SAMR: A Model for Teaching and Learning – Day 1

Ruben R. Puentedura, Ph.D.

Tech acts as a direct tool substitute, with functional improvement

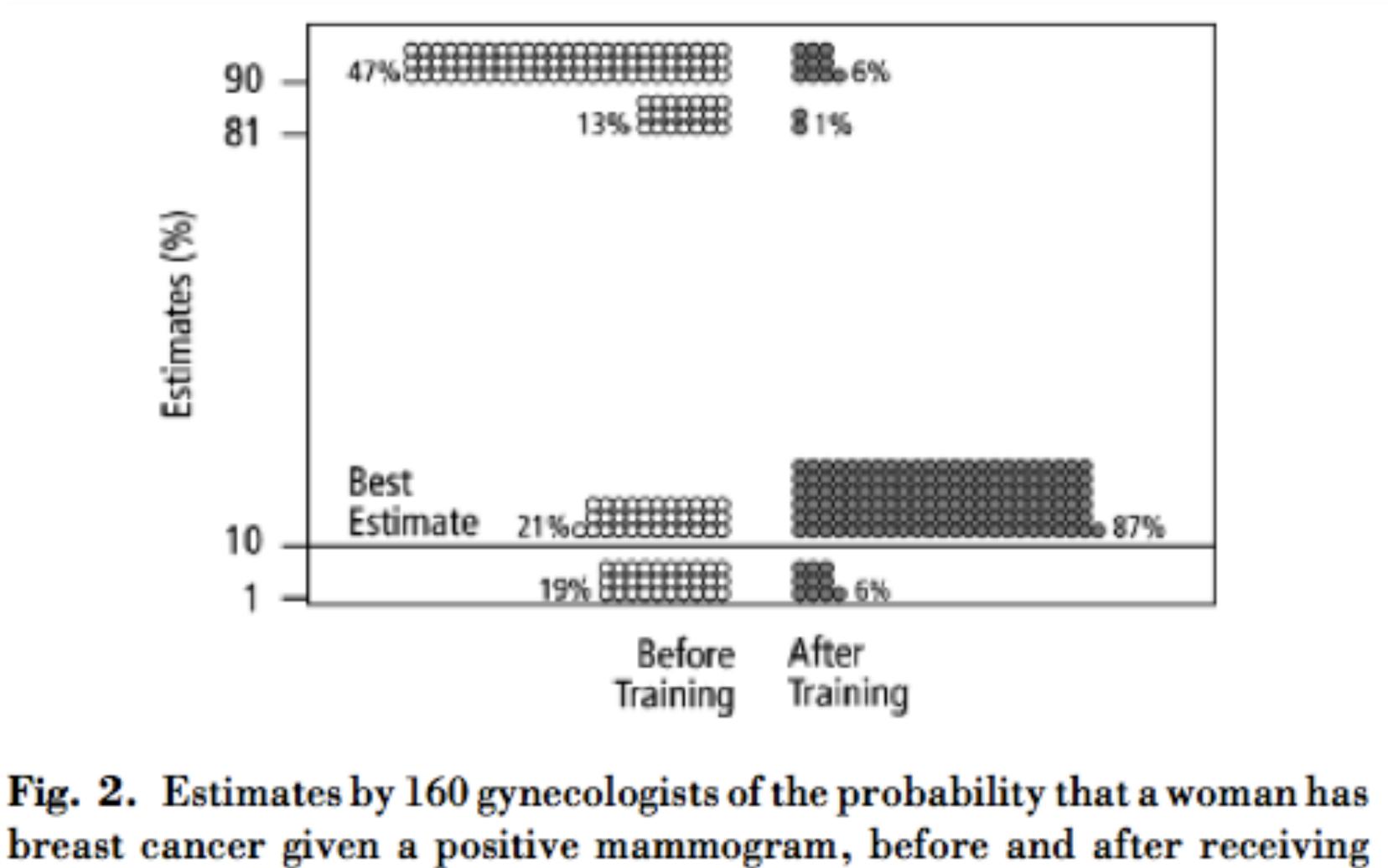
Substitution Tech acts as a direct tool substitute, with no functional change

Redefinition Tech allows for the creation of new tasks, previously inconceivable

Modification Tech allows for significant task redesign Transformation

Augmentation

Ruben R. Puentedura, As We May Teach: Educational Technology, From Theory Into Practice. (2009)

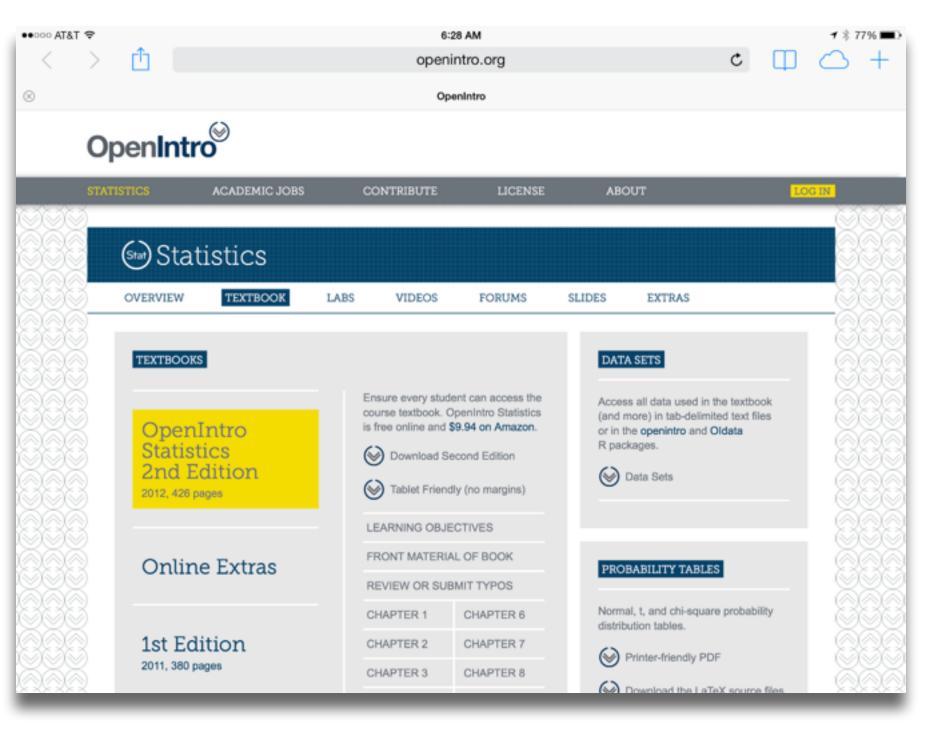


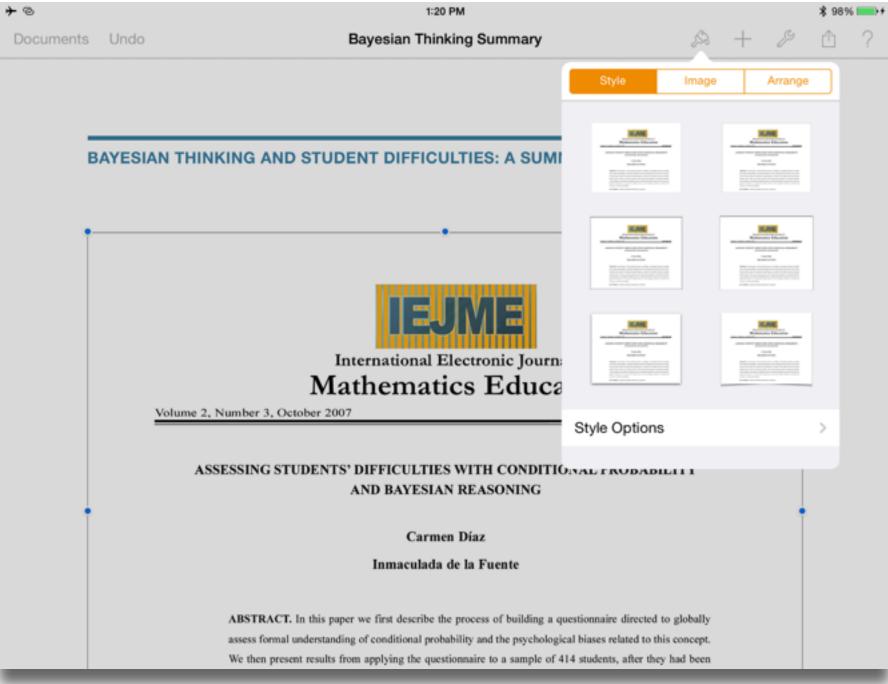
training in how to translate conditional probabilities into natural frequencies.

Modification Tech allows for significant task redesign

Augmentation Tech acts as a direct tool substitute, with functional improvement

Substitution





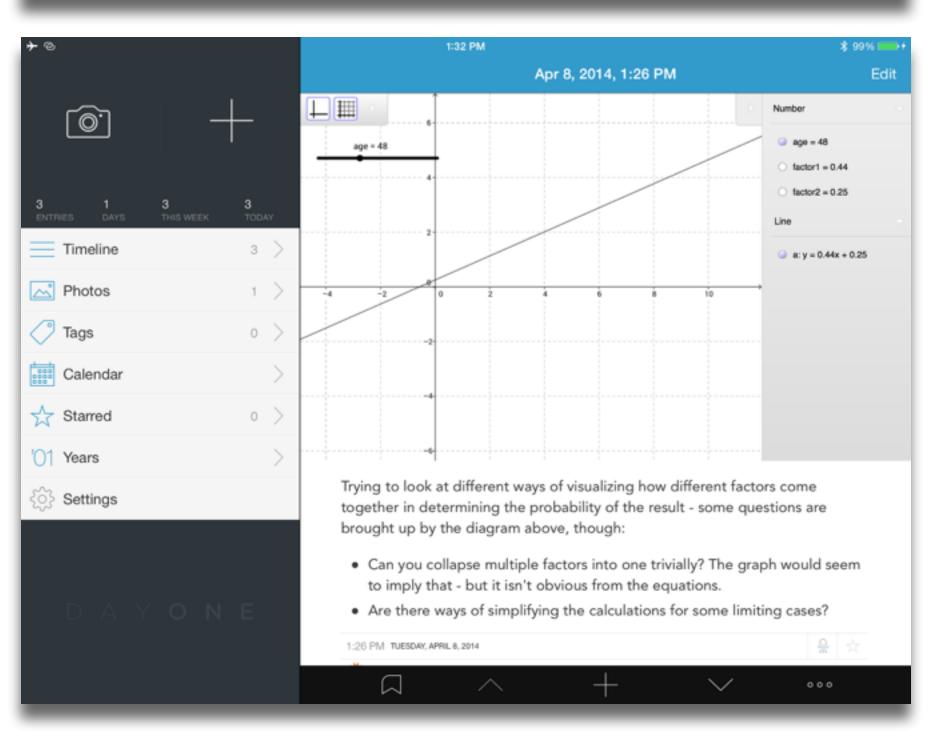
Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution

