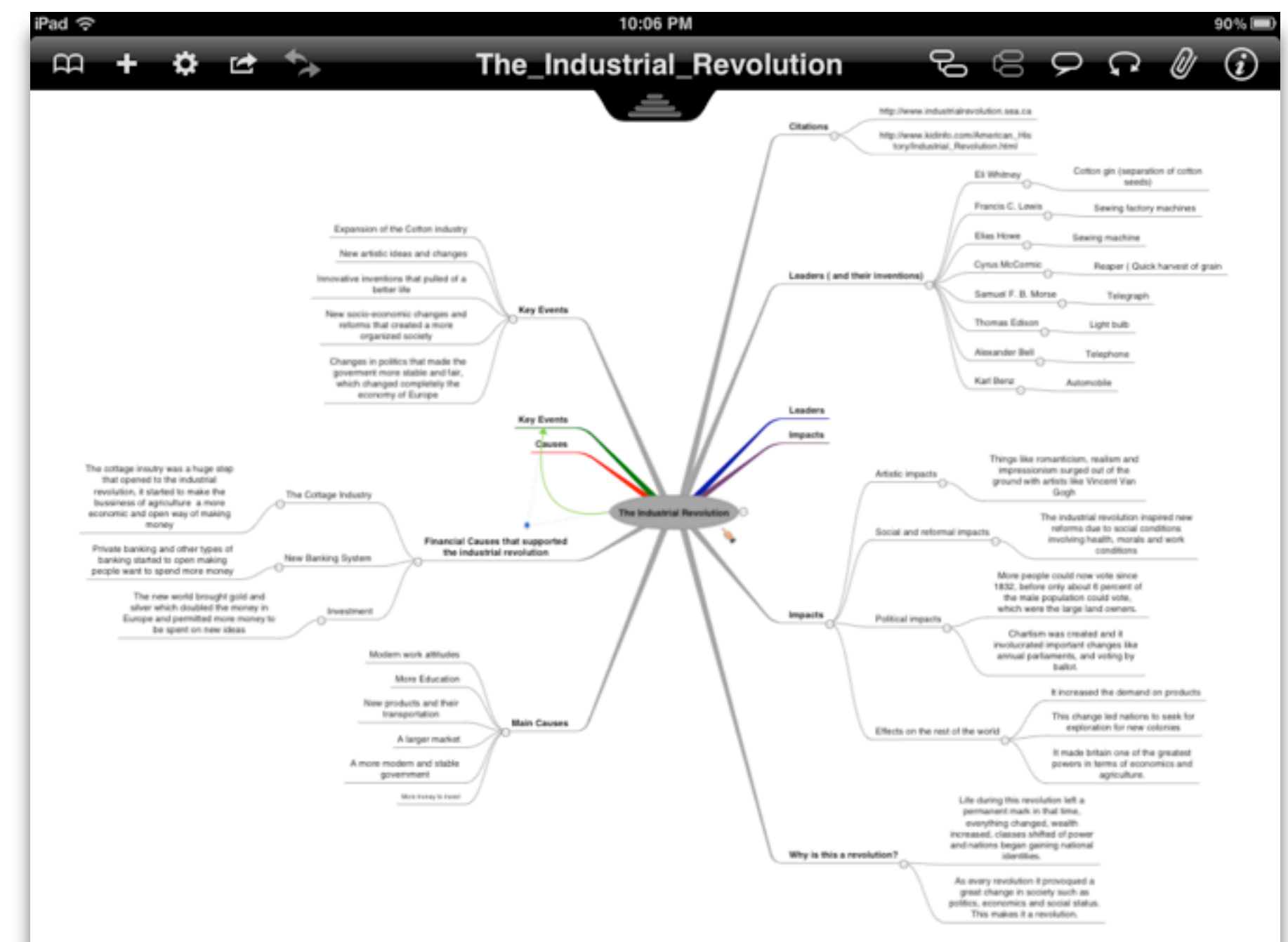
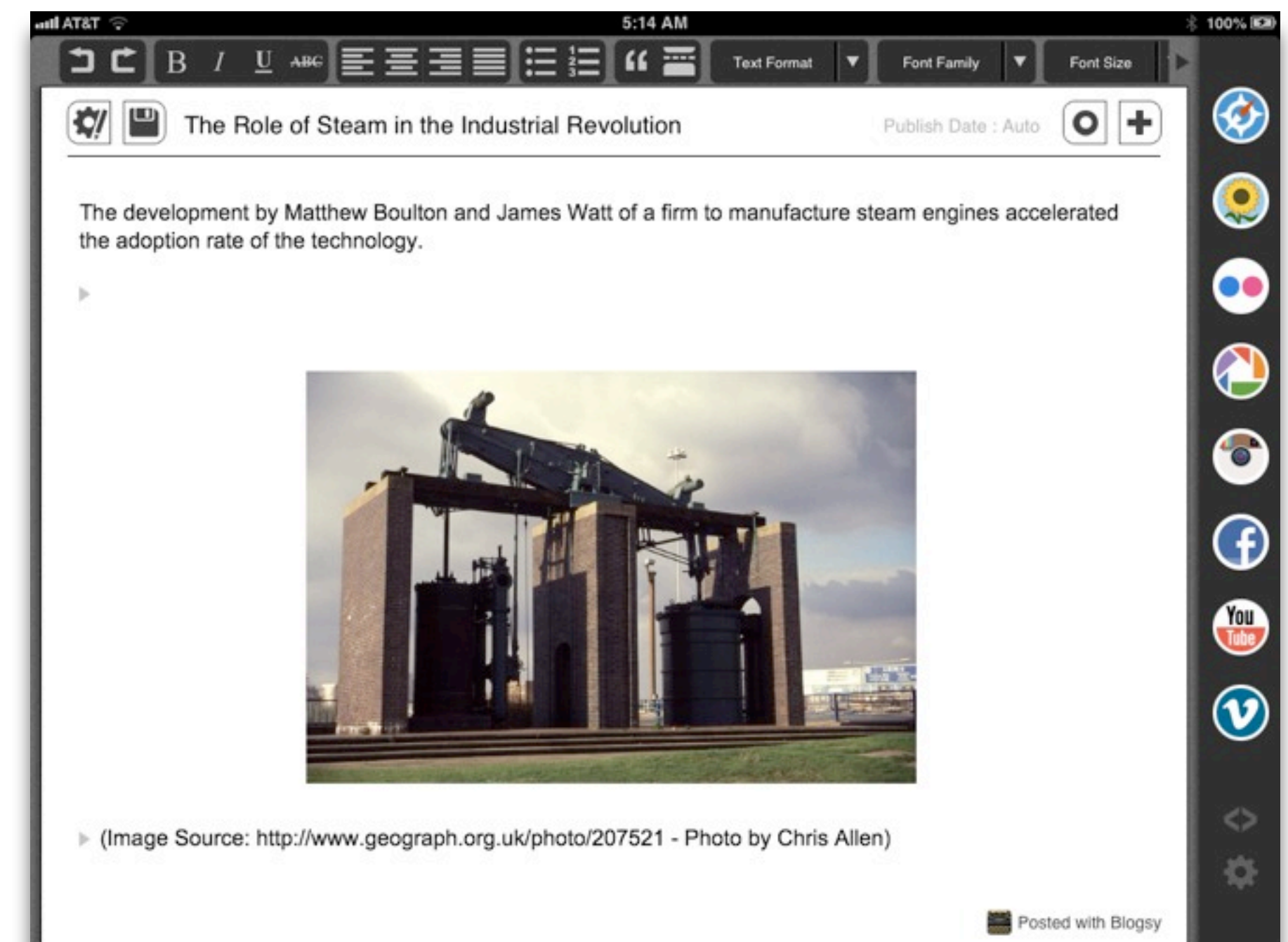
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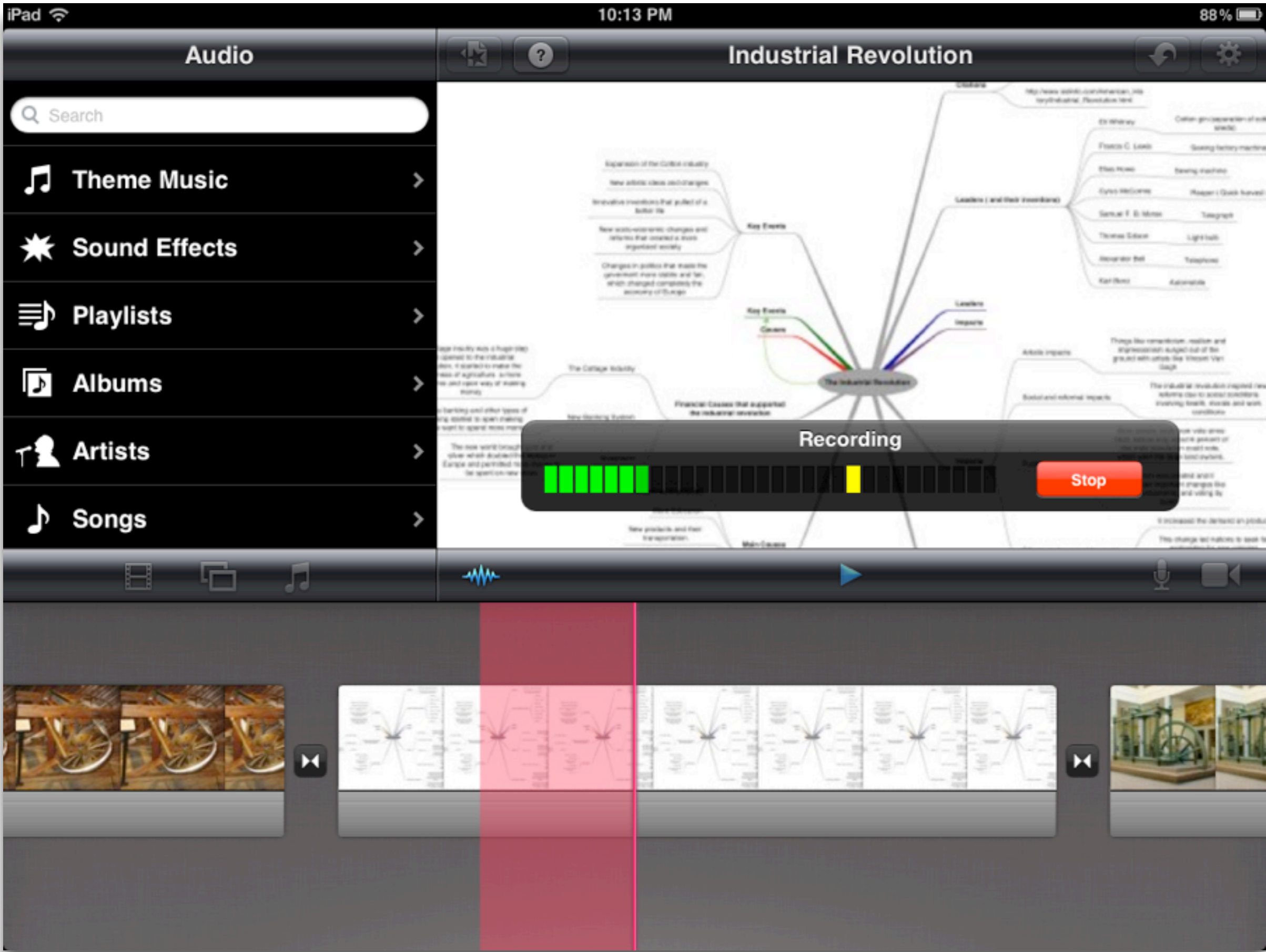
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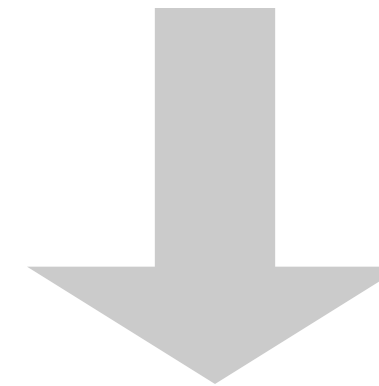
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Class

Homework



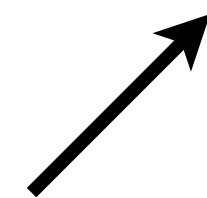
School

World

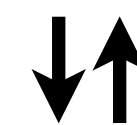
Home



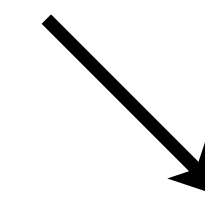
Learning Environments



Contextual Search
Augmented Reality



Cloud Resources
Mobile Tools



Sensors
Recorders

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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

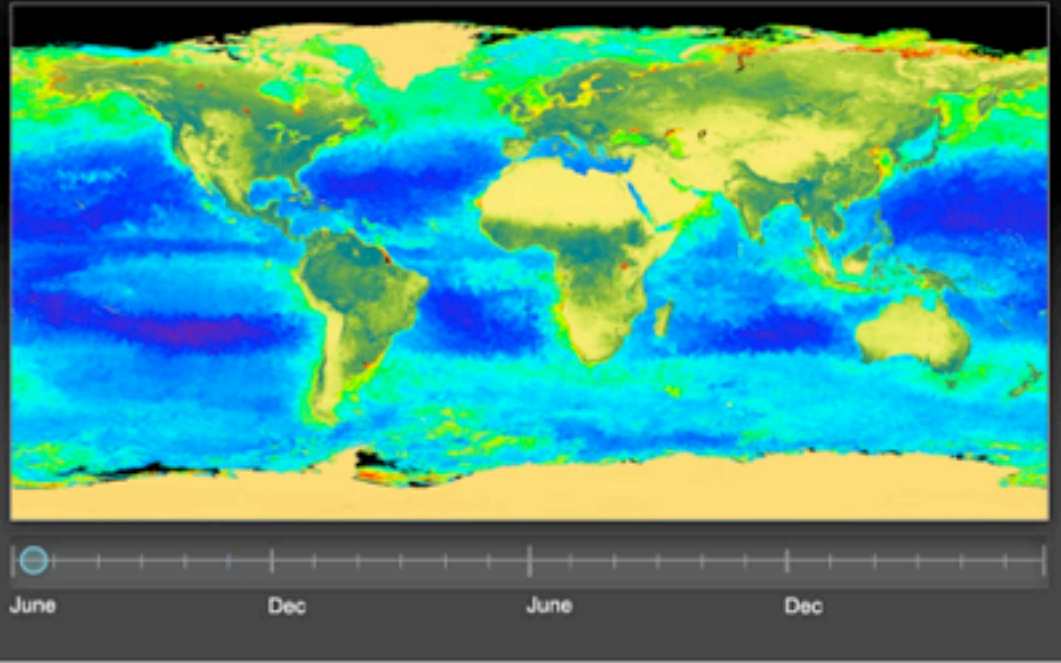
ns, the bility of is the e food nt for arth and ous oxy- e carbon oy pro- nts. d ma- on of dis- dissolved salts (0.05 percent), whereas ocean water has about 35,000 parts per million (3.5 percent).

