

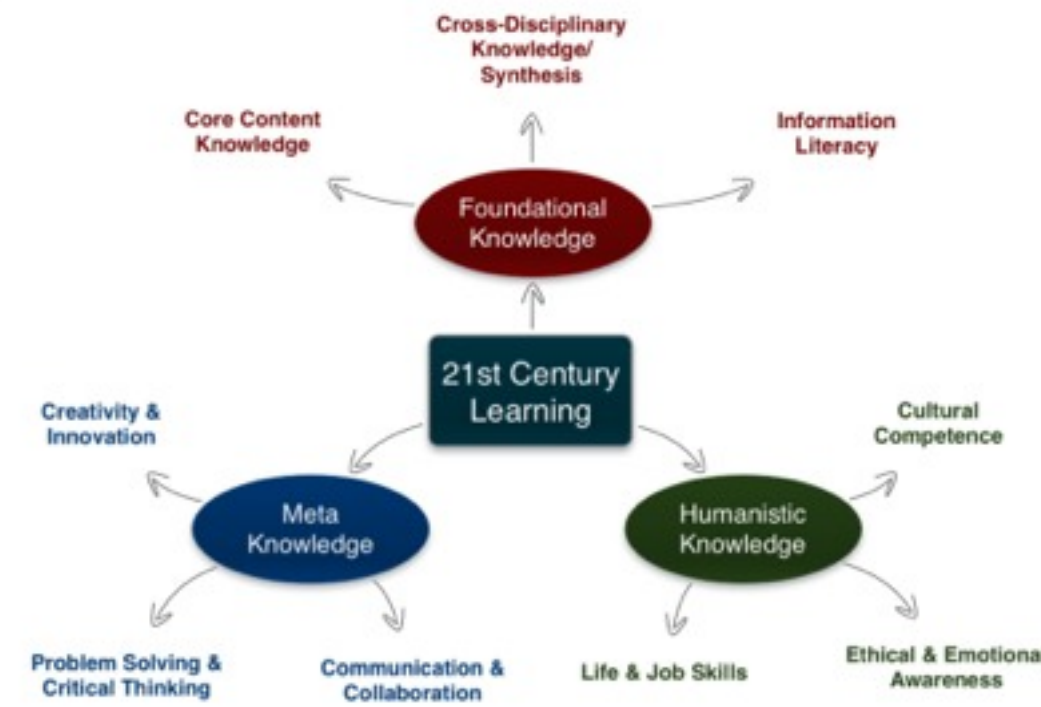
# SAMR: Moving from Enhancement to Transformation

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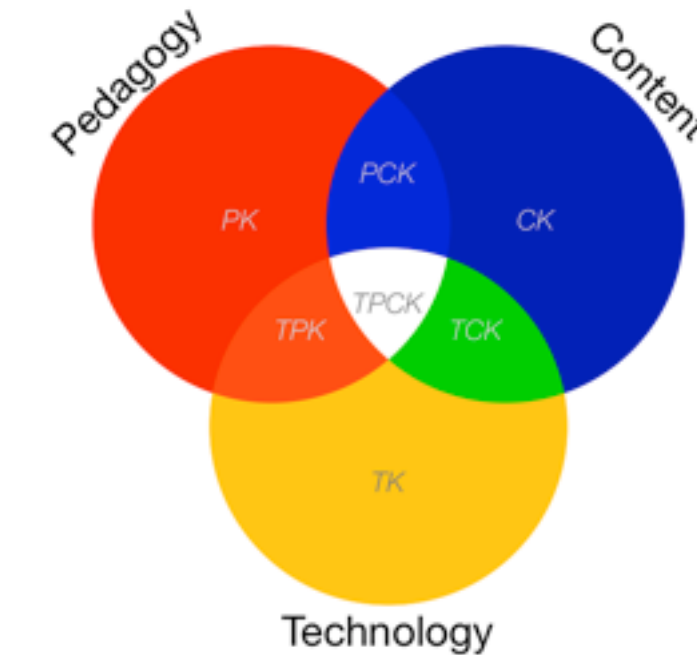
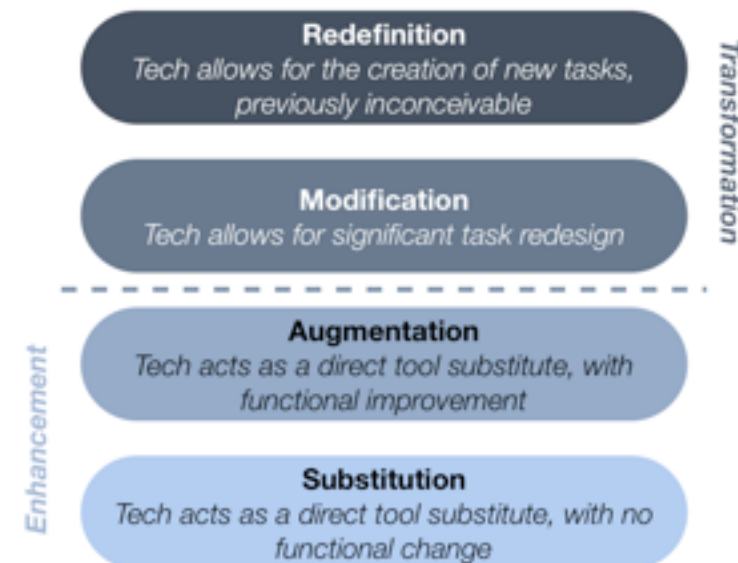
Ruben R. Puentedura, Ph.D.



# Augmenting Human Intellect & Learning Capacity



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



## One-to-One Technologies



**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**

# Gersmehl: Teaching Geography – Four Cornerstones

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- 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