••• AT&T LTE			1:00 PM	18:	56% 🔳
+ Q ∣	1	Compu	ting Not So Basic Probabilities from	•	*
DataSet = 2	_	Seed = 64		Number	~
of 56 doctors are	e sorted accor	culations from a s ding to whether t	he label	○ ANm1 = 22	
on the drug botti whether the calc		concentration or orrect or wrong.	a ratio, and	ANm2 = 6	
	Correct	Wrong	Row	O ANm3 = 4	
			Totals	O APrb = 0.571	
Concentration	22	6	28	ATot = 32	
Ratio	4	24	28	O BDnm = 26	
Column Totals	26	30	56	O BNum = 4	
a) What is the pr	obabilty that a	a calculation in th	e sample	O BOp = 0	
was based on	a concentrati	ion or was correct	?	O BPrb = 0.154	
🗖 Check the b				OataSet = 2	
b) Given that a ca was correct, w				O GrTt = 56	
that the calcul	-			OpANm1 = 1	
🗖 Check the b	ox to see the	answer to (b).		OpANm2 = 1	
shy . ^ _	1 D	• • •	🍇 ᡞ 🏹 💷	Input Bar	



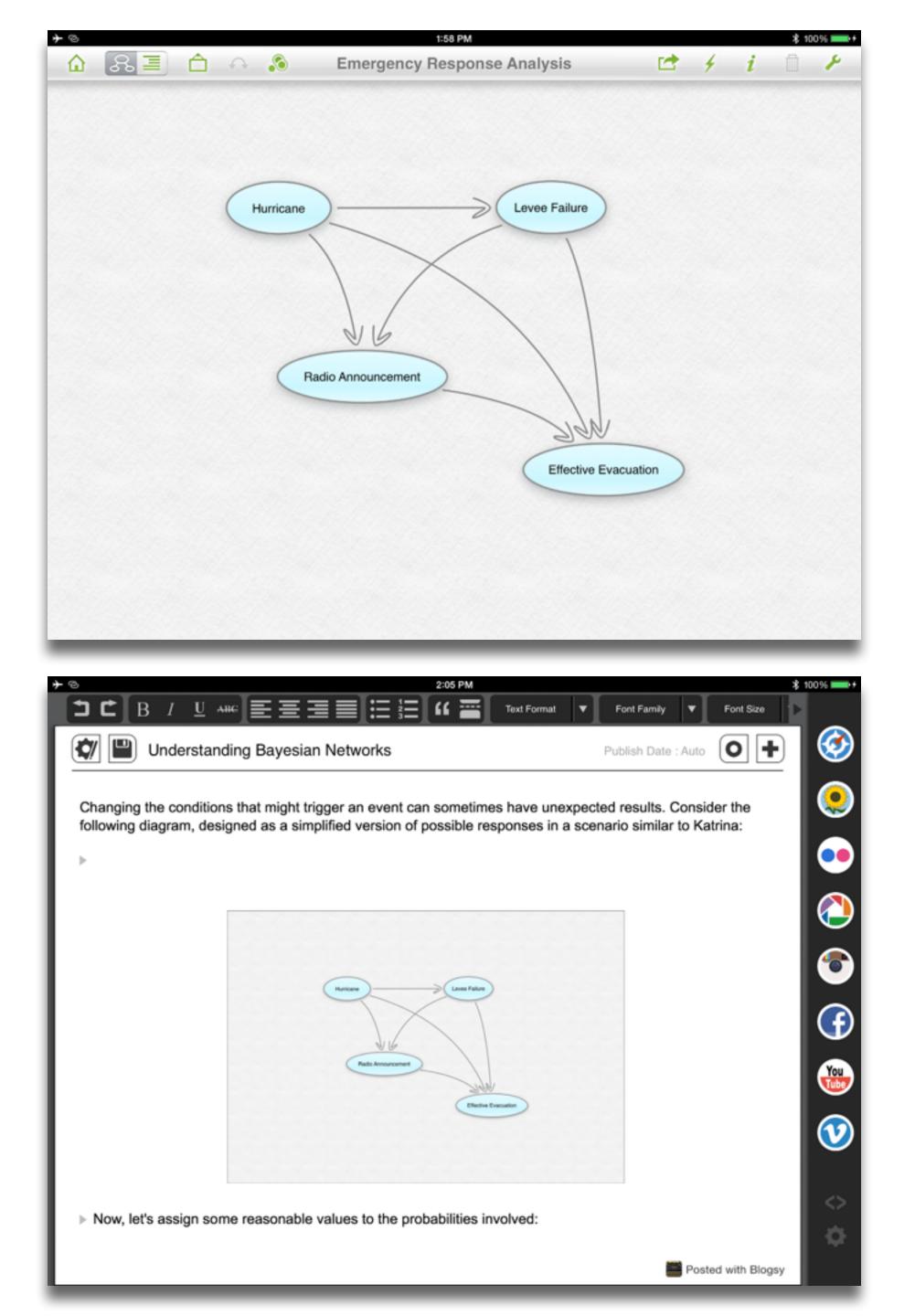
Modification

Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



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

* ⊚				1:05 PM			1 \$ 95% ■	+
	Examples			*	WolframAl	pha	Ċ	
sin(x)	W		acute myoca	ardial infarction			8	ו
Mathematics	Words & Linguistics	Units & Measures	Characteristi	cs of patients			>>	
			Primary diagn	osis at visit				
llillh	3			male	female	all		
Statistics & Data Analysis	People & History	Dates & Times	age		0 30 60	0 30 60		
Chemistry	Culture & Media	Money & Finance	weight	(yr) 40 80 120 (kg)	(yr)	(yr) 40 80 120 (kg)		
Physics	Art & Design	Socioeconomic Data	height	90 120 150 180 (cm)	90 120 150 180 (cm)	90 120 150 180 (cm)		
Astronomy	\$ bo Music	Health & Medicine	BMI	20 40	20 40	20 40		
©°	Tistory Favor	<u>الم</u>	patient pop (estimated ann 2007) More			hted for USA demographic	s, 2006 to	

T&T 🗢			2:39 PM		1 ≉ 4
entations	Undo	Sten	t Policy Analysis	A +	ይ ≙ ►
ny Analysia Stanta					
			111	8889888888888888888888	
		Independent Predictor	Hazard Ratio	95% CI	P Value
		30-Day Major Adverse Cardiac or Cerebrovascular Event			
		>1 vessel treated	1.416	1.138-1.762	0.0018
		Urgent procedure	3.27	2.5-5.54	< 0.0001
	E33333	Female sex	1.464	1.03-2.07	0.0321
		Chronic obstructive pulmonary disease	1.541	1.04-2.276	0.03
		Hypertension	1.622	1.037-2.535	0.0339
		3-Year Survival			
	8.8383	>1 vessel treated	1.252	1.072-1.462	0.0045
	20000	NYHA functional class III or IV	1.35	1.015-1.796	0.0389
		Prior myocardial infarction	1.411	1.077-1.848	0.0047
	83333	Age >65 yr	2.182	1.663-2.864	< 0.0001
	2010101	Chronic renal insufficiency	1.963	1.481-2.602	< 0.0001
	83333	Valvulopathy	1.641	1.183-2.277	0.0031
		Family history of coronary artery disease	0.615	0.437-0.865	0.0039
		Hyperlipidemia	0.66	0.518-0.841	0.0002
		Congenital heart disease	2.312	1.692-3.16	< 0.0001
		Peripheral vascular disease	1.921	1.452-2.541	< 0.0001

Bypass Grafting? James M. Wilson, MD

searching, browsing, accessing, collecting

Discovering

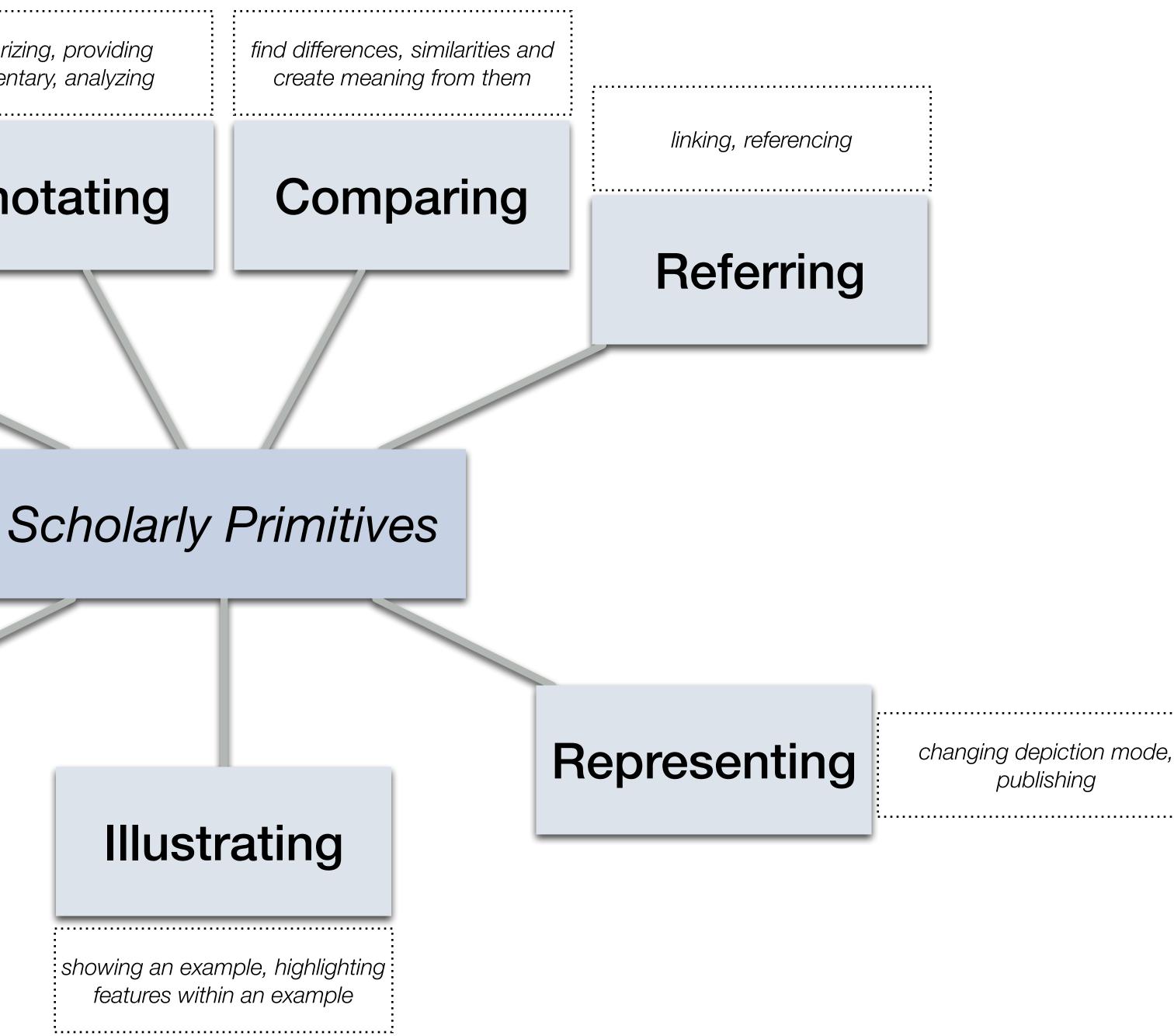
categorizing, providing commentary, analyzing

