

Building Transformation: Frameworks and Practices

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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

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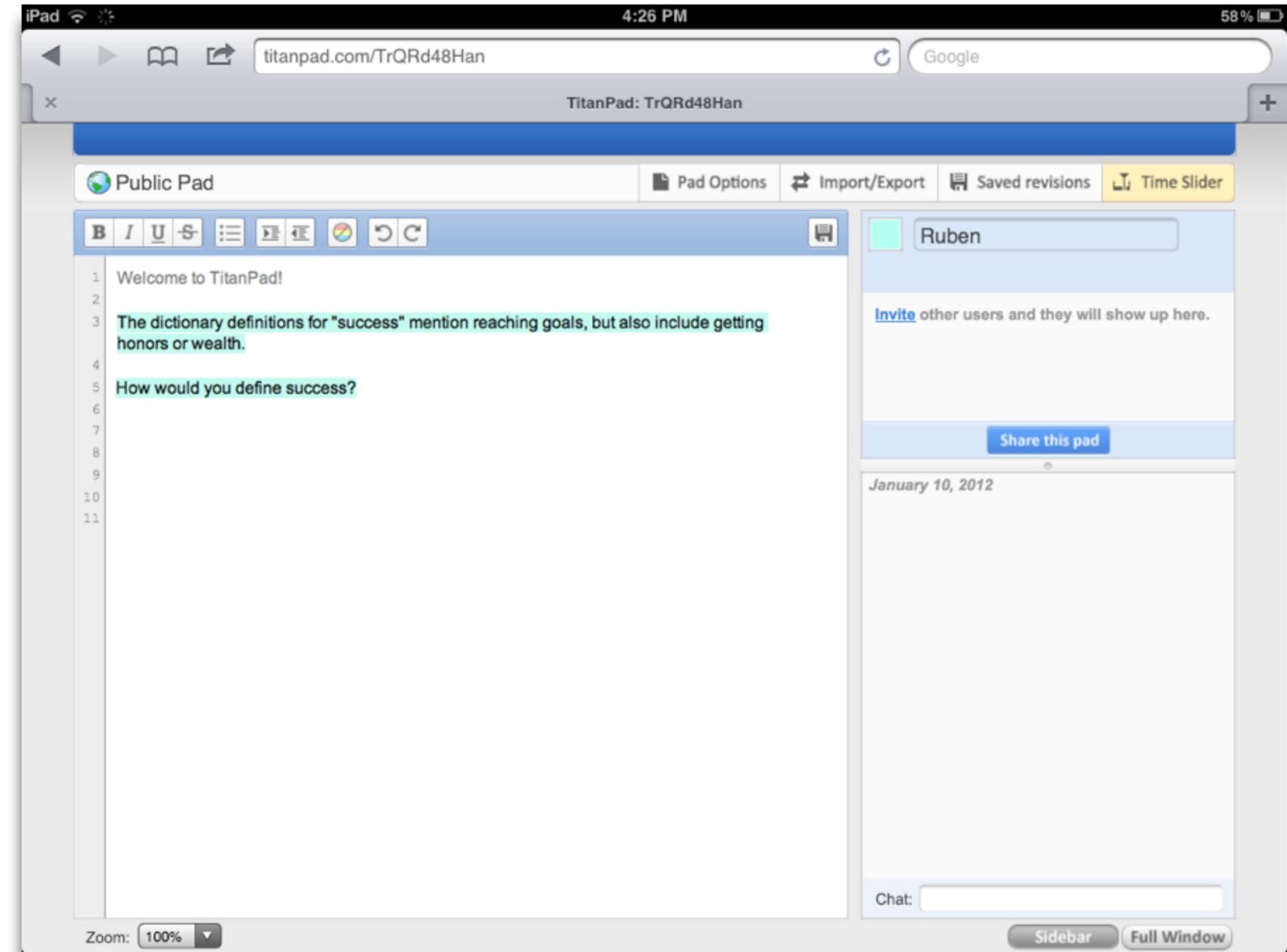
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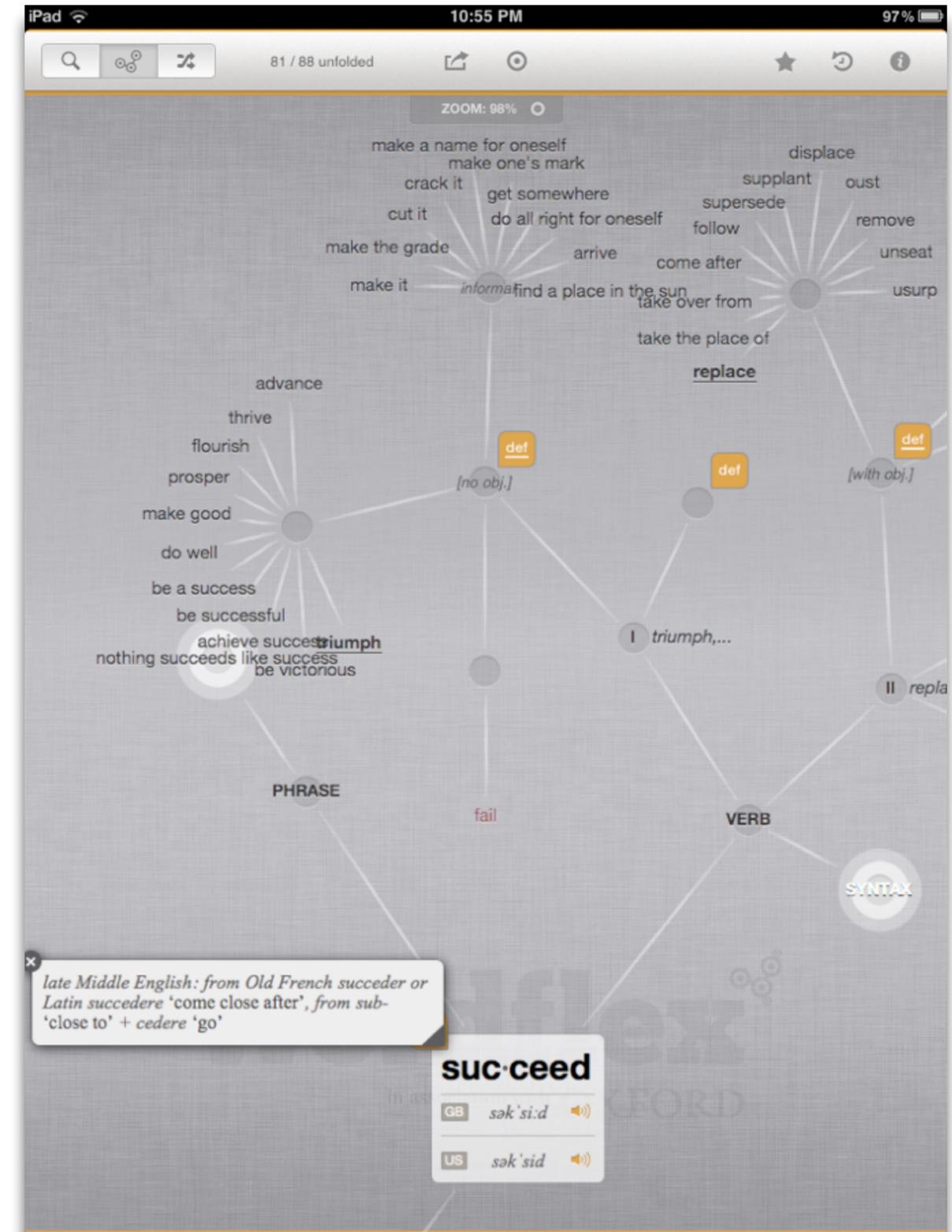
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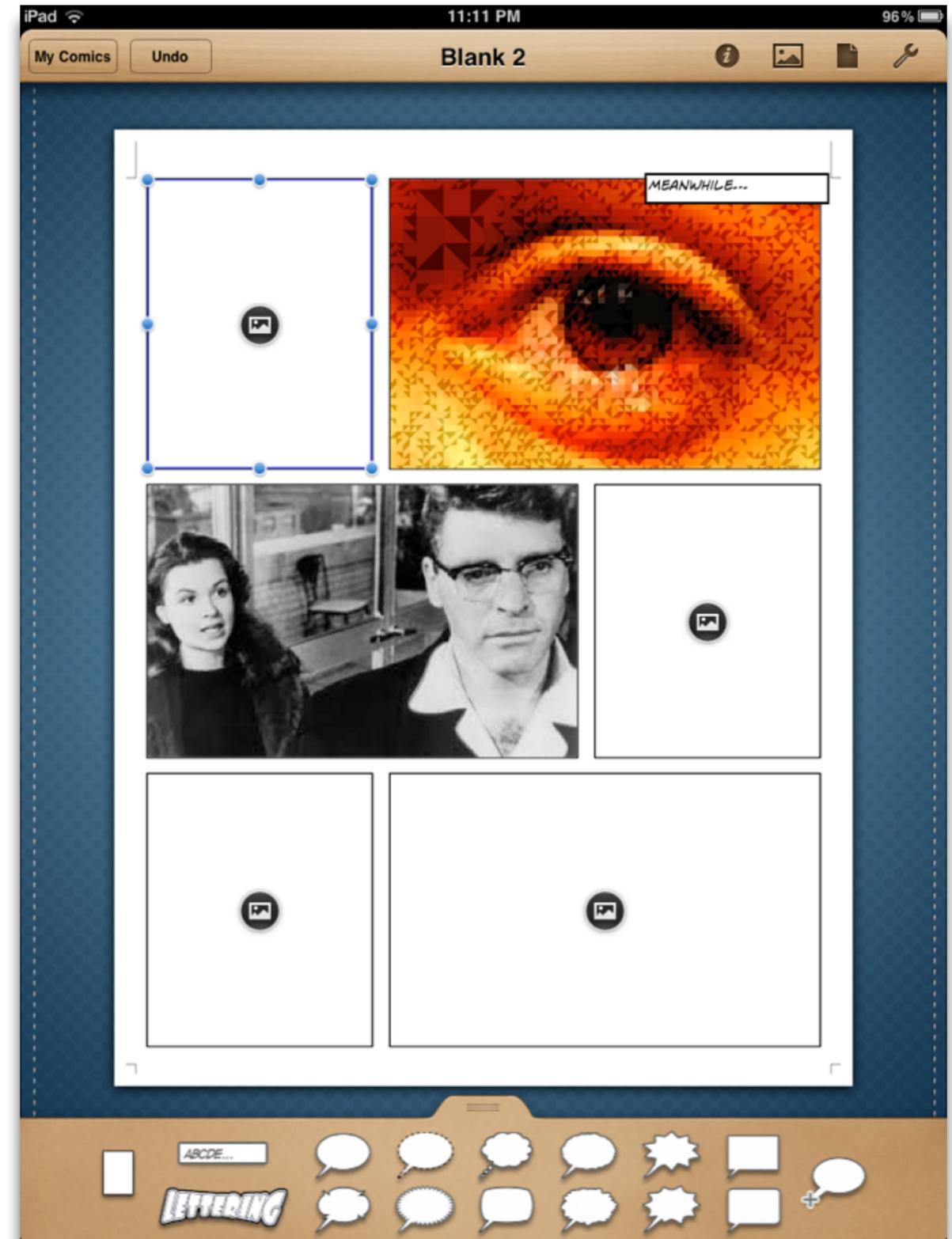
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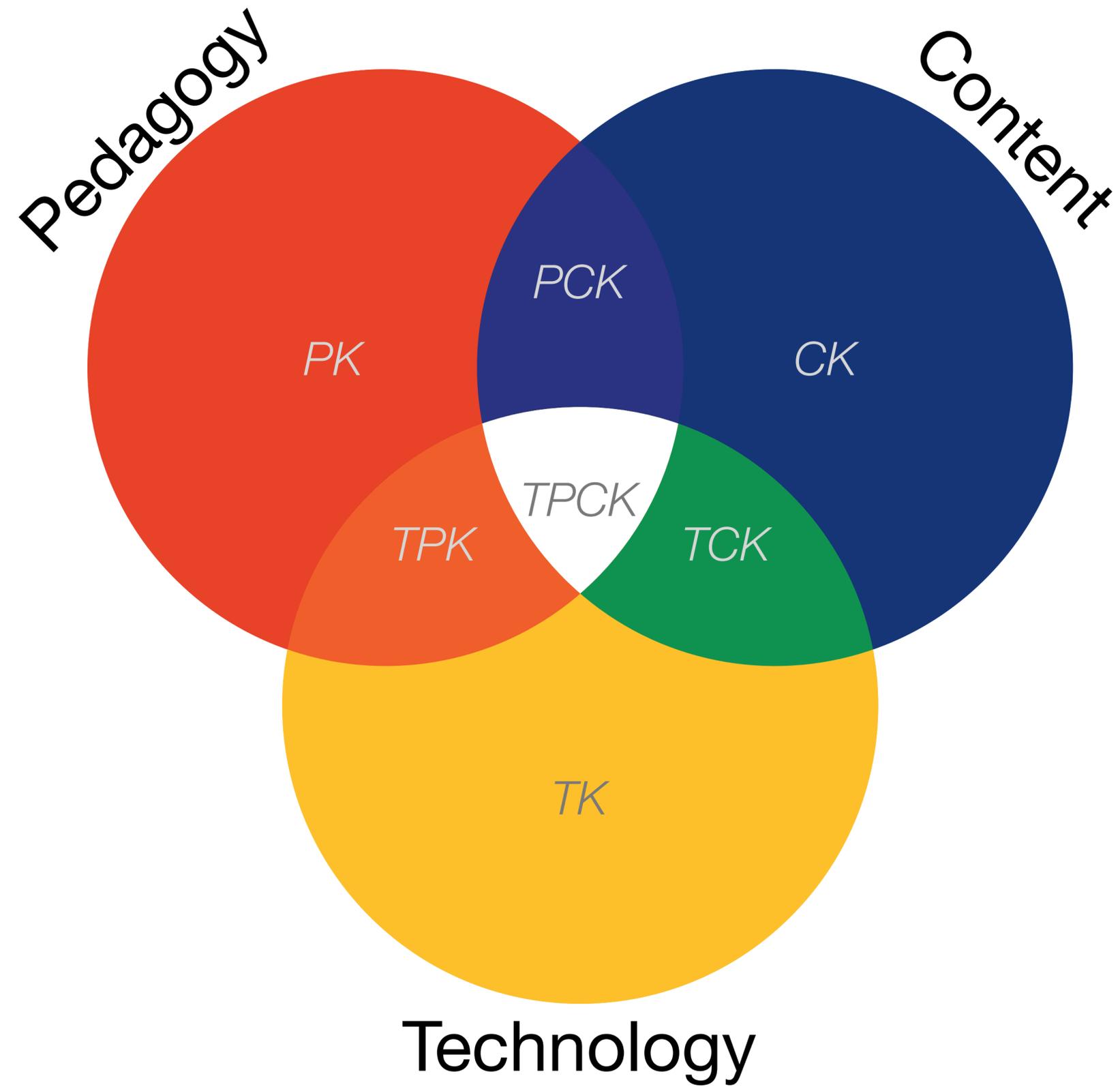
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Study	SAMR Level	Description	Effect Size
Ligas (2002)	S	CAI system used to support direct instruction approach for at-risk students.	0.029
Xin & Reith (2001)	A	Multimedia resources provided to contextualize learning of word meanings and concepts.	0.264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

