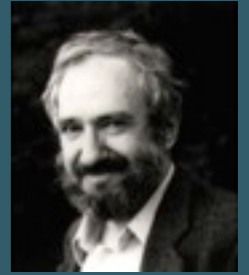


The SAMR Model: Six Exemplars

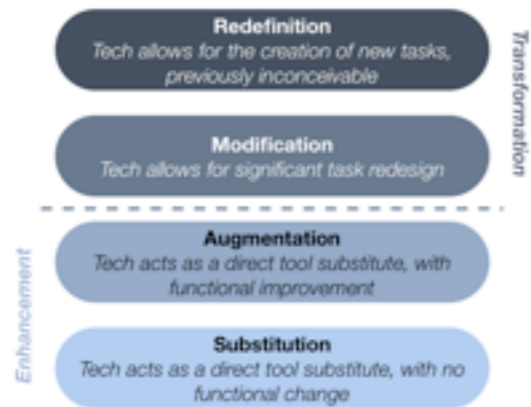
Ruben R. Puentedura, Ph.D.



Augmenting Human Intellect & Learning Capacity



21st Century Learning



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



One-to-One Technologies



Ubiquity



Intimacy



Embeddedness

Transformation

Redefinition

Tech allows for the creation of new tasks, previously inconceivable

Modification

Tech allows for significant task redesign

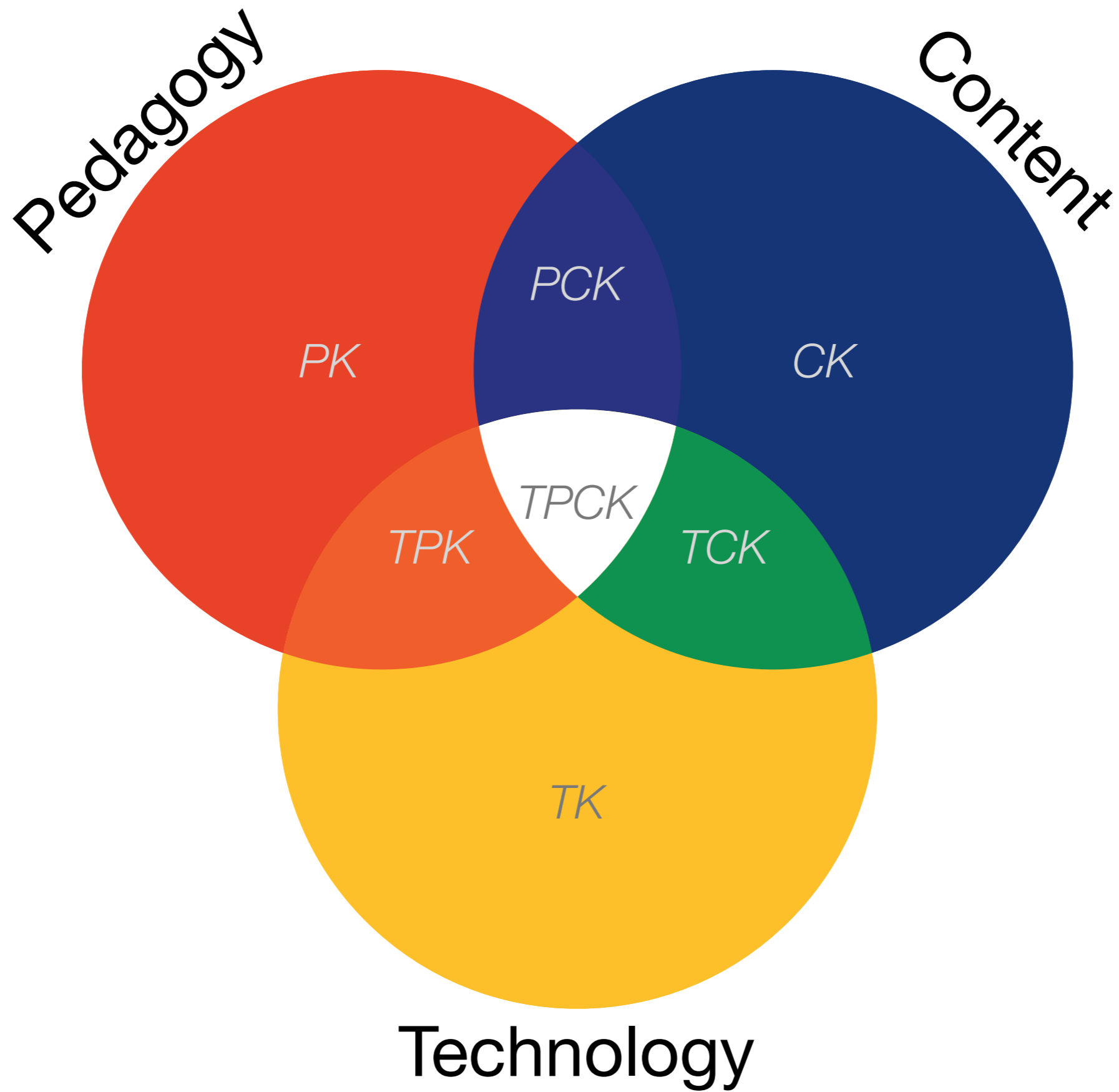
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Enhancement