## Redefinition

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## Modification

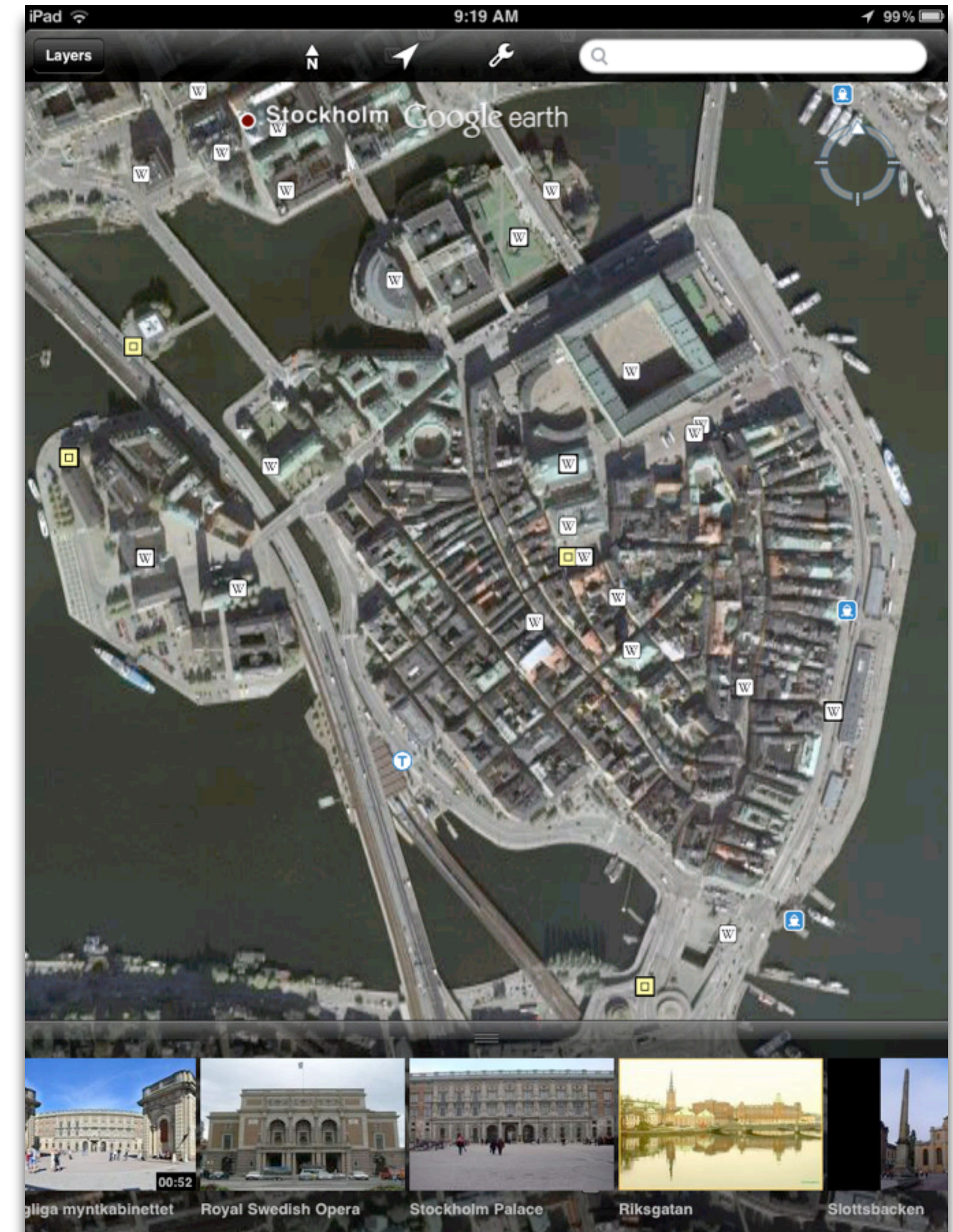
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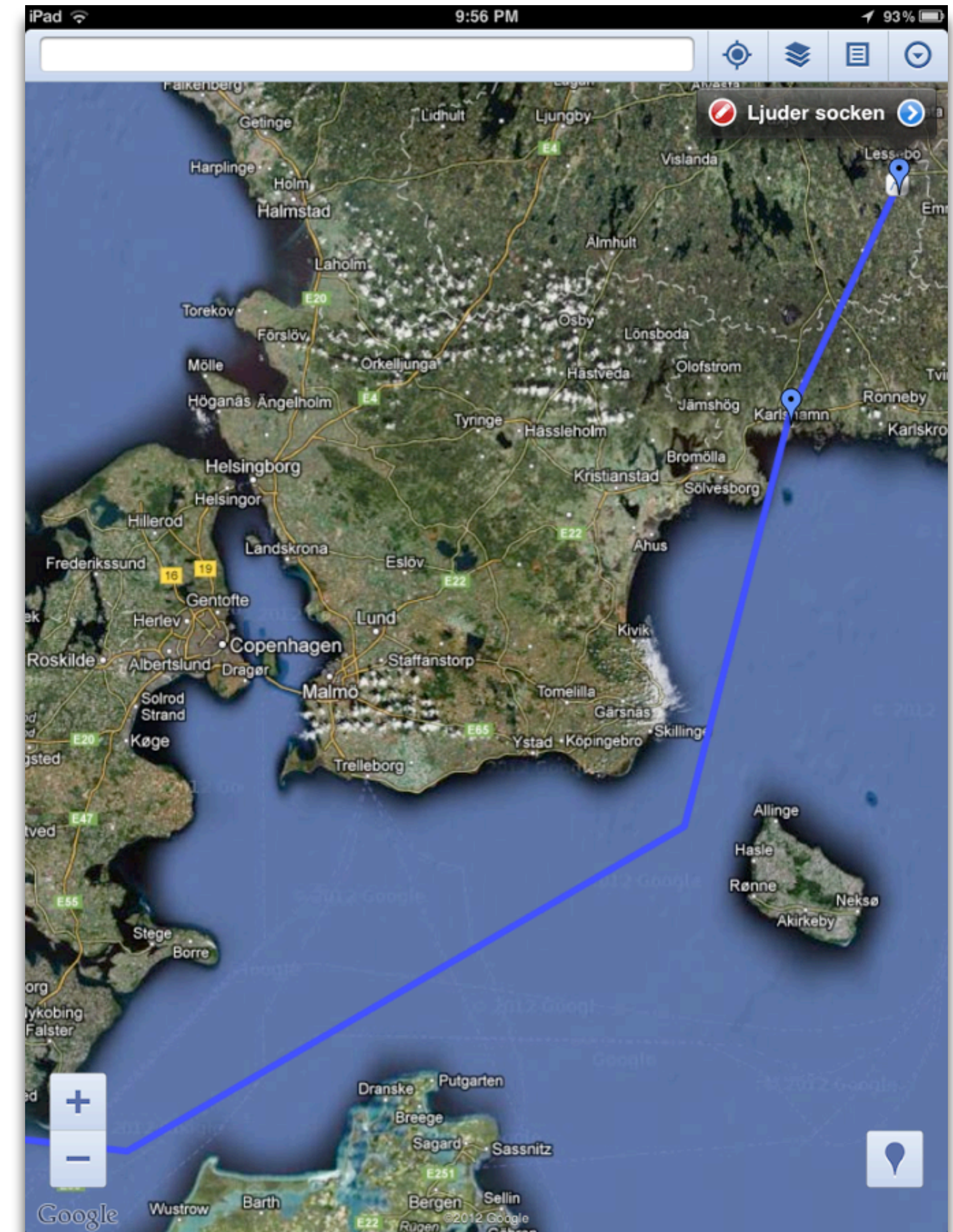
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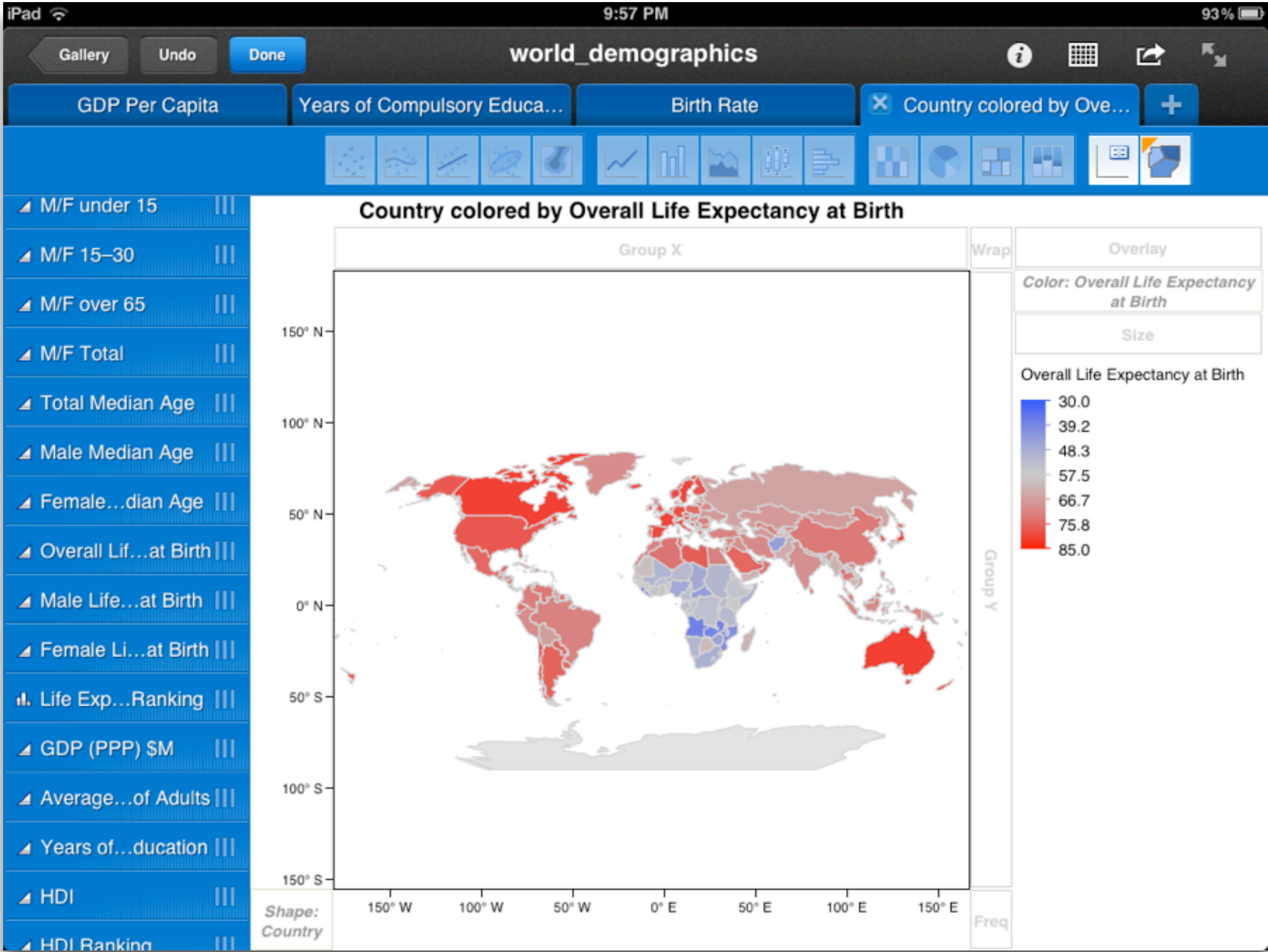