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>





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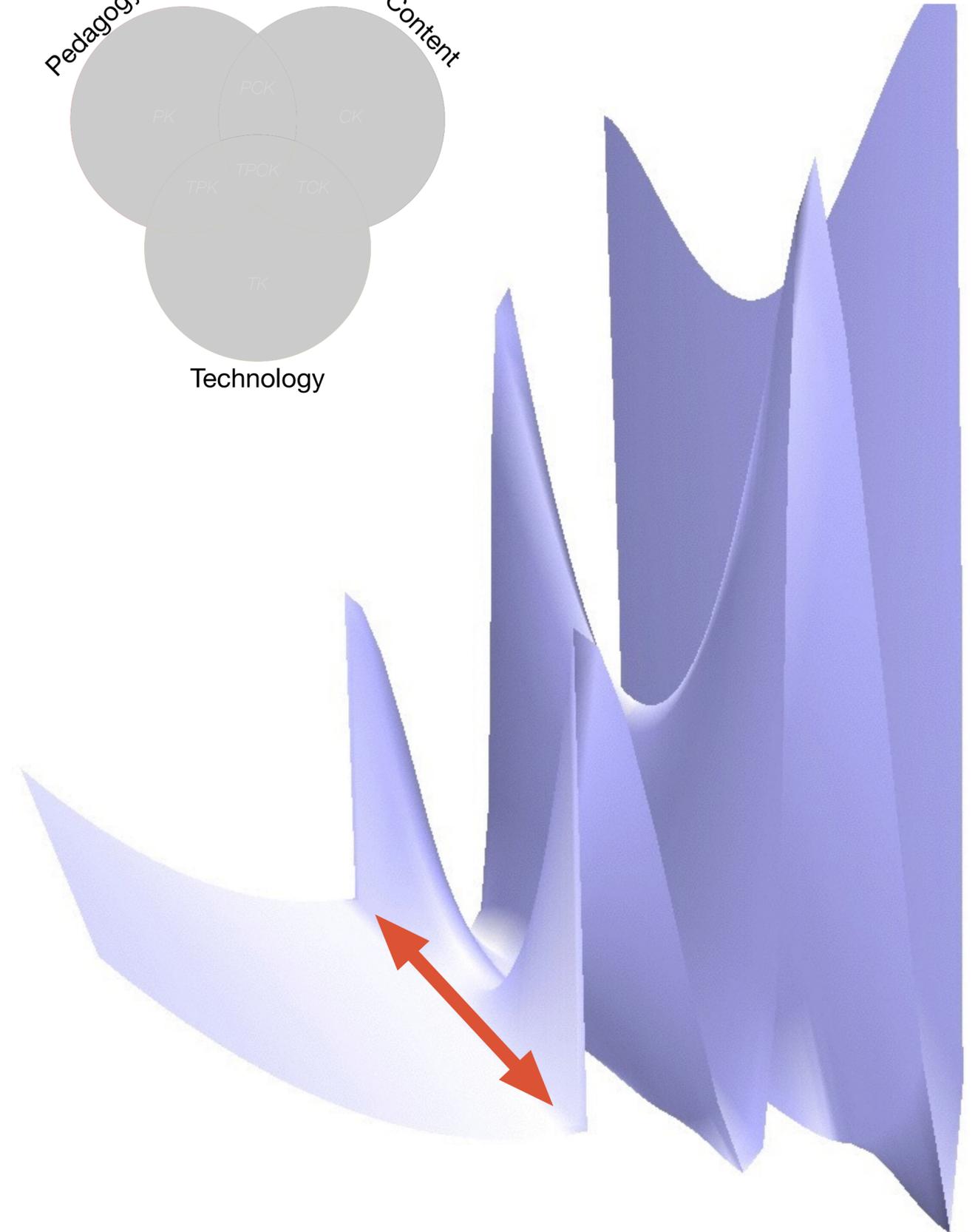
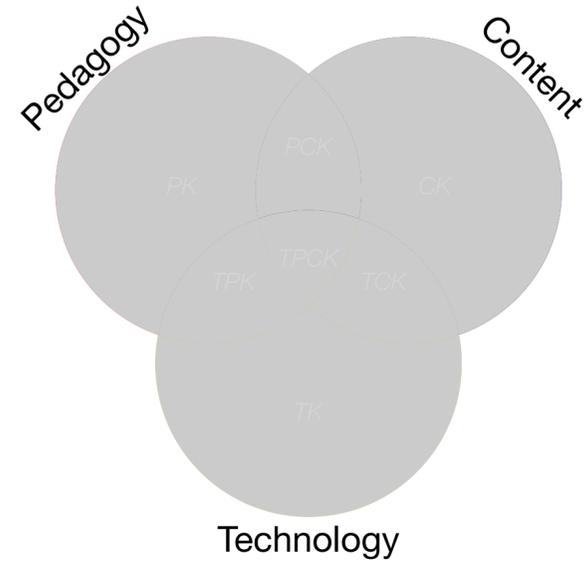
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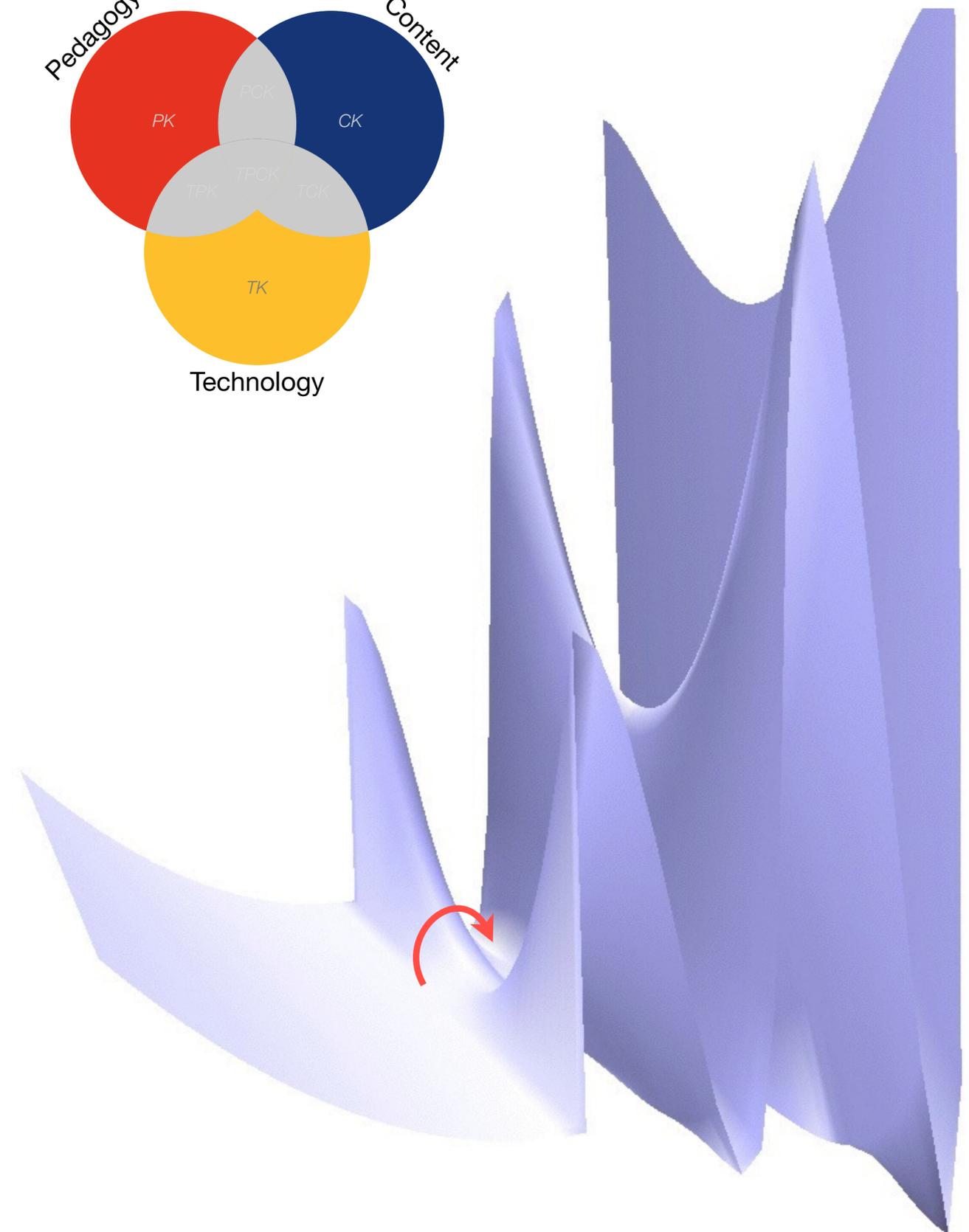
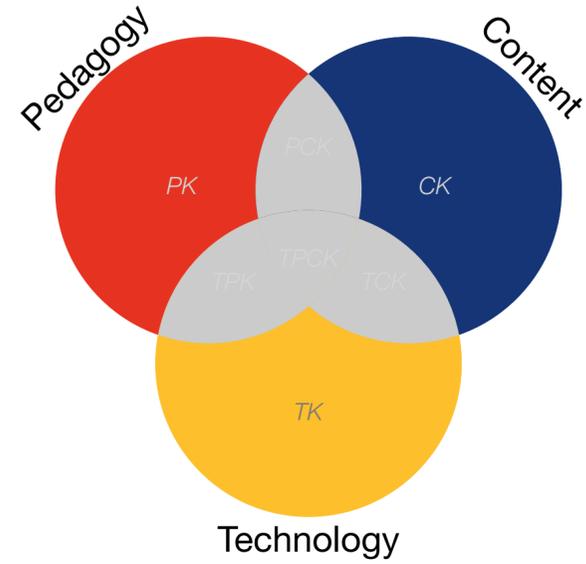
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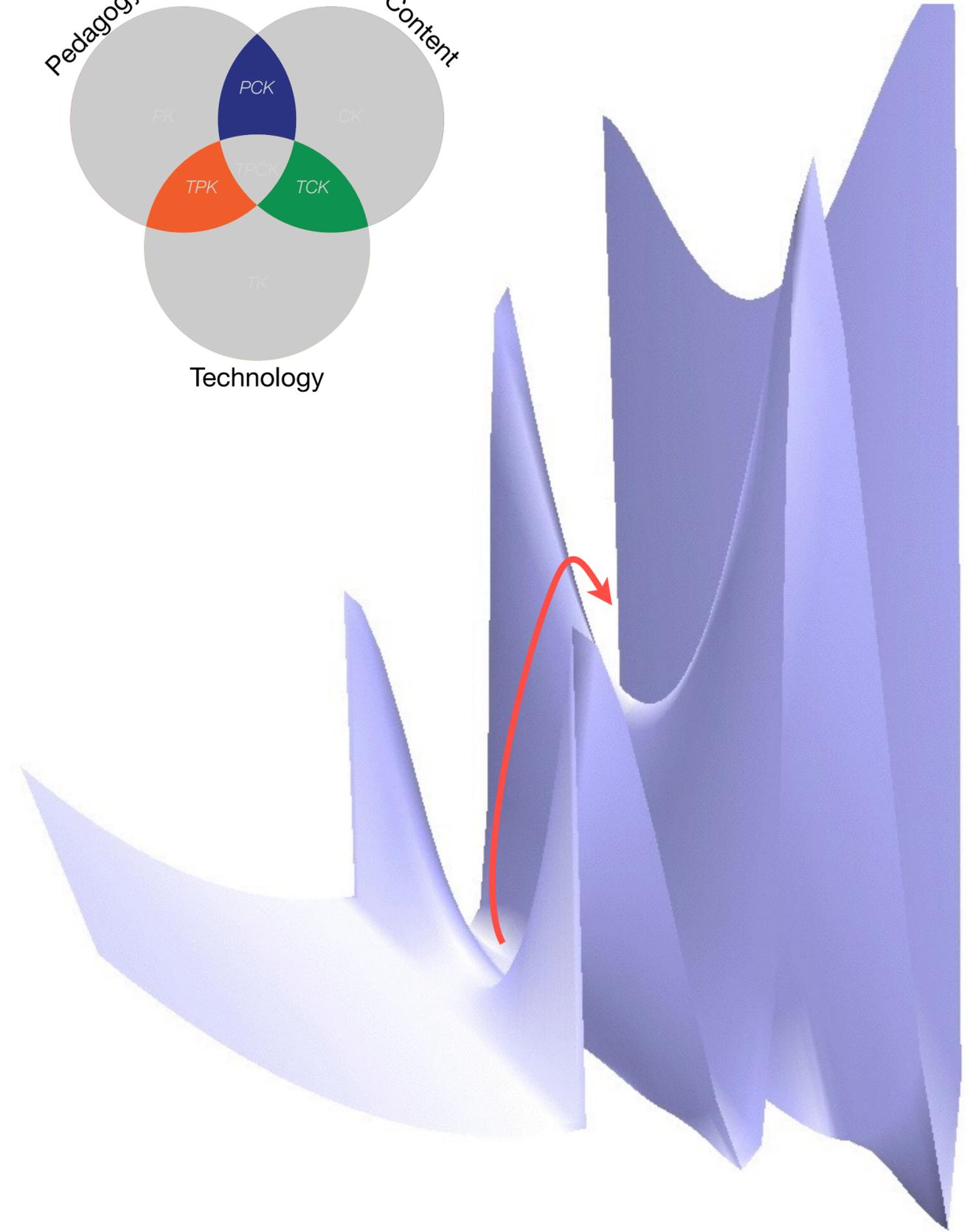
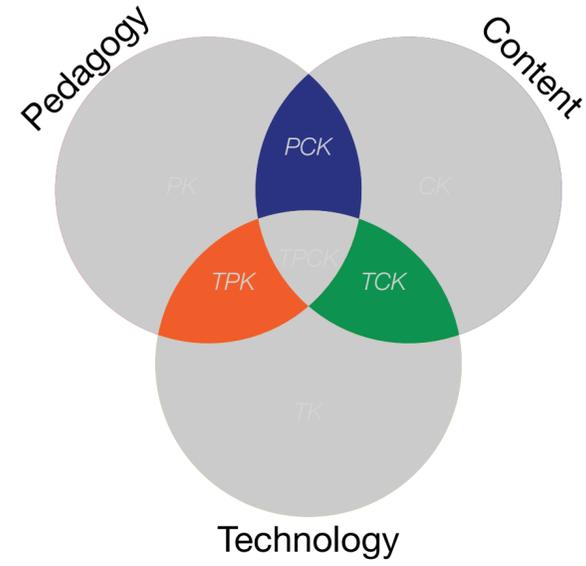
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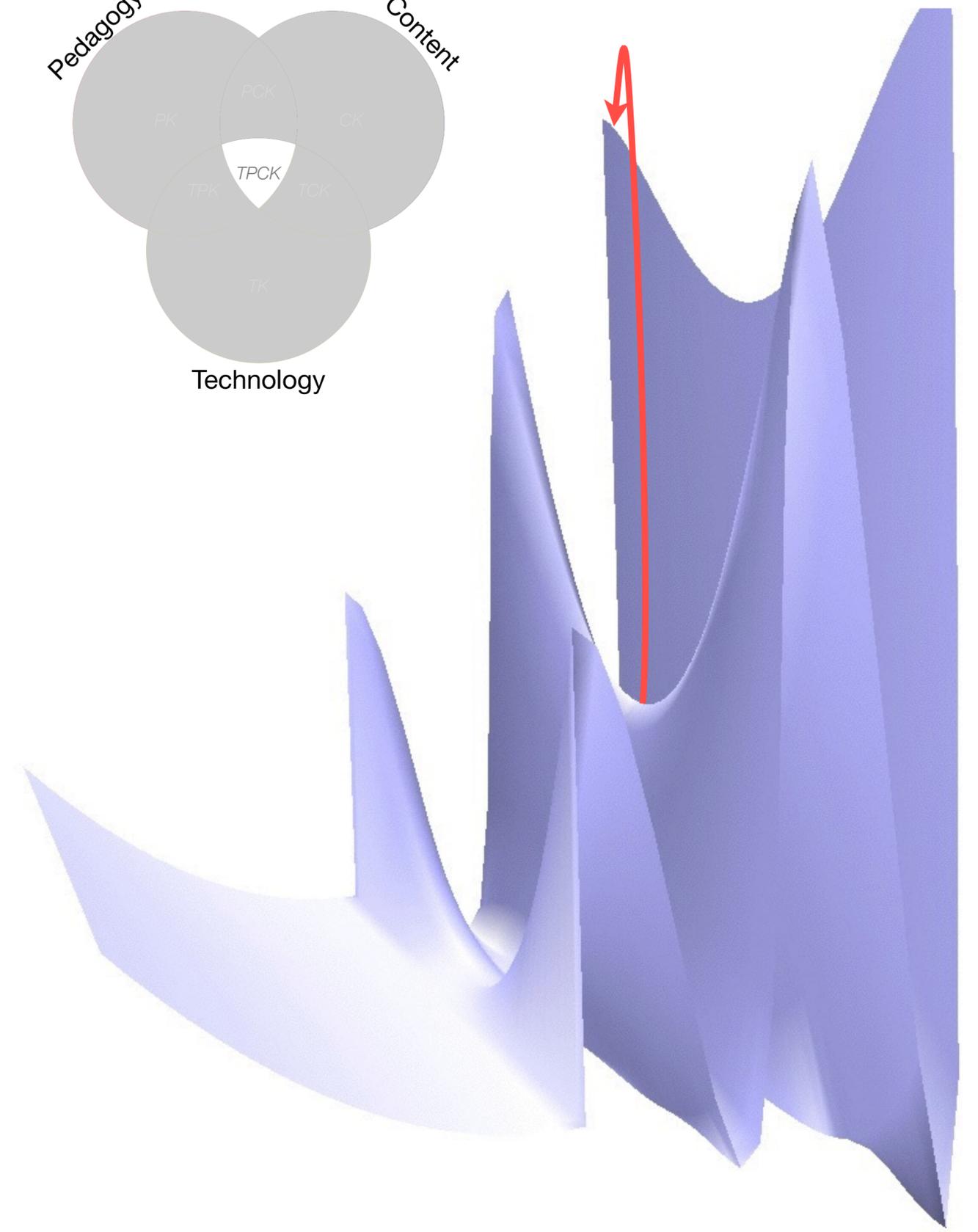
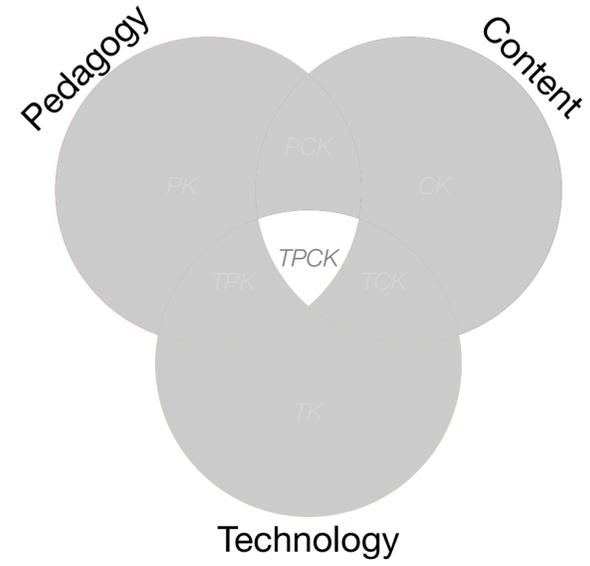