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



June Dec June Dec

Interactive The latitudes of peak photosynthesis change with the seasons.

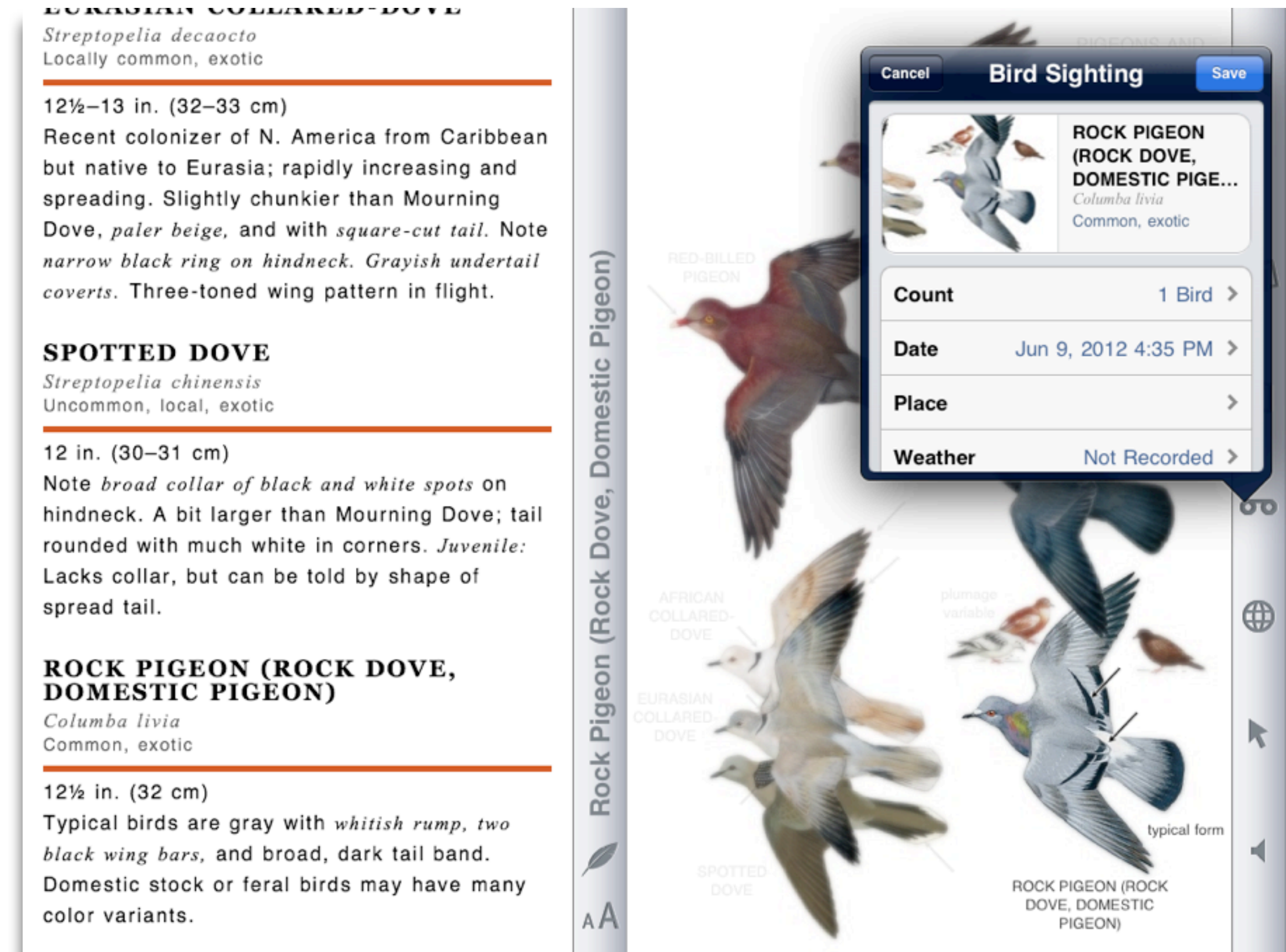
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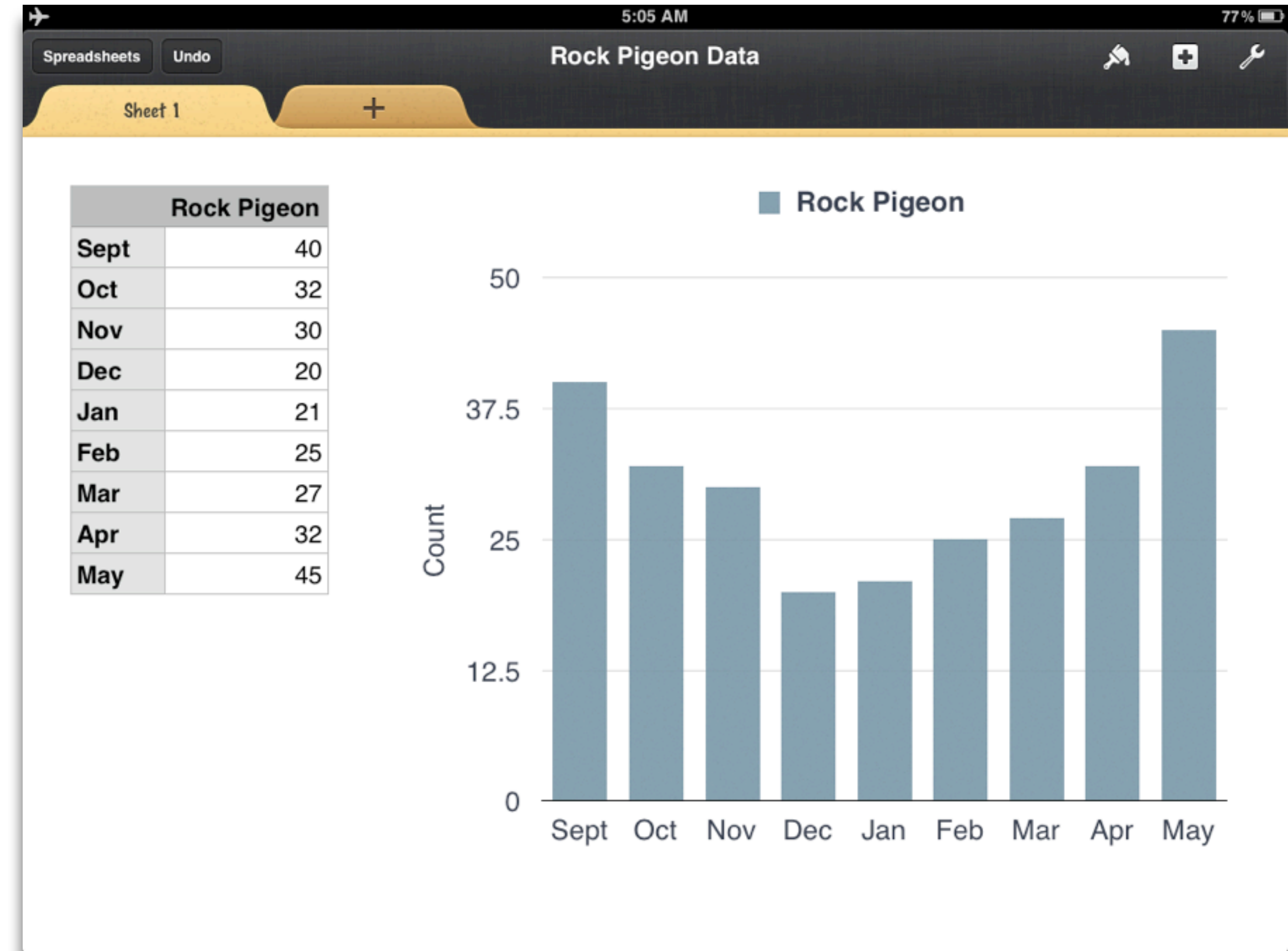
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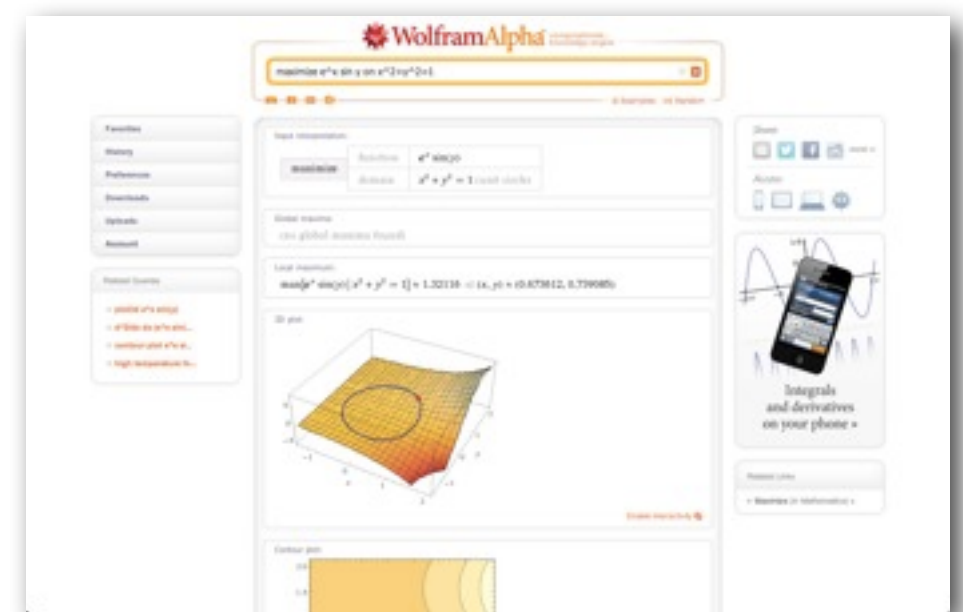