Social

Mobility

Visualization

Storytelling

Gaming

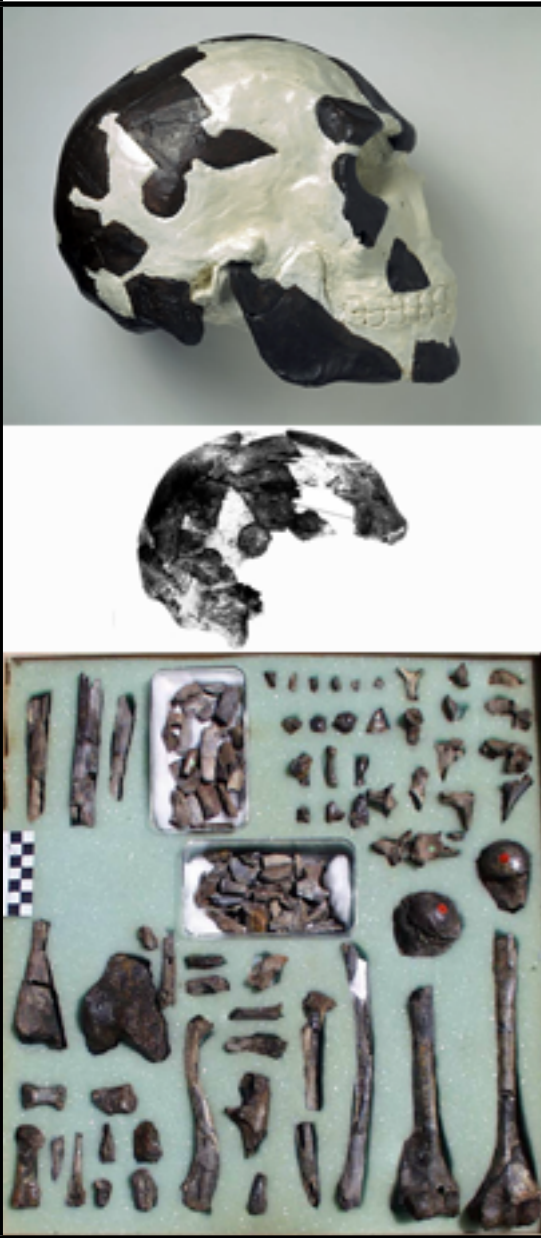
200,000
years

70,000
years

40,000
years

17,000
years

8,000
years



English

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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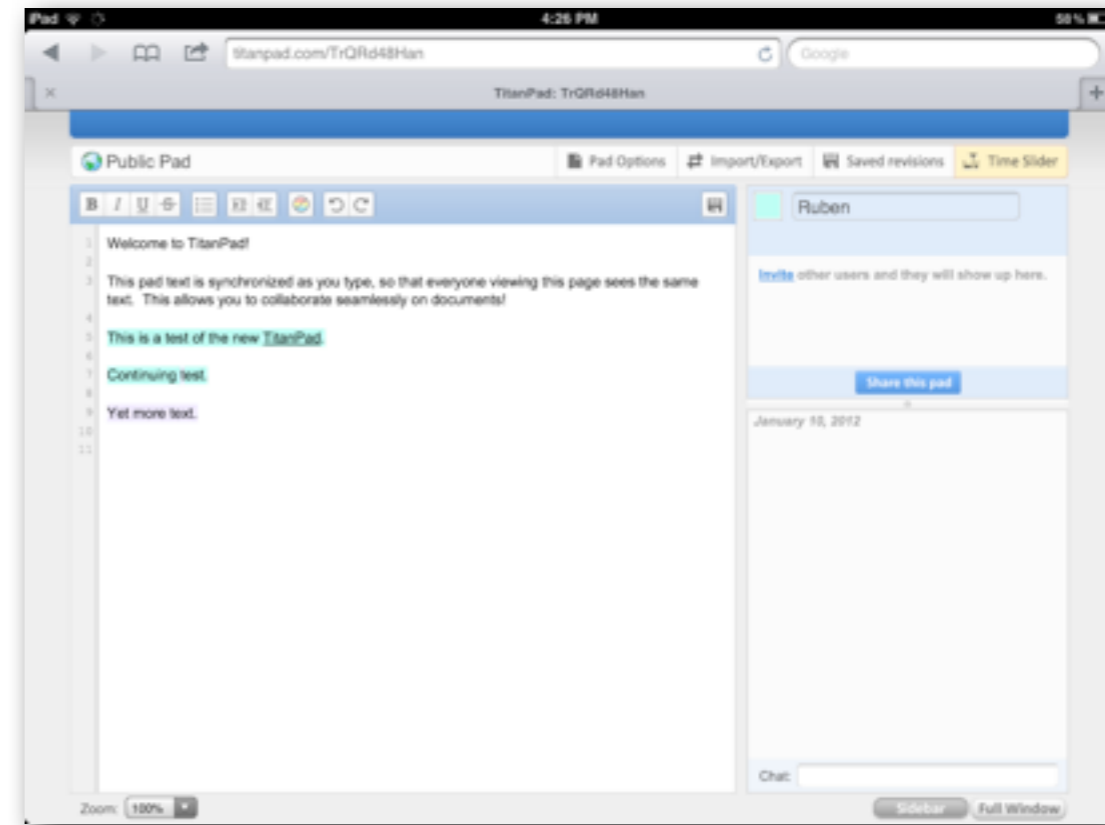
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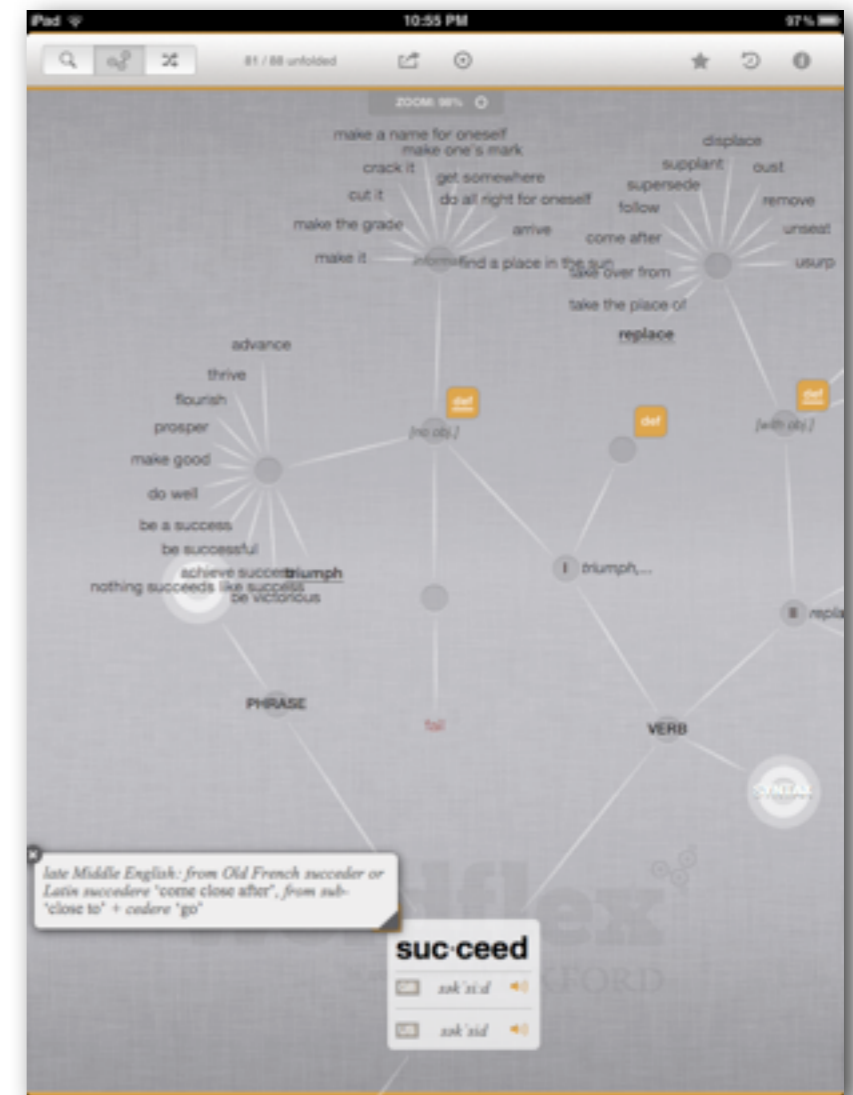
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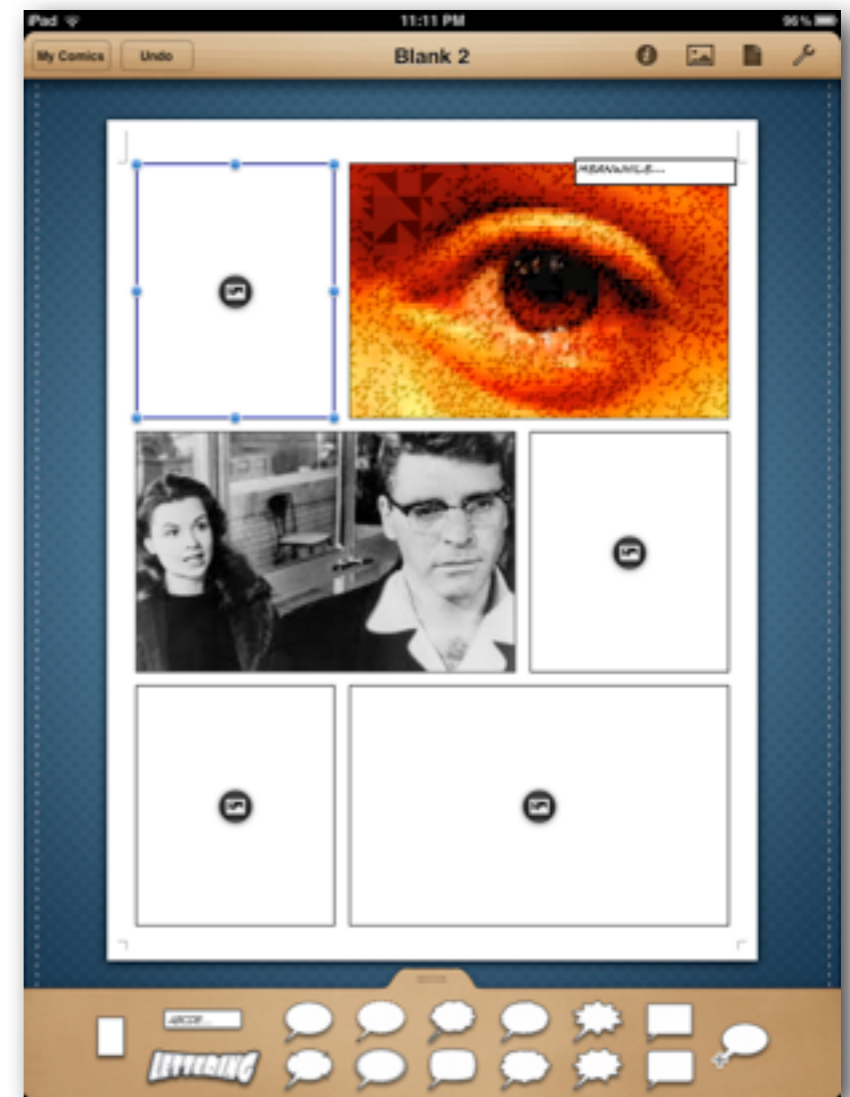
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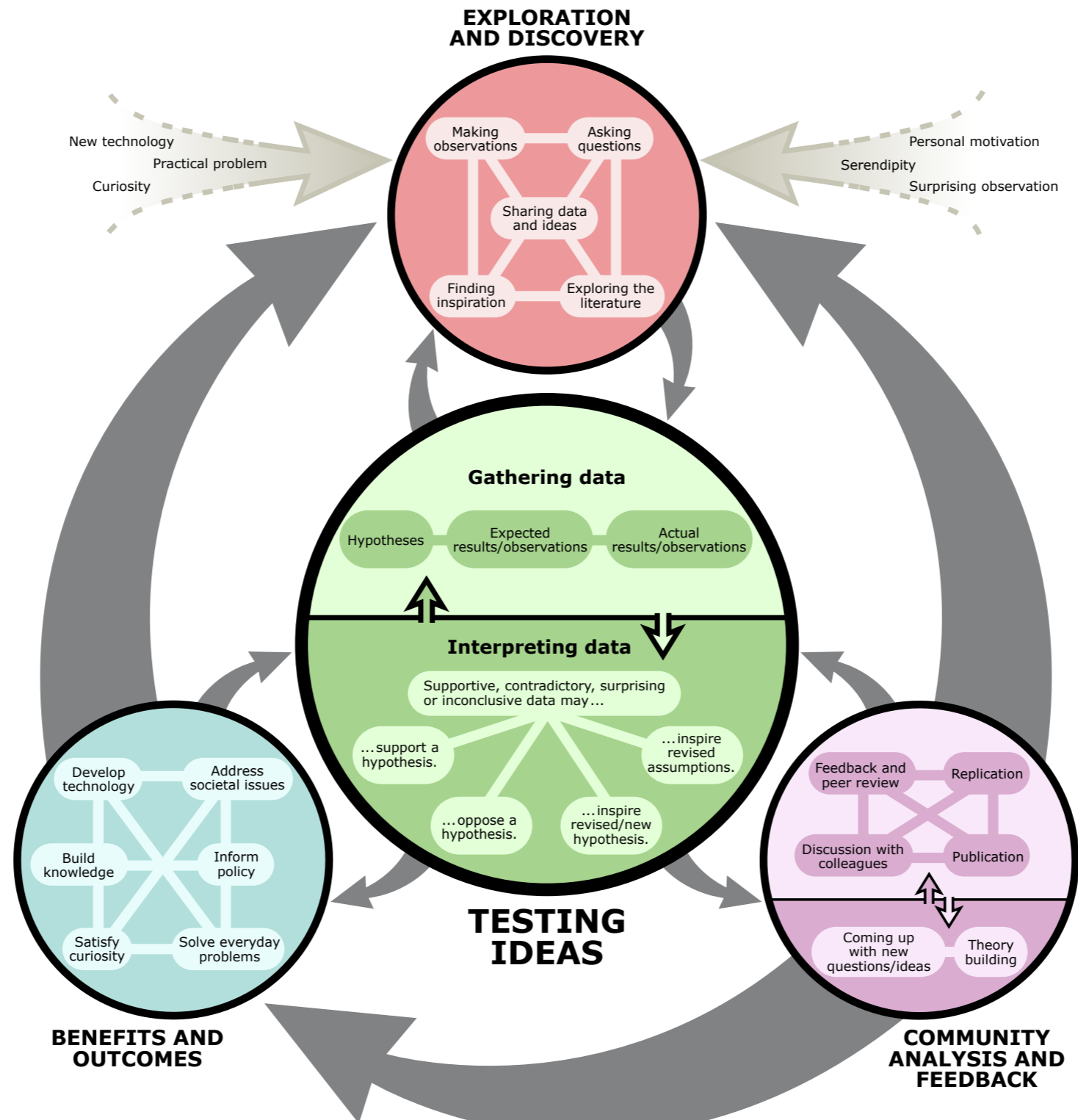
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Biology and Physics