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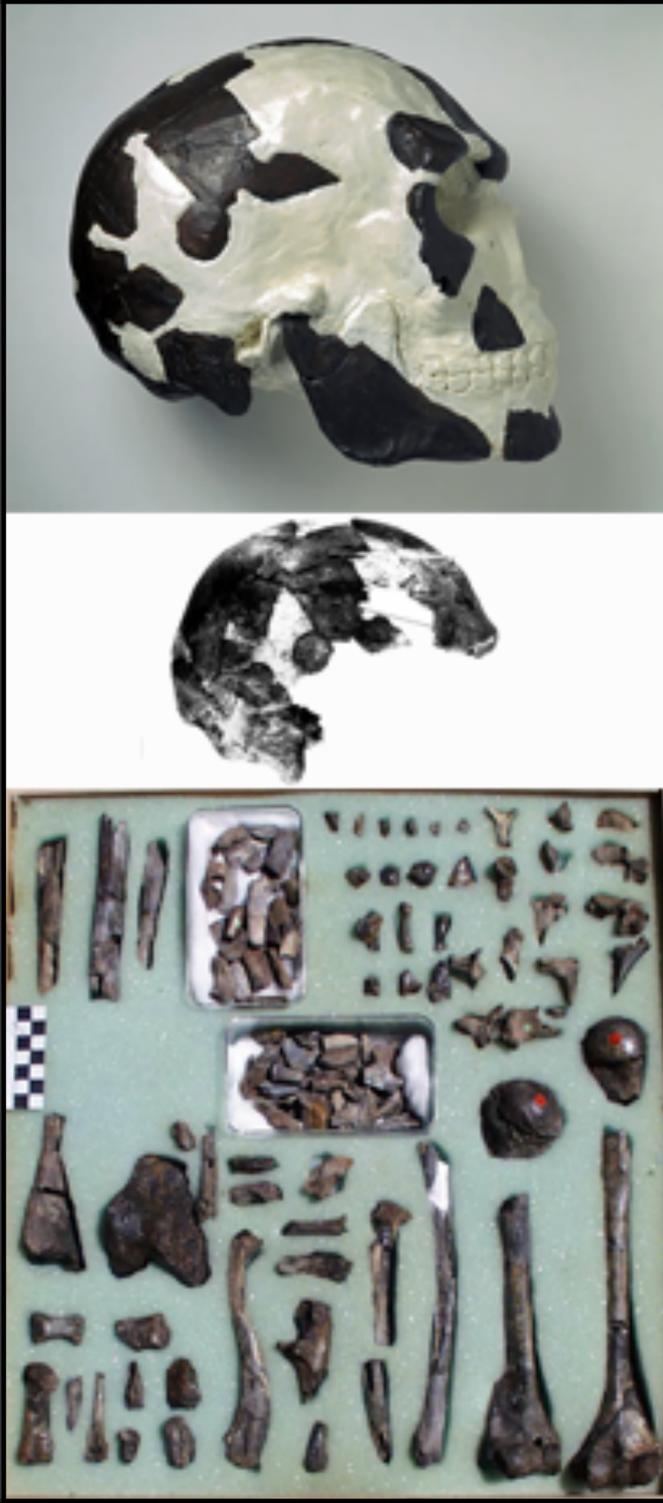
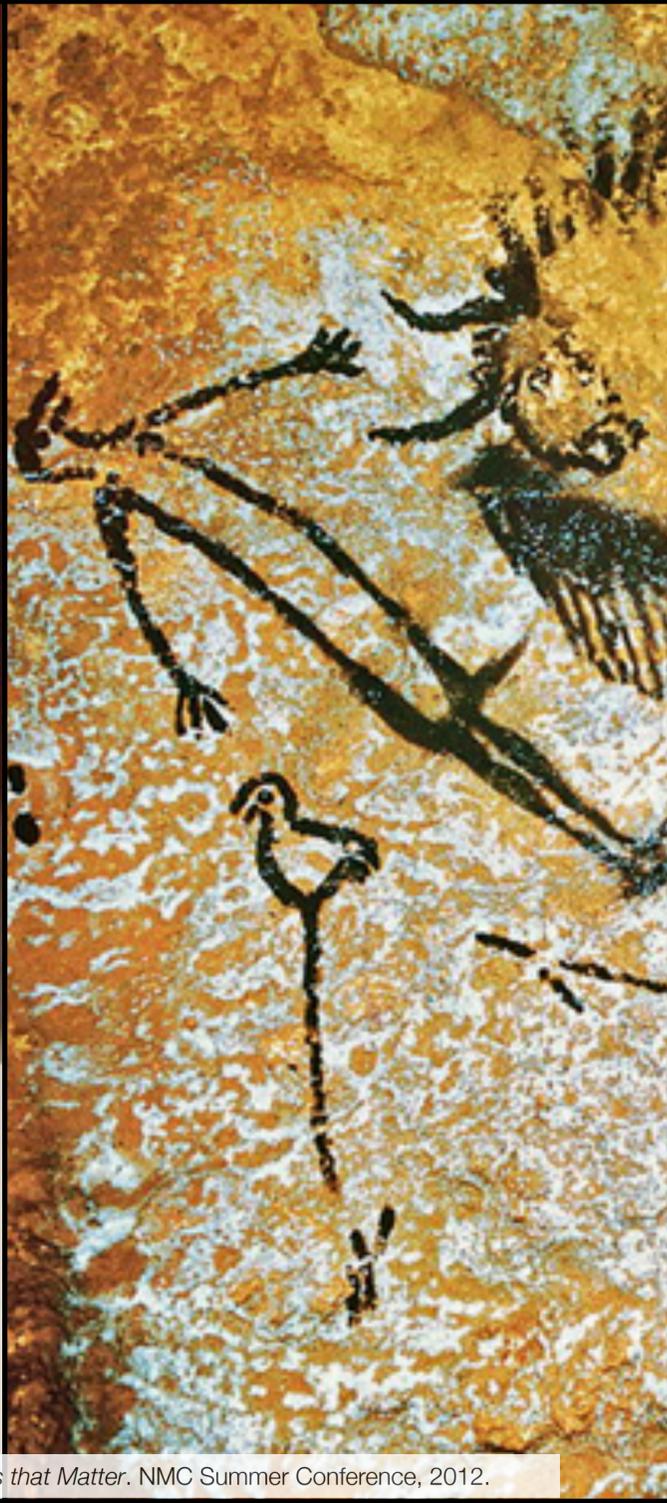
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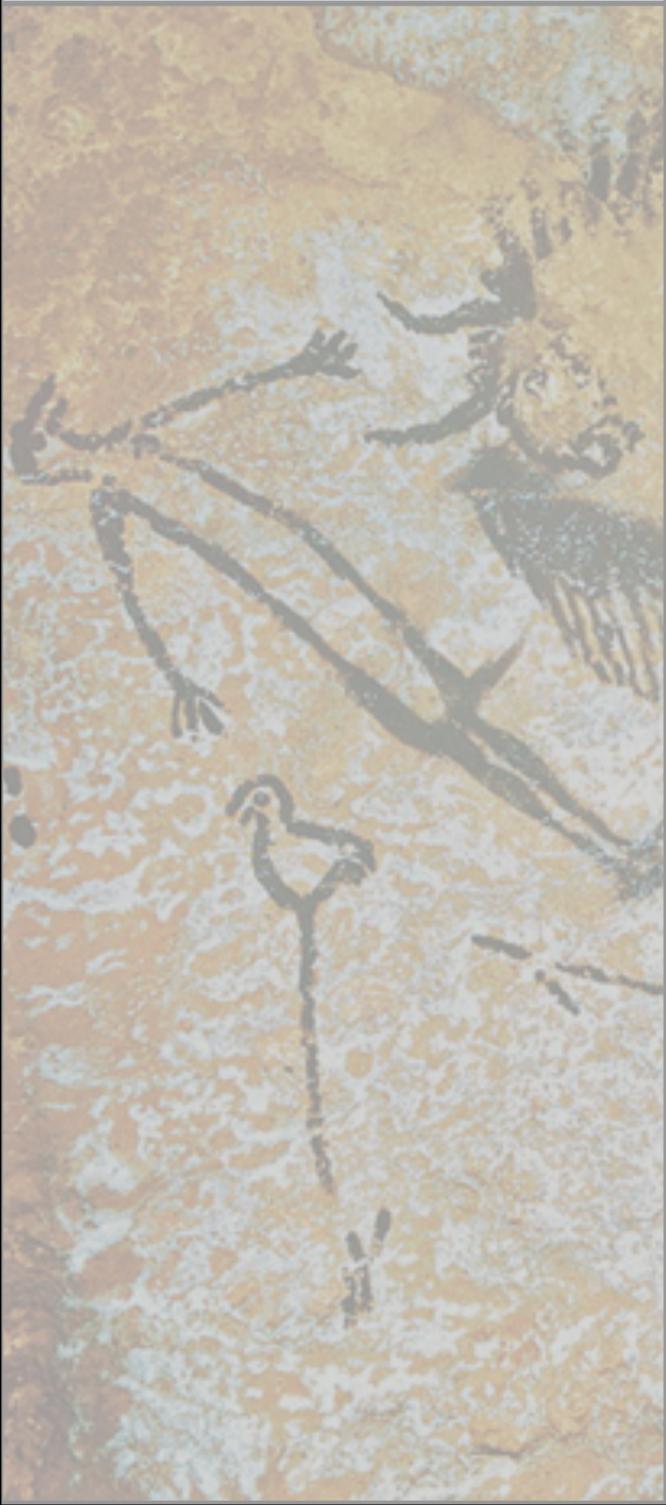
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200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
				