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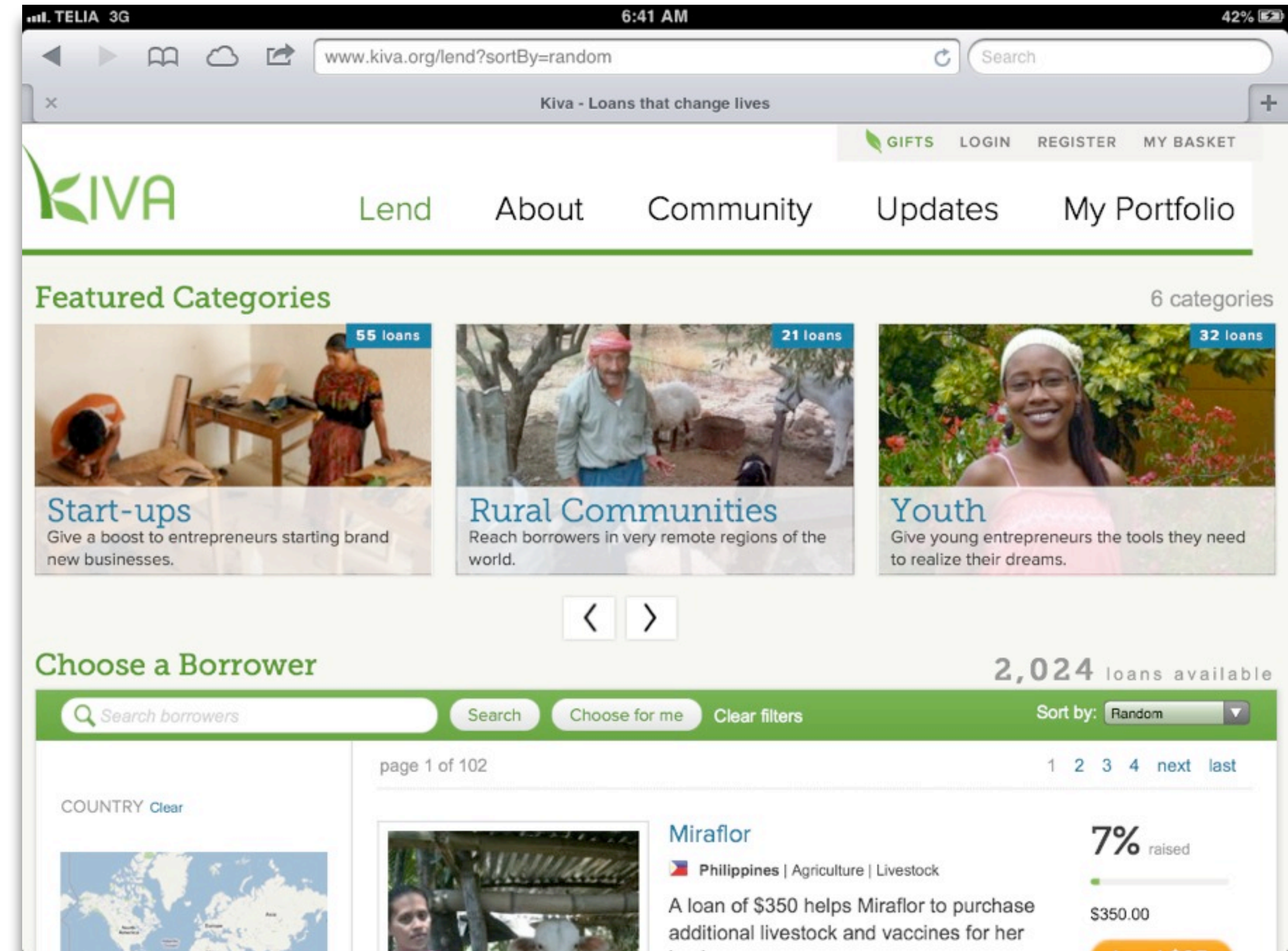
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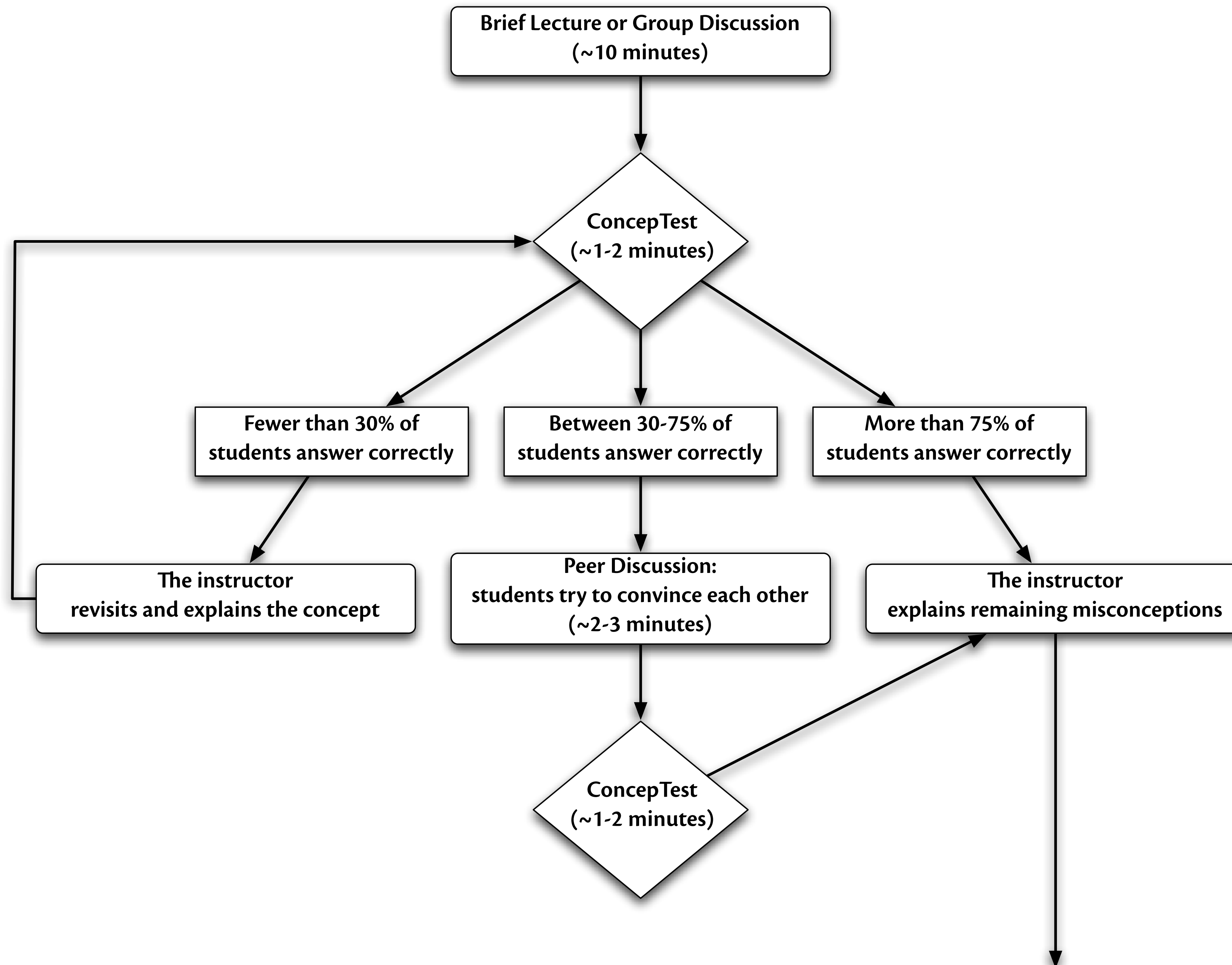
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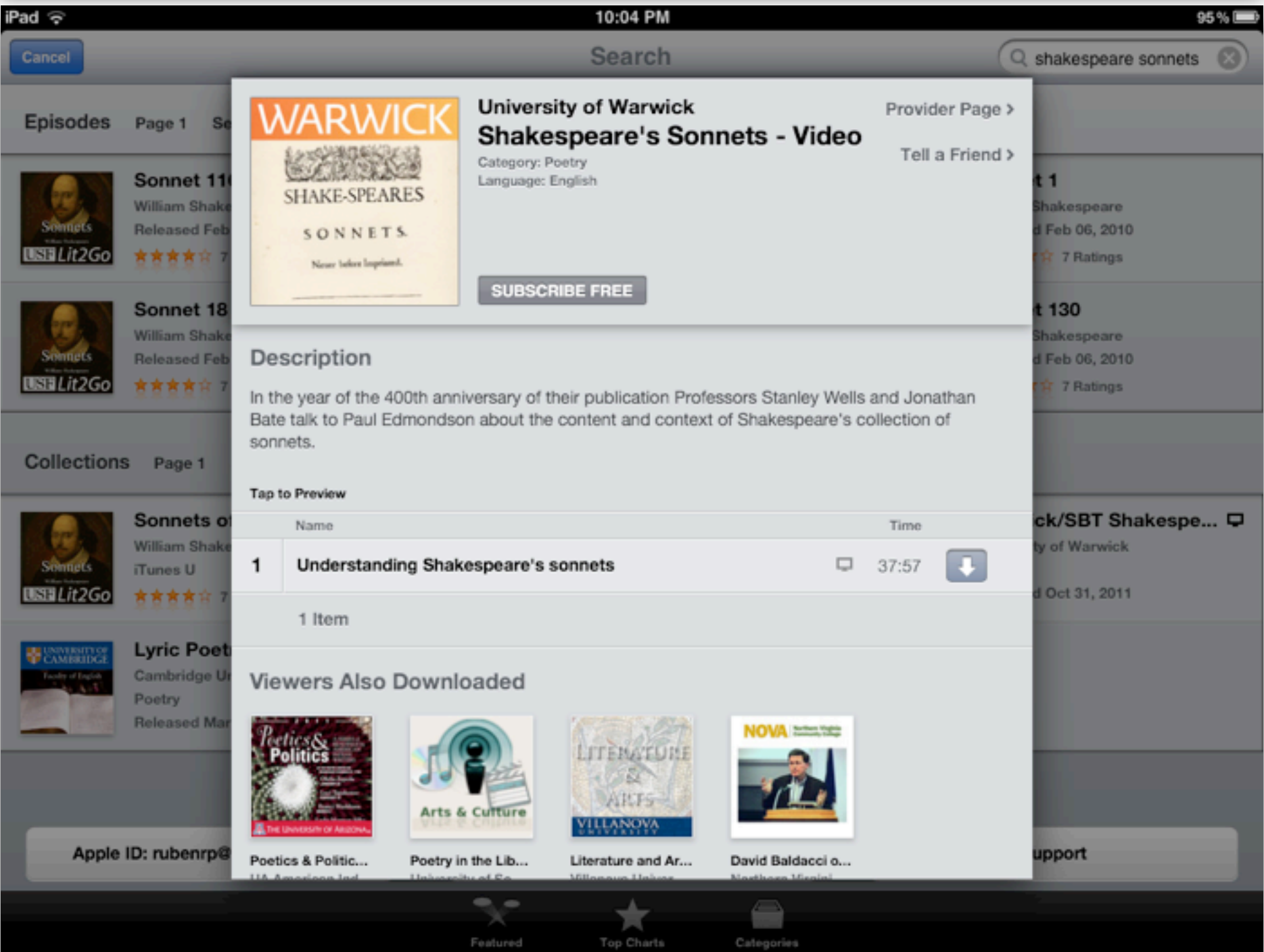
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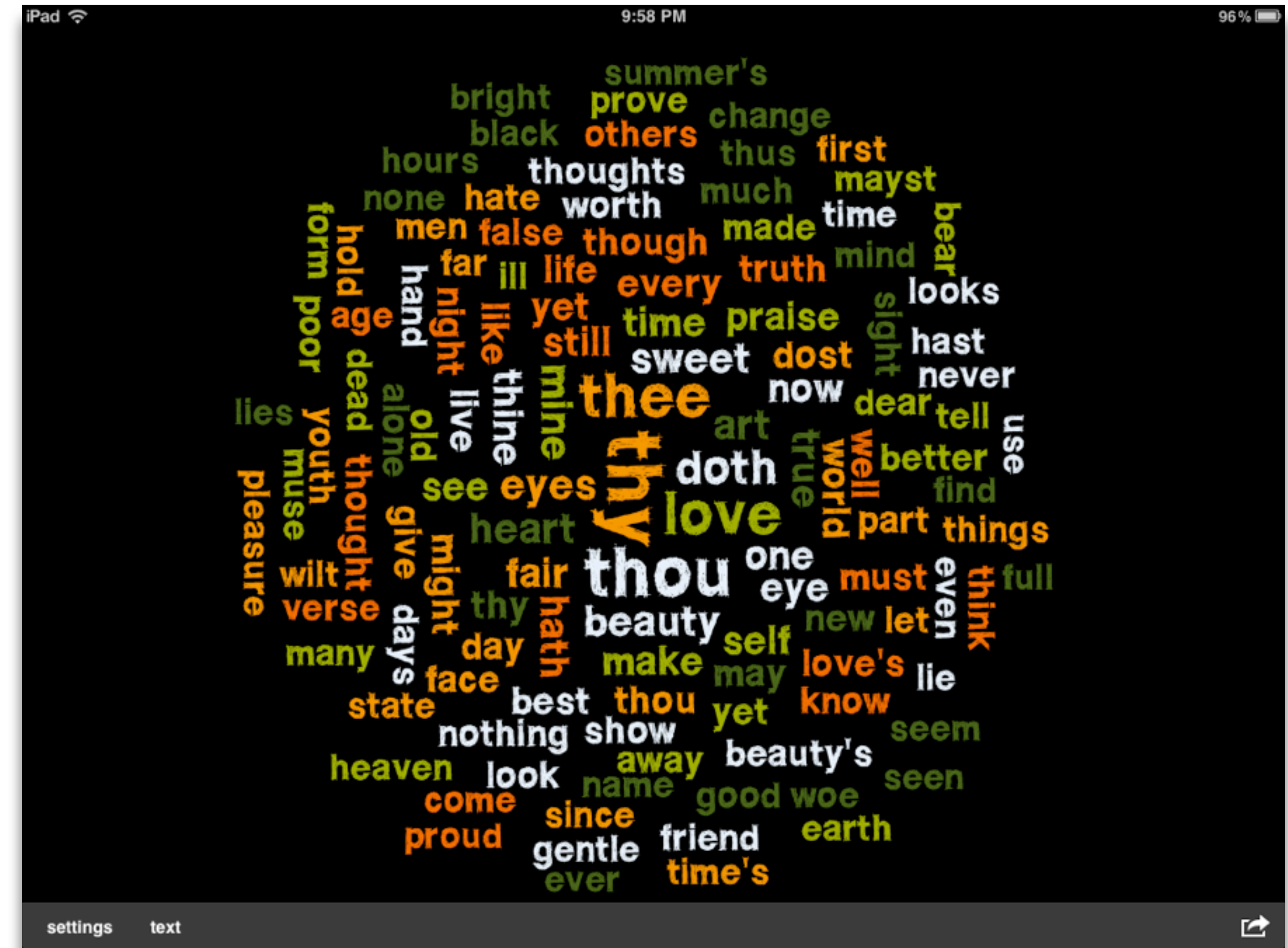