Understanding Science: How Science Works



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The screenshot shows a mobile device interface with a Wikipedia article titled "Aquatic Biomes". The article text includes: "Aquatic biomes cover 75 percent of the surface of the Earth. The aquatic and terrestrial biomes are similar in some ways... 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 lumpen's 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." Below the text is a definition for "biome" and an "ORIGIN" section. A search bar with "Search Web" and "Search Wikipedia" buttons is visible. To the right, there is an interactive map titled "Worldwide Photosynthetic Activity" showing global photosynthesis levels by latitude and season. Below the map is a starfish image and text: "Some aquatic organisms are adapted to both conditions for parts of their lives, such as salmon and some eels, but it".

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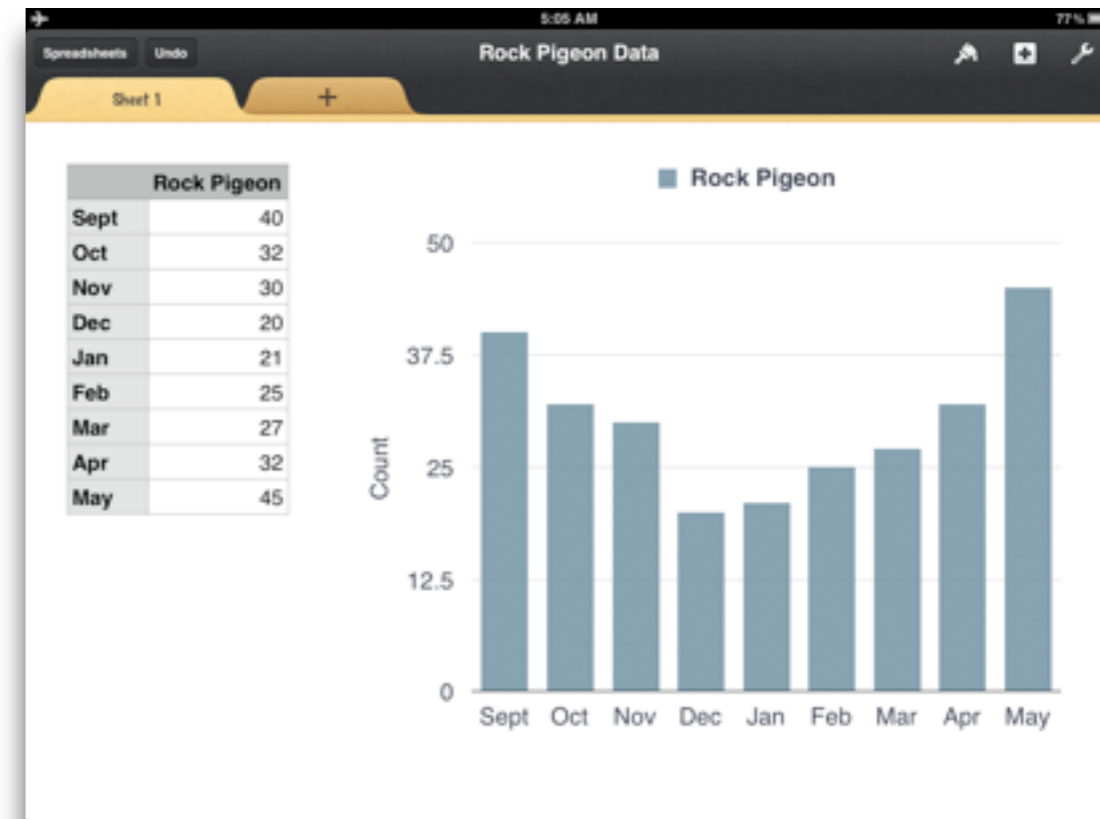
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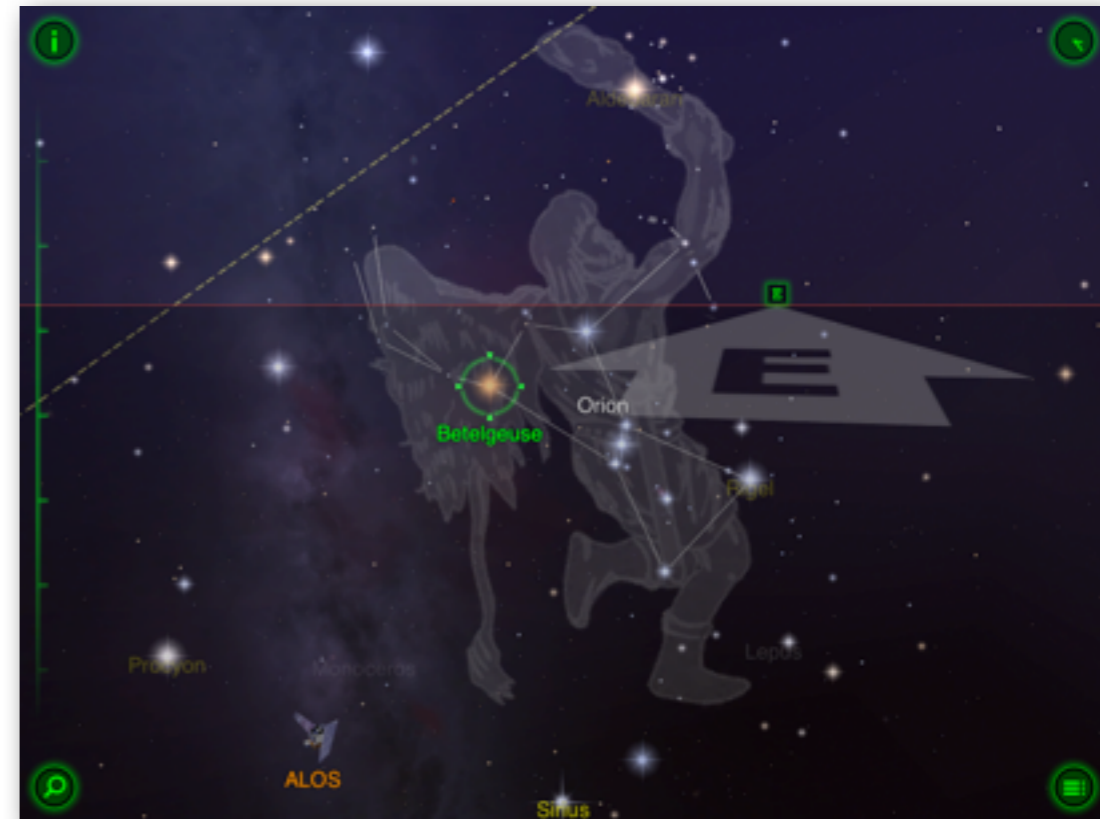
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The screenshot shows a mobile application interface for a physics course assistant. The title bar at the top reads "Wolfram PHYSICS I COURSE ASSISTANT". The main content area is titled "Gravitational Force" and includes a "Back" button. Below the title, there is a brief instruction: "Use Newton's law of universal gravitation to calculate the gravitational force between two point masses." The interface features three input fields: "Mass 1:" with a value of 5.9721986×10^{24} kg, "Mass 2:" with a value of 60 g, and "Distance:" with a value of 6367.5 km. A "Compute" button is located at the bottom of the input section. To the right, a "Result" panel displays the calculated gravitational force in three units: 589.8 mN (millinewtons), 0.1326 lbf (pounds-force), and 0.5898 N (newtons). Below the result, an "Equation" panel shows the formula $F = \frac{G m_1 m_2}{r^2}$ and a table defining the variables: F is gravitational force, m_1 is primary mass, m_2 is secondary mass, r is distance, and G is the Newtonian gravitational constant ($6.67 \times 10^{-11} \text{ m}^3/\text{kg s}^2$). The bottom of the screen shows "Powered by WolframAlpha" and a copyright notice for 2012.