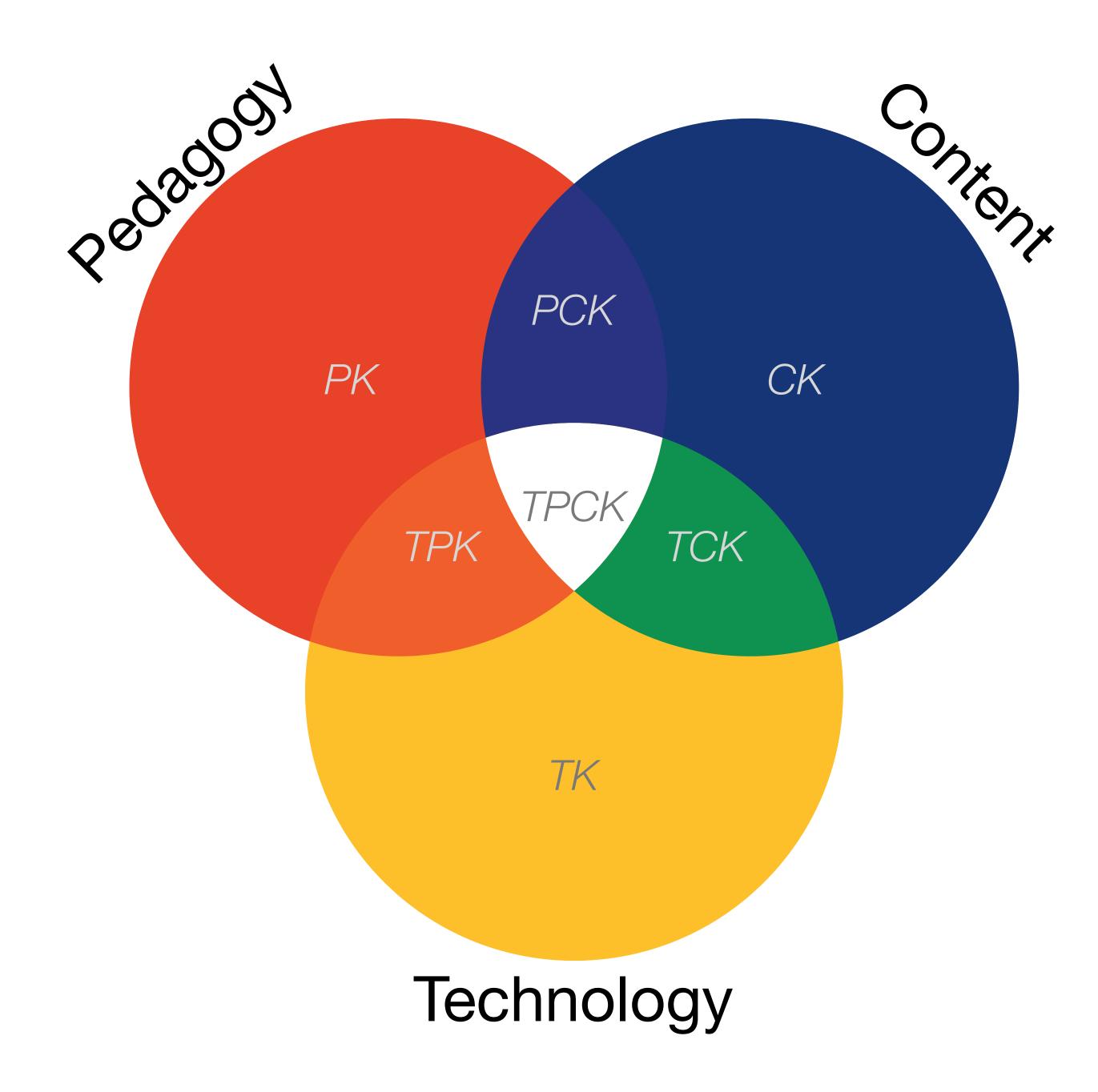
Annotating

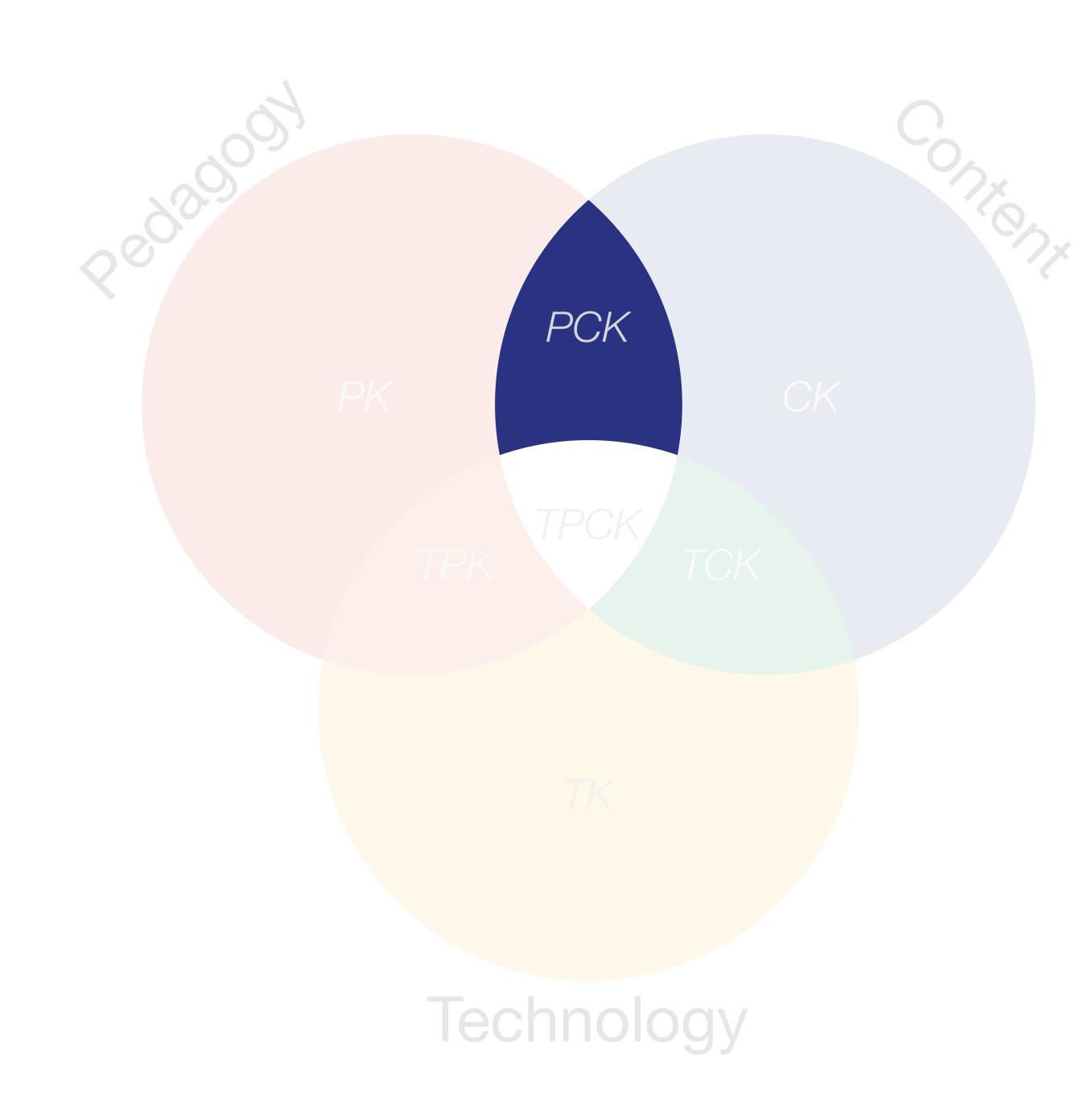
selecting according to a criterion, showing relationships of items selected to the original set

Sampling

John Unsworth. Scholarly Primitives: What Methods Do Humanities Researchers Have in Common and How Might Our Tools Reflect This? Humanities Computing, Formal Methods, Experimental Practice Symposium, Kings College, London. (May 2000)