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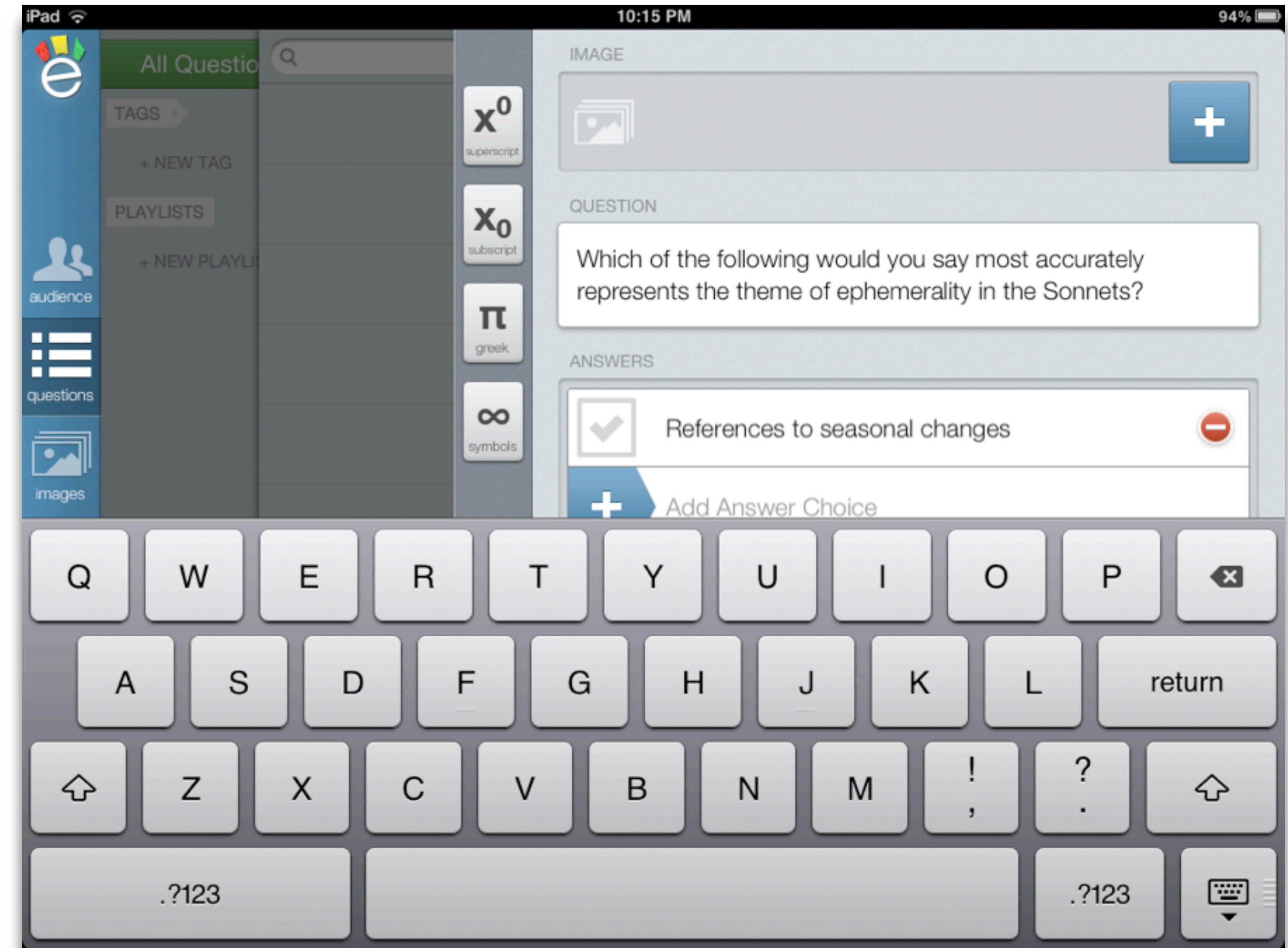
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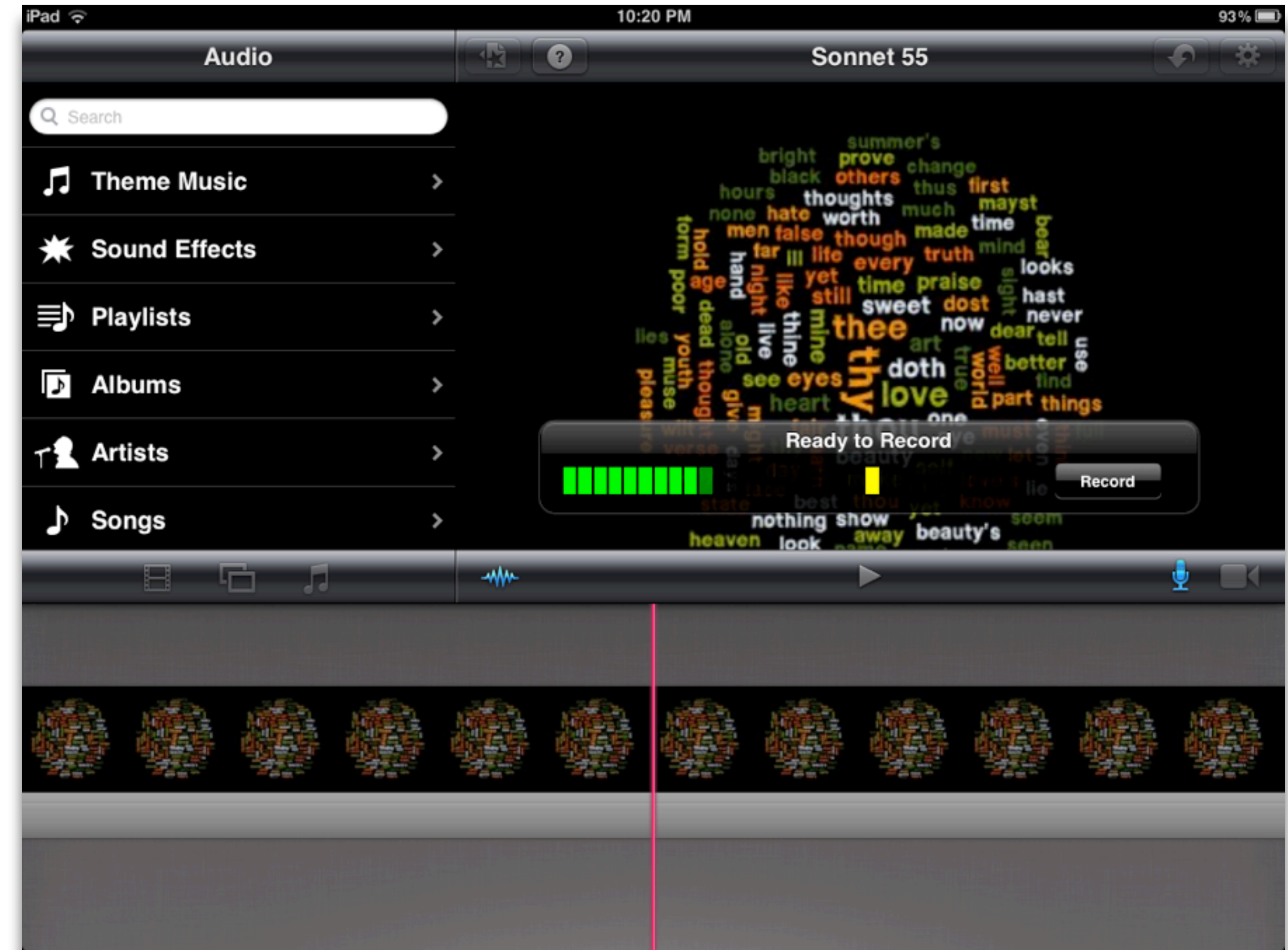
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# Choosing Your First SAMR Ladder Project: Three Options