Input information	
Newton's law of universal gravitation	
primary mass	5.9721986×10^{24} kg (kilograms)
secondary mass	60 grams
distance	6367.5 km (kilometers)

Result	
gravitational force	589.8 mN (millinewtons)
	0.1326 lbf (pounds-force)
	0.5898 N (newtons)

Equation	
$F = \frac{G m_1 m_2}{r^2}$	
F	gravitational force
m_1	primary mass
m_2	secondary mass
r	distance
G	Newtonian gravitational constant $(= 6.67 \times 10^{-11} \text{ m}^3/\text{kg s}^2)$

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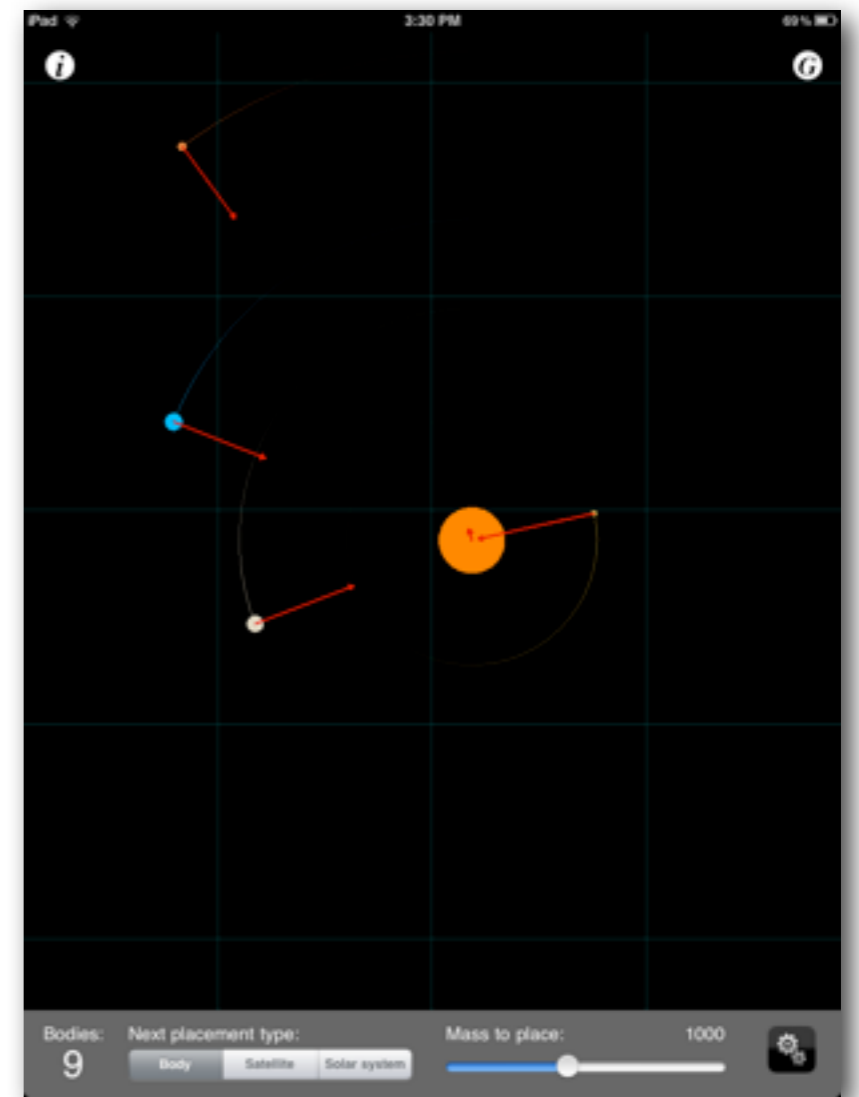
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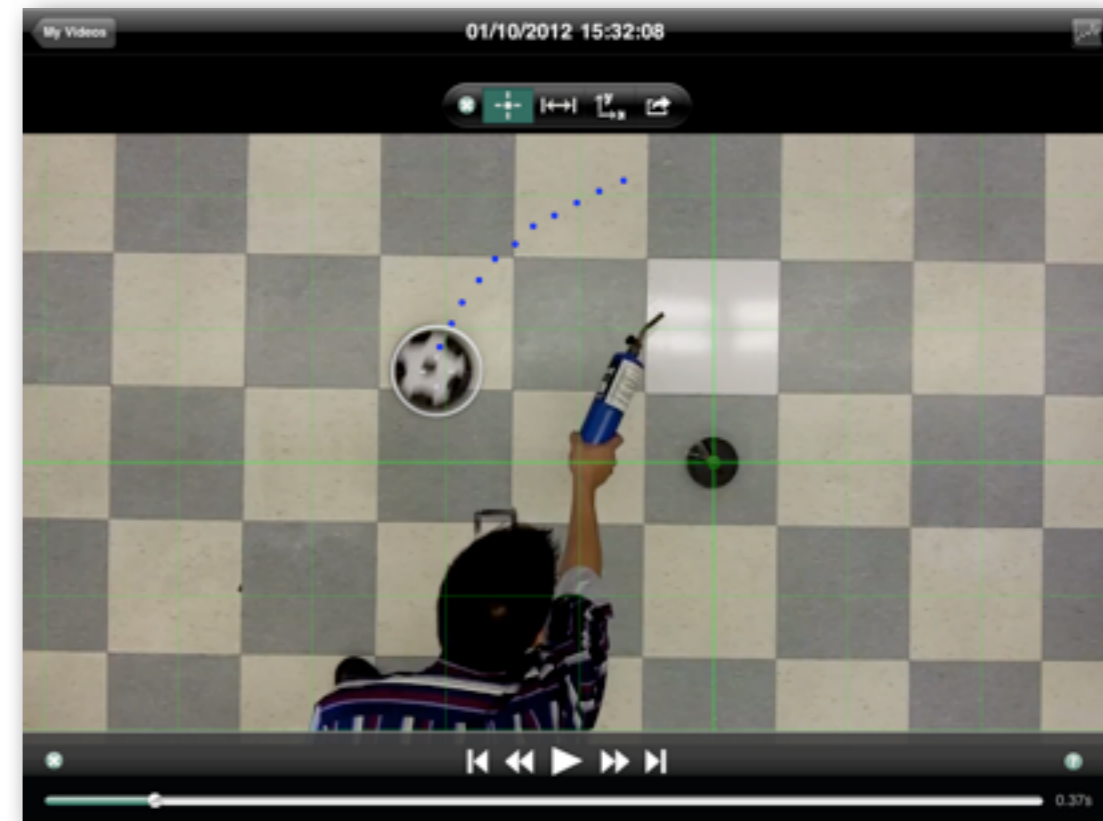
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Geography