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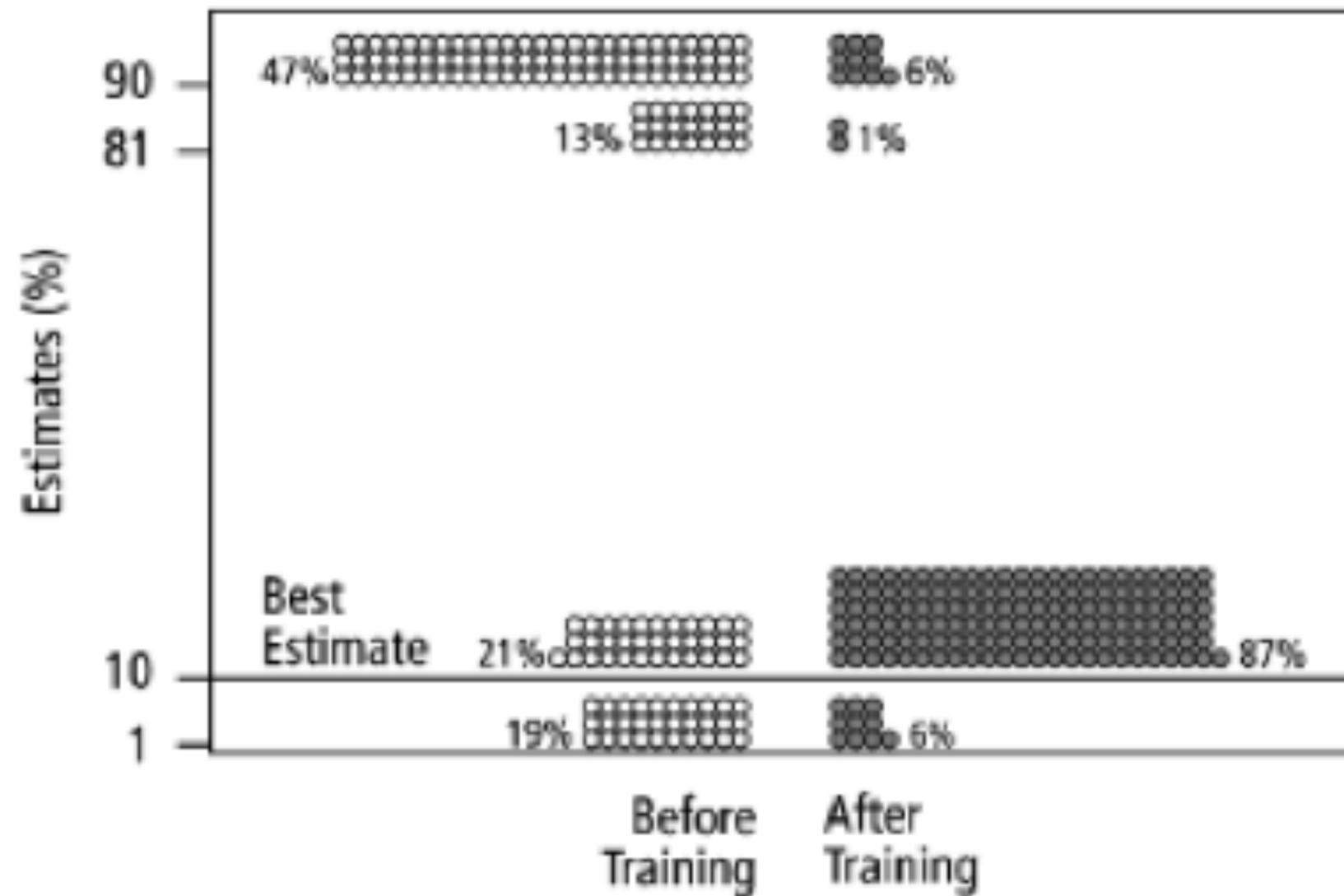
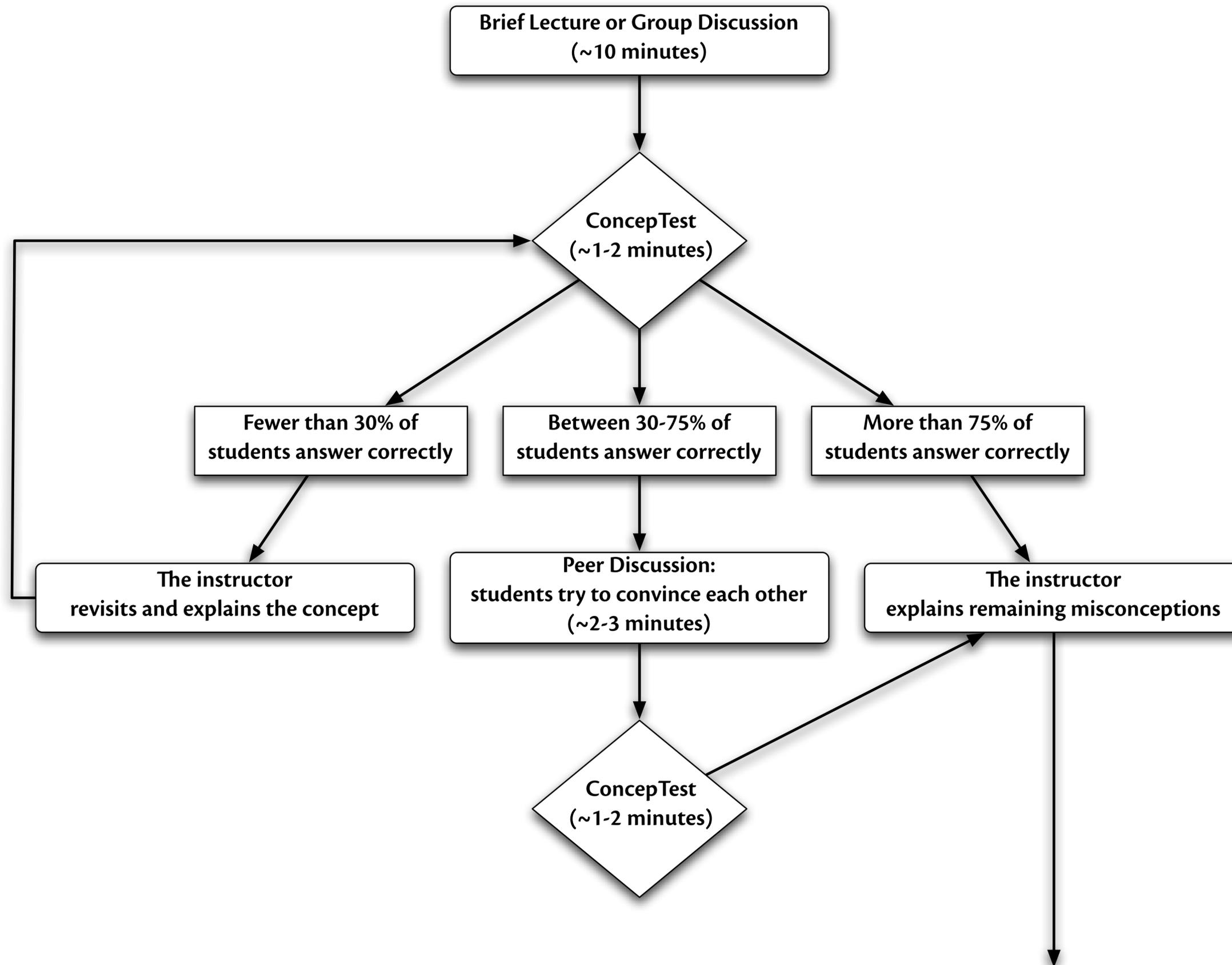


Fig. 2. Estimates by 160 gynecologists of the probability that a woman has breast cancer given a positive mammogram, before and after receiving training in how to translate conditional probabilities into natural frequencies.



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The screenshot shows the OpenIntro Statistics website. The main navigation bar includes 'STATISTICS', 'ACADEMIC JOBS', 'CONTRIBUTE', 'LICENSE', and 'ABOUT'. A secondary navigation bar includes 'OVERVIEW', 'TEXTBOOK', 'LABS', 'VIDEOS', 'FORUMS', 'SLIDES', and 'EXTRAS'. The 'TEXTBOOKS' section features two options: 'OpenIntro Statistics 2nd Edition' (2012, 426 pages) and '1st Edition' (2011, 380 pages). The 'DATA SETS' section offers access to all data used in the textbook in tab-delimited text files or in the OpenIntro and Olddata R packages. The 'PROBABILITY TABLES' section provides Normal, t, and chi-square probability distribution tables, with options for a printer-friendly PDF and downloading the LaTeX source files.

The screenshot shows a NetLogo simulation interface titled 'breast_cancer'. The interface includes a 'setup' button, a 'go' button, and a 'num-of-women' slider set to 10000. The simulation results are displayed in a table:

Cancer	No Cancer
104	9896
Cancer - Test Positive: 87	No Cancer - Test Positive: 993
Cancer - Test Negative: 17	No Cancer - Test Negative: 8903
Probability Cancer if Test Positive: 0.081	

The 'Cancer - Test Positive' and 'No Cancer - Test Positive' cells are circled in red. A red arrow points to the 'Probability Cancer if Test Positive' cell. The interface also includes a 'Command Center' at the bottom with an 'observer' prompt.