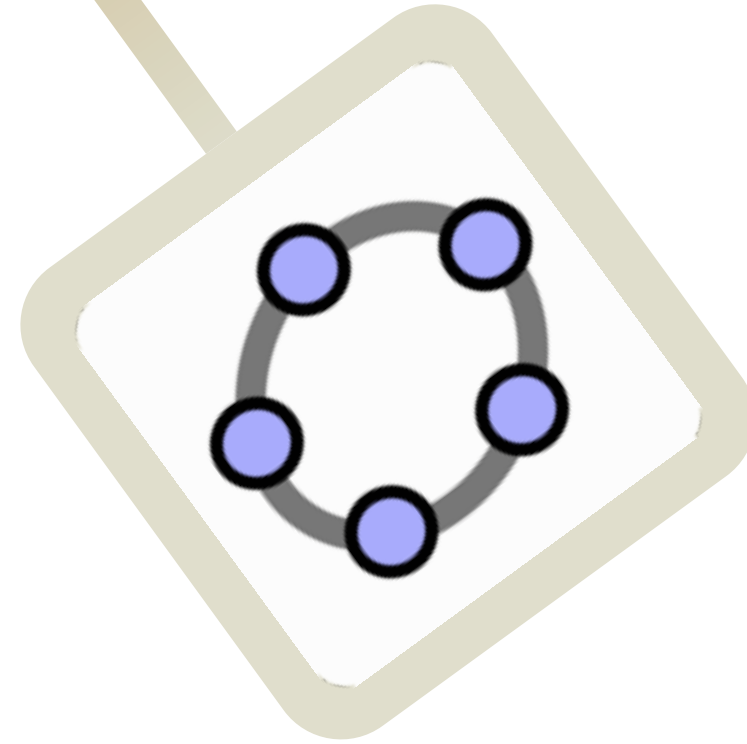
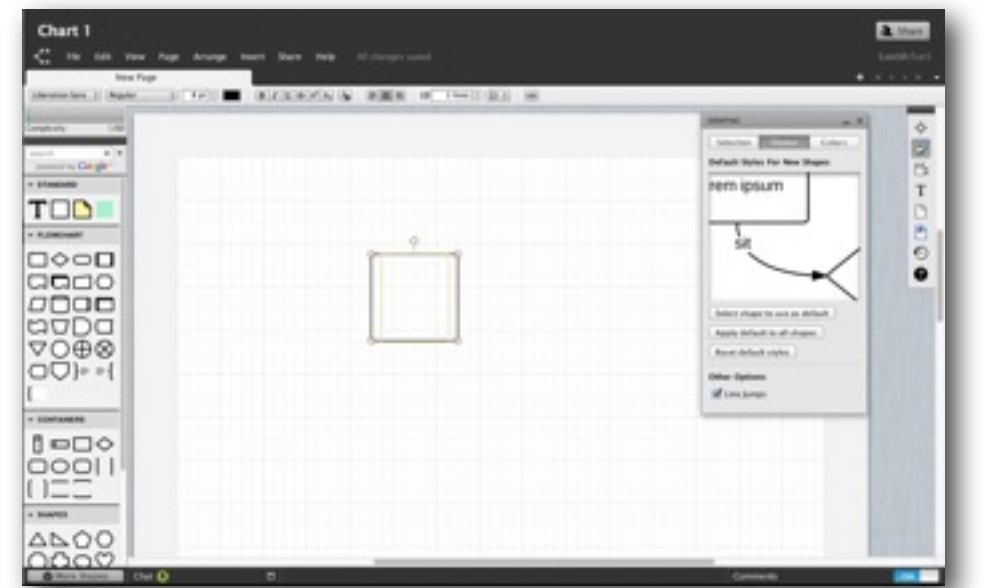
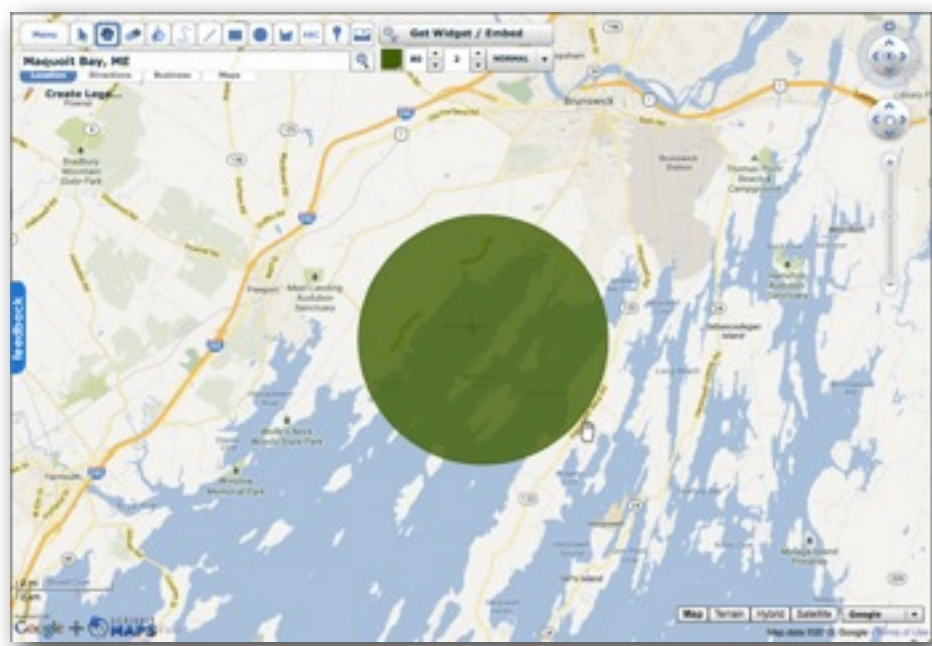
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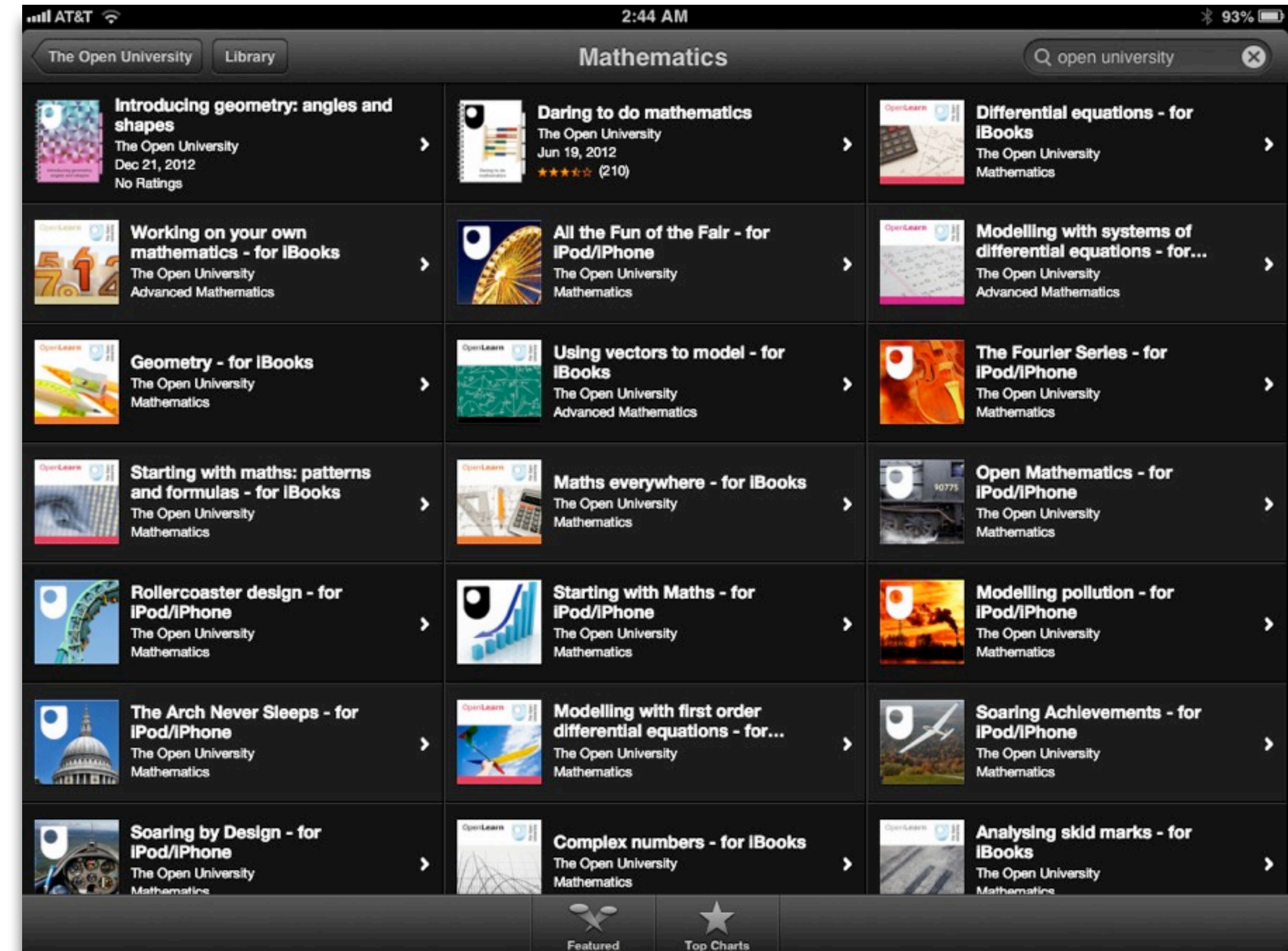
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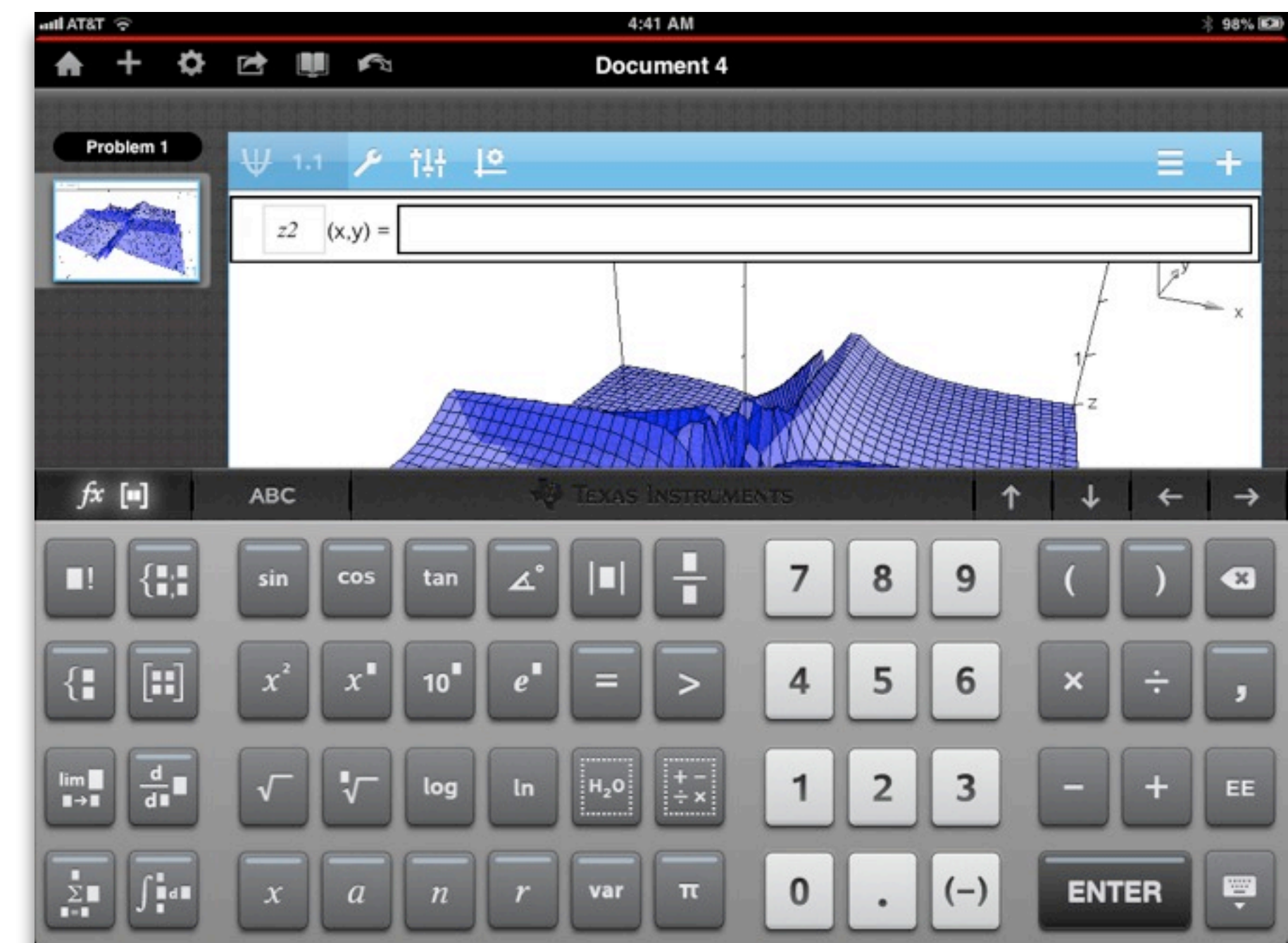
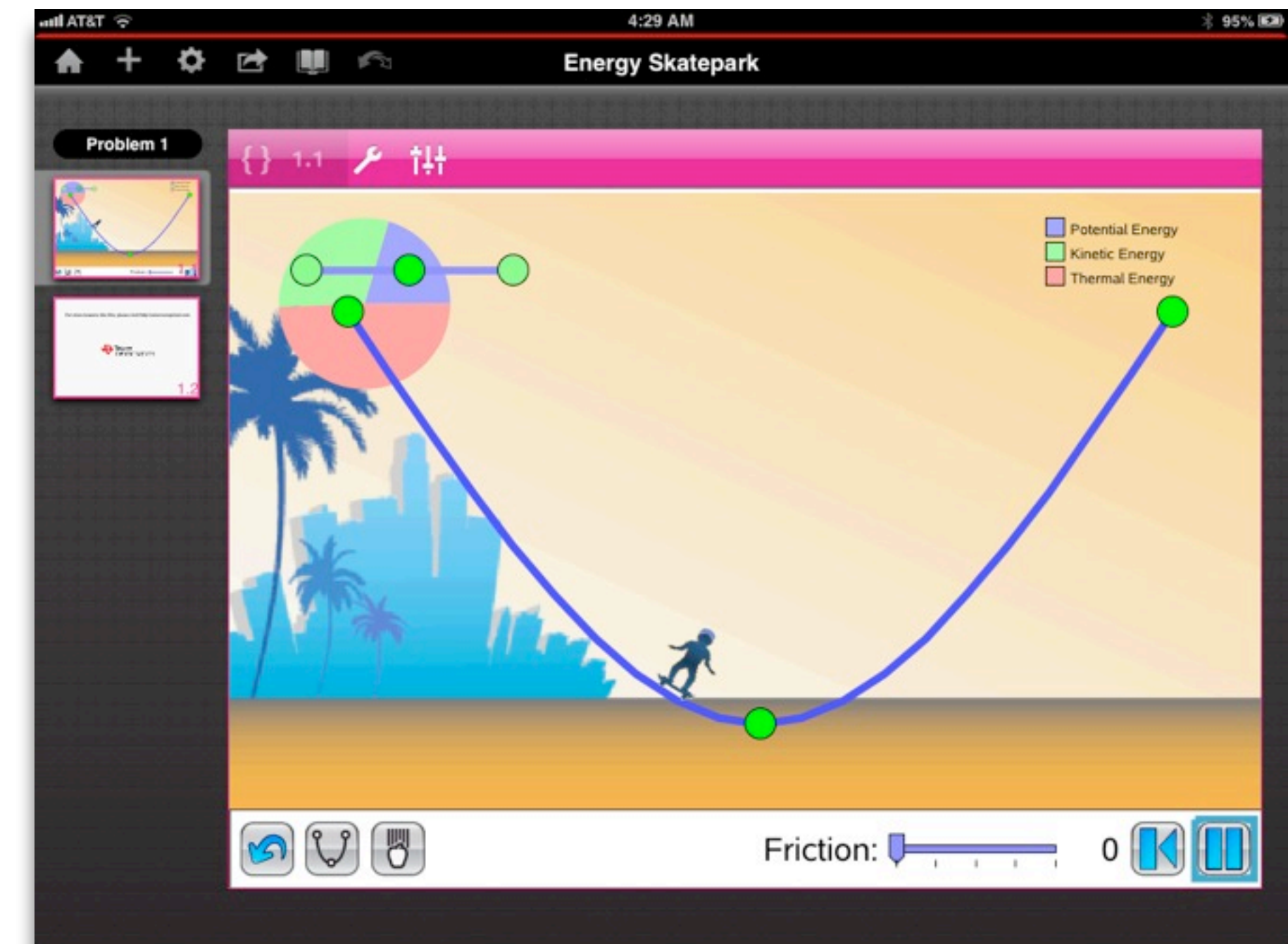