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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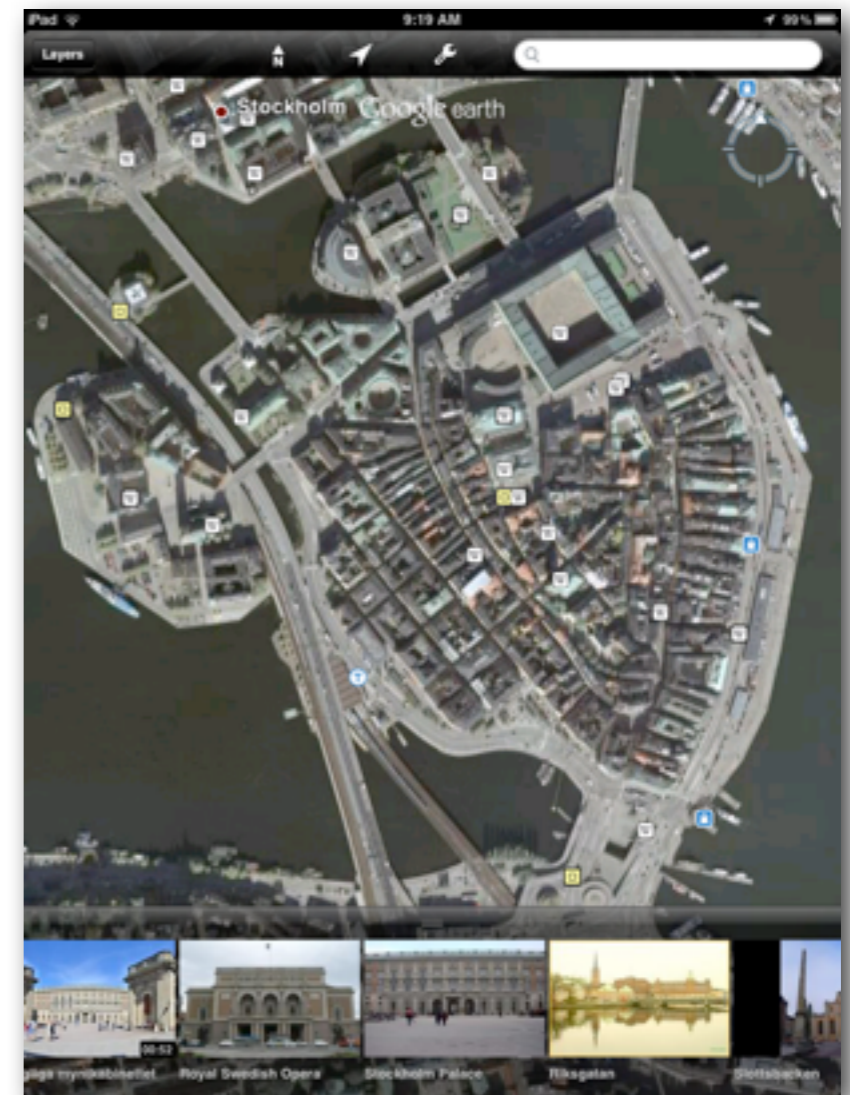
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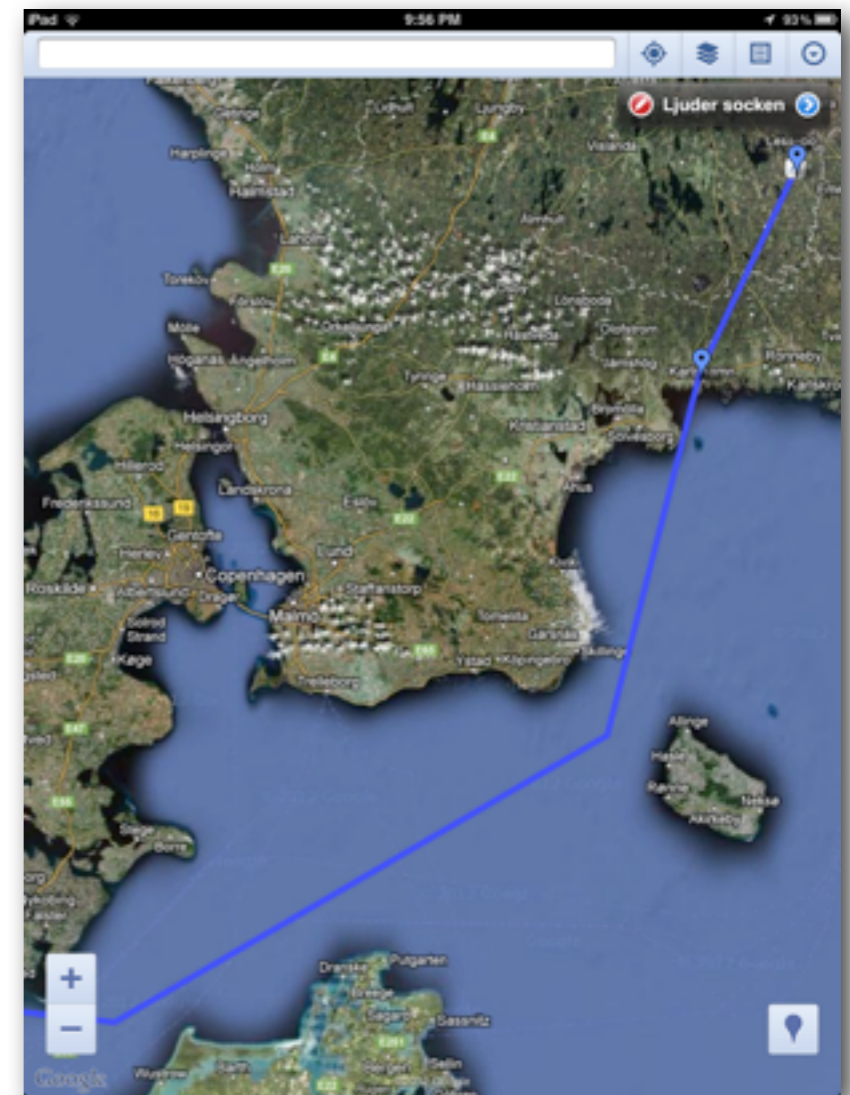
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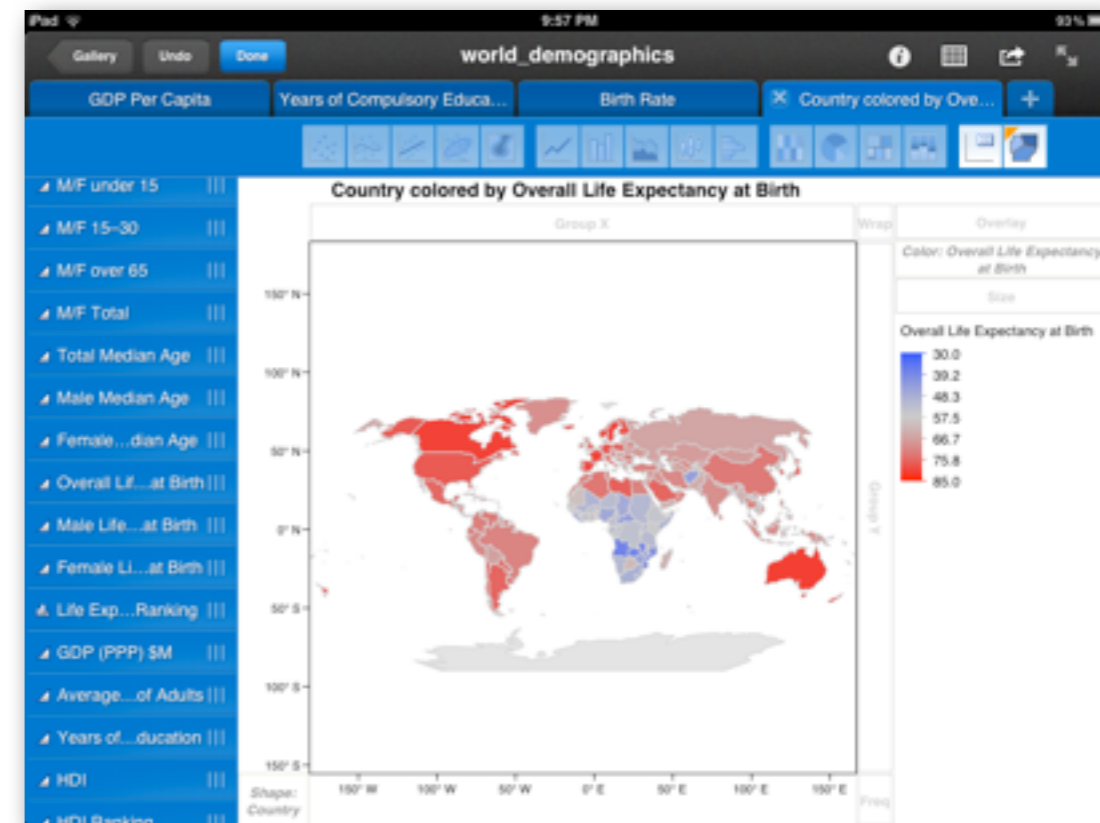
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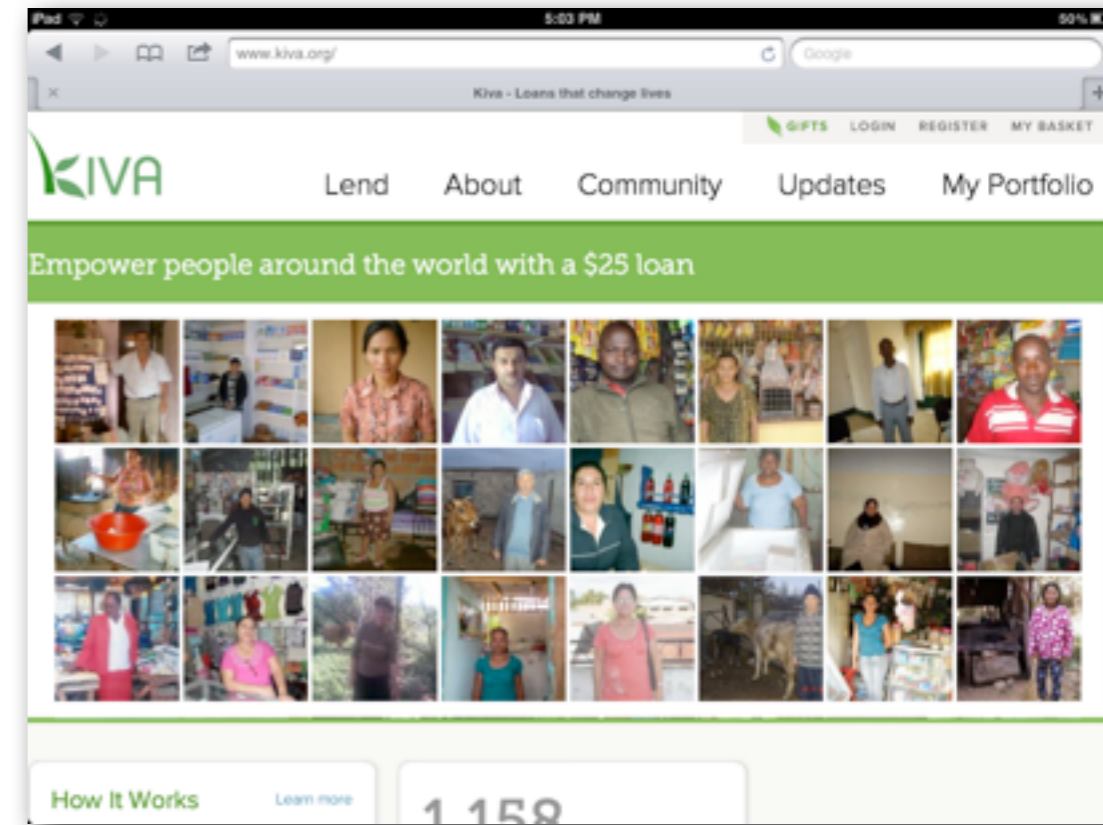
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Mathematics