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Computing Not So Basic Probabilities from

DataSet = 2 Seed = 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

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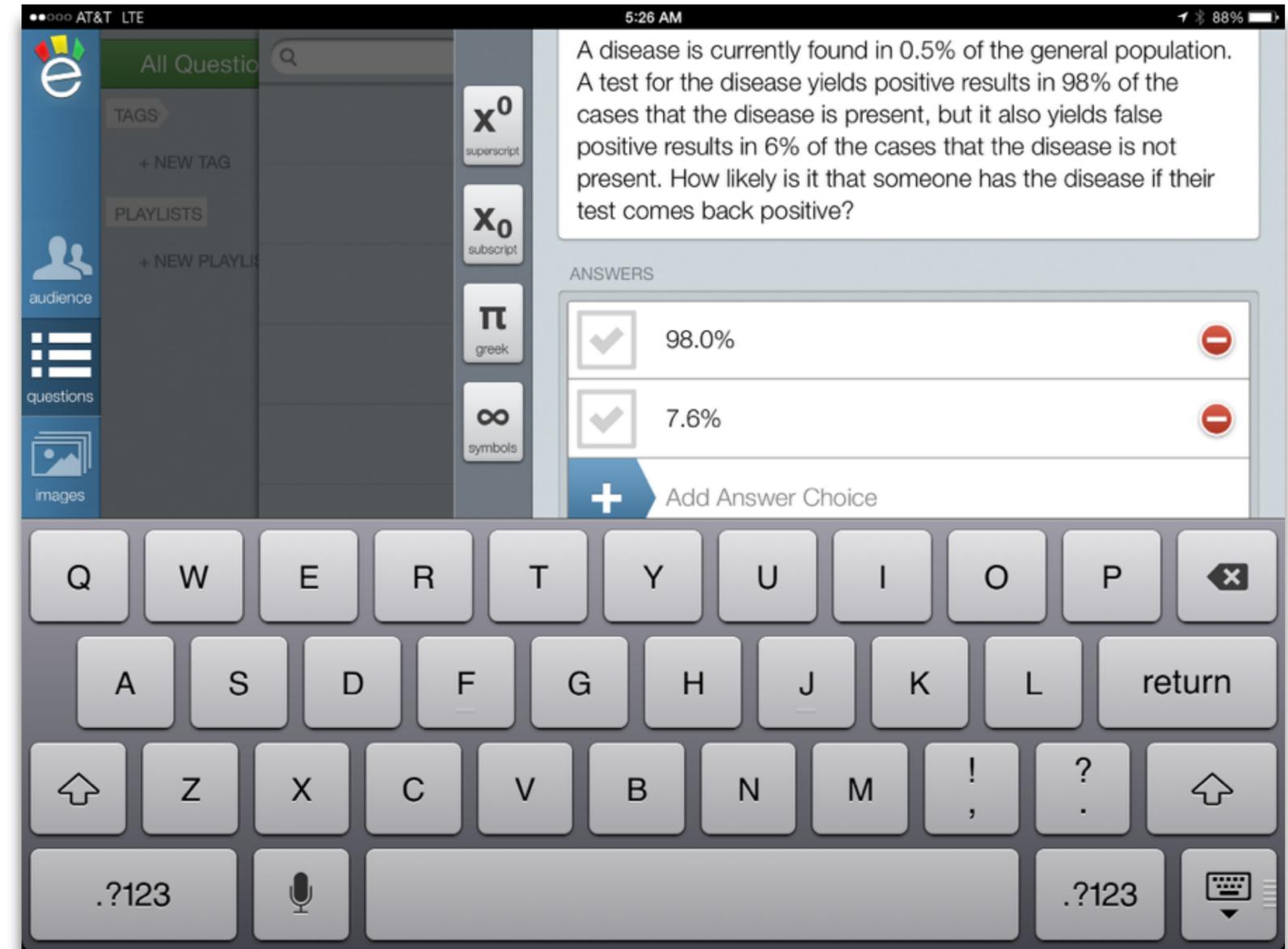
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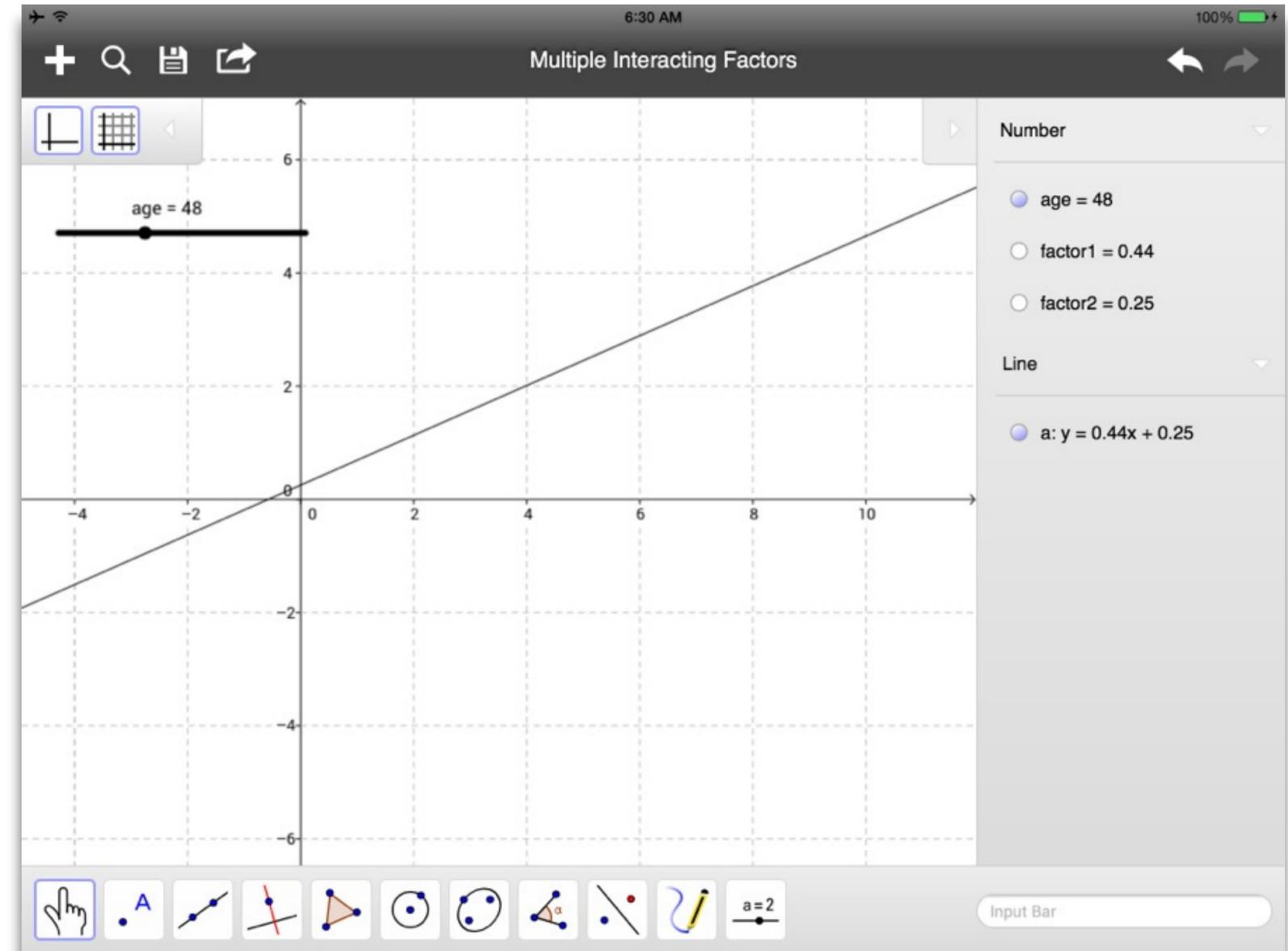