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- **Your Passion:**

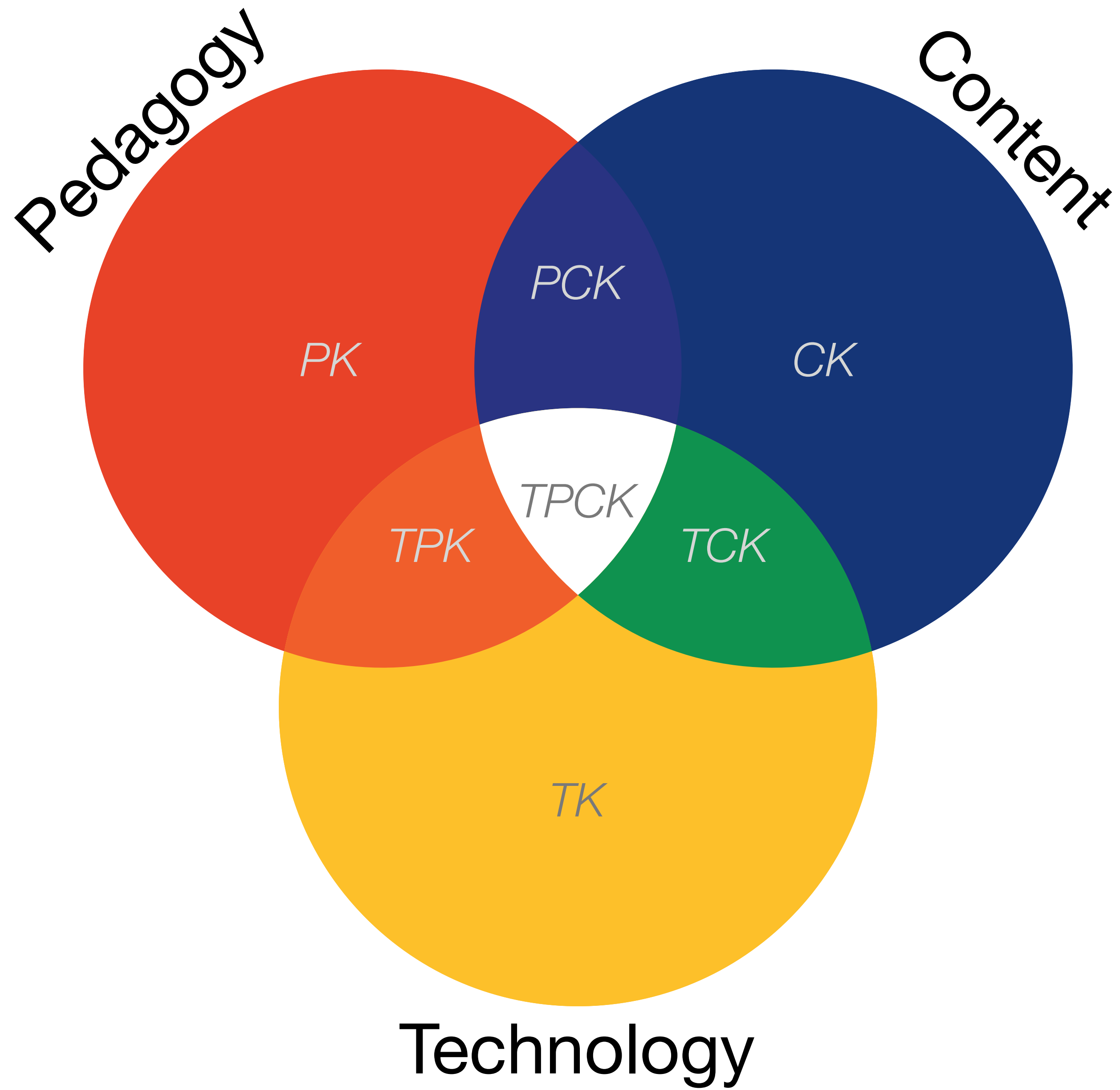
- If you had to pick one topic from your class that best exemplifies why you became fascinated with the subject you teach, what would it be?

- **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?

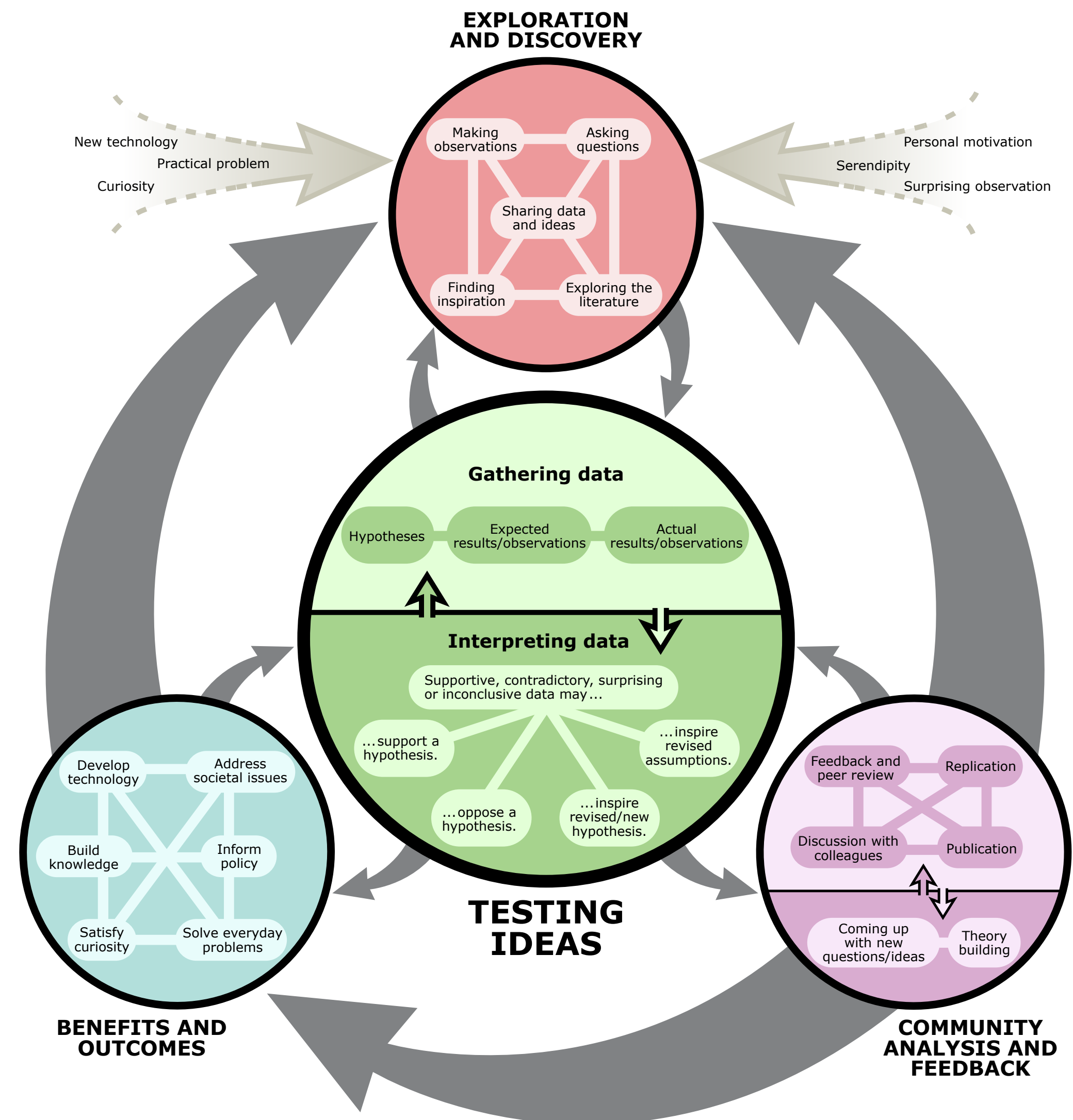
- **What Students Will Do In the Future:**

- 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?



# Understanding Science:

## How Science Works





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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

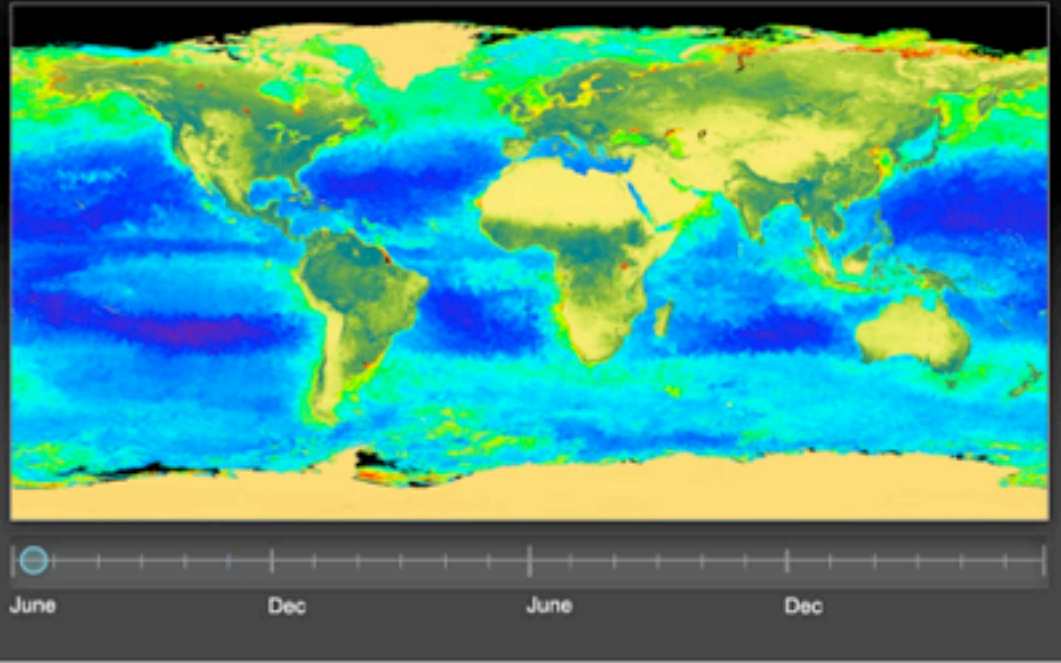
ns, the ability of is the food nt for arth and ous oxy- e carbon oy pro- nts. d ma- on of dis- dissolved salts (0.05 percent), whereas ocean water has about 35,000 parts per million (3.5 percent).