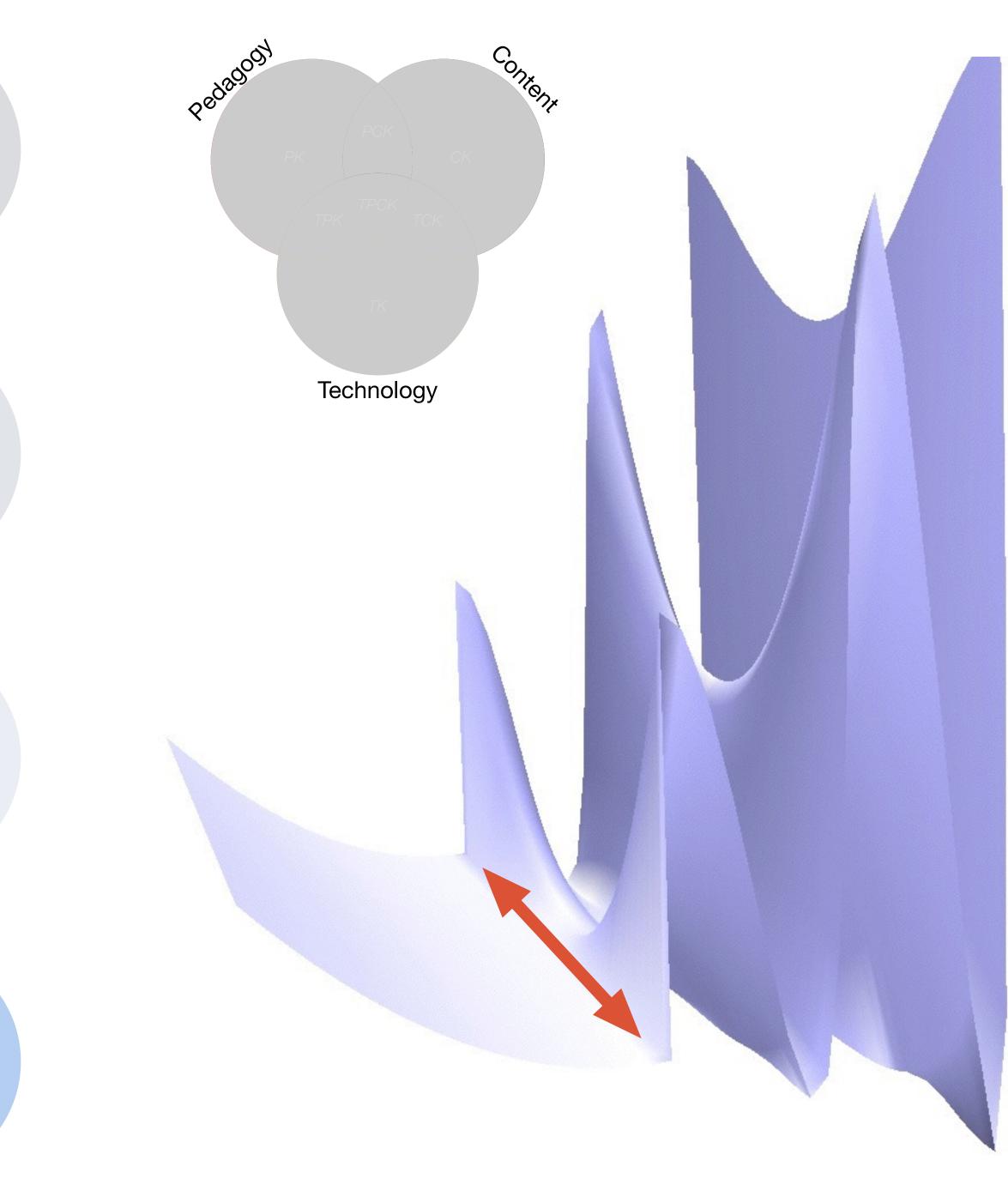




Modification Tech allows for significant task redesign

Augmentation Tech acts as a direct tool substitute, with functional improvement

Substitution



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

iPad ᅙ

Library

 \equiv

William Rosen

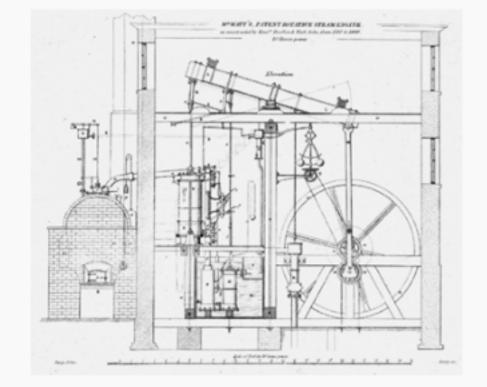


Fig. 5: The caption for this technical drawing reads "Mr. Watt's Patent Rotative Steam Engine as constructed by Messrs. Boulton & Watt, Soho, from 1787 to 1800. 10 Horse power." By 1787, the engine had evolved considerably from the earlier versions, using the sun-and-planet gear to drive the large wheel;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

above and to the left of the large wheel—to control

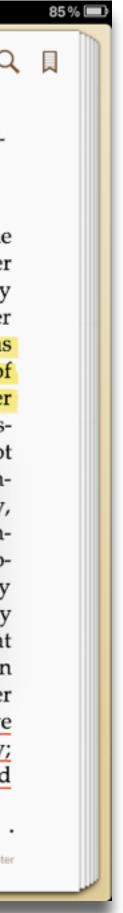
10:37 PM

The Most Powerful Idea in the World ${}_{\mathrm{A}}\mathrm{A}$ Q 🔲

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 les-Get data & graph this; how does this immei ory, pro but compare with later trends in patents unissued per year? con protect by 178 ary that pac ĥad ohn Locke in the centur, 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
 10 pages left in this chapter

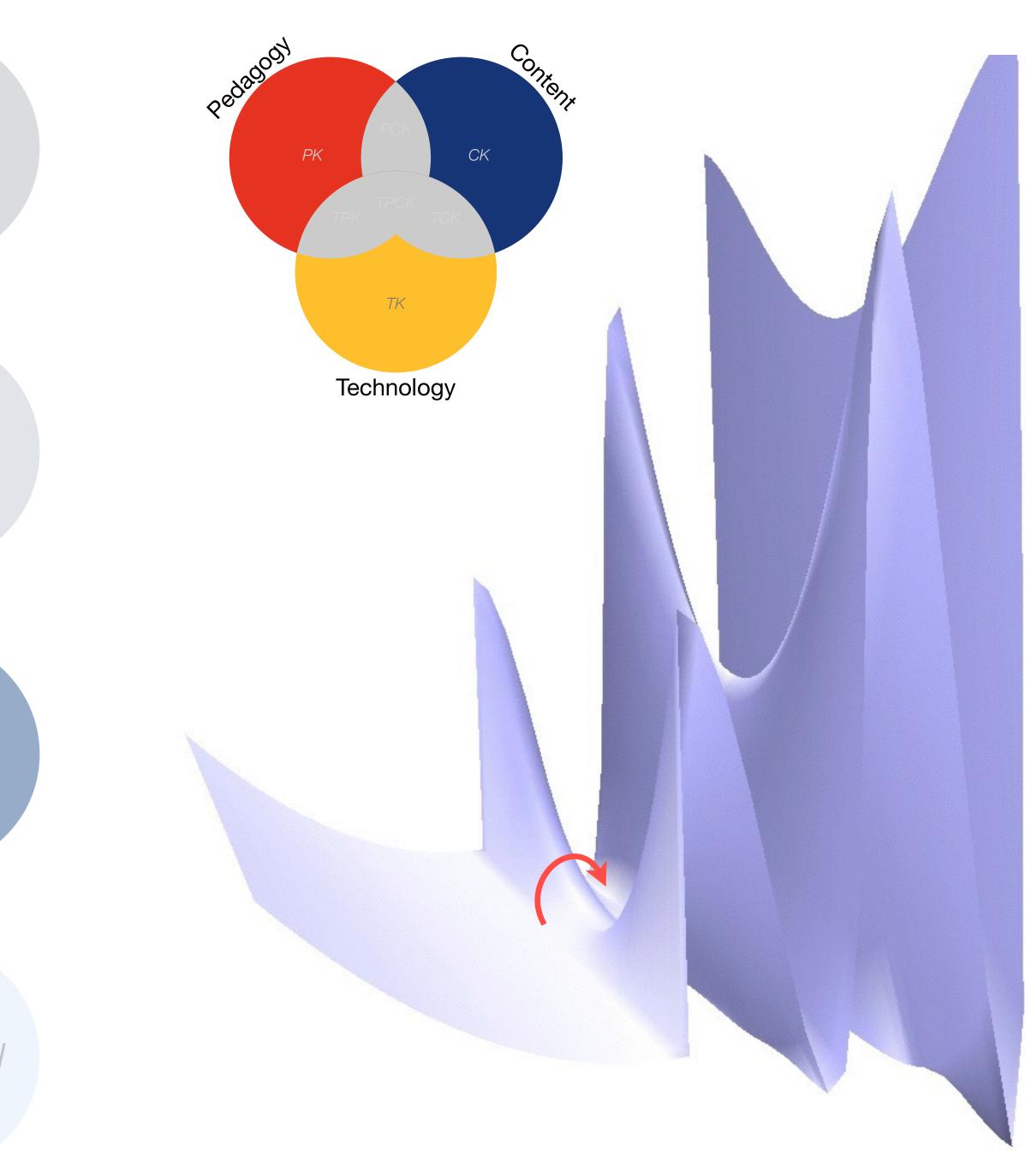


Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



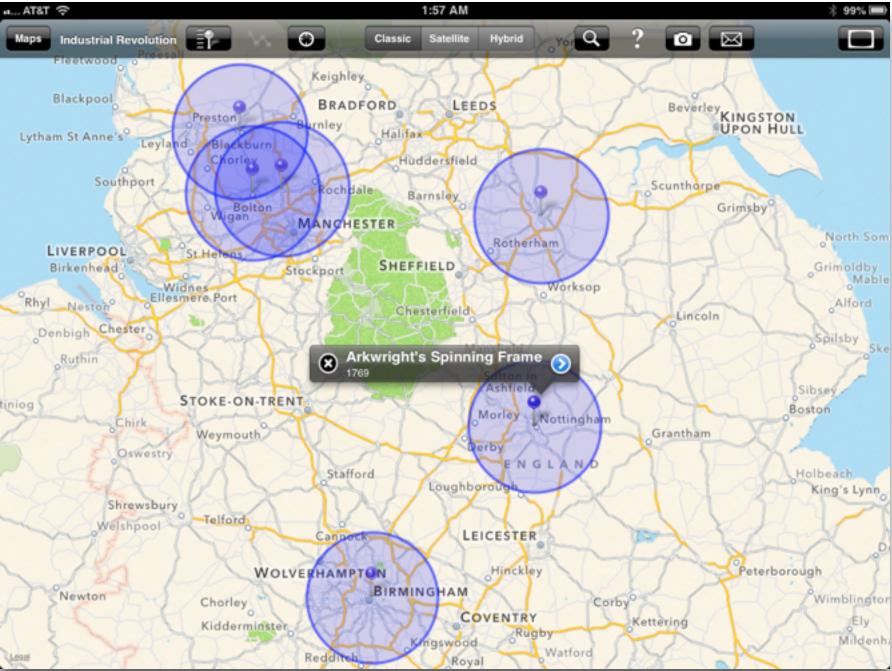
Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution