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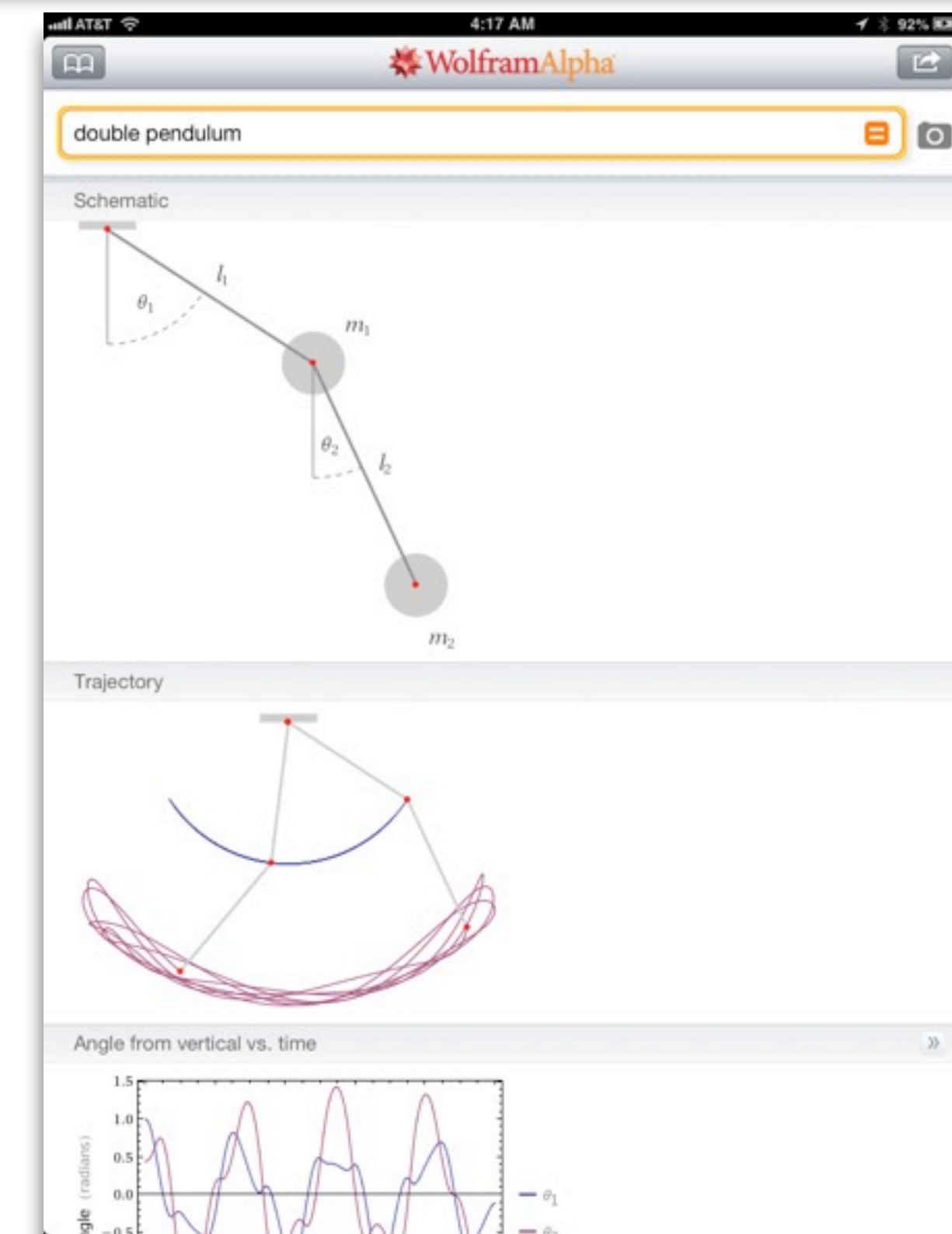
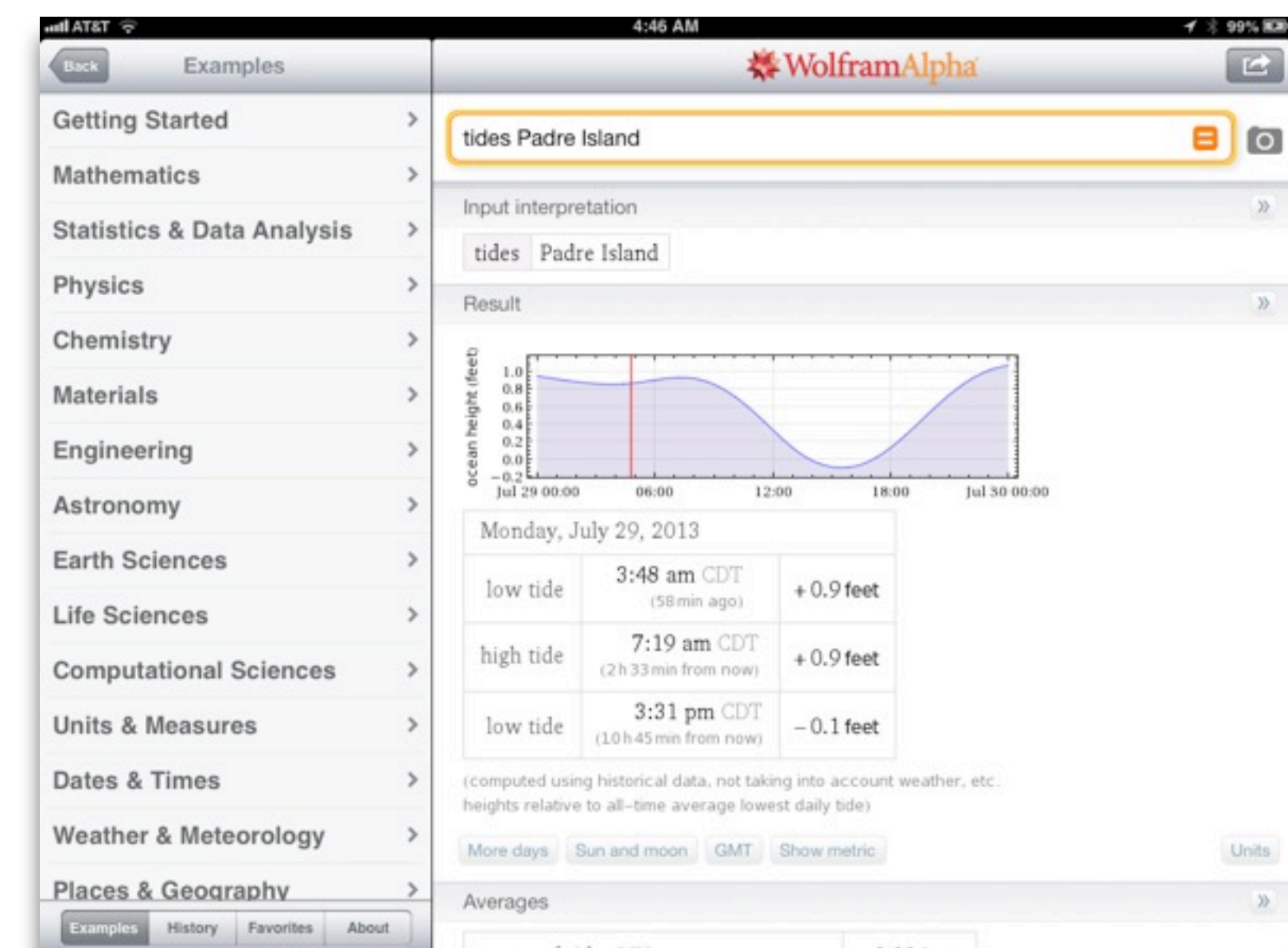
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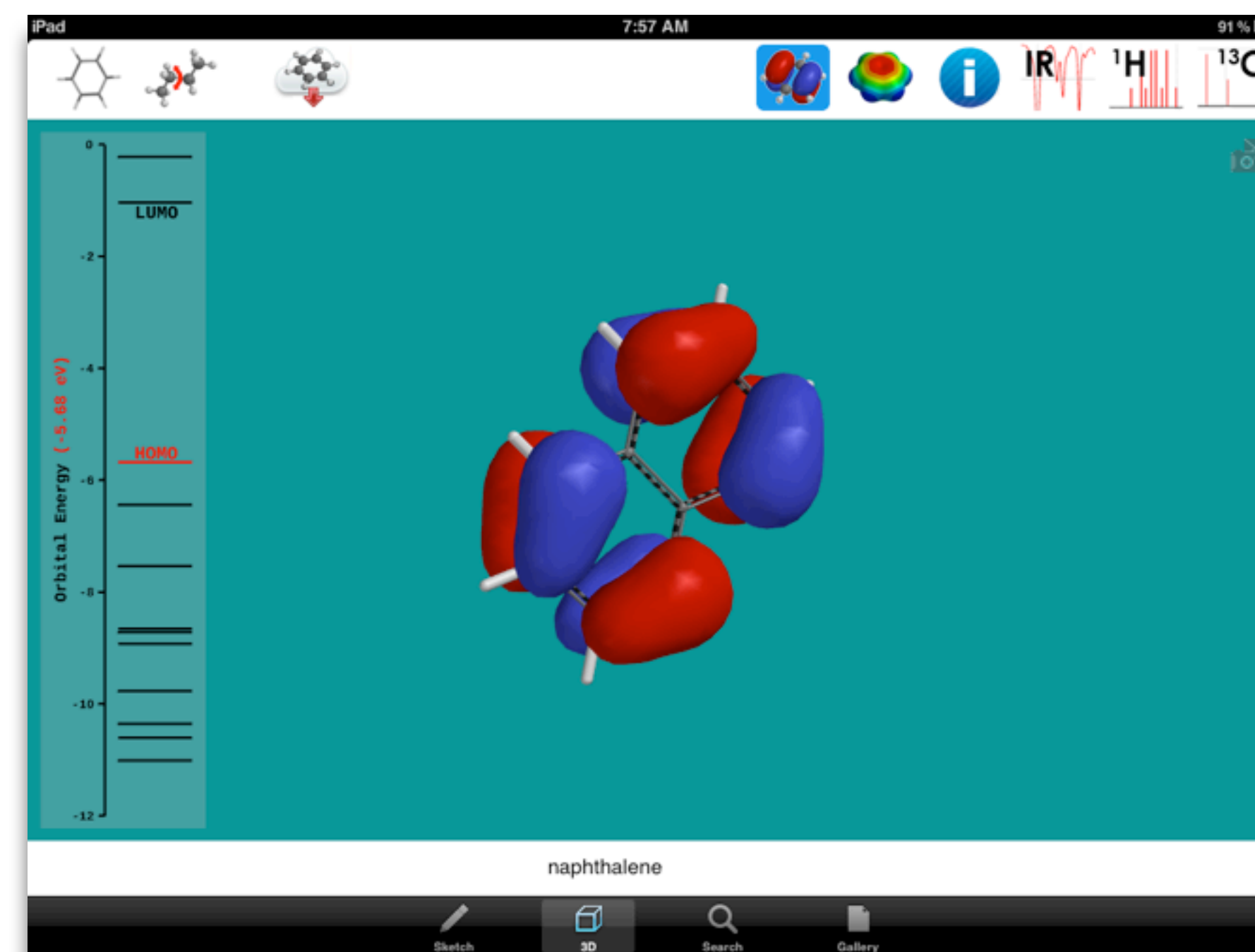
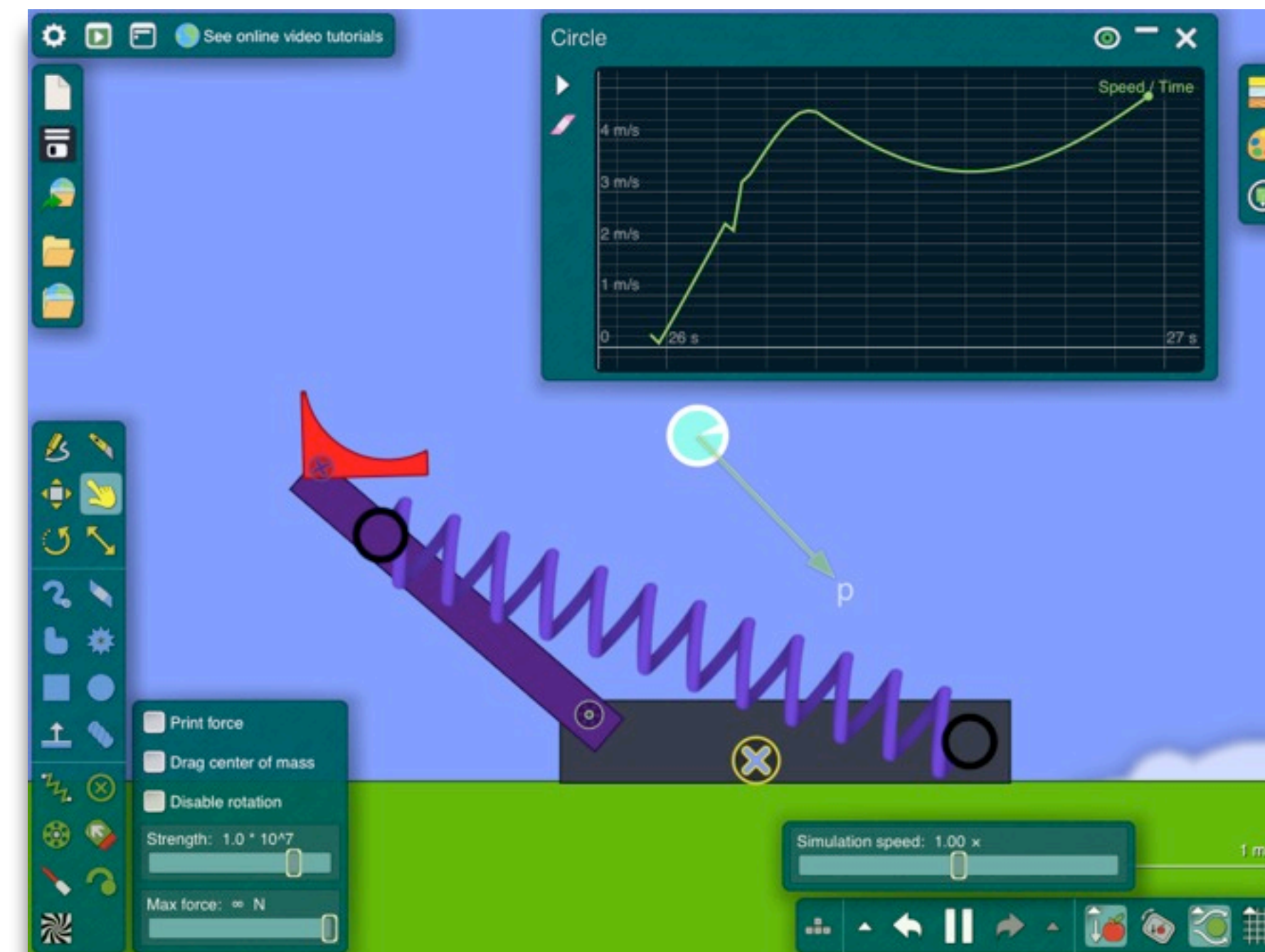
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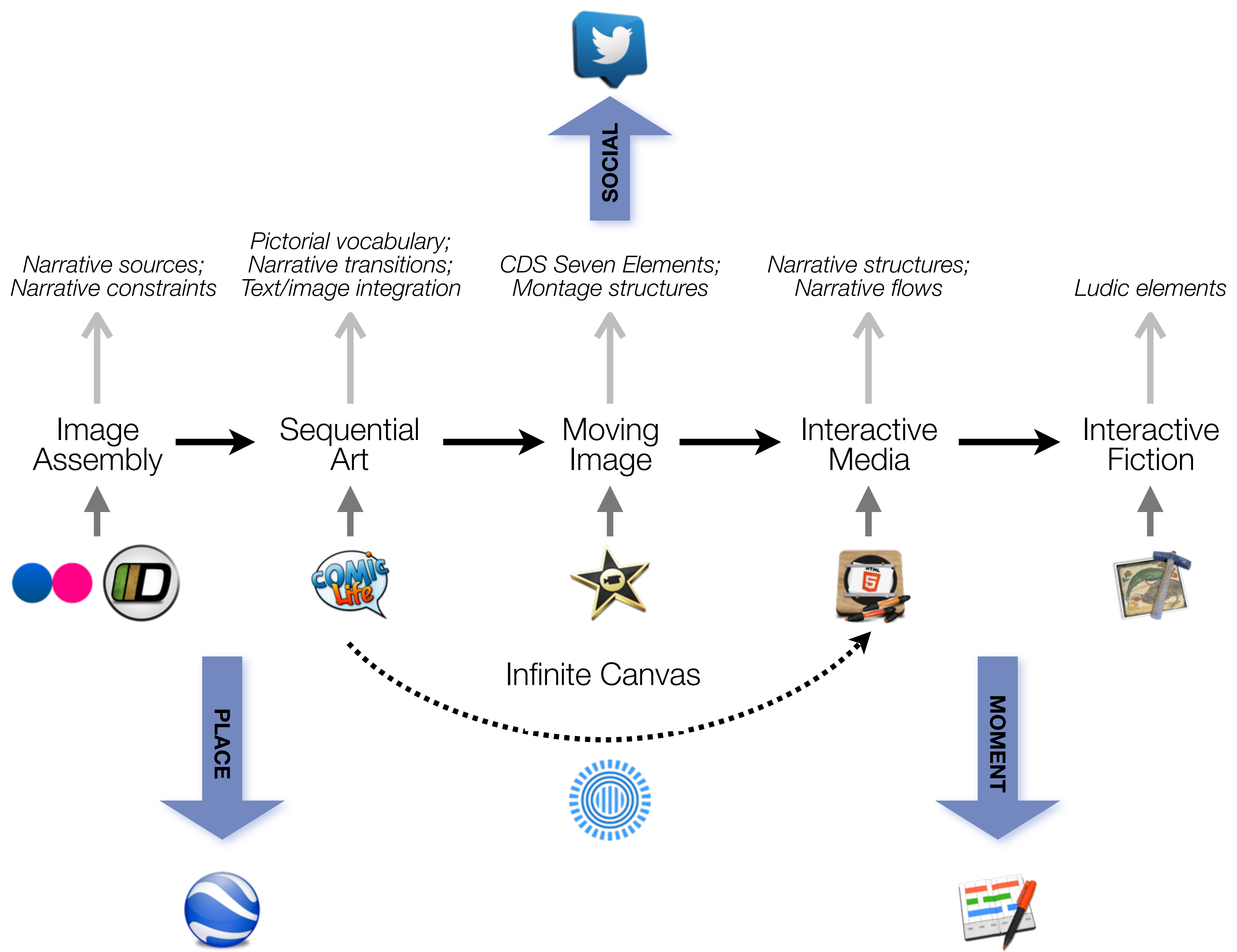