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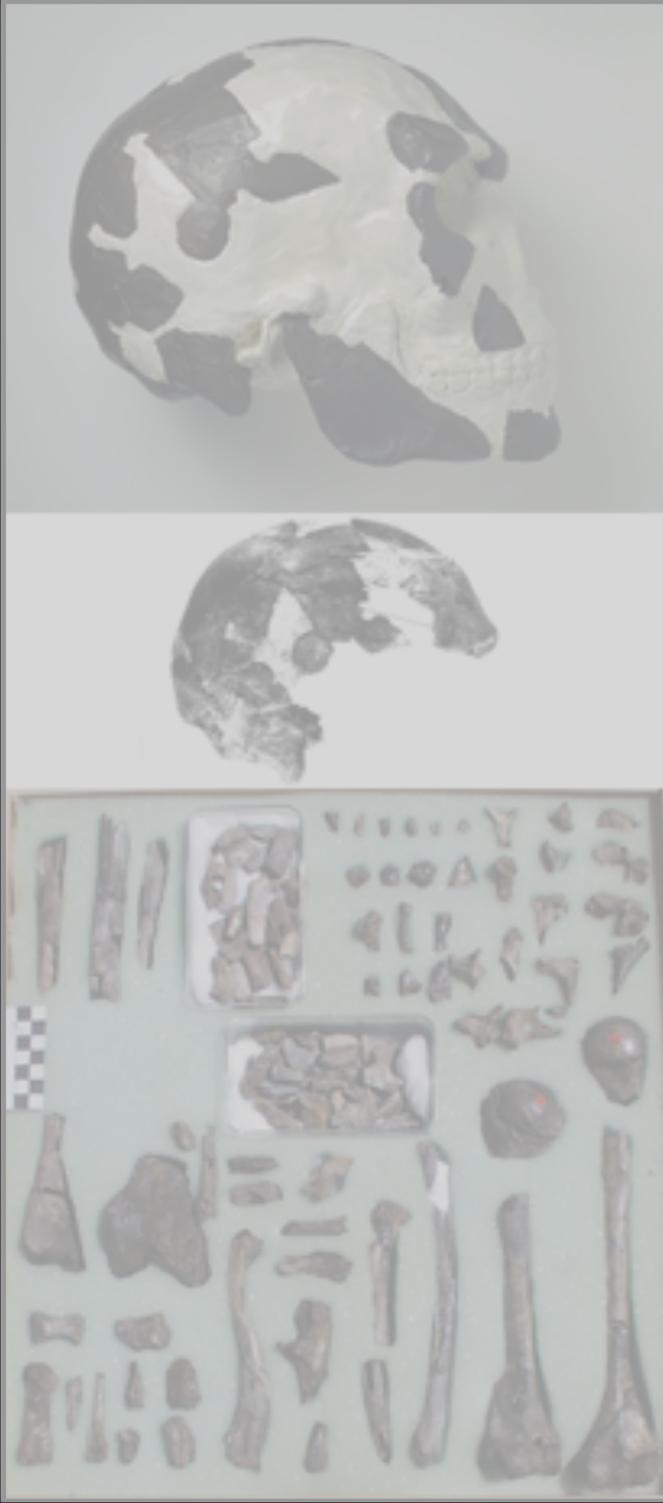
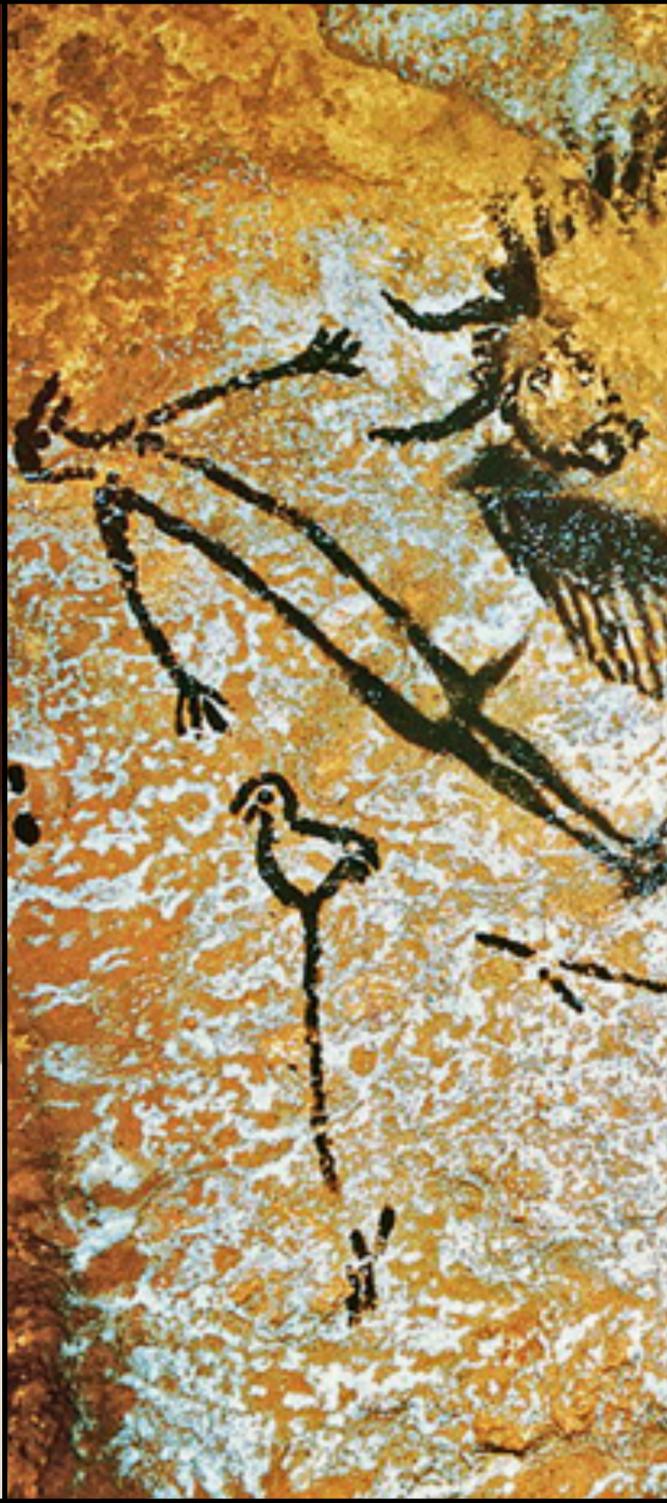
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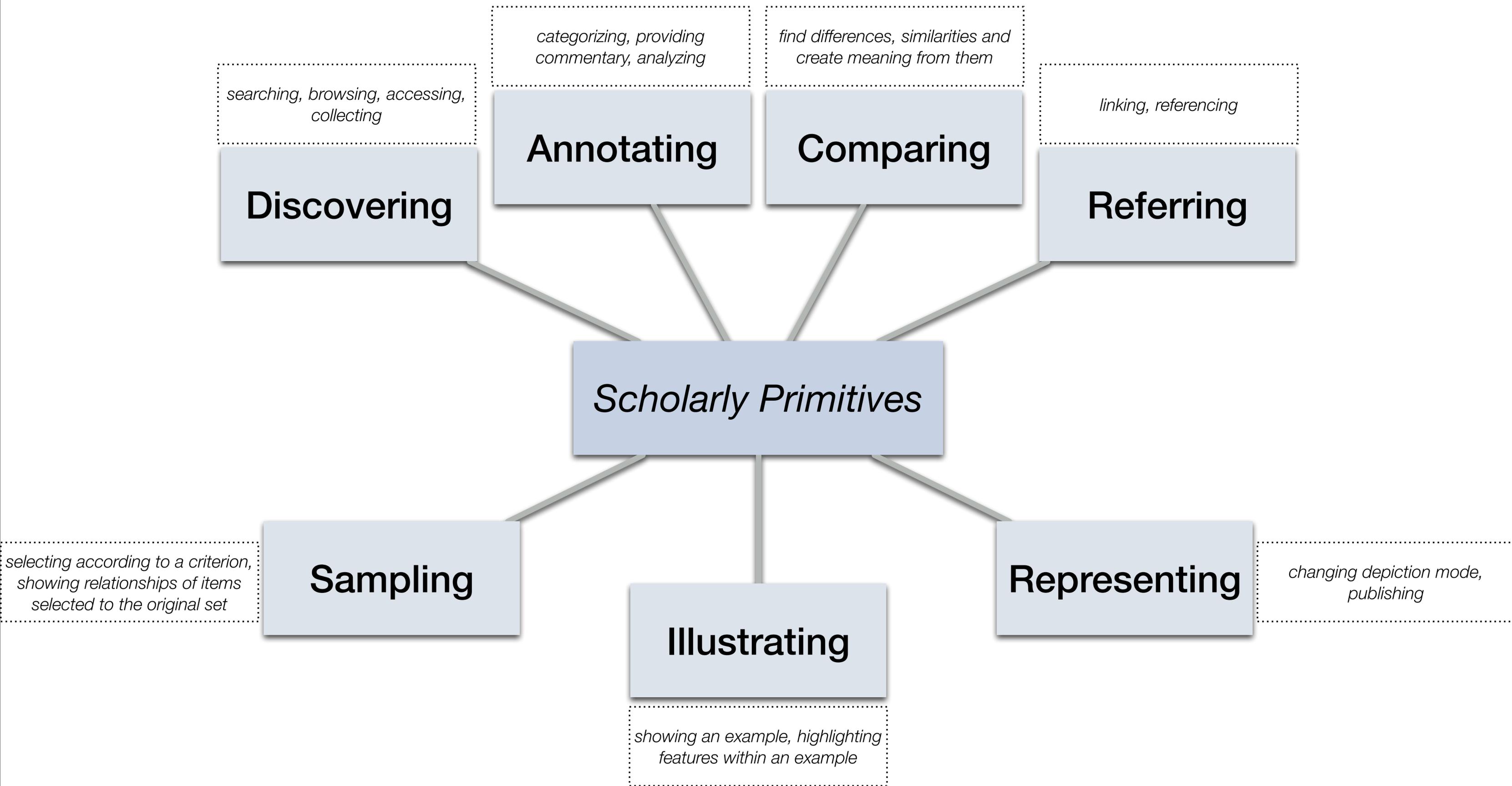
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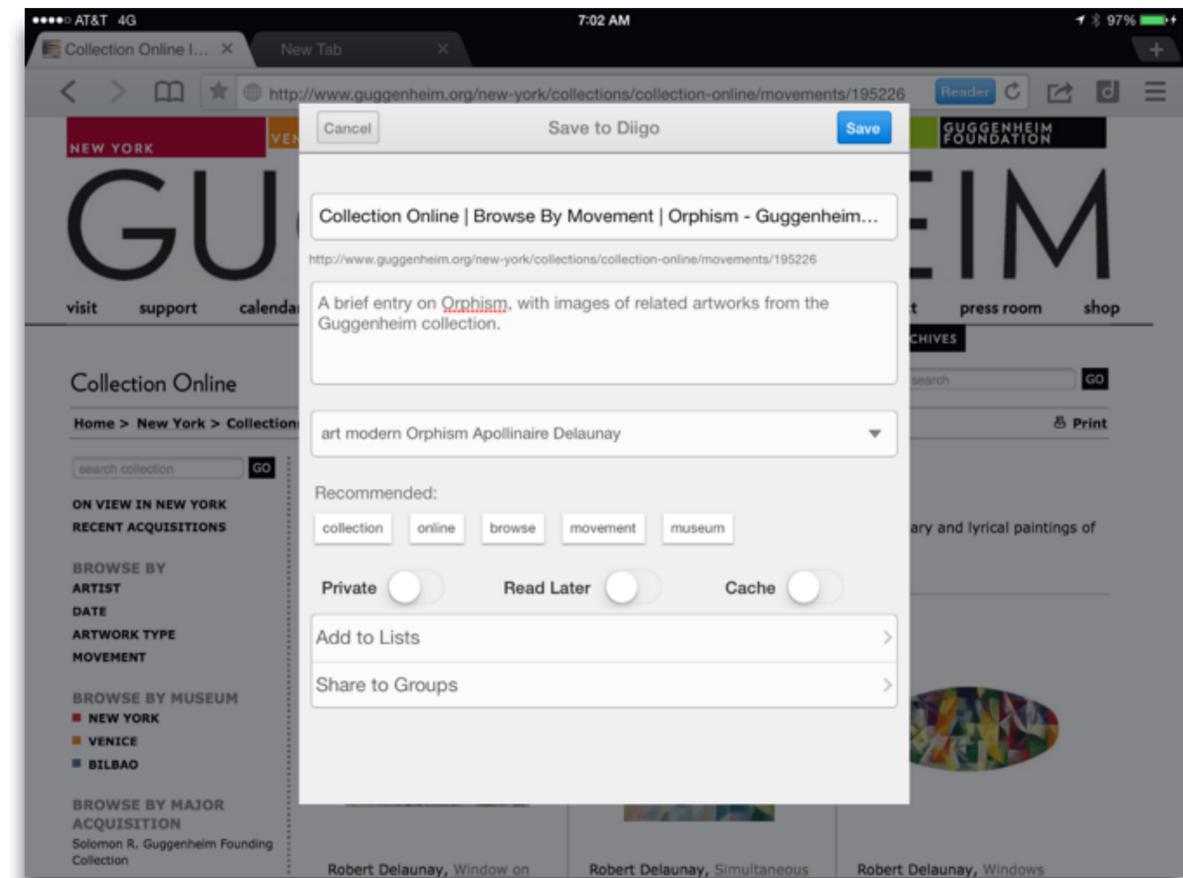
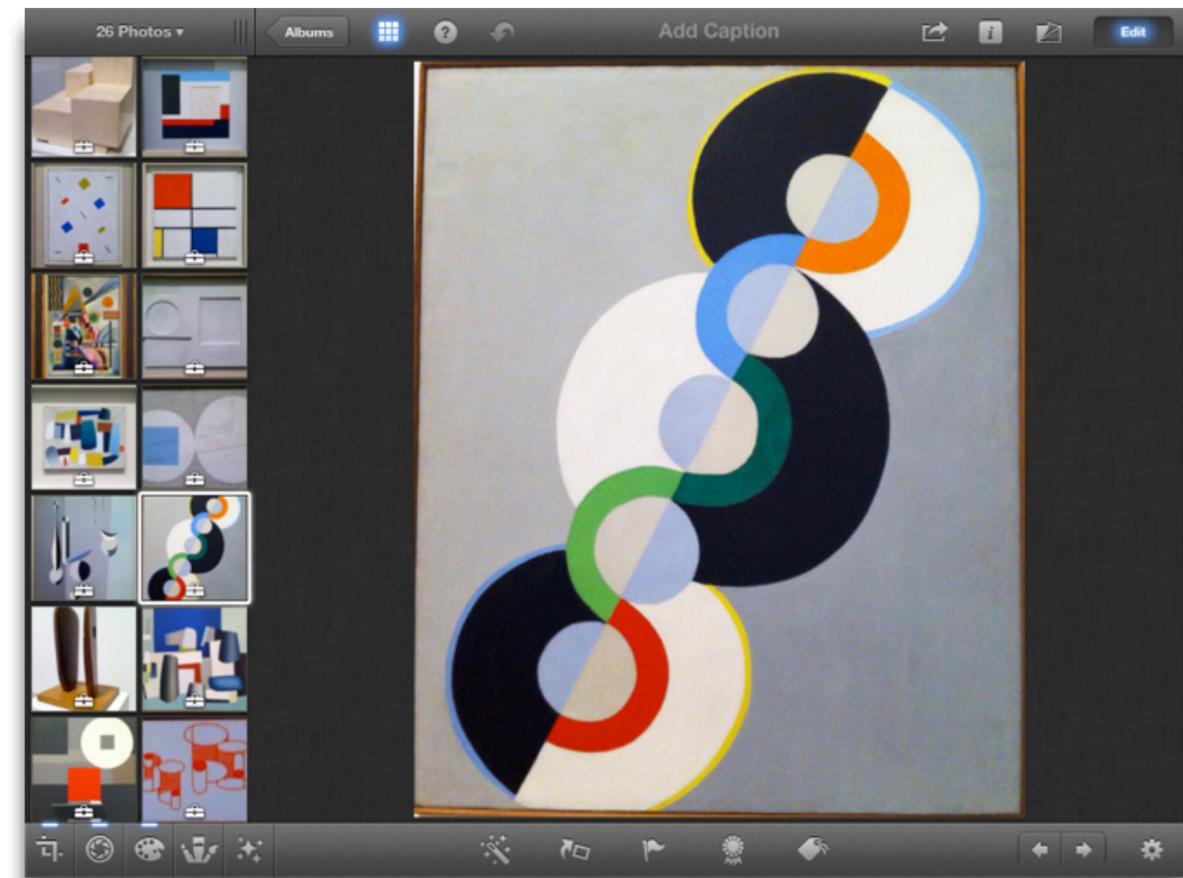
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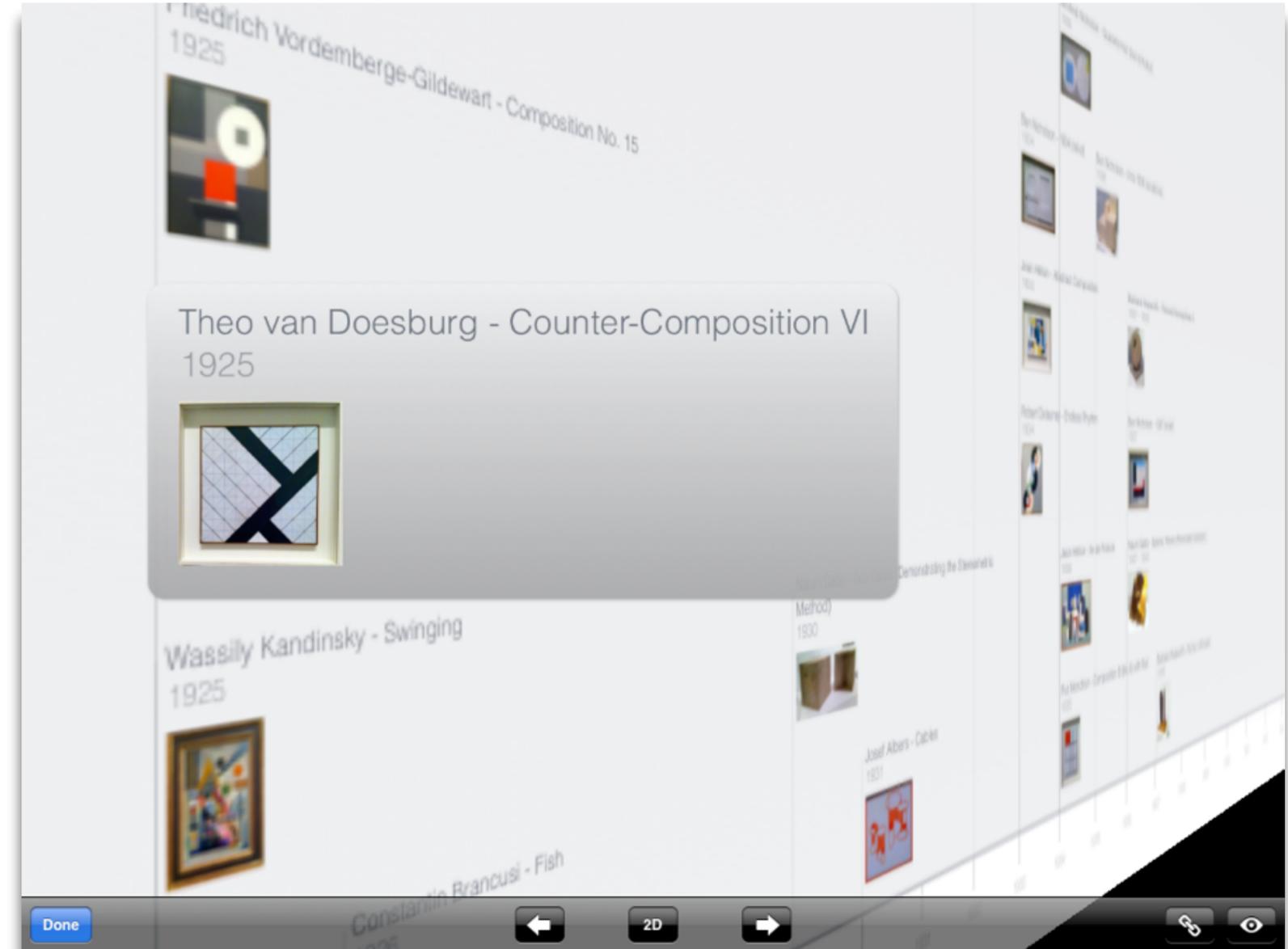