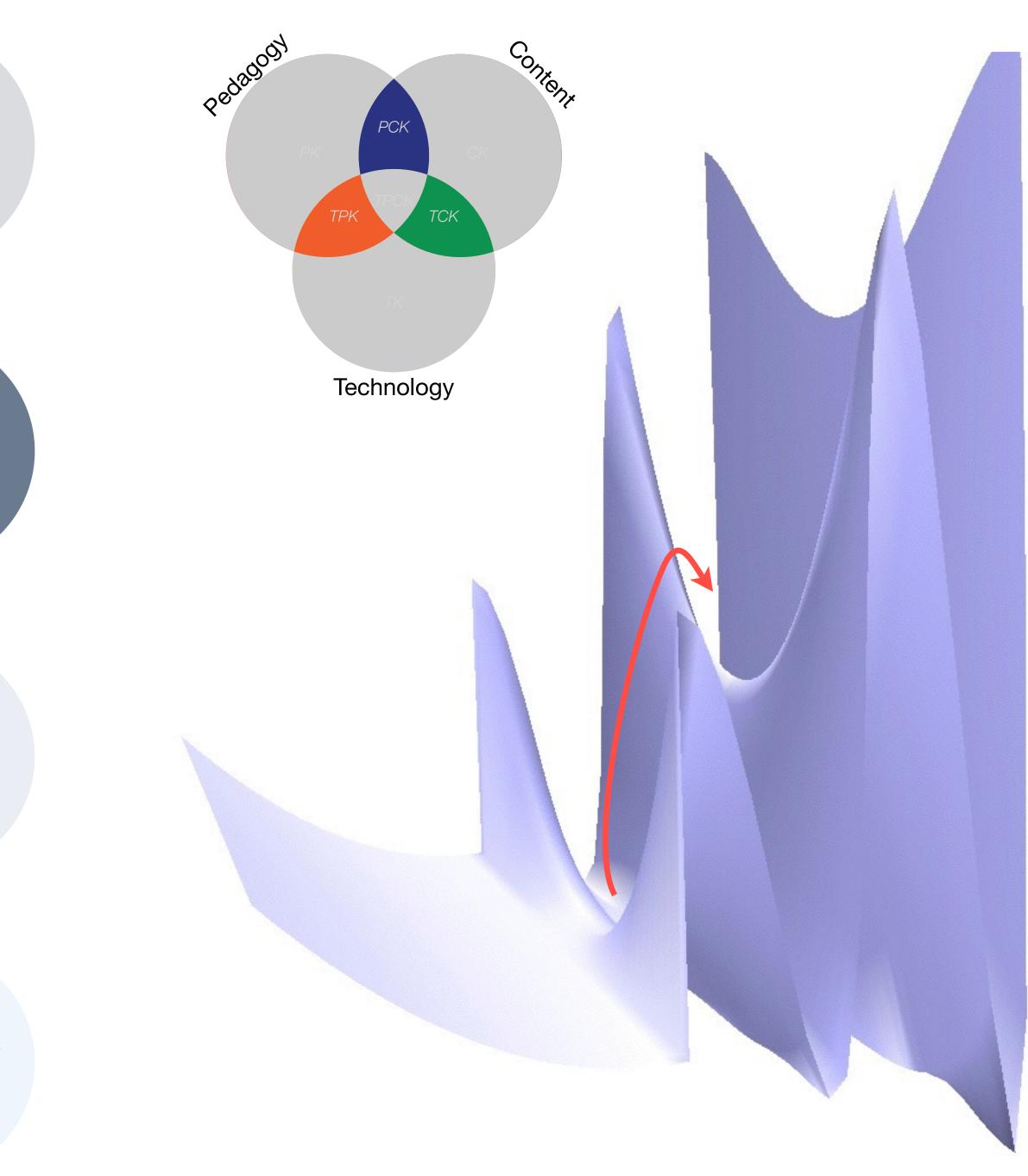
Modification

Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



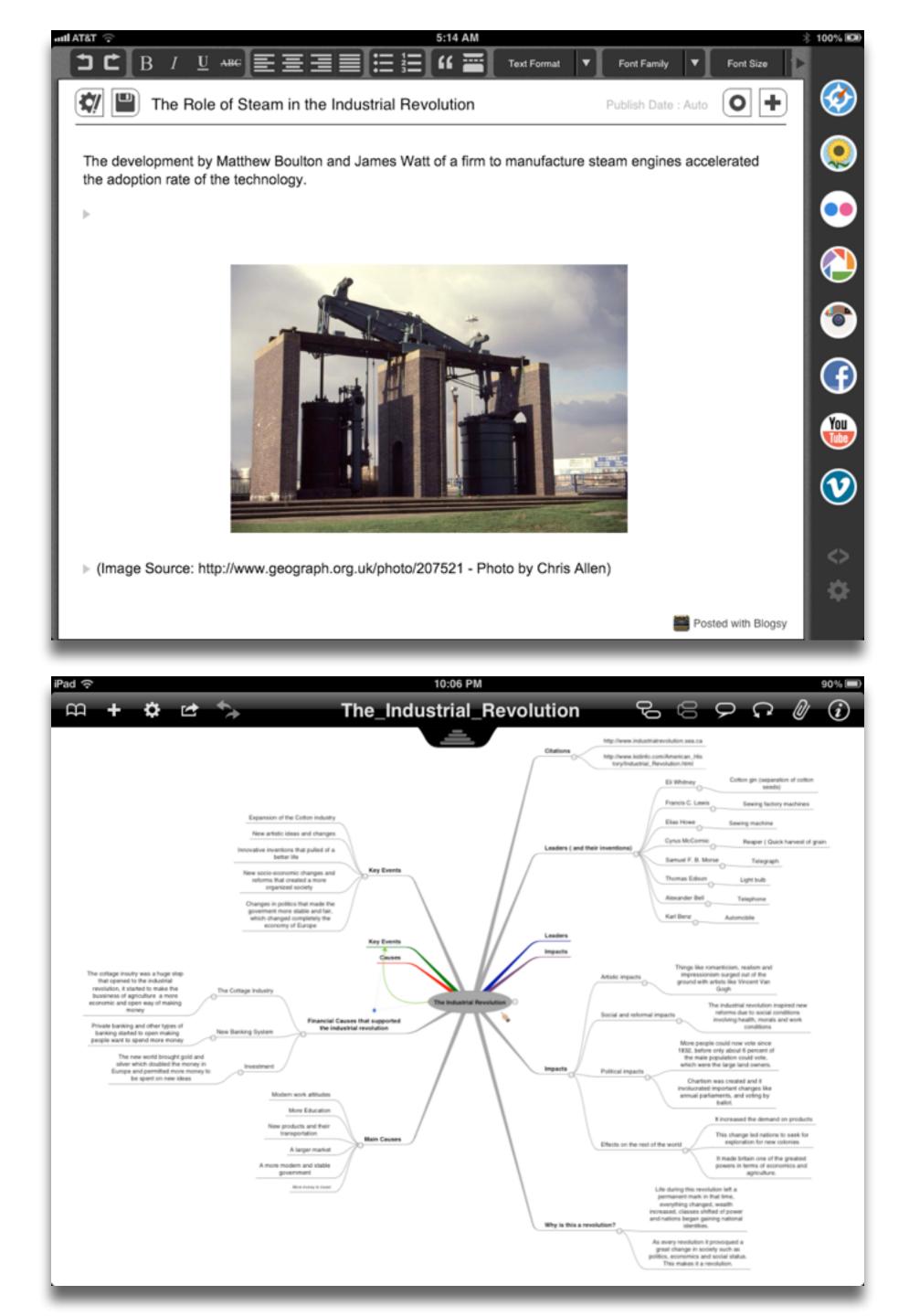
Modification

Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



Redefinition

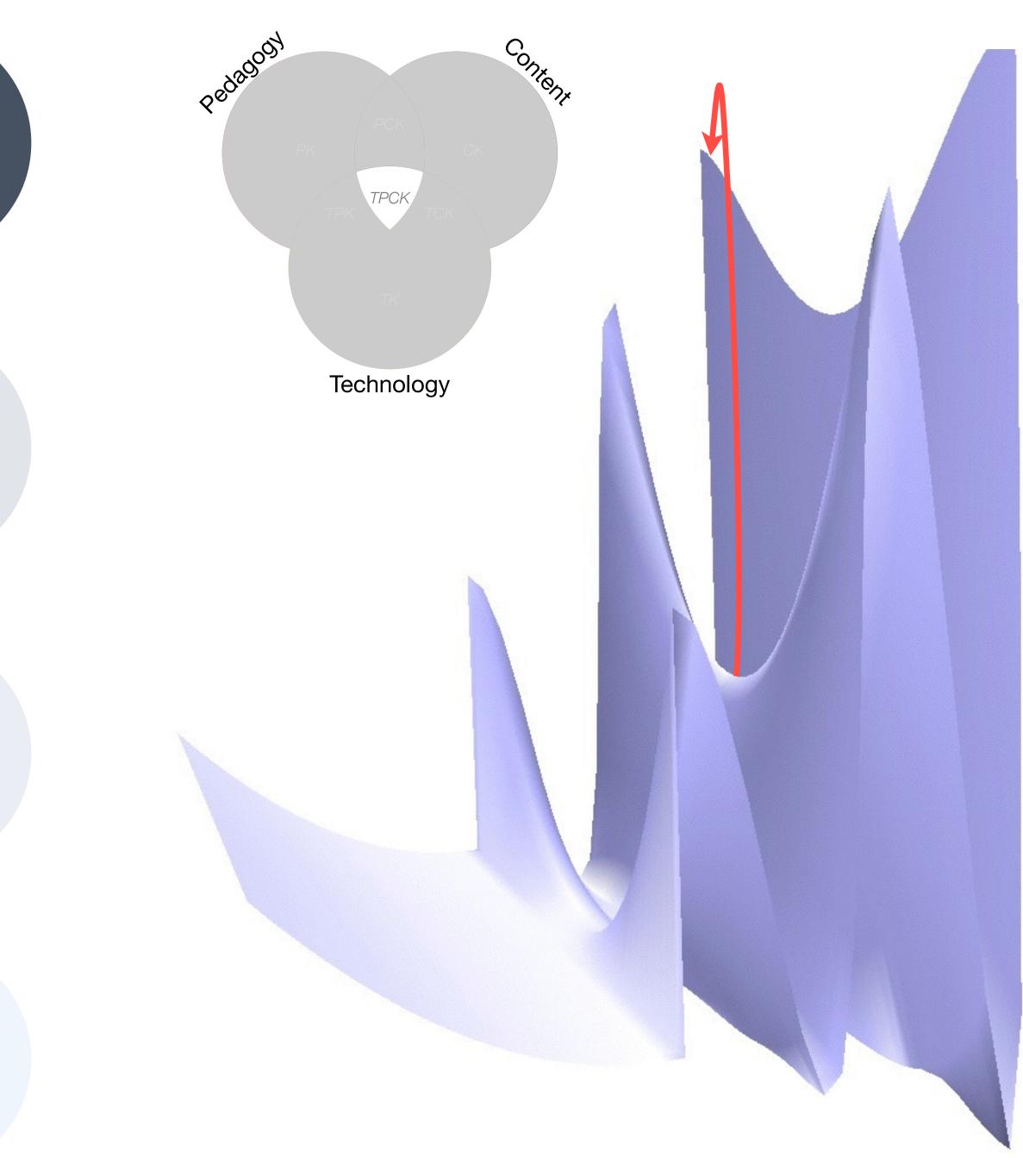
Tech allows for the creation of new tasks, previously inconceivable

Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



Redefinition

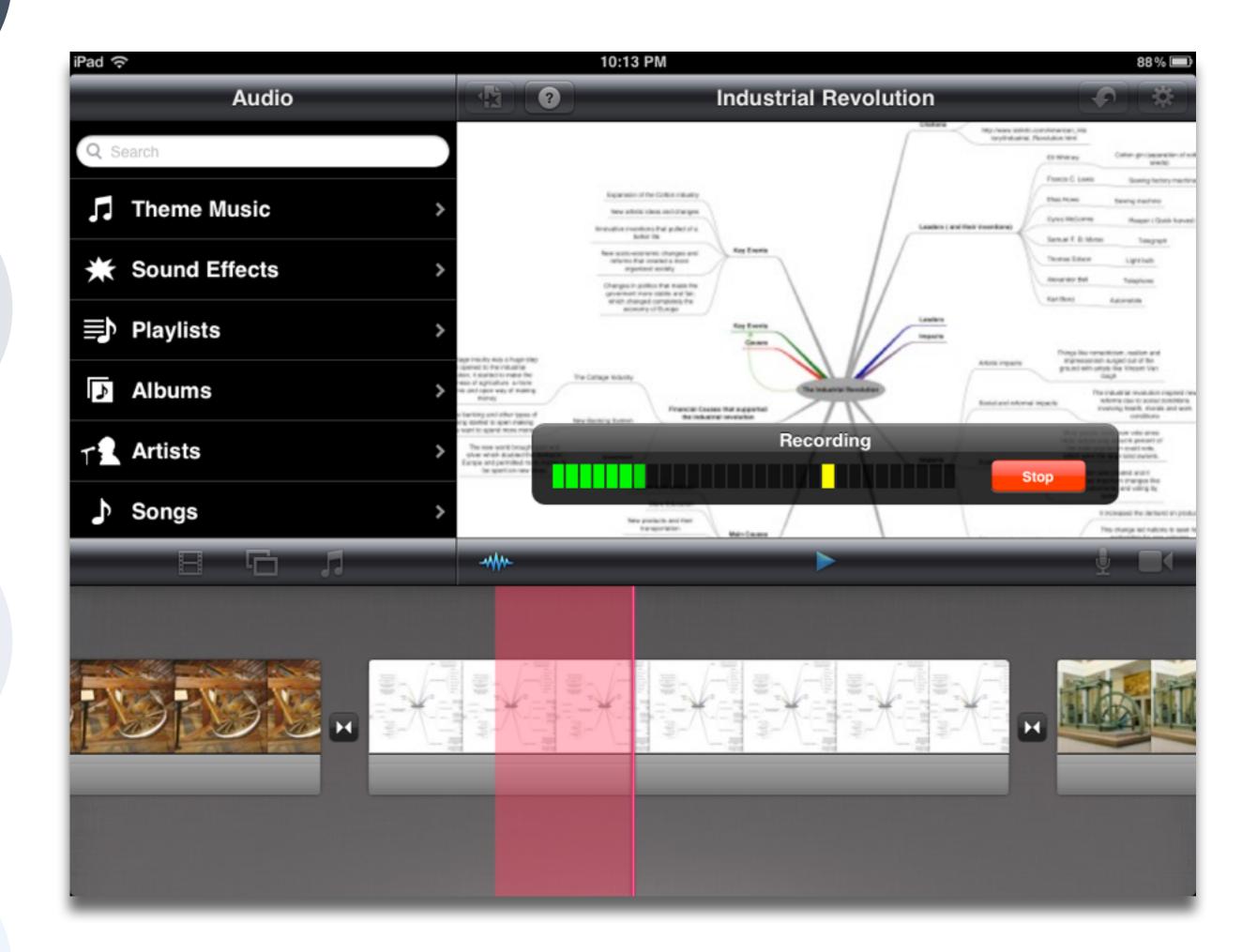
Tech allows for the creation of new tasks, previously inconceivable

Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



Choosing the First SAMR Ladder Project: Three Options

• Your Passion:

- subject you teach, what would it be?
- Barriers to Your Students' Progress:
 - beyond?
- What Students Will Do In the Future:
 - future studies or in their lives outside school?

• If you had to pick one topic from your class that best exemplifies why you became fascinated with the

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

• Which topic from your class would, if deeply understood, best serve the interests of your students in

Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
<image/>				
	Ruben R. Puentedura, "Technology In Educati	on: The First 200,000 Years" The NMC Perspective Series: Ideas	that Matter. NMC Summer Conference, 2012.	





Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
<image/>				

Bookmarks

Discussions

Blogging

Telepresence



<u>_</u>





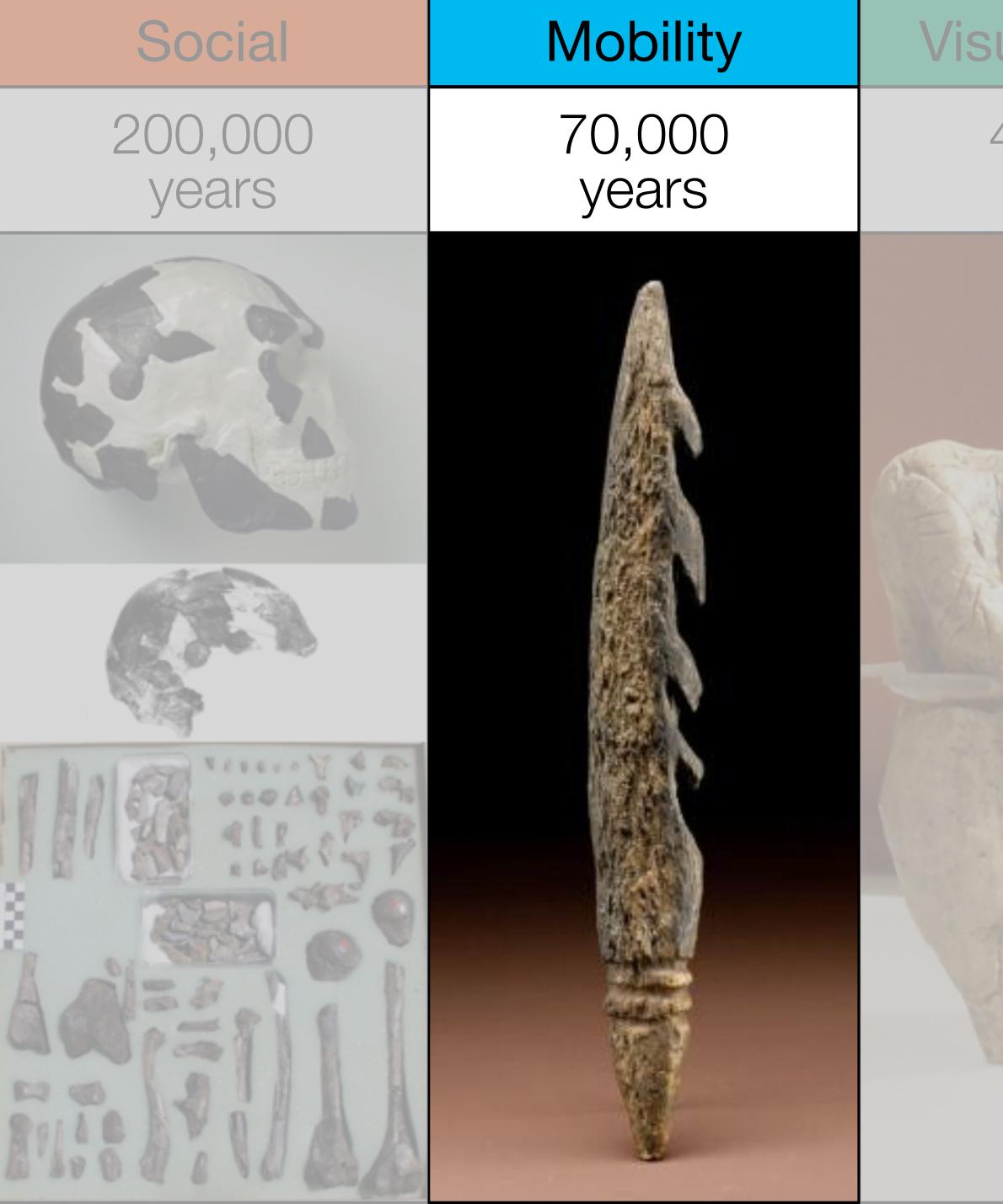




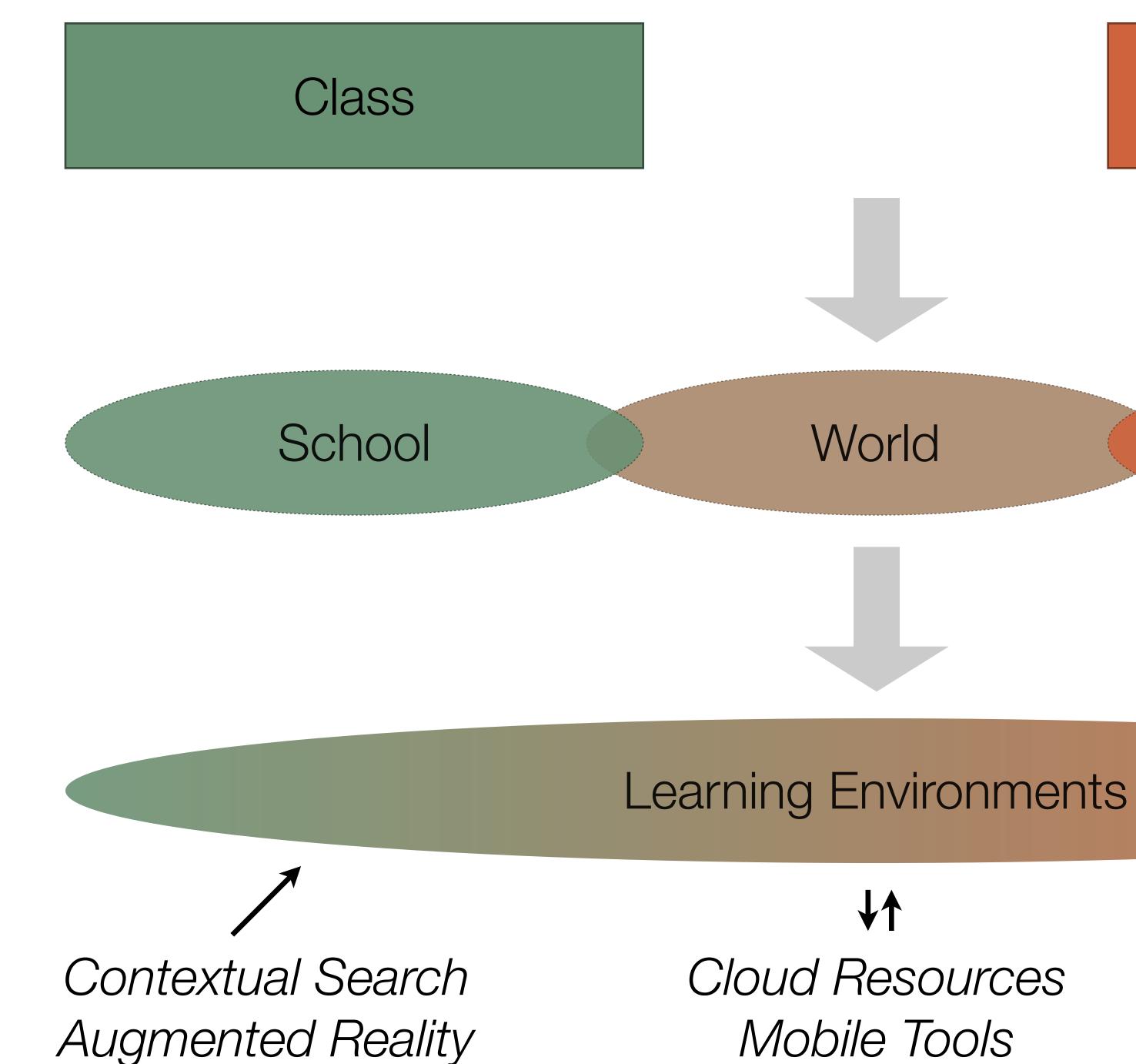
Microblogging



File Sharing



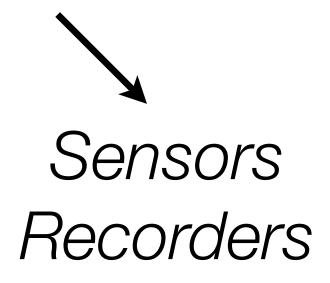
ualization	Storytelling	Gaming
40,000 years	17,000 years	8,000 years





Home

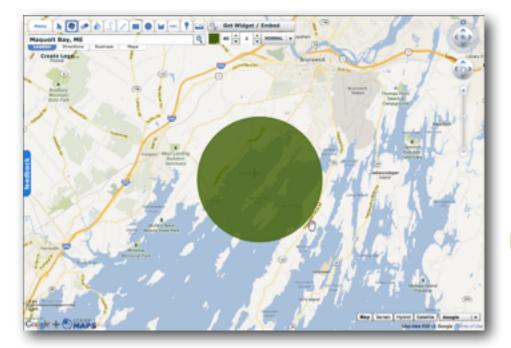
Mobile Tools



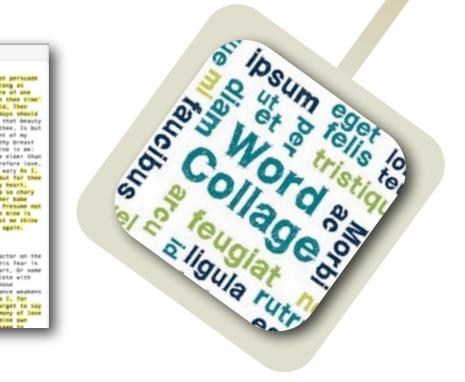


ualization	Storytelling	Gaming
40,000 years	17,000 years	8,000 years

	Timeline Beautifully crafted torrelines that are	
C Marine 1 Marine 1 Marine 1	<page-header> Bit State St</page-header>	Inducery 7,1980 Website This is an example of a website. Just parte a list to the site in the media field.
Z, mires	1	The State Sec
	EE Intern	€ ingine 10 ins
and the part of the second		



word tree	🕐 menerativas 🖓 ena plorase per Texe
nde Baruer Olerna	0011
Company of the second s	
1200.00 million	— By glass shall not persuade
am - management	me I am old, to long an
and a second second	youth and thou are of one
and and an a second sec	adde: But when in thes time!
and the second s	s furrows I behald. Then
	took 1 death my days should
have -	explate, for all that beauty
28 014	that doth cover thee. Is but
Street N. Ash	the seemly raiment of my
- Merculant	an heart, Which in thy breast
A CONTRACTOR OF THE OWNER OWNER OF THE OWNER	- doth live, as thing in me;
 All the second statement 	Here can I then he elder than
The second secon	thou art? Of therefore love.
do -	the of thyself so wary As I.
1 Second	not for syself, but for thes
No. of Concession, Name of	will; Bearing thy heart,
leve	which I will keep to chary
NOTION AND A STREET AND A STREE	- As tender ourse her babe
AN -C STOCKET OF	from faring 111. Presume not
and the state of t	an thy heart when sine is
A CONTRACTOR OF	stain, they gaviet as thing
The second	most to give back again.
MY STATE MERCURAL	_
that The state and a Westman and	XX111
In the second se	
A CONTRACTOR OF THE OWNER	As an unperfect actor on the
	stage, Who with his fear is
	put beside his part, Gr some
and	fierce thing replate with
has not here the barrent	too much rage, whose
	strength's abundance weakens
Children	his own heart; So E. for
· ····	fear of trust, forget to say
an Alternation	The perfect ceremony of Love
and the second s	is rite, And in mine own
and the second s	have's attempth seen to





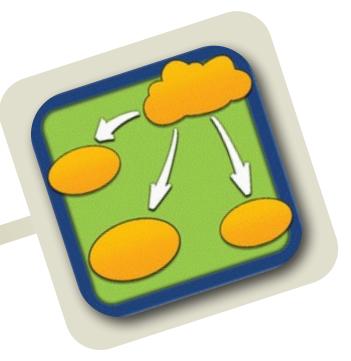
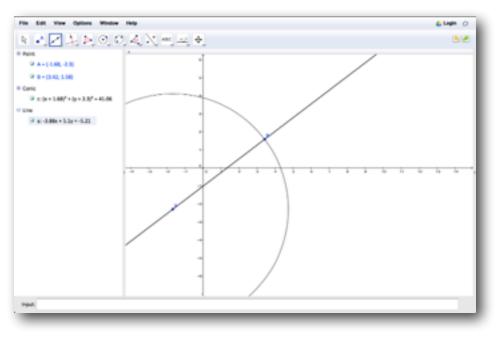
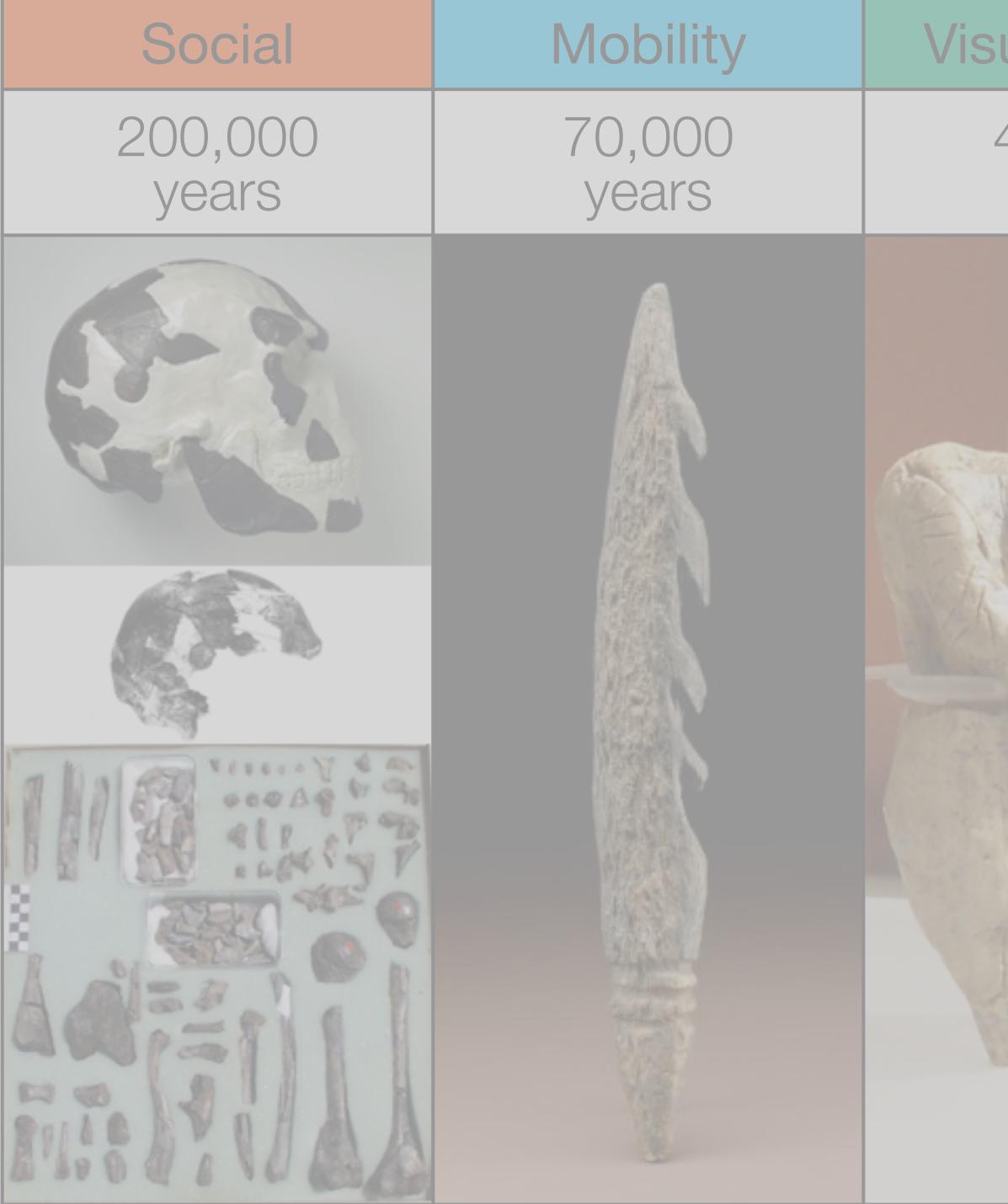