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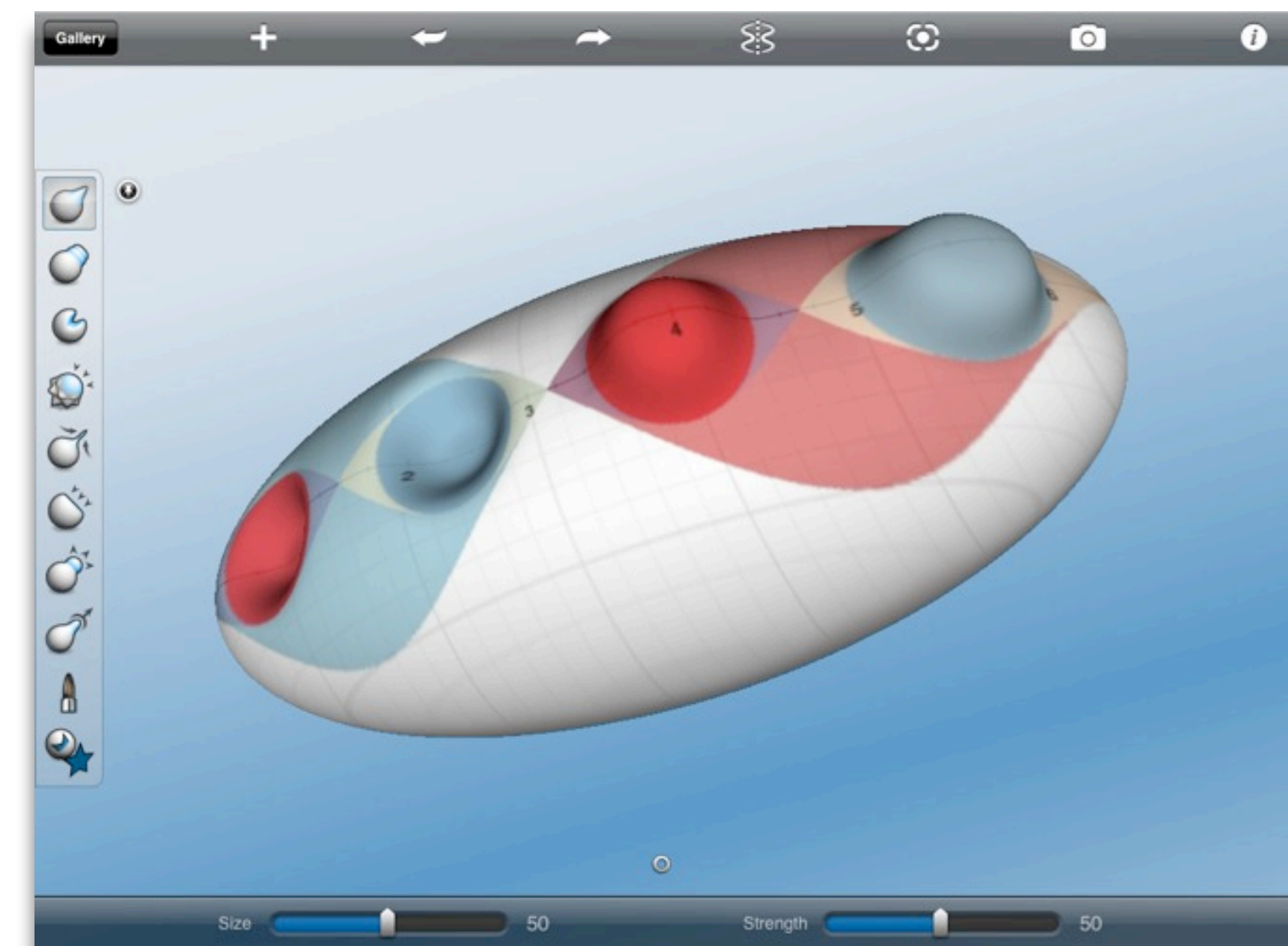
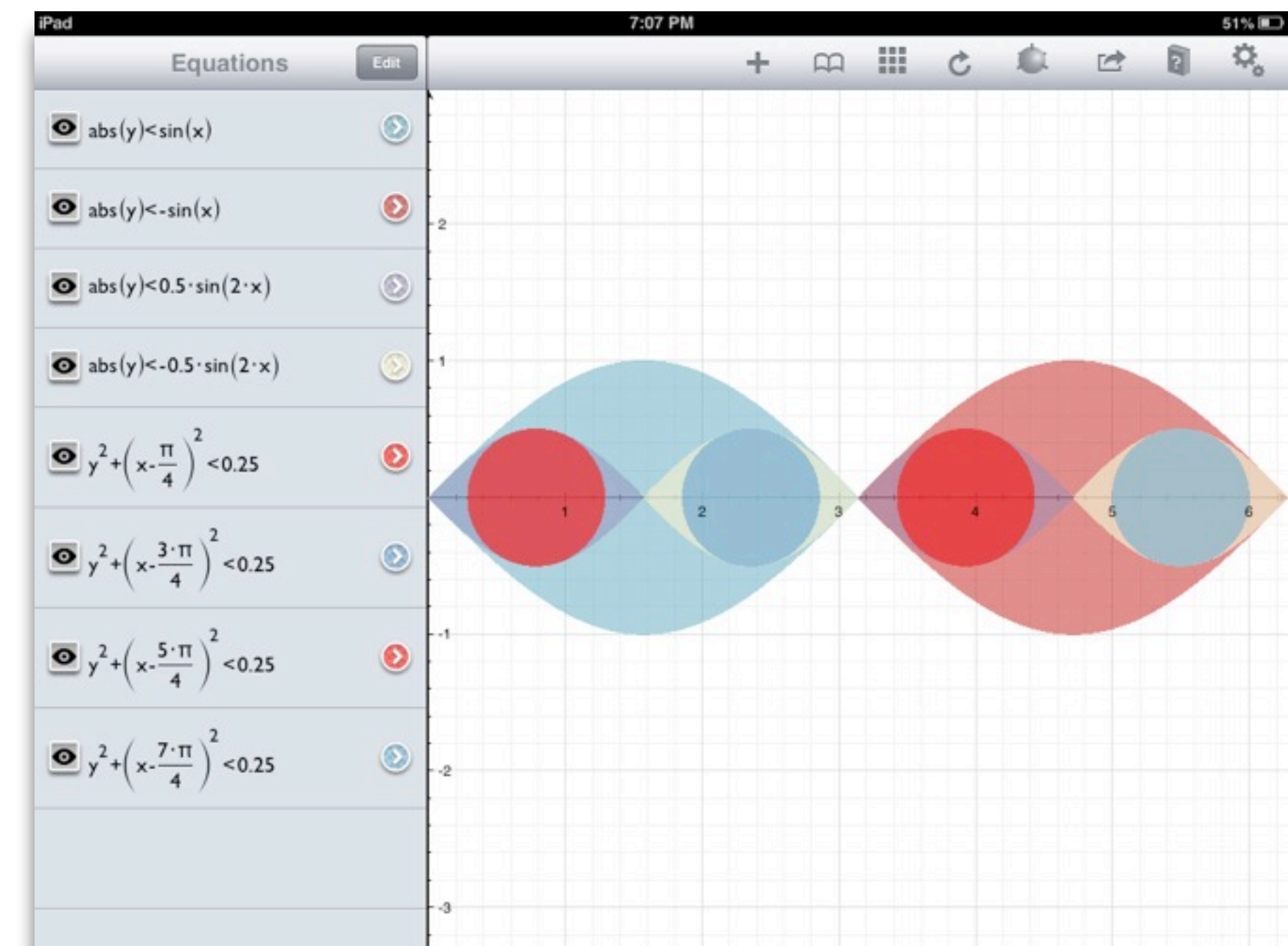
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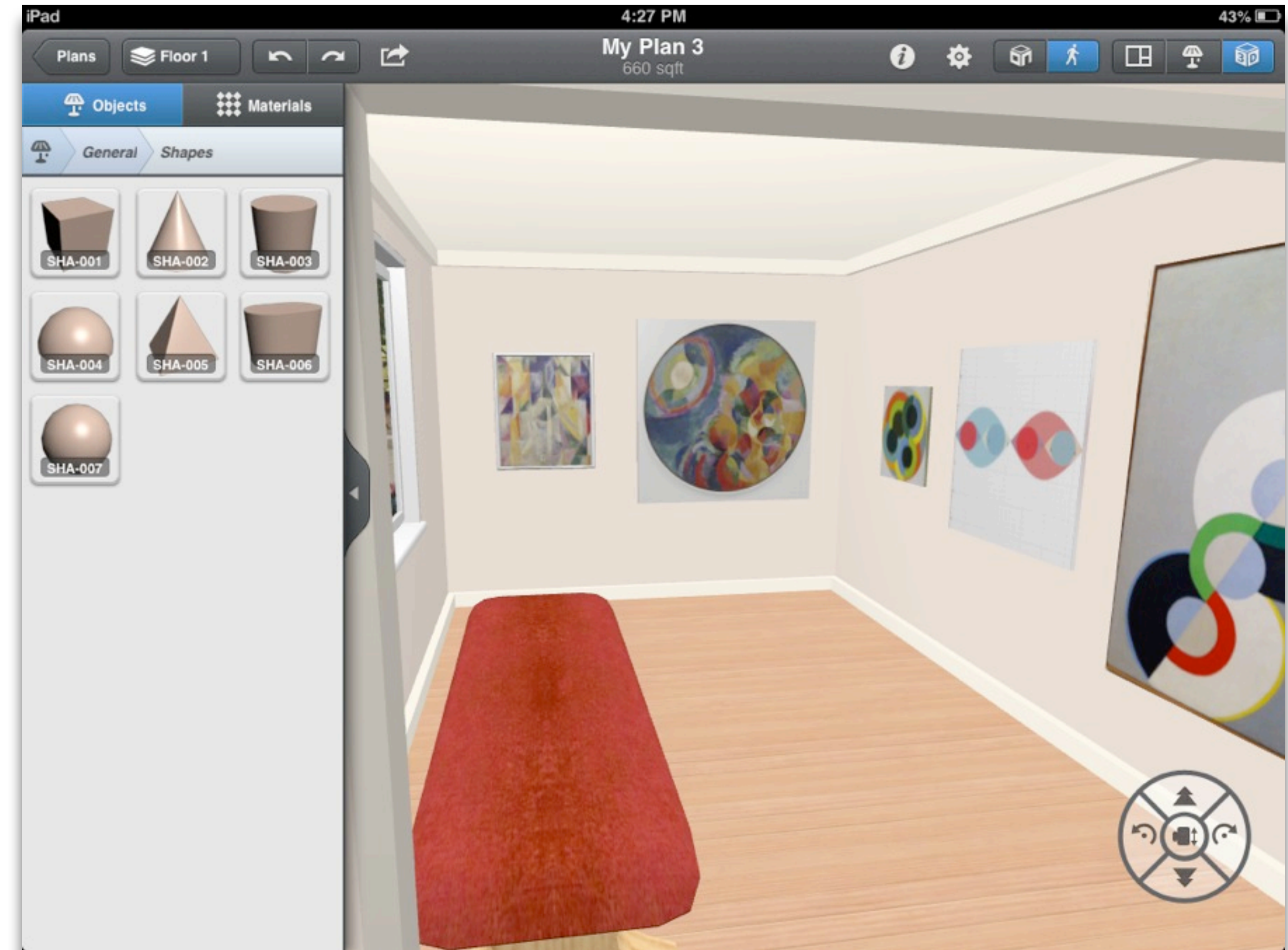
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Formal Definition of **Game** (Salen & Zimmerman)