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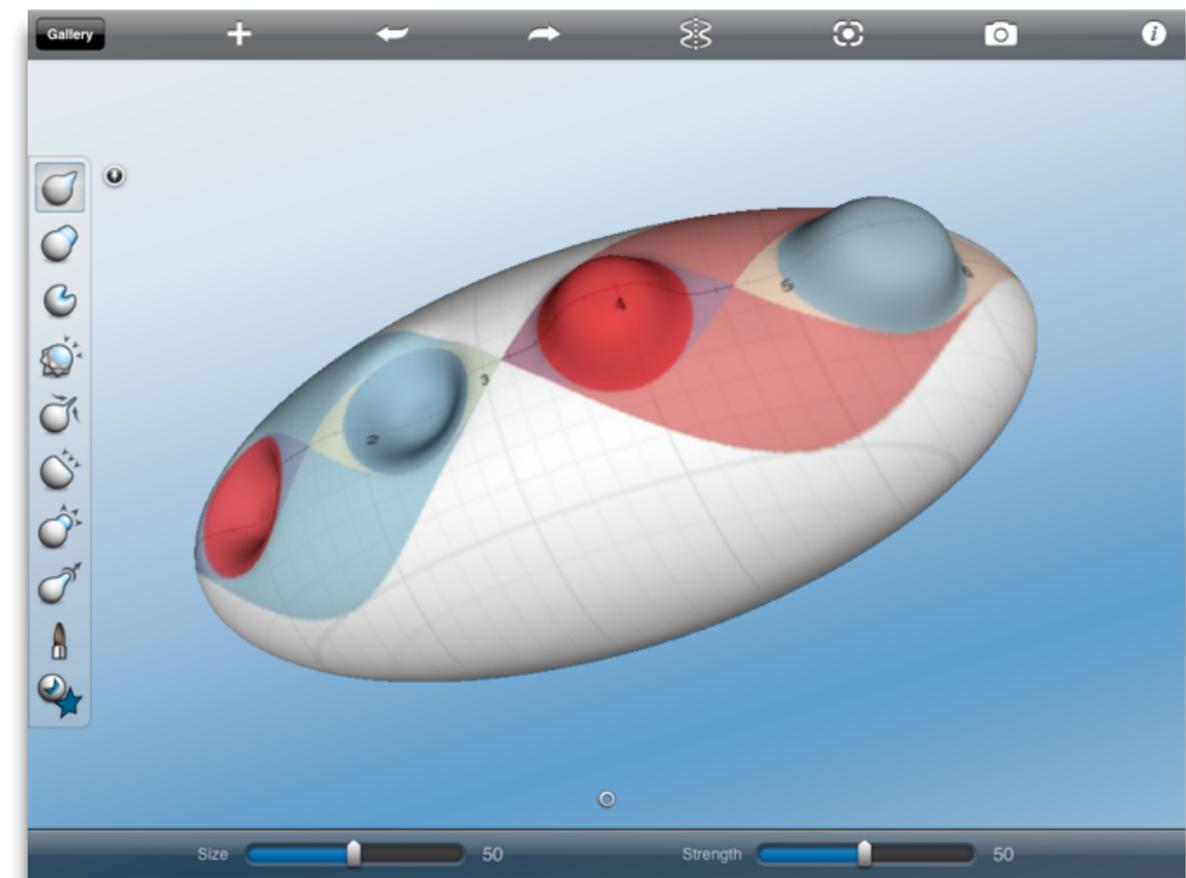
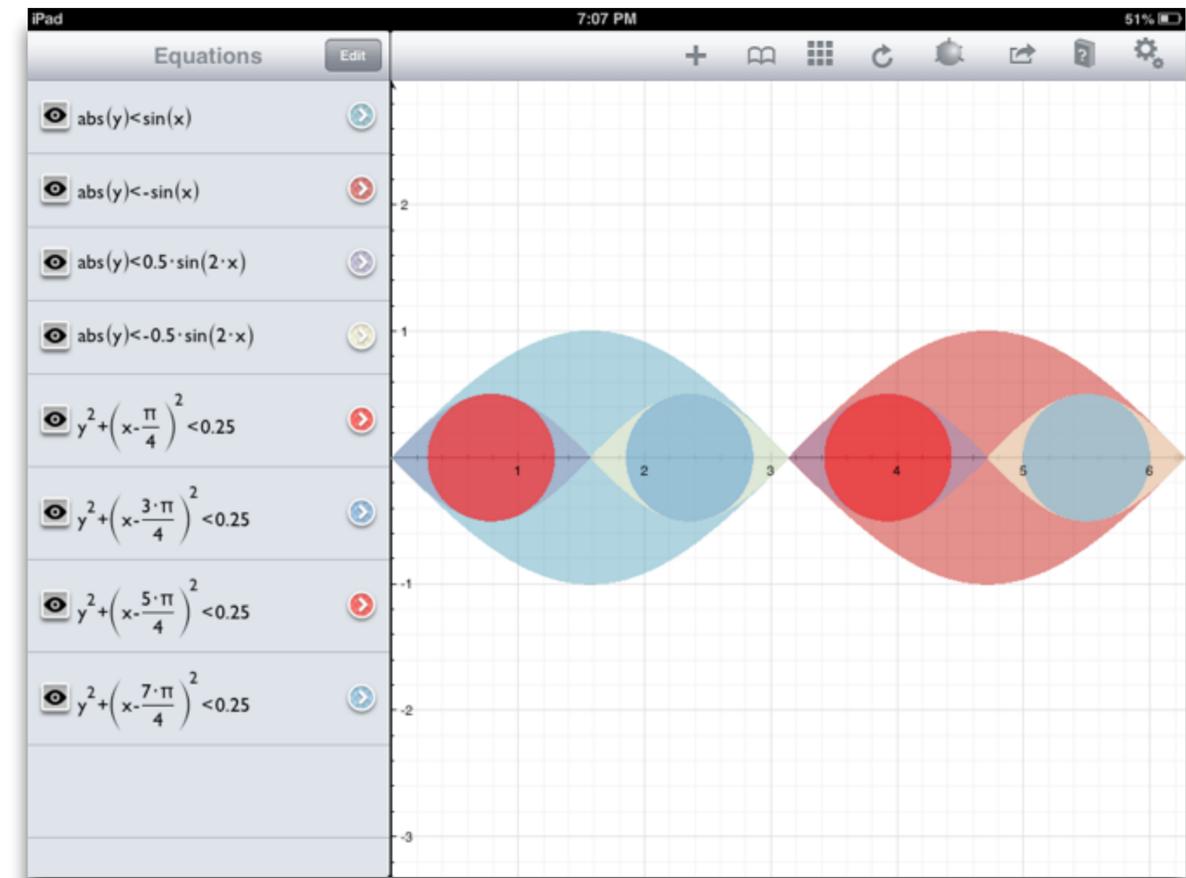
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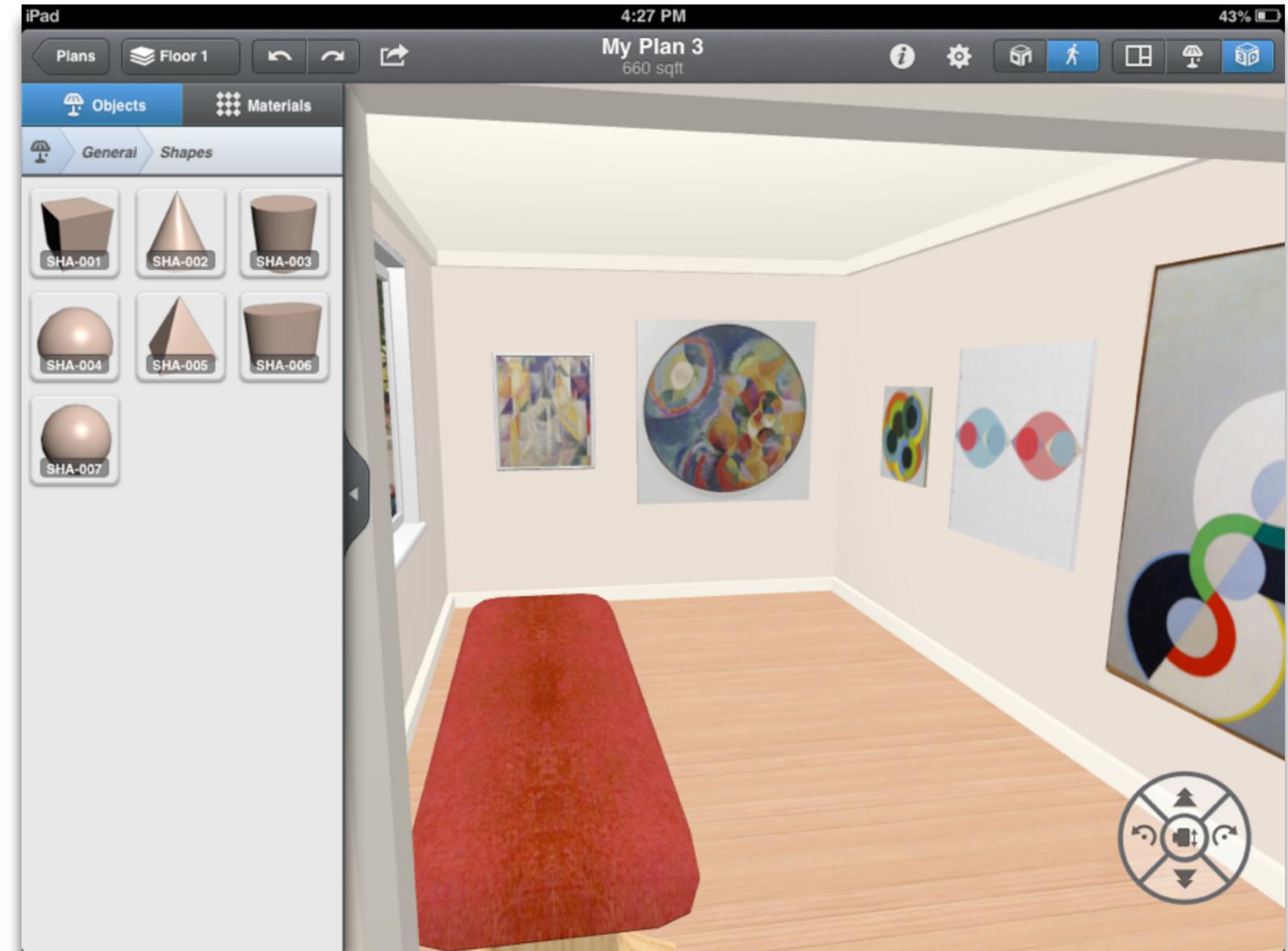
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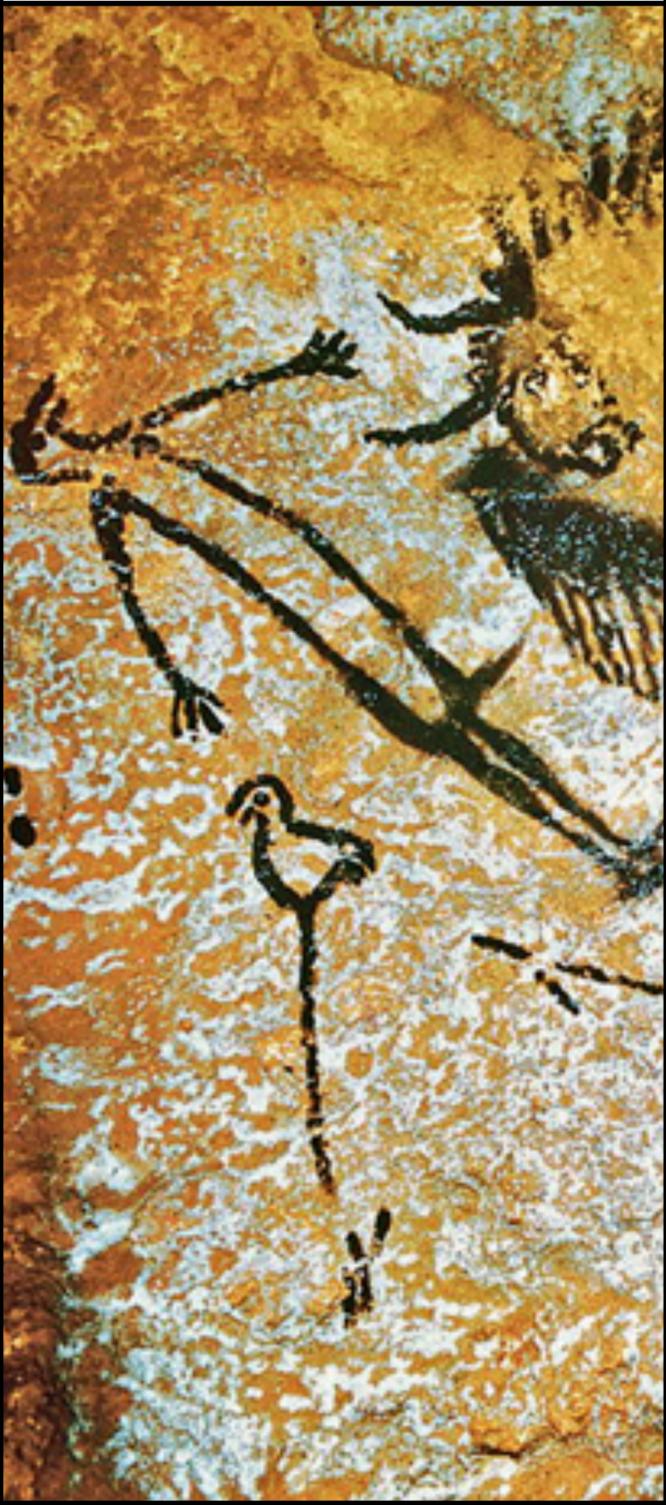
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Location