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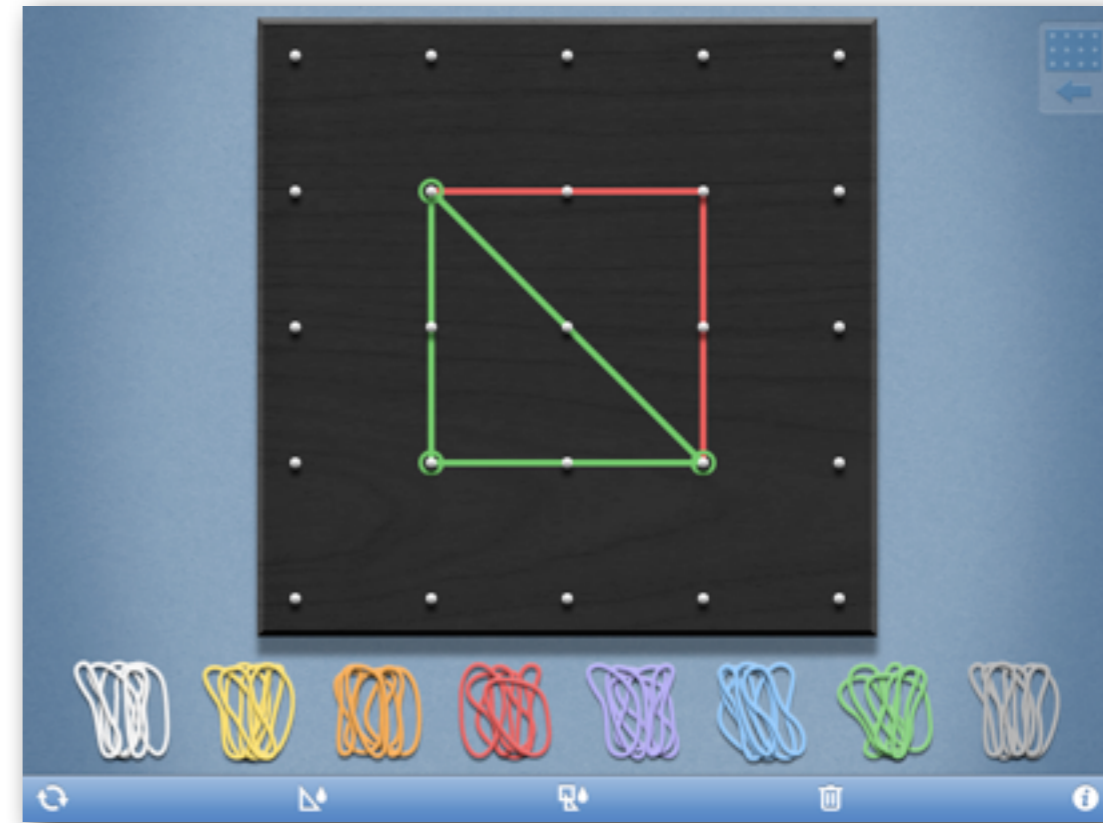
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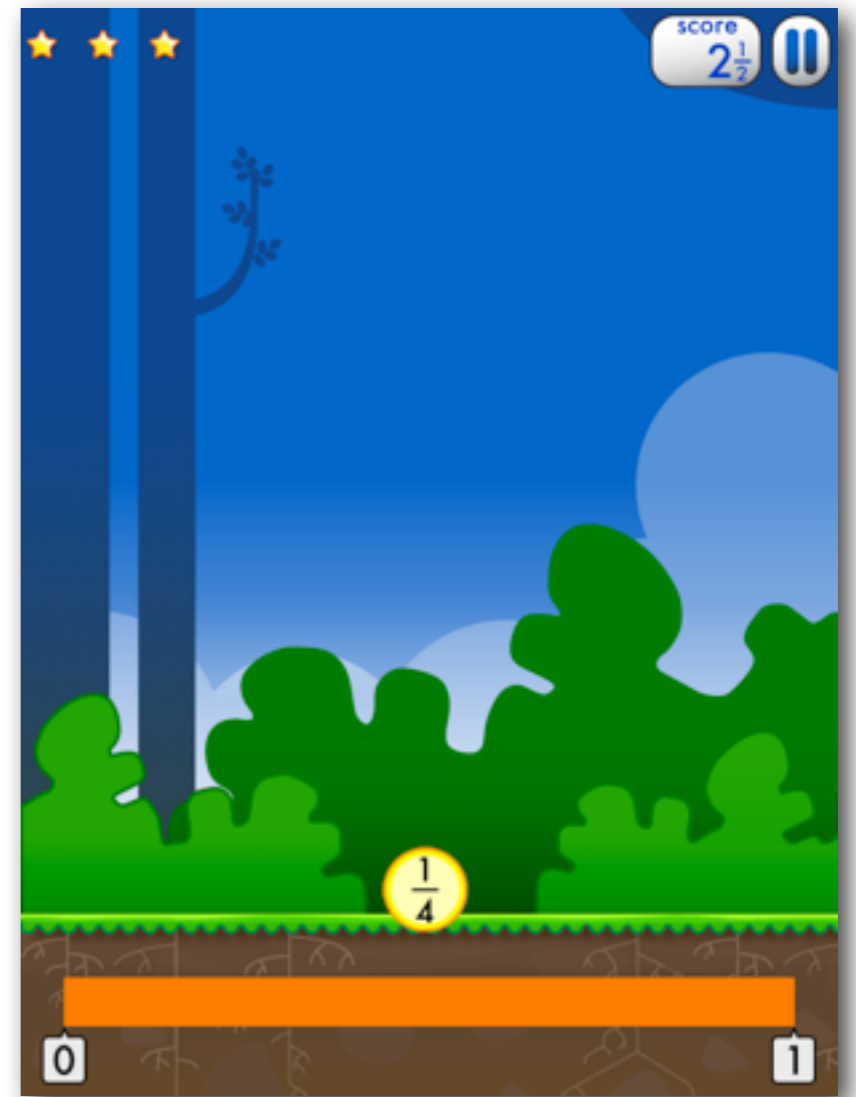
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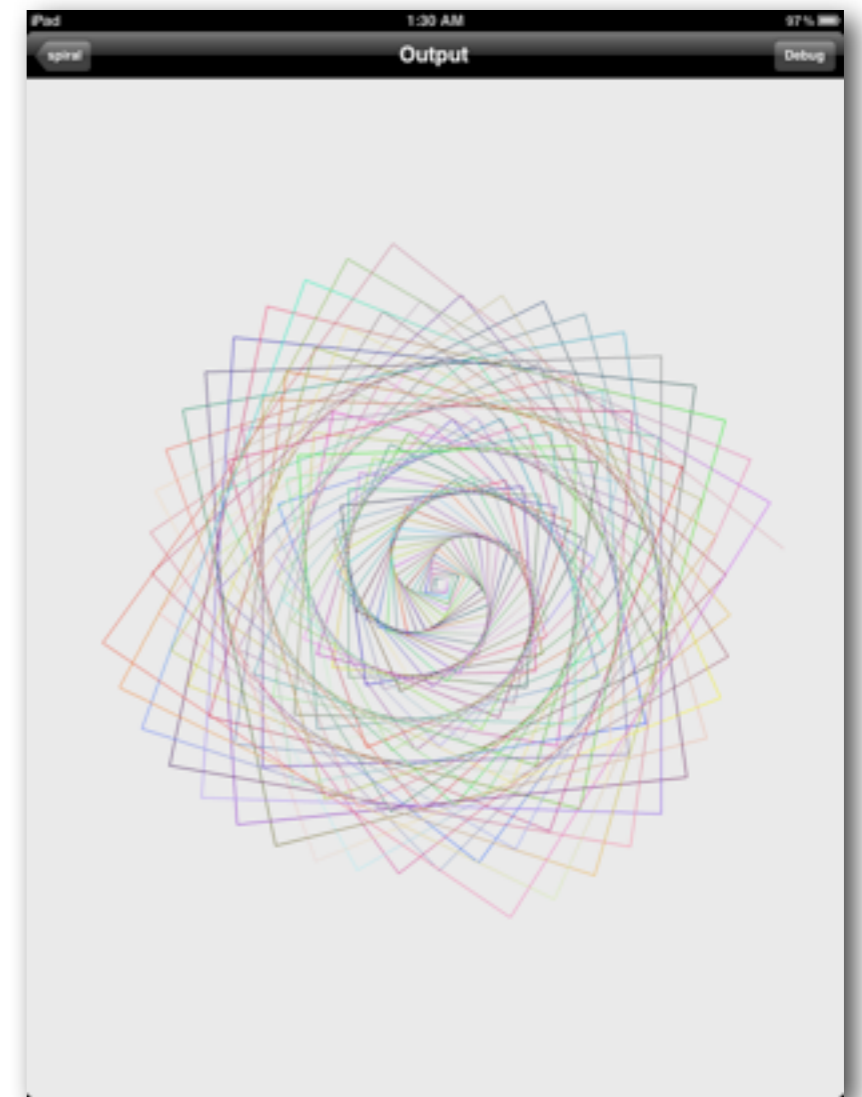
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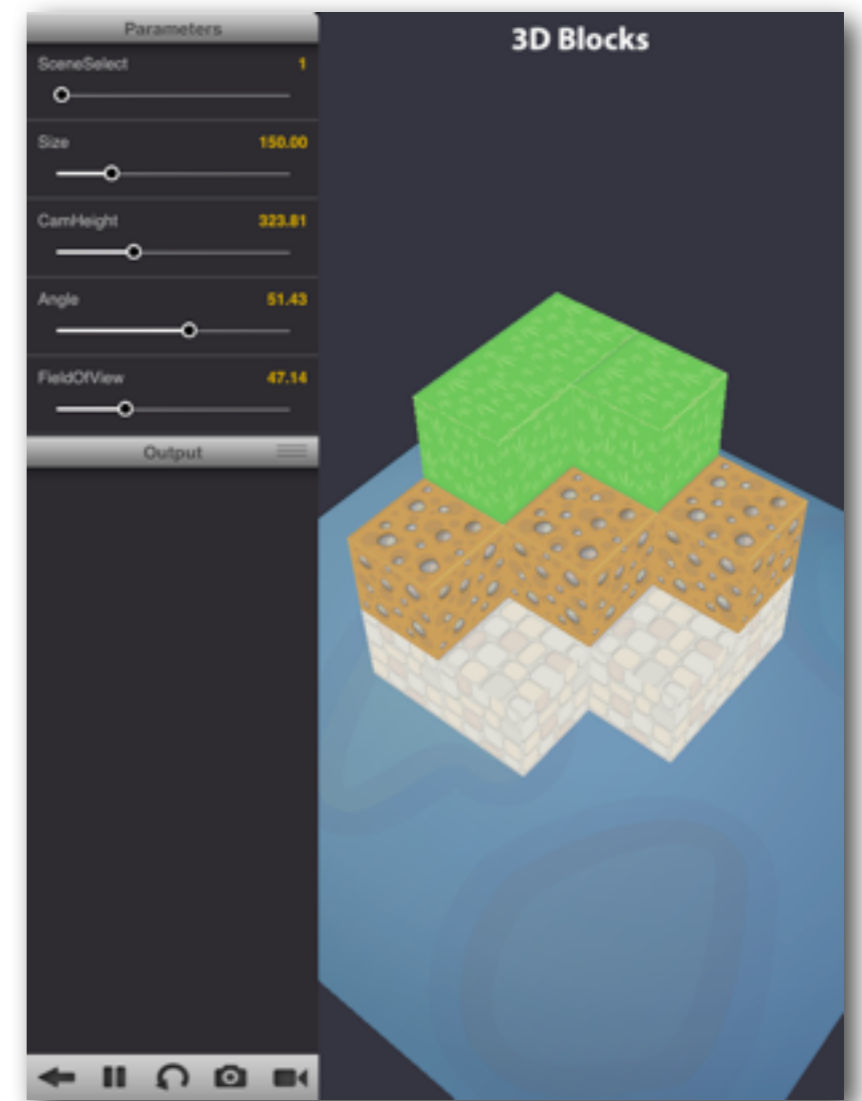
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Music