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

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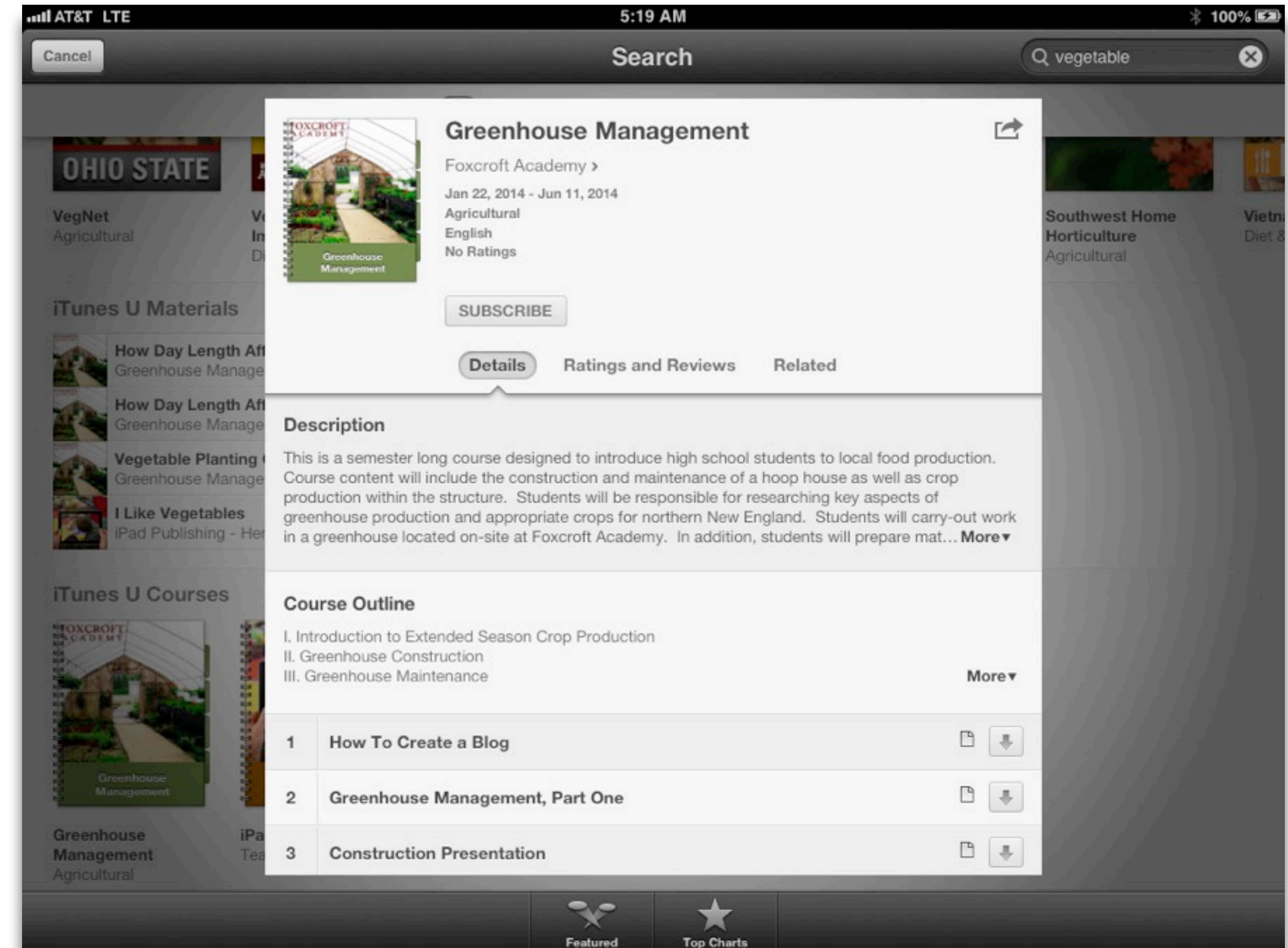
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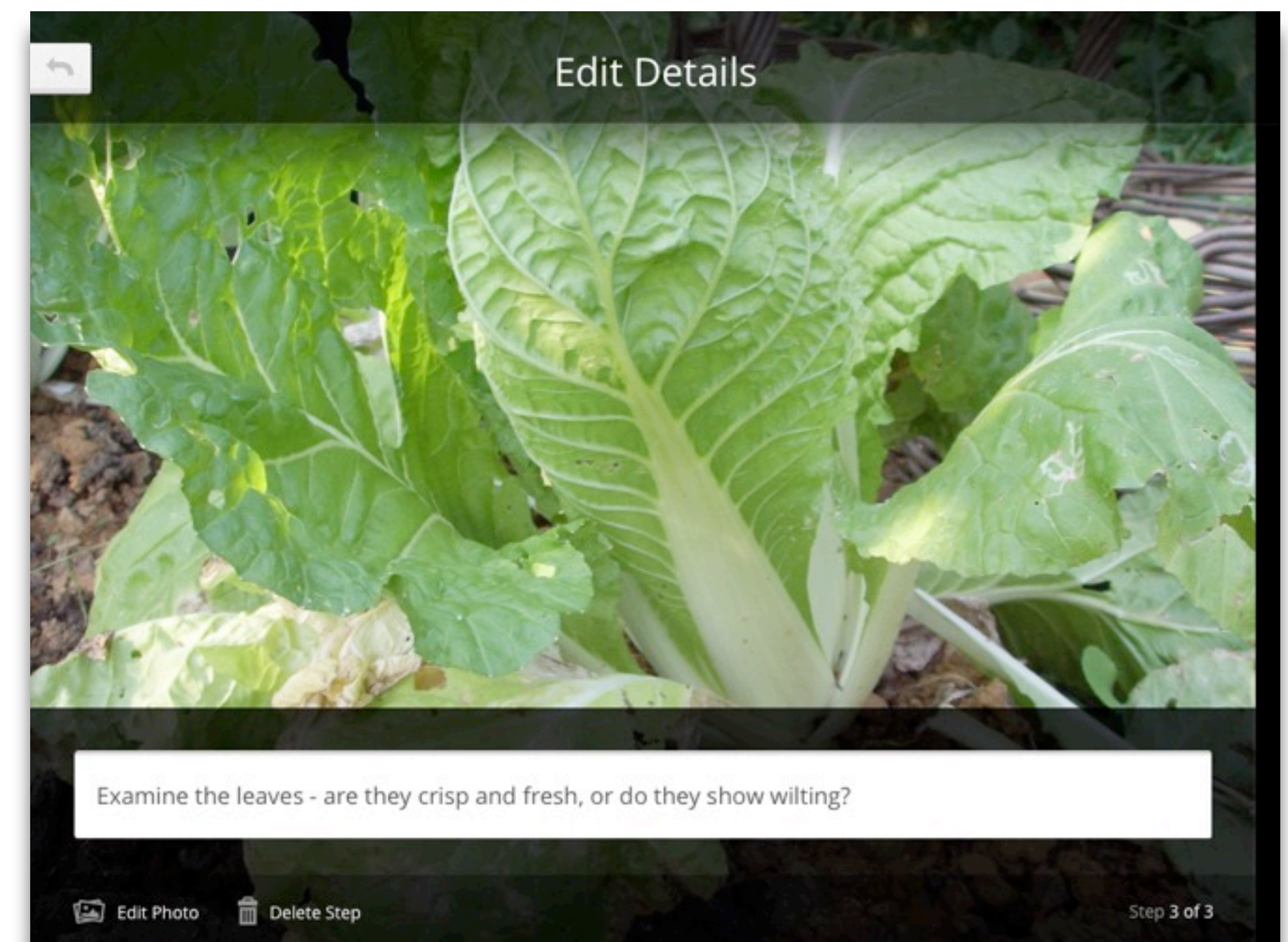
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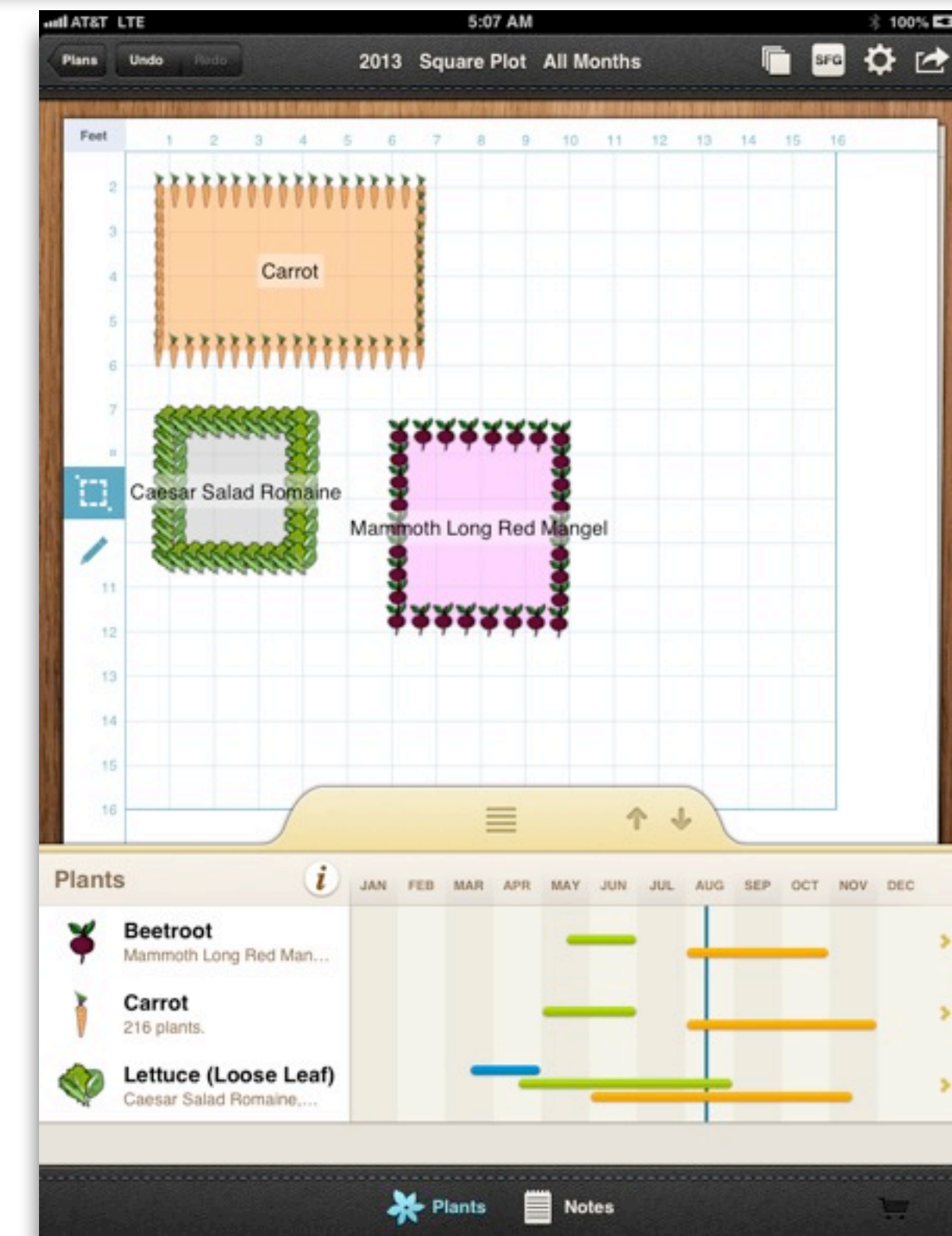
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SAMR in Action

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

Choosing the First SAMR Ladder Project: Three Options

- **Your Passion:**

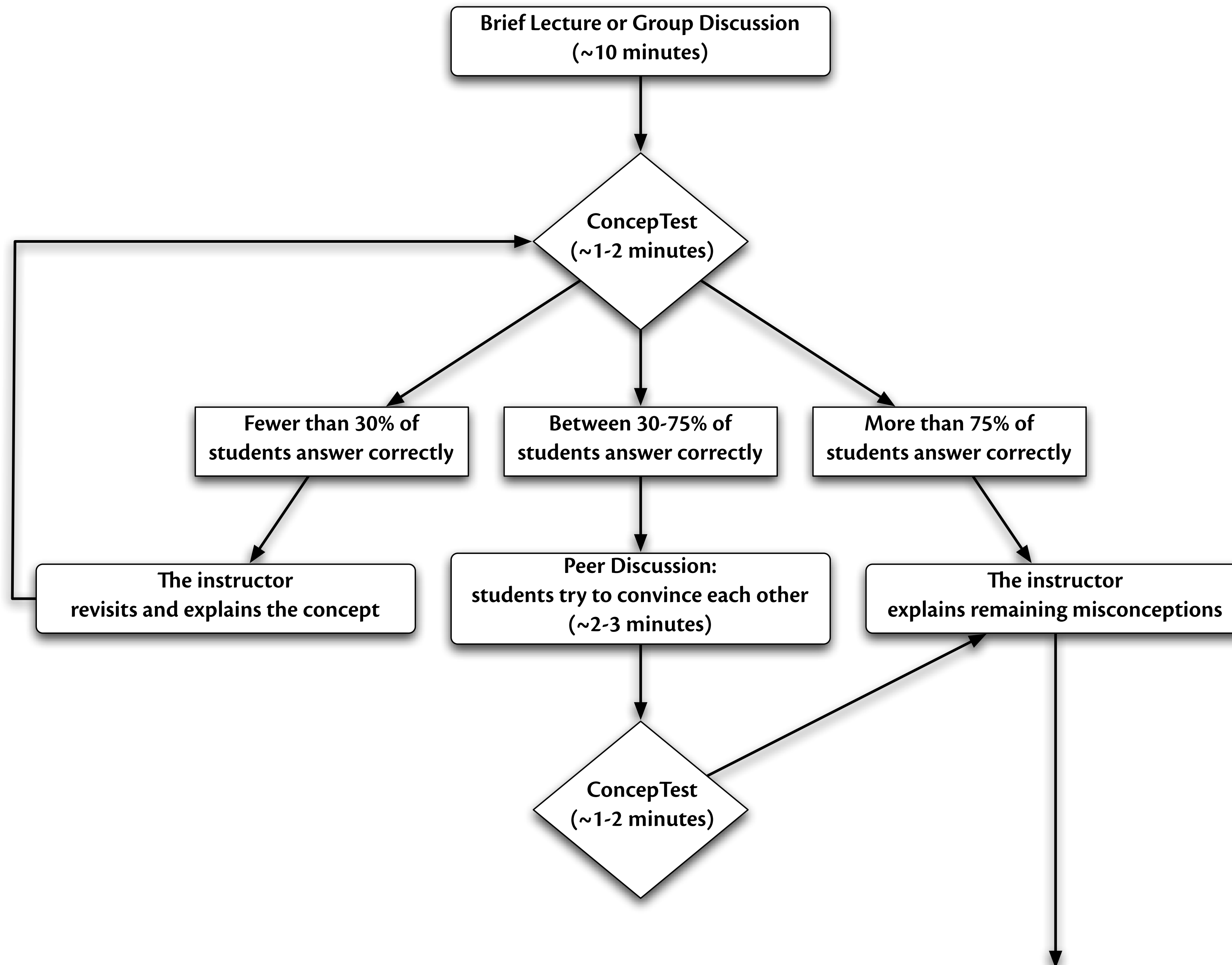
- If you had to pick one topic from your class that best exemplifies why you became fascinated with the subject you teach, what would it be?

- **Barriers to Your Students' Progress:**

- Is there a topic in your class that a significant number of students get stuck on, and fail to progress beyond?

- **What Students Will Do In the Future:**

- Which topic from your class would, if deeply understood, best serve the interests of your students in future studies or in their lives outside school?