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.

31



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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.

RED-BILLED PIGEON

AFRICAN COLLARED-DOVE

EURASIAN COLLARED-DOVE

SPOTTED DOVE

plumage variable

typical form

ROCK PIGEON (ROCK DOVE, DOMESTIC PIGEON)


Rock Pigeon (Rock Dove, Domestic Pigeon)

AA

Cancel

Bird Sighting

Save



ROCK PIGEON (ROCK DOVE, DOMESTIC PIGEON...)

*Columba livia*

Common, exotic

Count

1 Bird >

Date

Jun 9, 2012 4:35 PM >

Place

>

Weather

Not Recorded >

## Redefinition

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## Modification

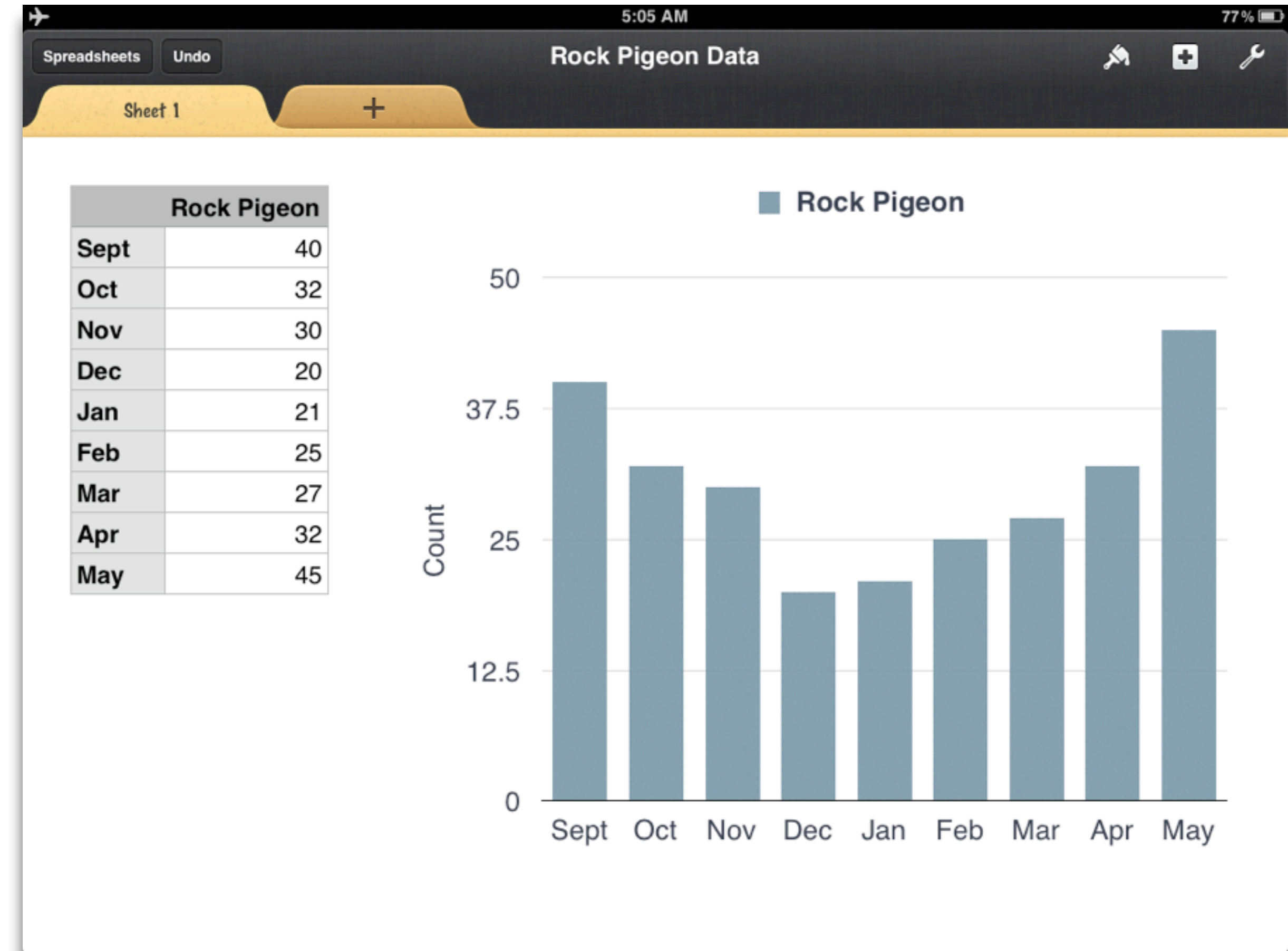
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# The SAMR Ladder: Questions and Transitions

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- **Substitution:**

- What will I gain by replacing the older technology with the new technology?

- **Substitution to Augmentation:**

- Have I added an improvement to the task process that could not be accomplished with the older technology at a fundamental level?
- How does this feature contribute to my design?






- **Augmentation to Modification:**

- How is the original task being modified?
- Does this modification fundamentally depend upon the new technology?
- How does this modification contribute to my design?

- **Modification to Redefinition:**

- What is the new task?
- Will any portion of the original task be retained?
- How is the new task uniquely made possible by the new technology?
- How does it contribute to my design?