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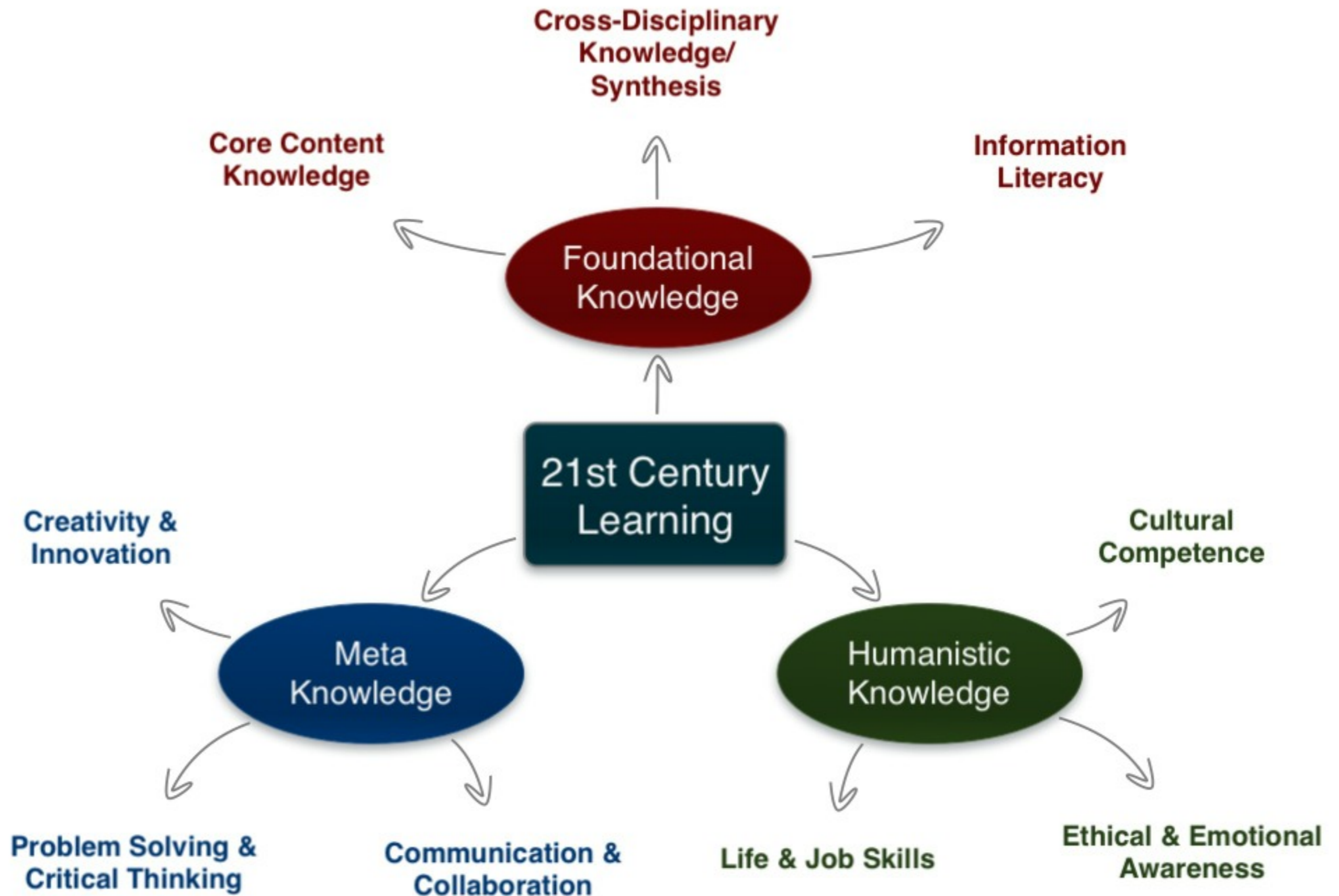
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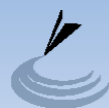
Focusing the Model





P21 Common Core Toolkit

A Guide to Aligning the Common Core State Standards
with the Framework for 21st Century Skills



PARTNERSHIP FOR
21ST CENTURY SKILLS

It is imperative that the **CCSS** be considered the “**floor**”—not the “**ceiling**”—when it comes to expectations for student performance in the 21st century.