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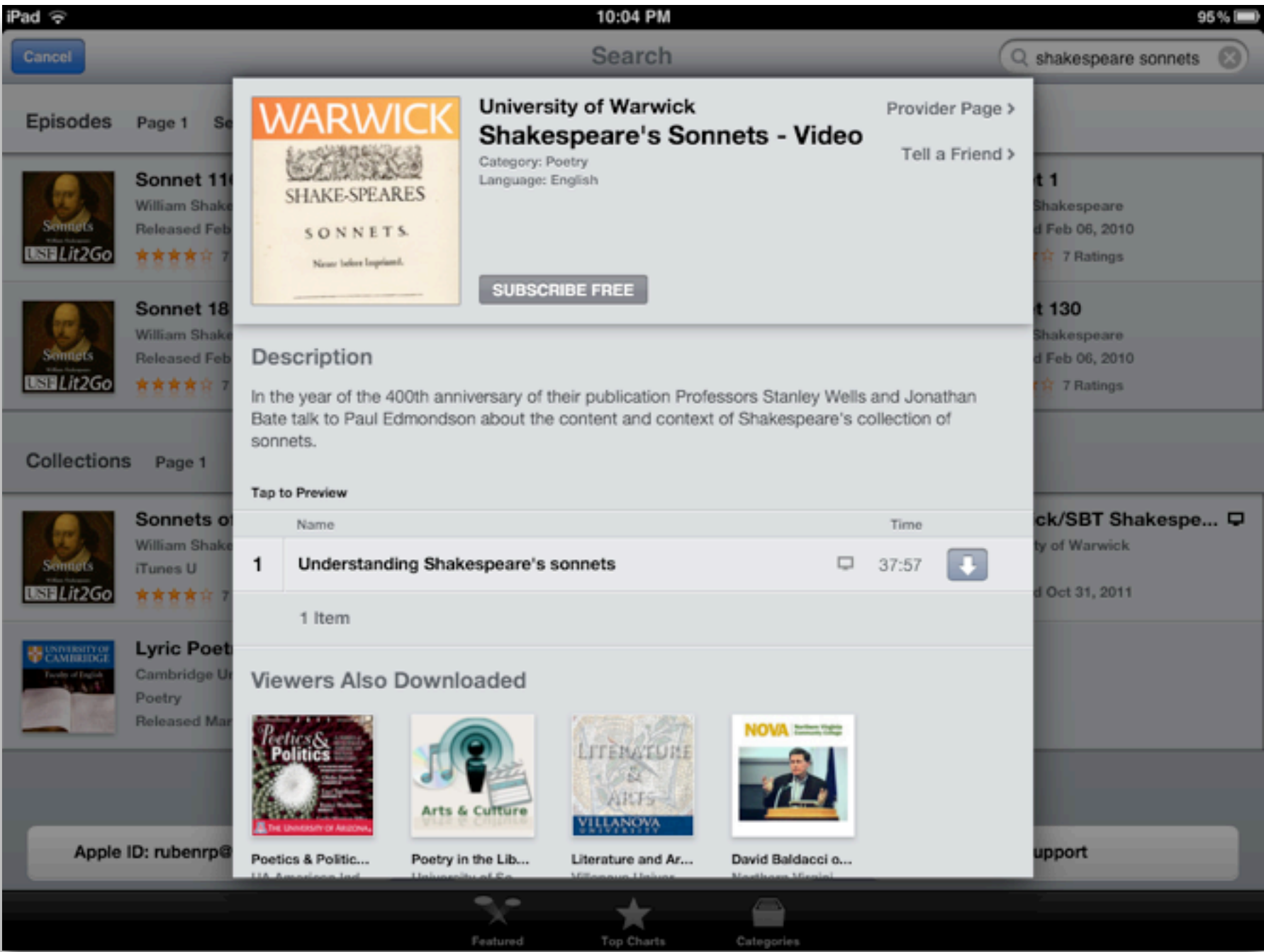
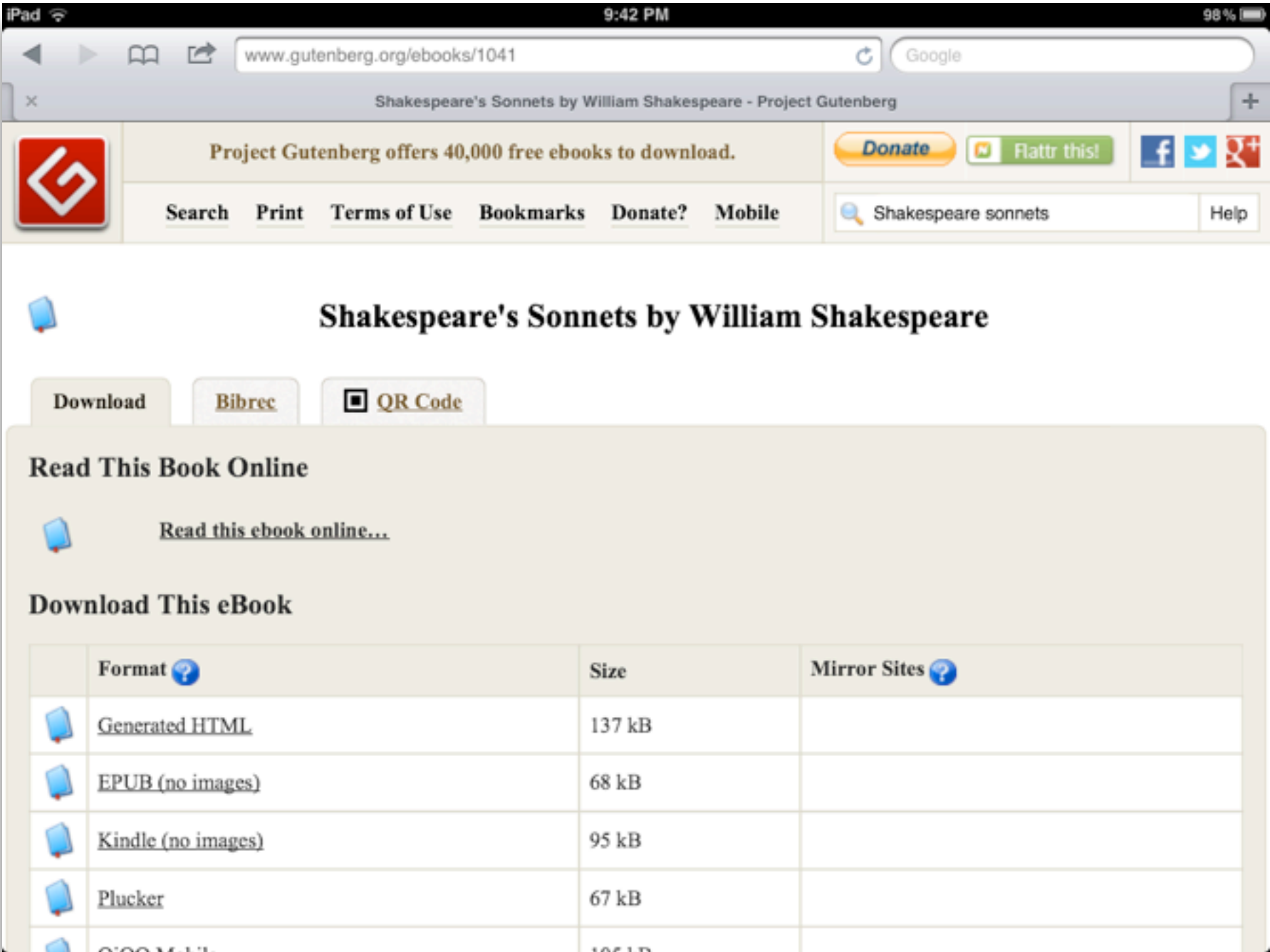
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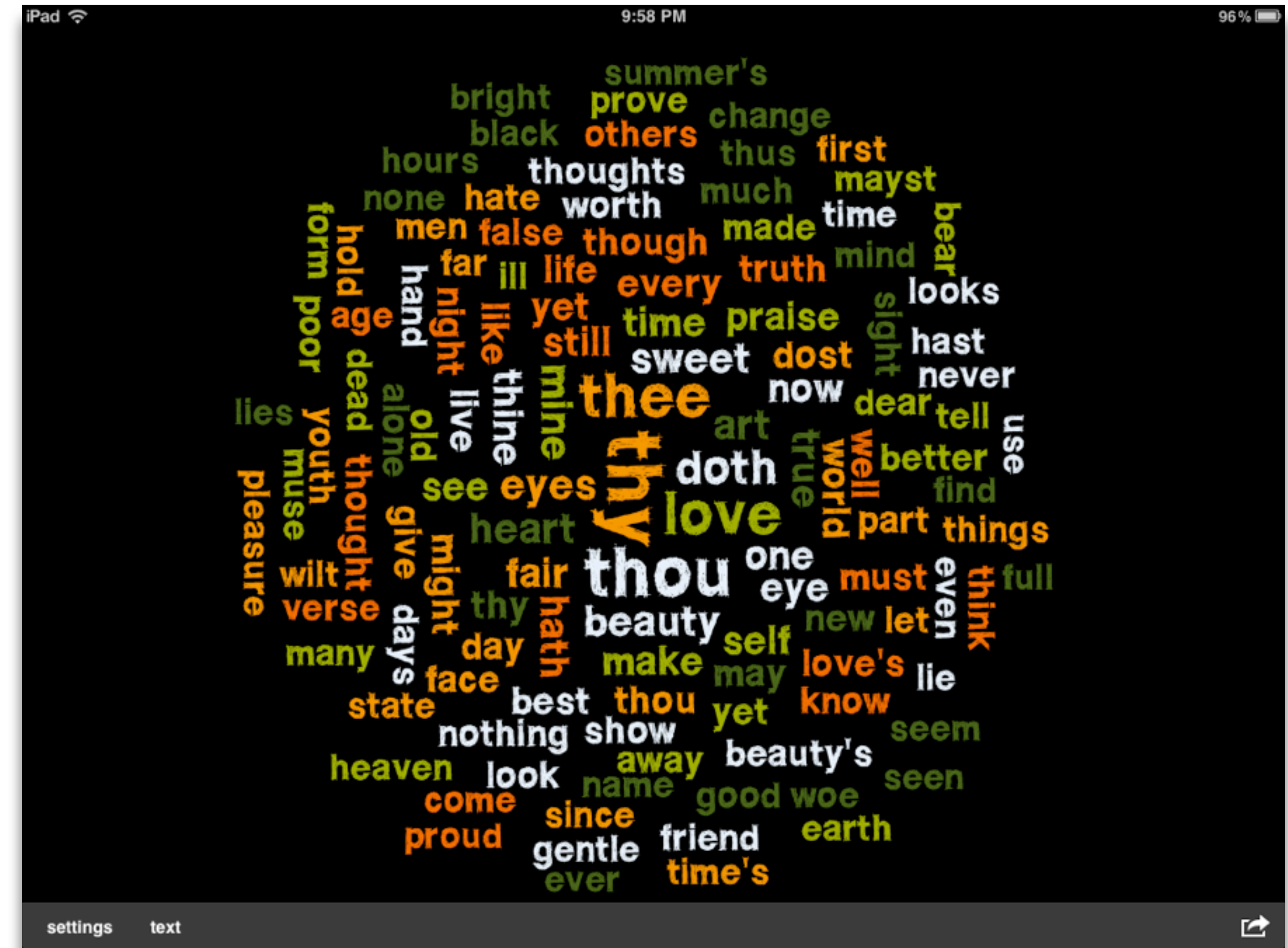