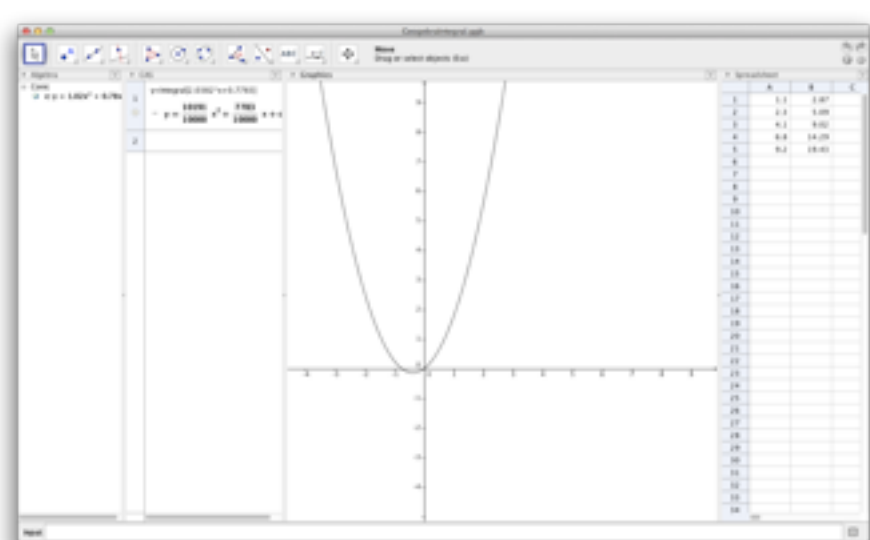
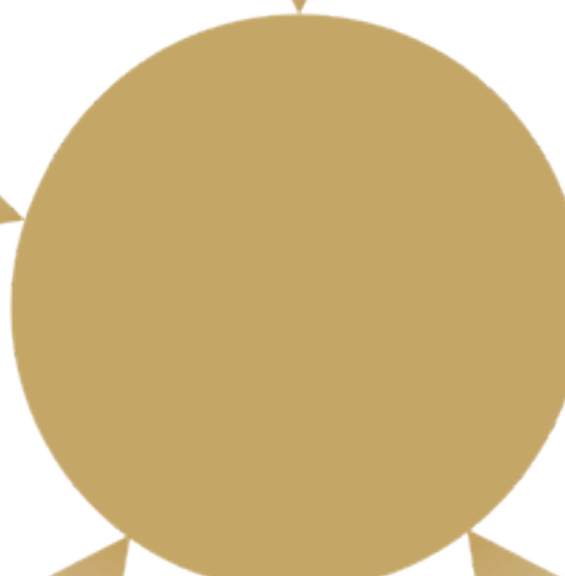
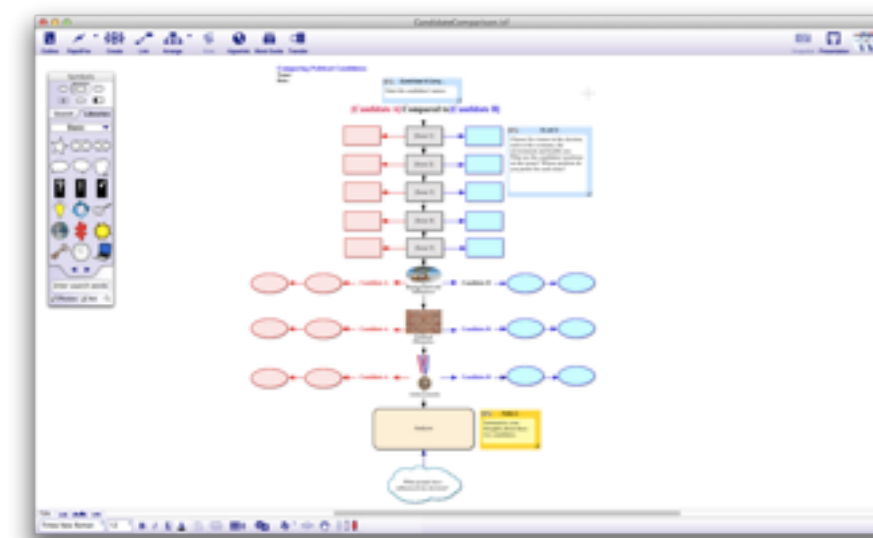
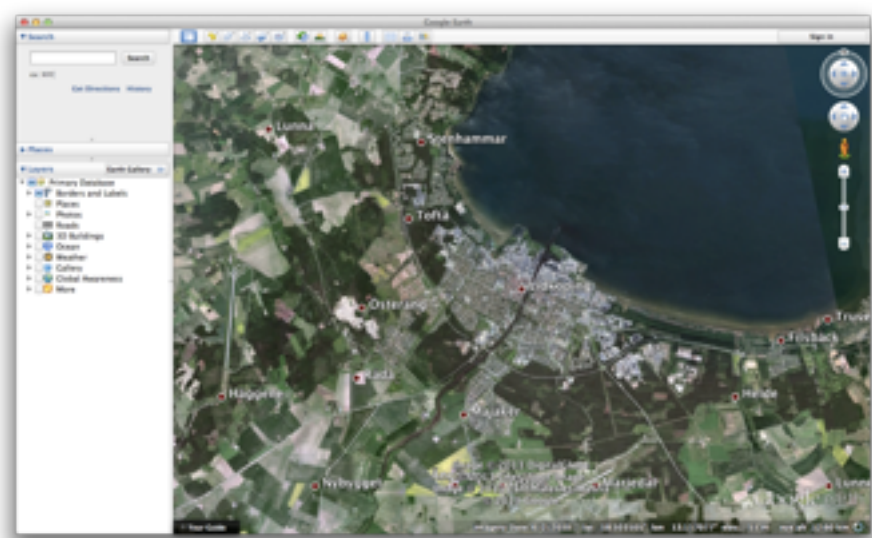
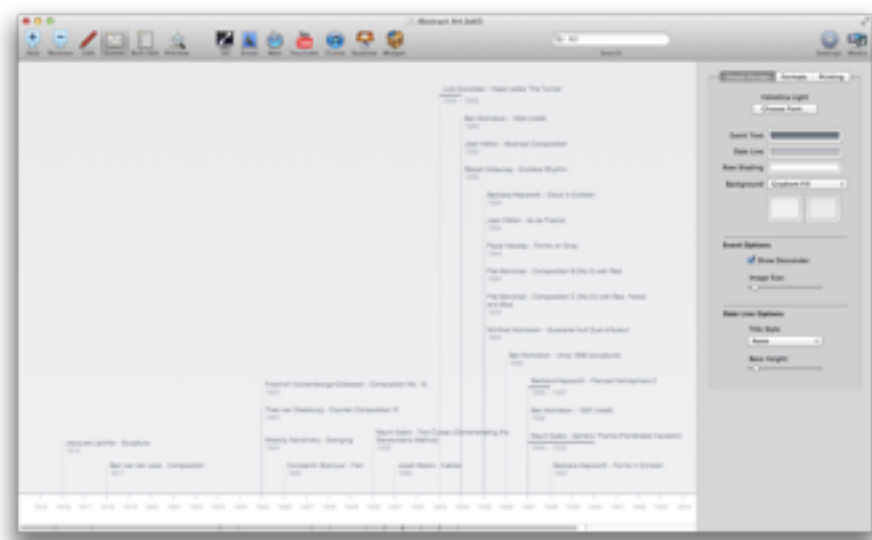
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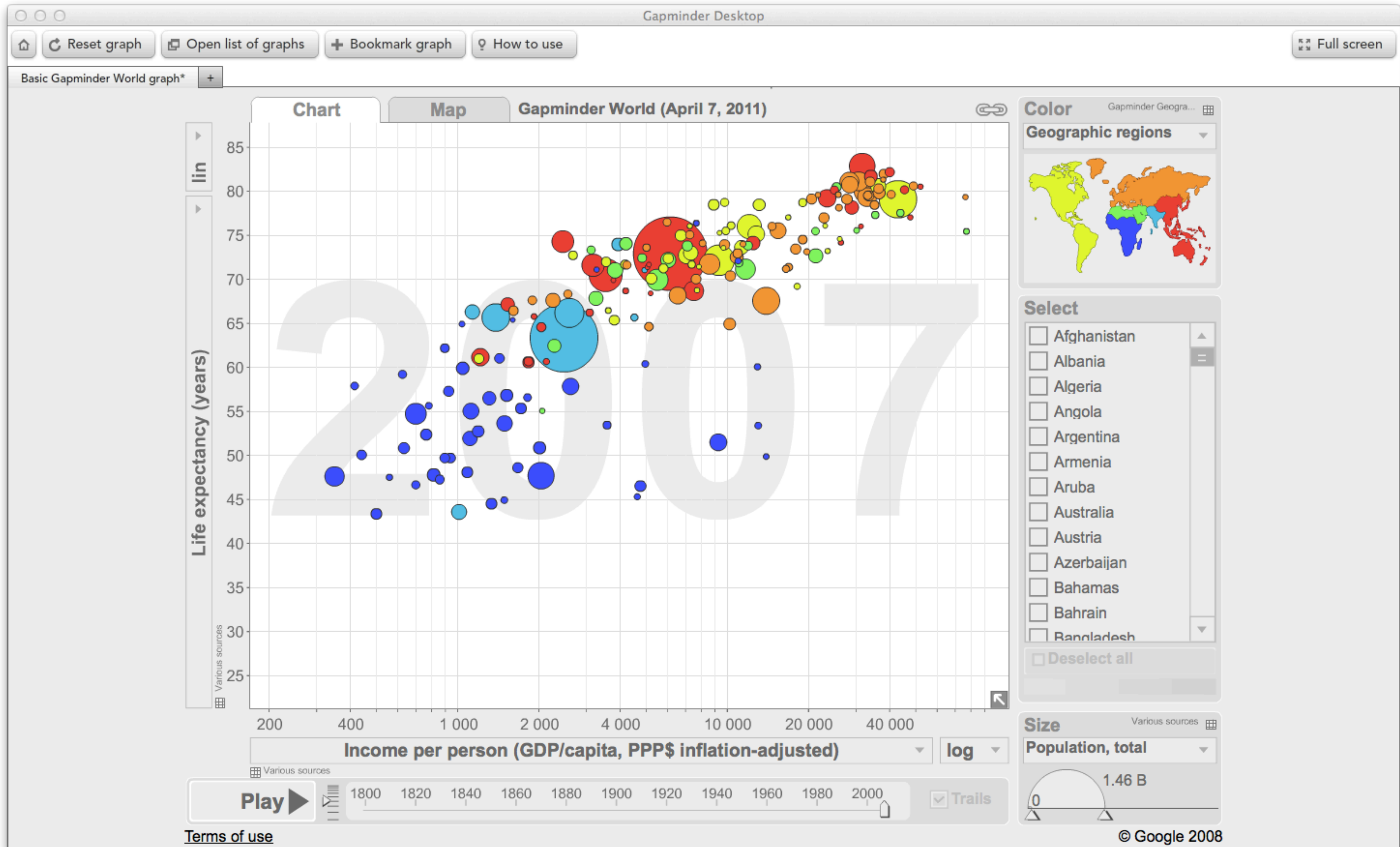


# A Basic Social Toolkit

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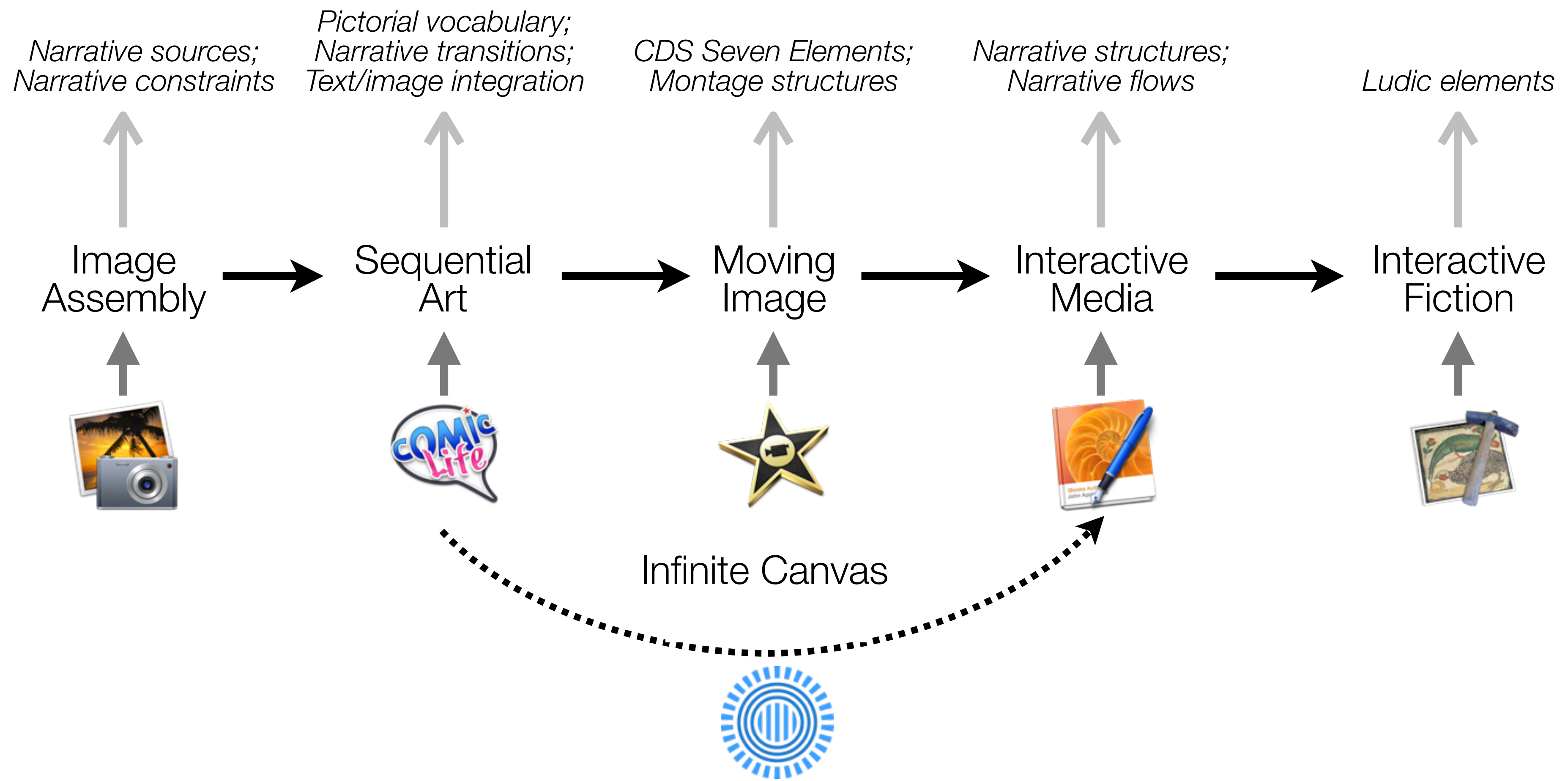
- Bookmarks: Delicious, Diigo
- RSS Feeds: Reeder
- Discussions: Edmodo
- Microblogging: Twitter
- Blogging: WordPress
- Wikis: MediaWiki
- Telepresence: Google+ Hangouts