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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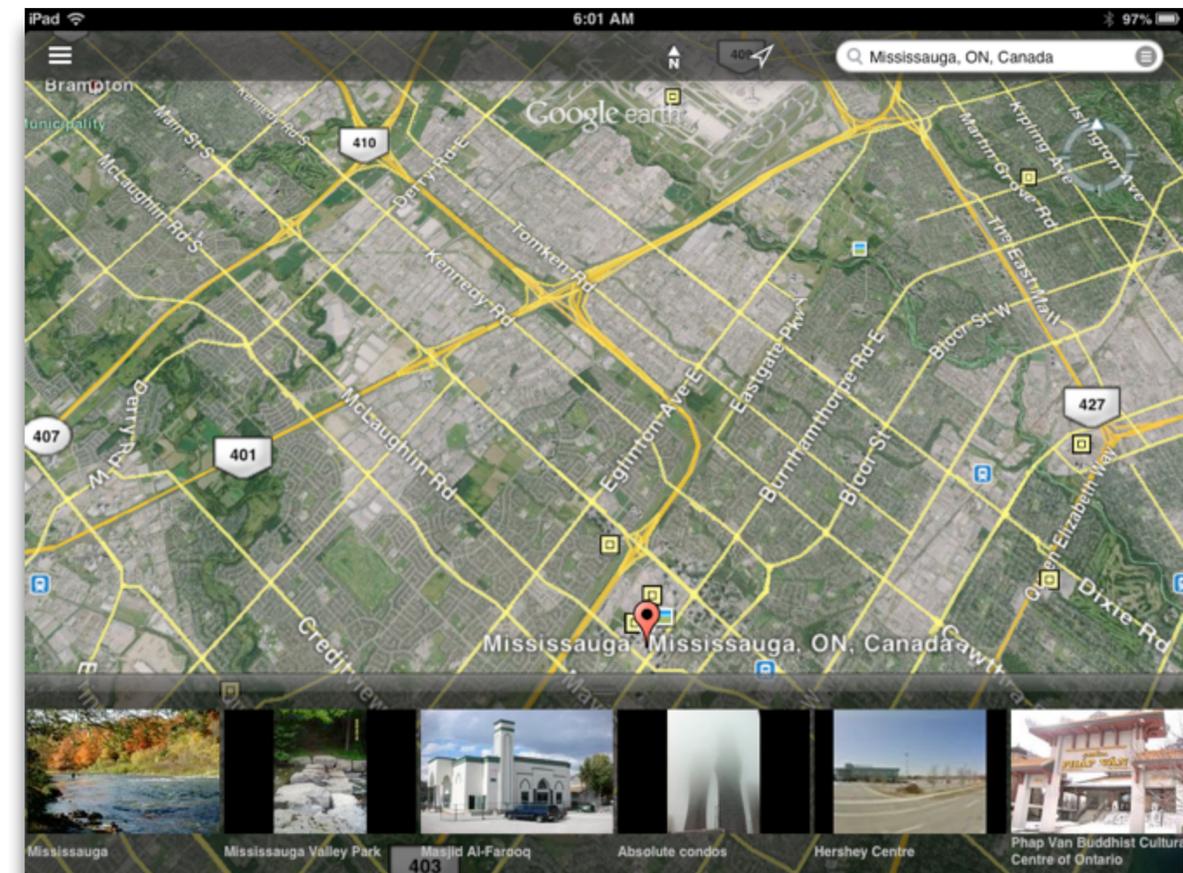
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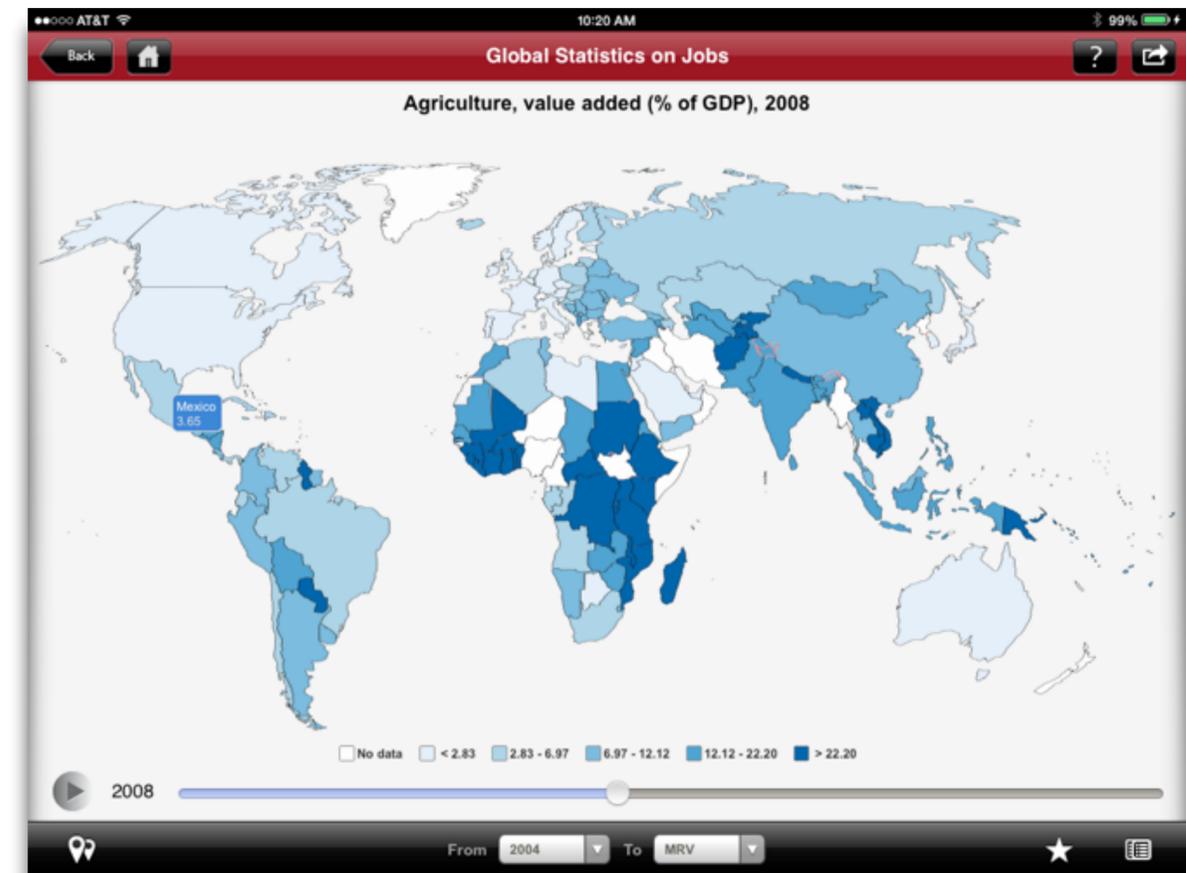
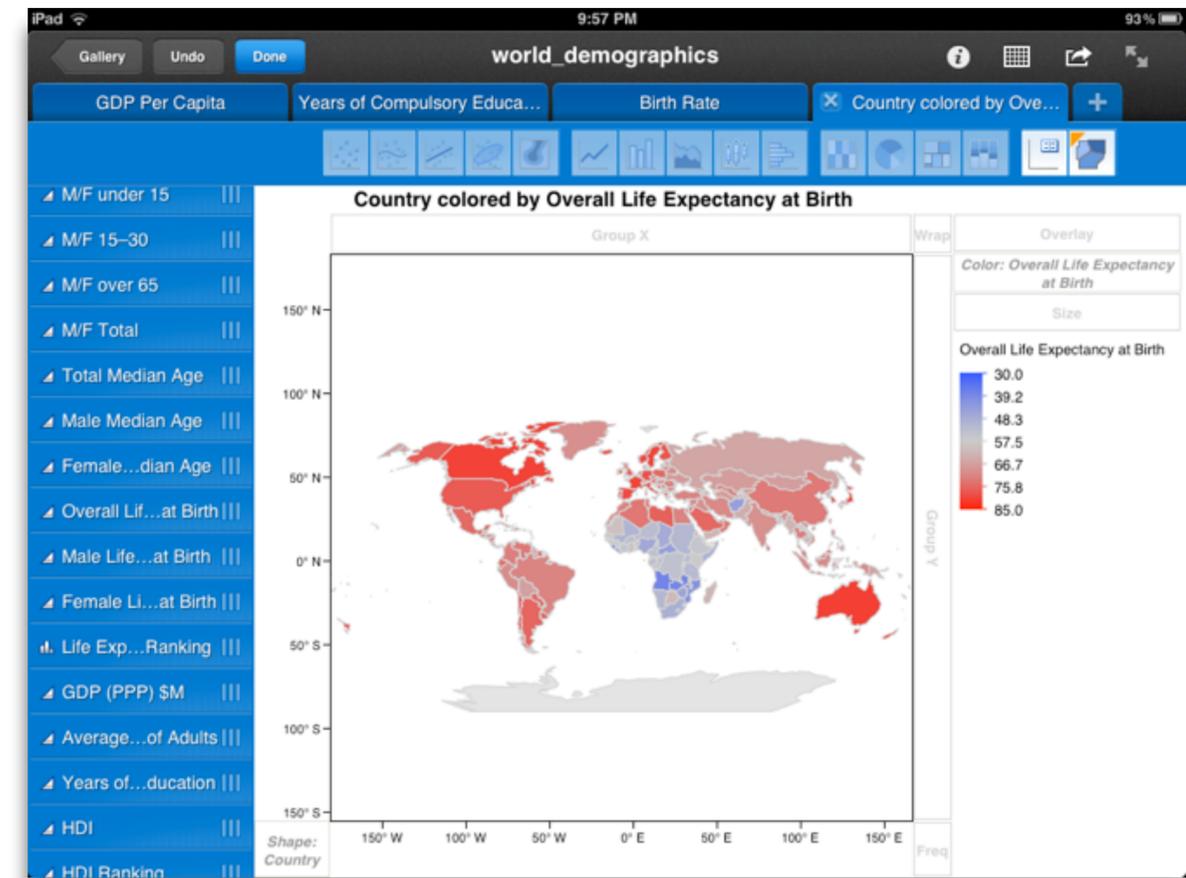
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The screenshot shows the Kiva website interface. At the top, there's a navigation bar with 'Lend', 'About', 'Community', 'Updates', and 'My Portfolio'. Below this, 'Featured Categories' are displayed: 'Start-ups' (55 loans), 'Rural Communities' (21 loans), and 'Youth' (32 loans). A 'Choose a Borrower' section shows 2,024 loans available, with a search bar and filters. The current borrower profile is for 'Mirafior' in the Philippines, with a 7% interest rate and a \$350.00 loan amount. The profile description states: 'A loan of \$350 helps Mirafior to purchase additional livestock and vaccines for her'.

The screenshot shows an iPad app titled 'Anatomy of a Loan'. The main screen features a line graph showing data from 1995 to 2006 for Mexico, Canada, and the United States. Below the graph, there's a section titled 'COFFEE CONSUMPTION IS STILL RISING, THOUGH' with an image of a coffee cup. At the bottom, there's a loan profile for 'Juan Carlos' with a 6% interest rate and a \$25 loan amount. The app interface includes a 'My Comics' button and an 'Undo' button at the top left, and a toolbar at the bottom with various icons and a 'LETTERING' button.

Hippasus



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