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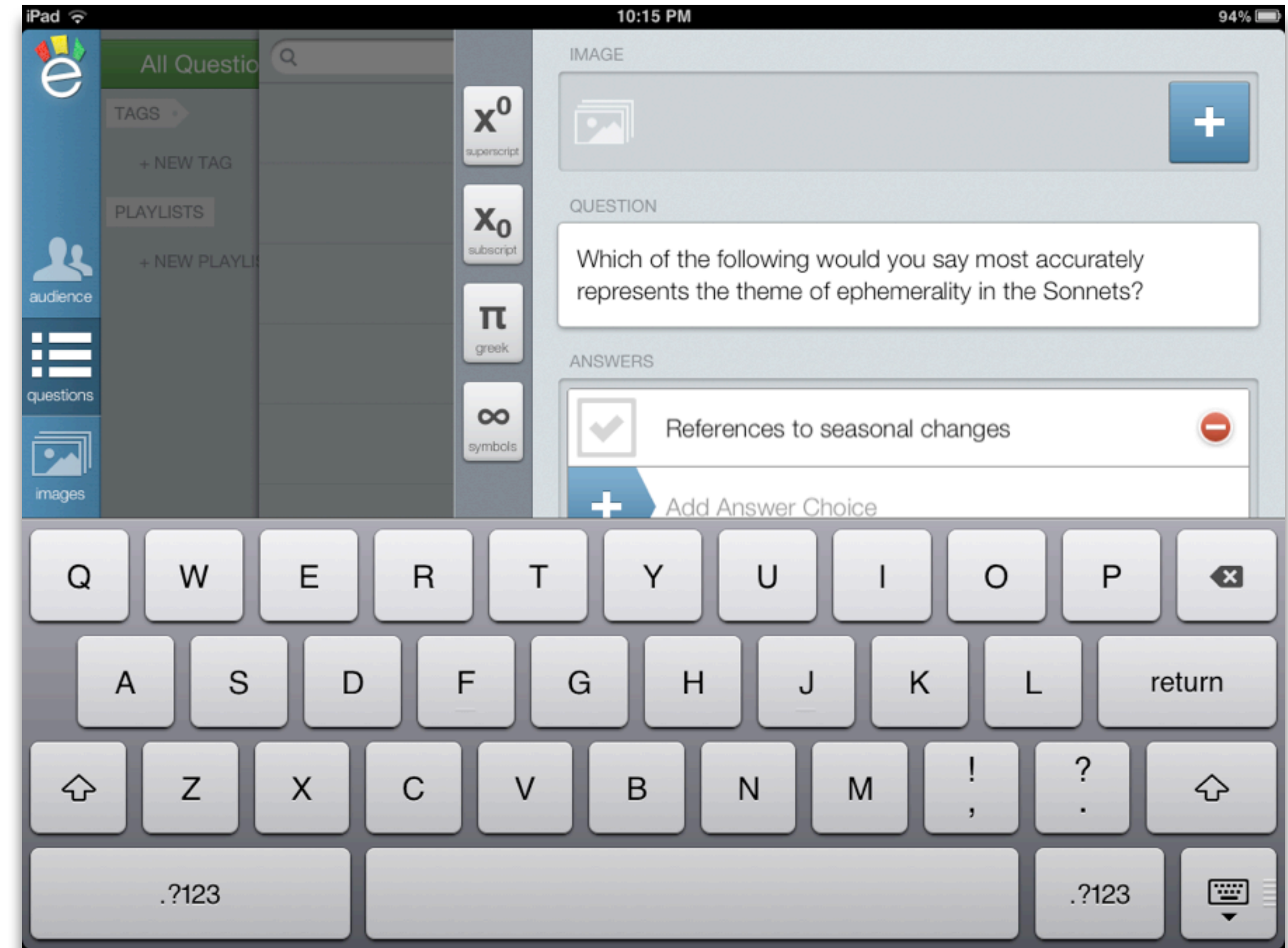
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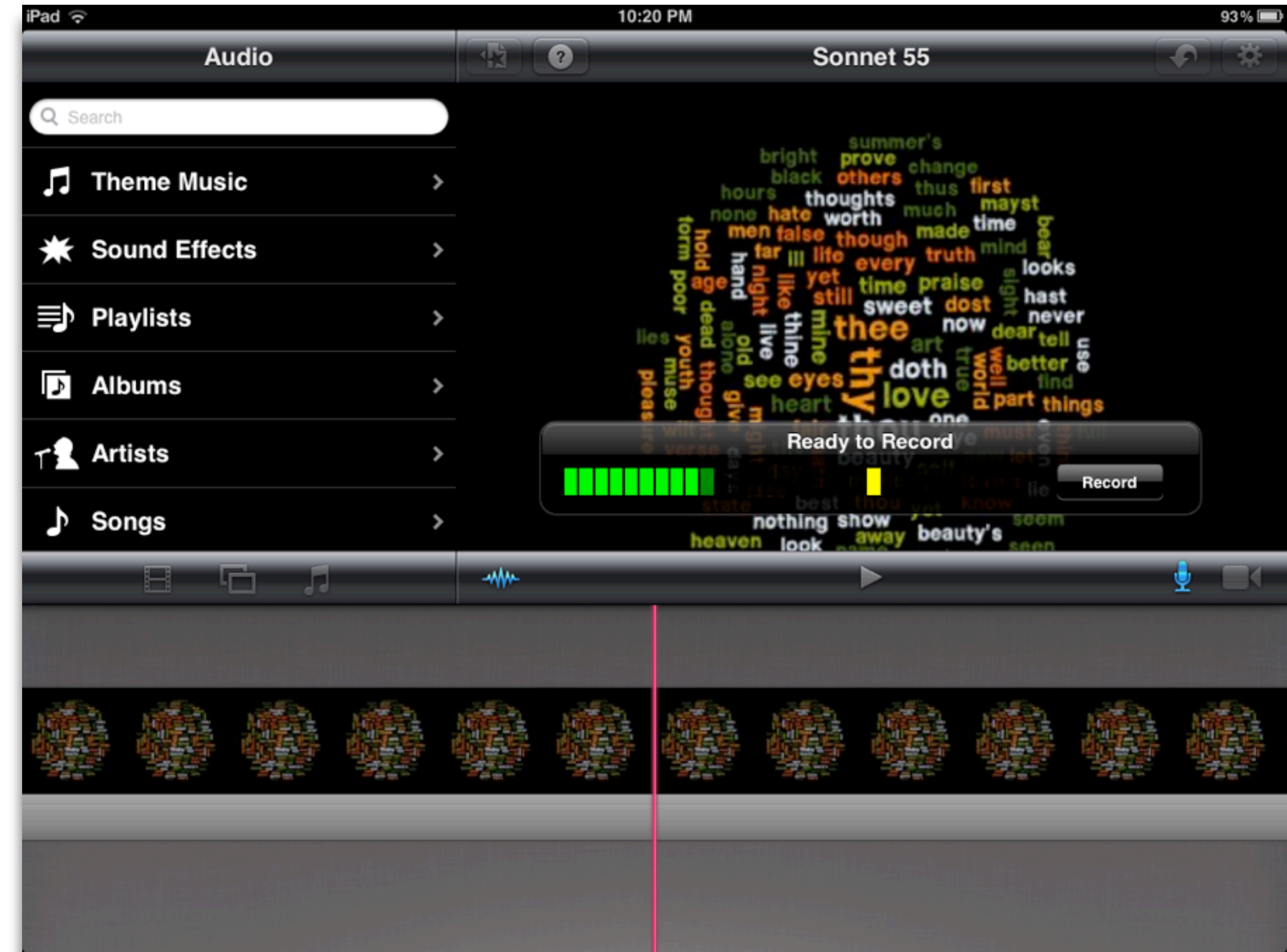
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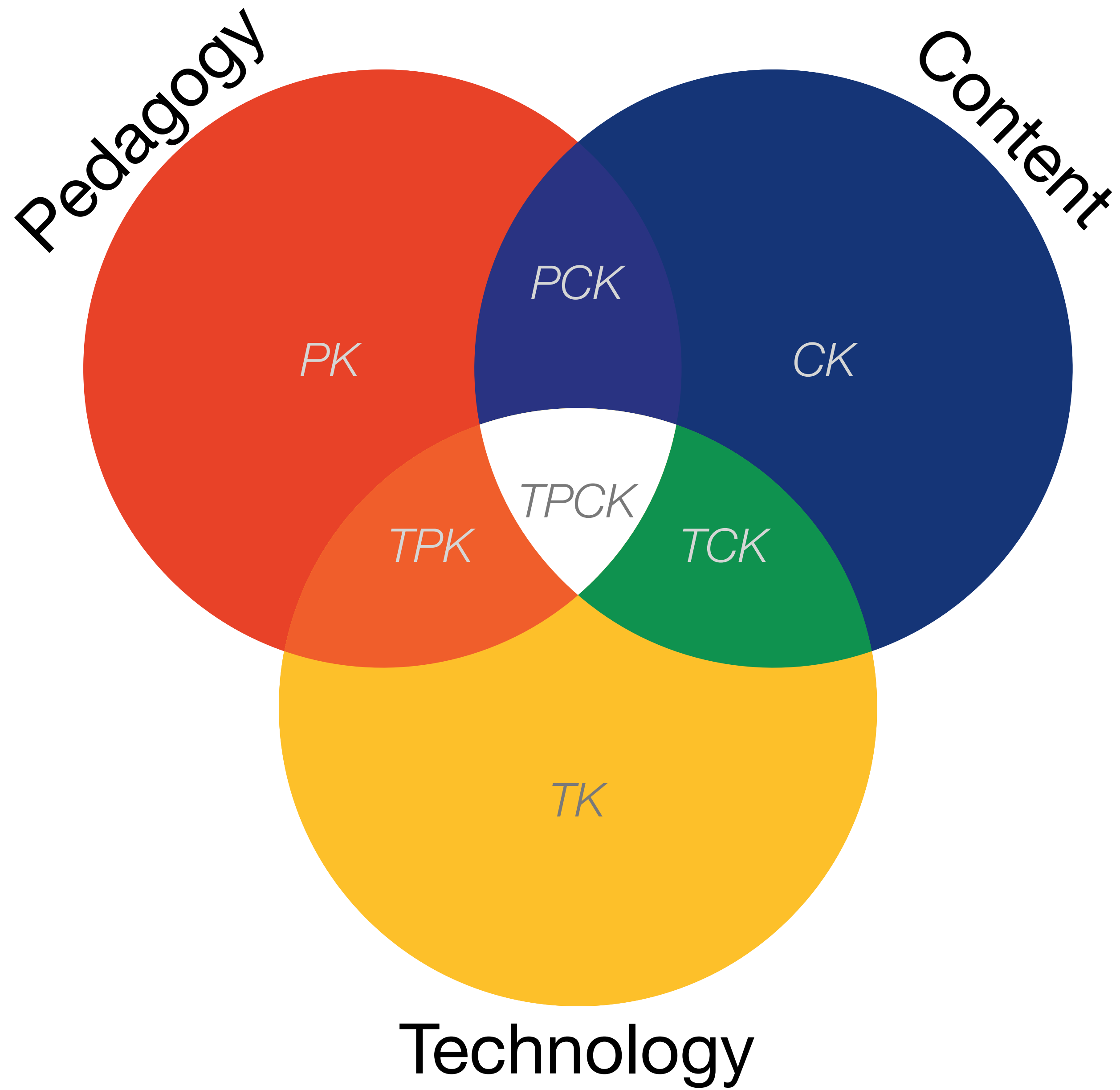
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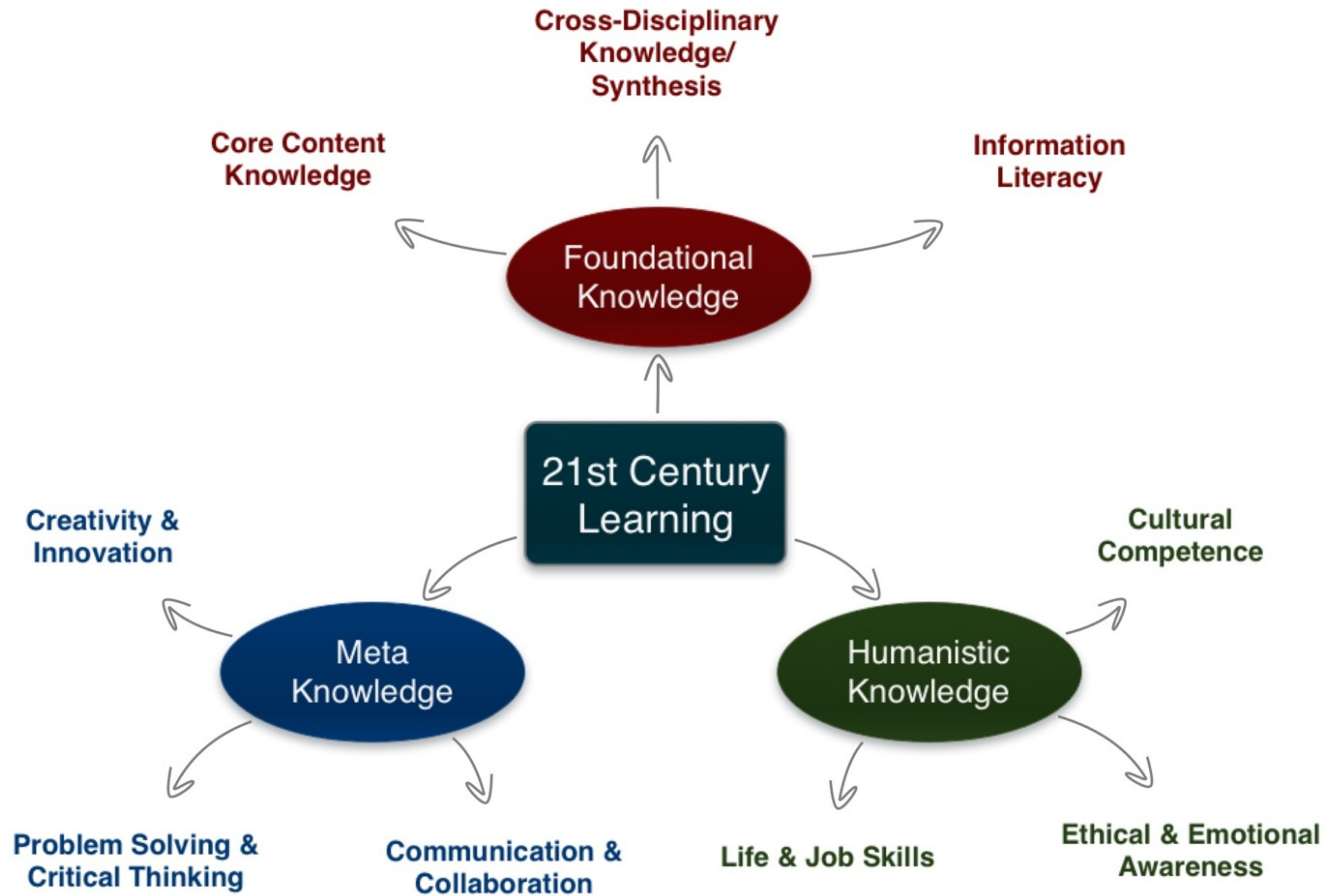
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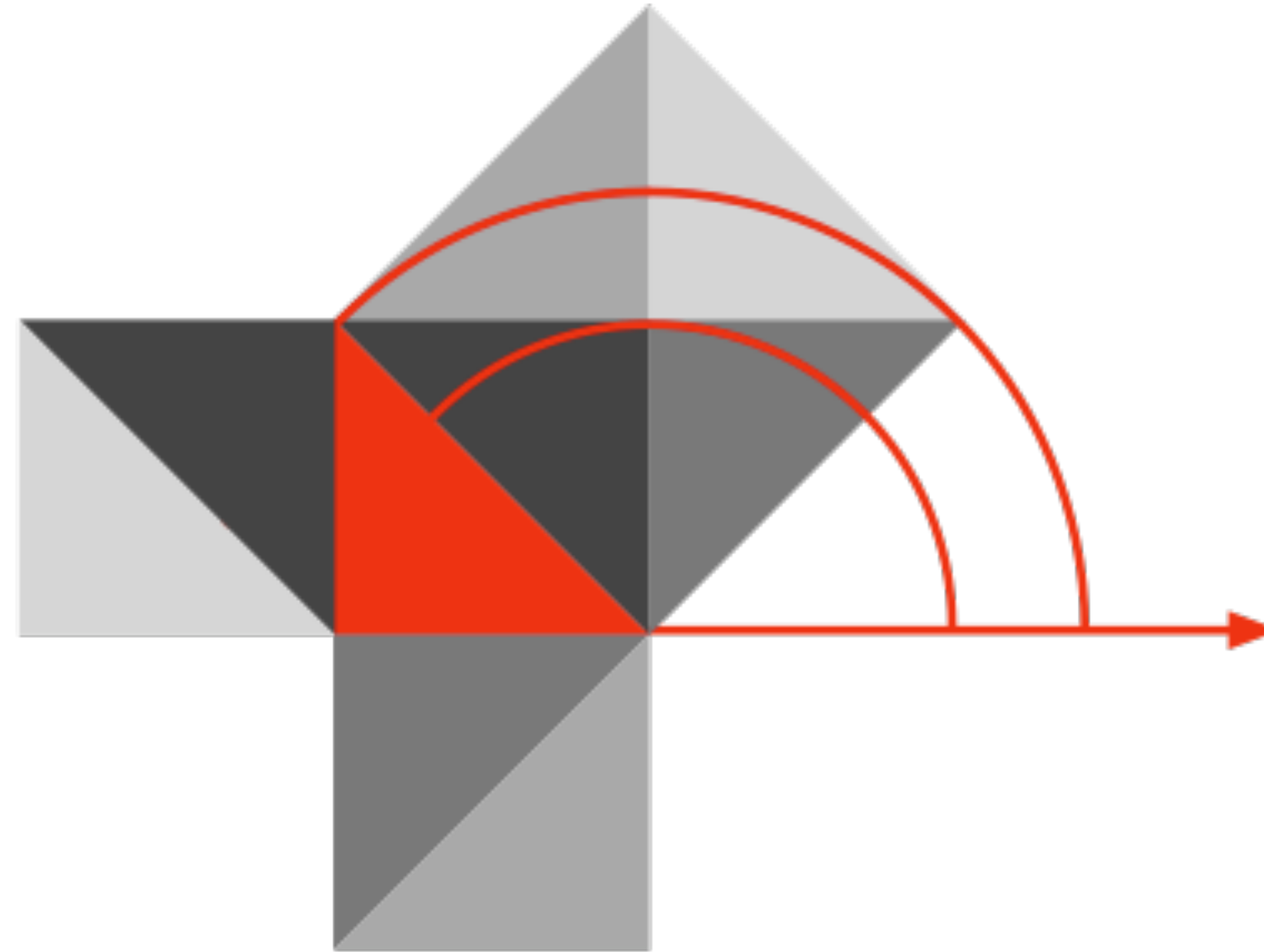
Black and Wiliam: Defining Formative Assessment

“Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.”

Resources

- Ruben R. Puentedura, *Transformation, Technology, and Education*. (2006) Online at:
<http://hippasus.com/resources/tte/>
- Ruben R. Puentedura, *As We May Teach: Educational Technology, From Theory Into Practice*. (2009) Online at:
<http://tinyurl.com/aswemayteach>
- Ruben R. Puentedura, “Technology In Education: The First 200,000 Years” *The NMC Perspective Series: Ideas that Matter*. NMC Summer Conference. (2012) Online at:
<http://www.youtube.com/watch?v=NemBarqD6qA>
- Punya Mishra & Matthew J. Koehler, “Technological pedagogical content knowledge: A framework for teacher knowledge”. *Teachers College Record*, 108(6). (2006) Online at:
http://mkoehler.educ.msu.edu/OtherPages/Koehler_Pubs/TECH_BY_DESIGN/TCRecord/mishra_koehler_tcr2006.pdf
- *TPCK - Technological Pedagogical Content Knowledge*. Online at:
<http://tpack.org>
- AACTE (Eds.) *The Handbook of Technological Pedagogical Content Knowledge for Educators*. Routledge. (2008)
- Punya Mishra and Kristen Kereluik, “What is 21st Century Learning? A review and synthesis.” Paper submitted to the SITE2011 Conference. (2011) Online at:
http://punya.educ.msu.edu/publications/21stCenturyKnowledge_PM_KK.pdf
- Punya Mishra and Kristen Kereluik, “What is 21st Century Learning? A review and synthesis.” SITE2011 Conference Presentation. (2011) Online at:
http://punya.educ.msu.edu/presentations/site2011/SITE_2011_21st_Century.pdf

Hippasus



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