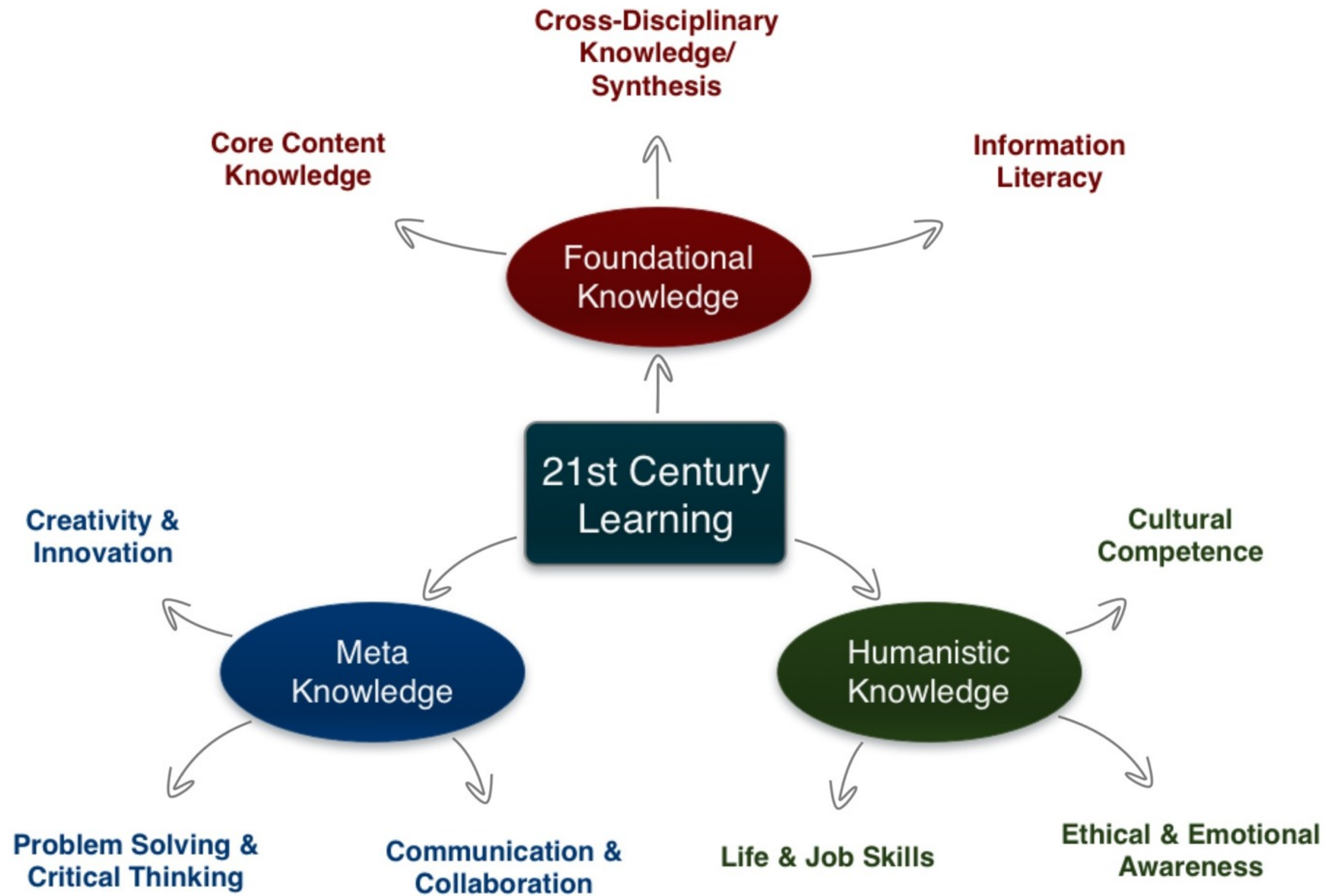














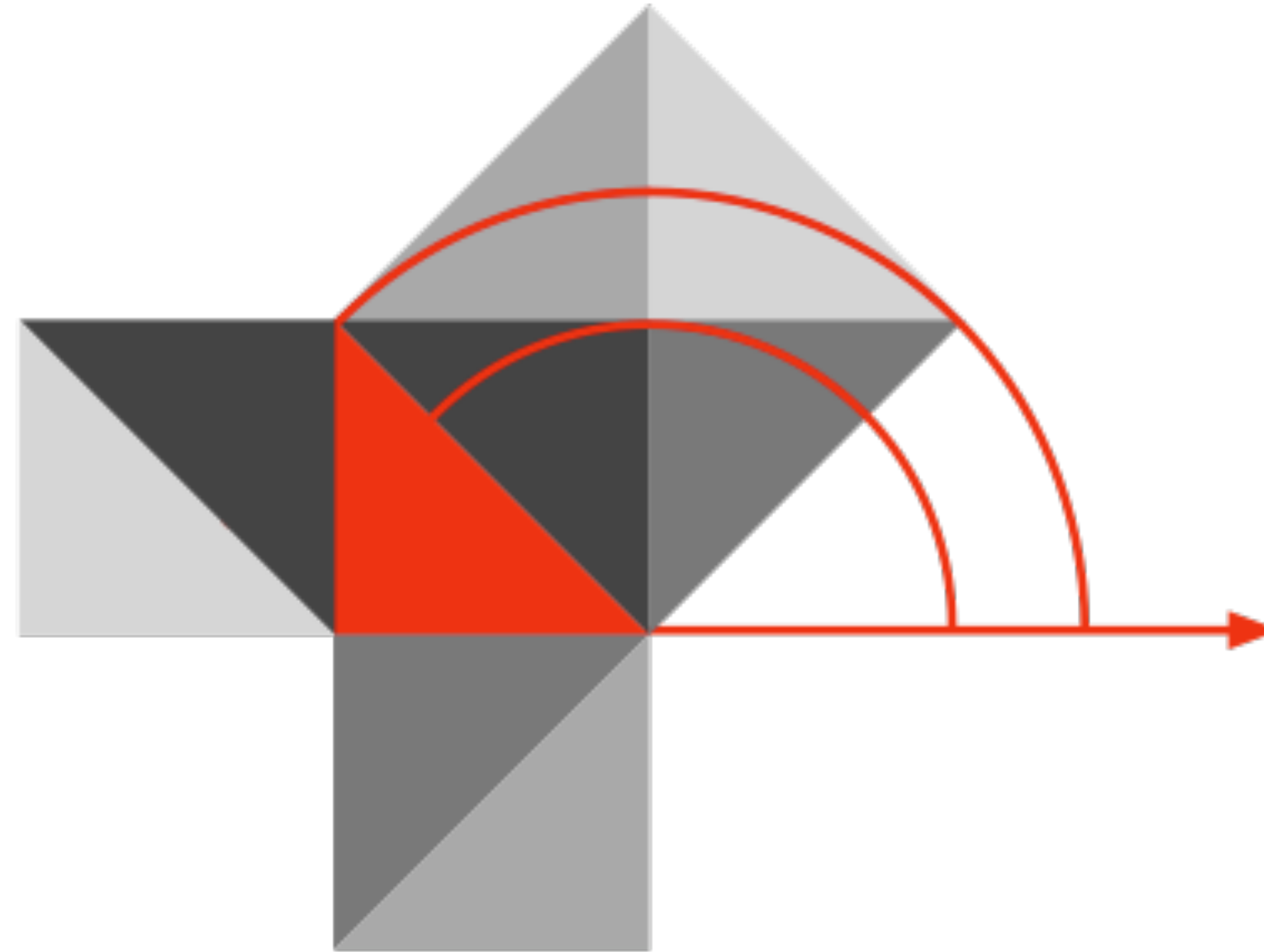
# Resources

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- 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](http://punya.educ.msu.edu/publications/21stCenturyKnowledge_PM_KK.pdf)
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- Ruben R. Puentedura, “Digital Storytelling: An Alternative Instructional Approach”. *2008 NMC Summer Conference Proceedings*. (2008) Online at: <http://www.nmc.org/pdf/2008-Puentedura.pdf>
- Ruben R. Puentedura, “The Infinite Canvas Reloaded: Digital Storytelling, Webcomics, and Web 2.0”. *2009 NMC Summer Conference Proceedings*. (2010) Online at: <http://wp.nmc.org/proceedings2009/papers/infinite-canvas/>

# Hippasus

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Twitter: @rubenrp

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