The SAMR Ladder: Questions and Transitions

- **Substitution:**
 - What will I gain by replacing the older technology with the new technology?
- **Substitution to Augmentation:**
 - Have I added a feature to the task process that could not be done 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 depend upon the new technology?
 - How does this modification contribute to my design?
- **Modification to Redefinition:**
 - What is the new task?
 - Will it replace or supplement older tasks?
 - How is it uniquely made possible by the new technology?
 - How does it contribute to my design?

Class

Homework



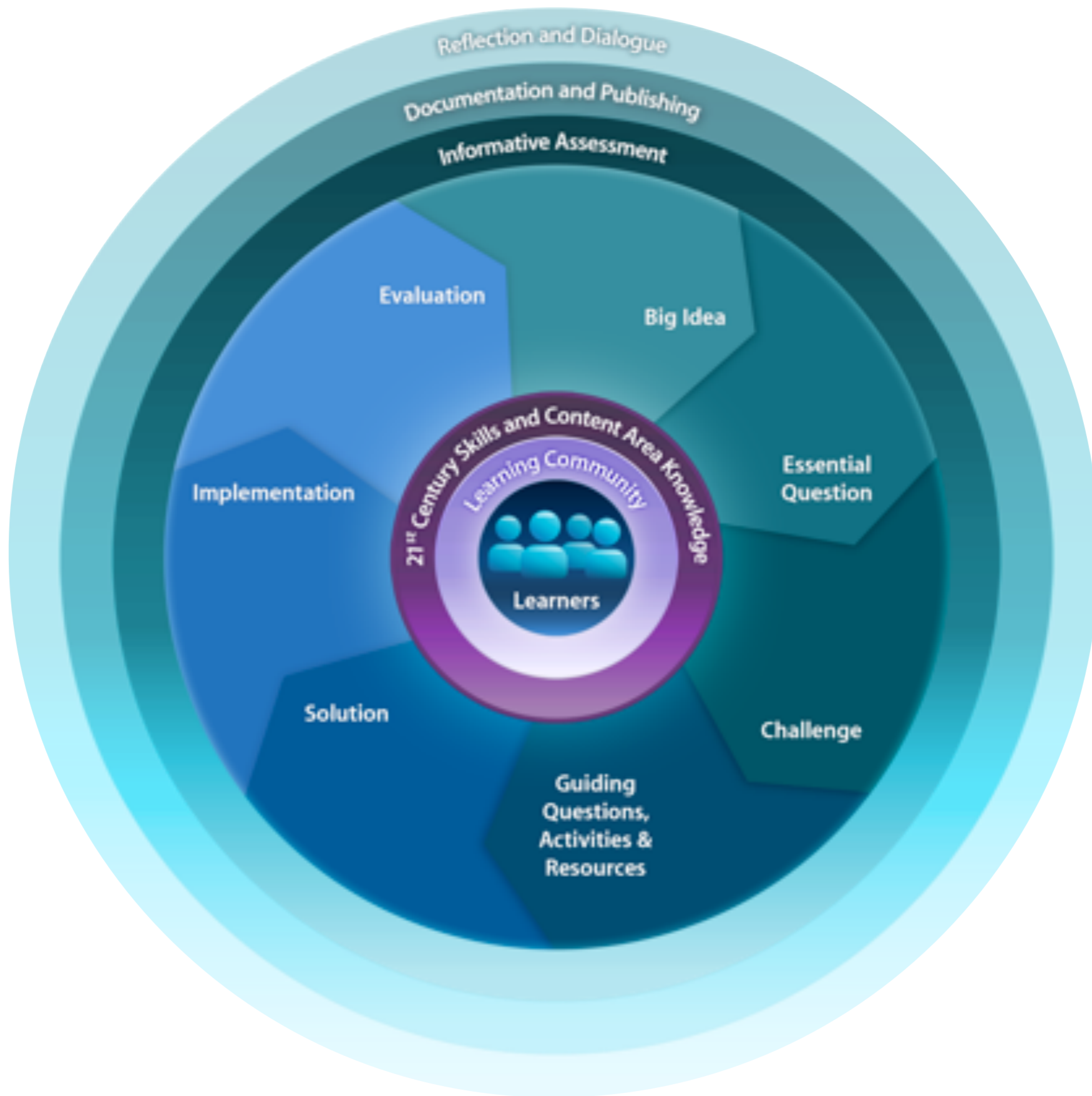
School

World

Home



Learning Environments



Reflection and Dialogue

Documentation and Publishing

Informative Assessment

Evaluation

Big Idea

Essential Question

Implementation

21st Century Skills and Content Area Knowledge

Learning Community



Learners

Challenge

Solution

Guiding Questions, Activities & Resources

The CBL Process

Collaborative Space

- How will the teams communicate?
- Where will resources be shared?

Introduction

- Why is this idea important to the students?
- Why is this idea important to the community?

Team Formation

- What makes up a productive design team?
- How do we capitalize on everyone's skills?

Assessment

- How will the process be assessed?
- How will the solution be assessed?

Guiding Questions

- What do we need to know in order to meet the challenge?

Guiding Activities

- What do we need to do to answer our guiding questions?
- What resources are needed?

Solution Development

- How do we meet the challenge?
- Is the solution justified?

Implement and Assess

- How can the solution be tested?
- Did the solution work?

Document/Reflect

- What did we learn?
- What would we do differently?

Publish

- How do we share our results?
- What is the story behind the solution?

Additional Resources

Resources

Background:

- Vannevar Bush, “As We May Think”. *The Atlantic Monthly*. (July 1945) Online at: <http://www.theatlantic.com/magazine/archive/1969/12/as-we-may-think/3881/>
- Douglas C. Engelbart, *A Research Center for Augmenting Human Intellect*. (December 1968 live demo) Archived online at: <http://sloan.stanford.edu/mousesite/1968Demo.html>
- Alan Kay, “A Personal Computer for Children of All Ages”. *Proceedings of the ACM National Conference*. Boston (August 1972) Online at: <http://www.mprove.de/diplom/gui/Kay72a.pdf>
- Seymour Papert, “On Making a Theorem for a Child”. *Proceedings of the ACM National Conference*. Boston (August 1972) Online at: <http://portal.acm.org/citation.cfm?id=569942>

SAMR and TPCK:

- 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>
- *TPCK - Technological Pedagogical Content Knowledge*. (2008-2010) Online at: http://www.tpck.org/tpck/index.php?title=Main_Page
- AACTE (Eds.) *The Handbook of Technological Pedagogical Content Knowledge for Educators*. New York:Routledge, 2008.

Resources – Part II

Defining Mobile Devices/The Lively Sketchbook

- Ruben R. Puentedura, “Drawing On The Lively Sketchbook”. *Connect@NMC Talks*. (2010) Online at: <http://www.nmc.org/connect/2010/april/16>
- Ruben R. Puentedura, “The Lively Sketchbook”. (2010) Online at: http://www.hippasus.com/rrpweblog/archives/2010_01.html

The Curiosity Amplifier

- John Seely Brown. “A New Culture of Learning”. NMC Summer Conference, Closing Keynote. (2010) Online at: <http://www.nmc.org/2010-summer-conference/jsb-keynote-video>

Technology In Education: The First 200,000 Years

- Ruben R. Puentedura. “Technology In Education: The First 200,000 Years”. NMC Summer Conference, *Ideas that Matter* Presentation. (2012) Online at: <http://www.hippasus.com/rrpweblog/archives/000069.html>

Photo Credits

- *iPad in Subway*: Takashi M
- *YouTube + iPad + Hanalei = Happiness*: Wayan Vota
- *Parcours-jeu multimedia : Les métiers du musée*: Jean-Pierre Dalbéra

Hippasus



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Email: rubenrp@hippasus.com

Twitter: @rubenrp

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