Chart 1		
C The Salt View Page Arrange Intent Dis-		
	AND & REAL PROPERTY OF	
		Internet Solidati Status (nr. 19 Ferri (DSL) Sel Sel Solidati Anton Solidati Anton Solidati Anton Solidati Anton Solidati Anton Solidati Anton Solidati Anton
		Connech

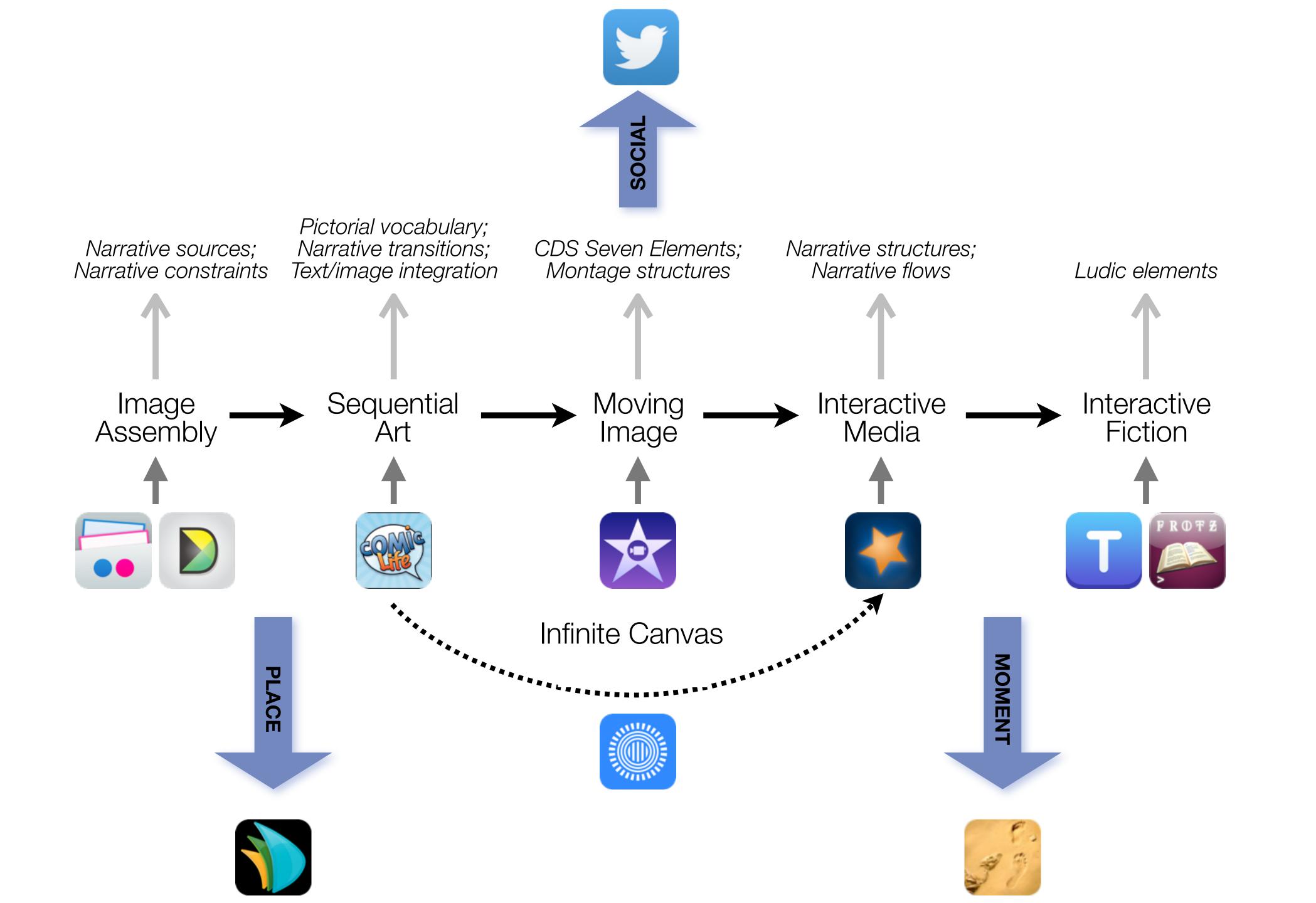


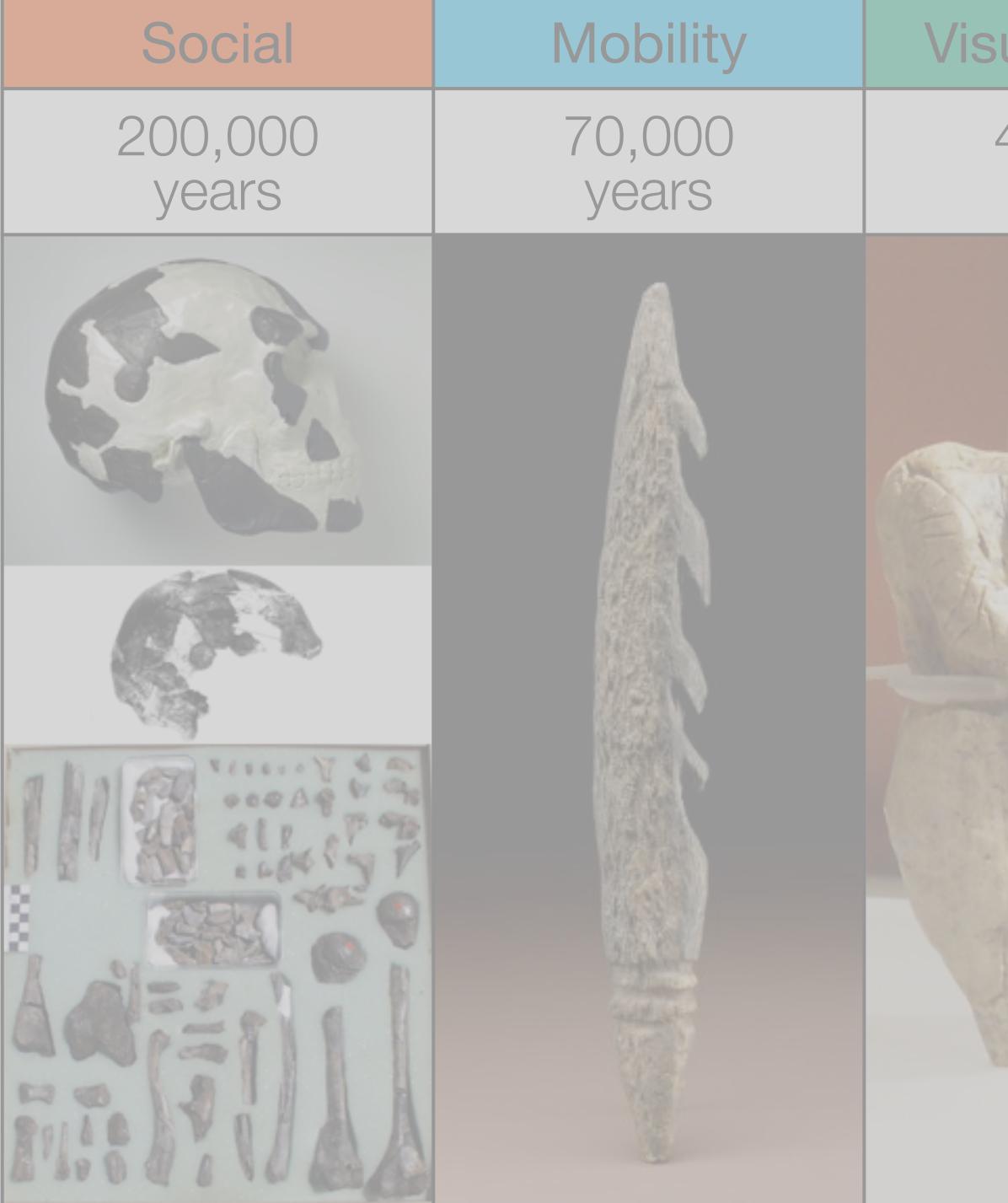






ualization	Storytelling	Gaming
40,000 years	17,000 years	8,000 years





ualization	Storytelling	Gaming
40,000 years	17,000 years	8,000 years





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."

Salen, K. and E. Zimmerman. Rules of Play : Game Design Fundamentals. The MIT Press. (2003)

Research Article

The Pen Is Mightier Than the Keyboard: **Advantages of Longhand Over Laptop Note Taking**



Pam A. Mueller¹ and Daniel M. Oppenheimer² ¹Princeton University and ²University of California, Los Angeles

Abstract

Taking notes on laptops rather than in longhand is increasingly common. Many researchers have suggested that laptop note taking is less effective than longhand note taking for learning. Prior studies have primarily focused on students' capacity for multitasking and distraction when using laptops. The present research suggests that even when laptops are used solely to take notes, they may still be impairing learning because their use results in shallower processing. In three studies, we found that students who took notes on laptops performed worse on conceptual questions than students who took notes longhand. We show that whereas taking more notes can be beneficial, laptop note takers' tendency to transcribe lectures verbatim rather than processing information and reframing it in their own words is detrimental to learning.



Psychological Science 1 - 10© The Author(s) 2014 Reprints and permissions: sagepub.com/journalsPermissions.nav DOI: 10.1177/0956797614524581 pss.sagepub.com





Augmentation Tech acts as a direct tool substitute, with functional improvement

Substitution

Tech acts as a direct tool substitute, with no functional change

●●●●○ AT&T LTE

 \times

5:07 AM

5 1

Technology

Modification Tech allows for significant task redesign

Generalize patterns

Augmentation Tech acts as a direct tool substitute, with functional improvement

Substitution Tech acts as a direct tool substitute, with no functional



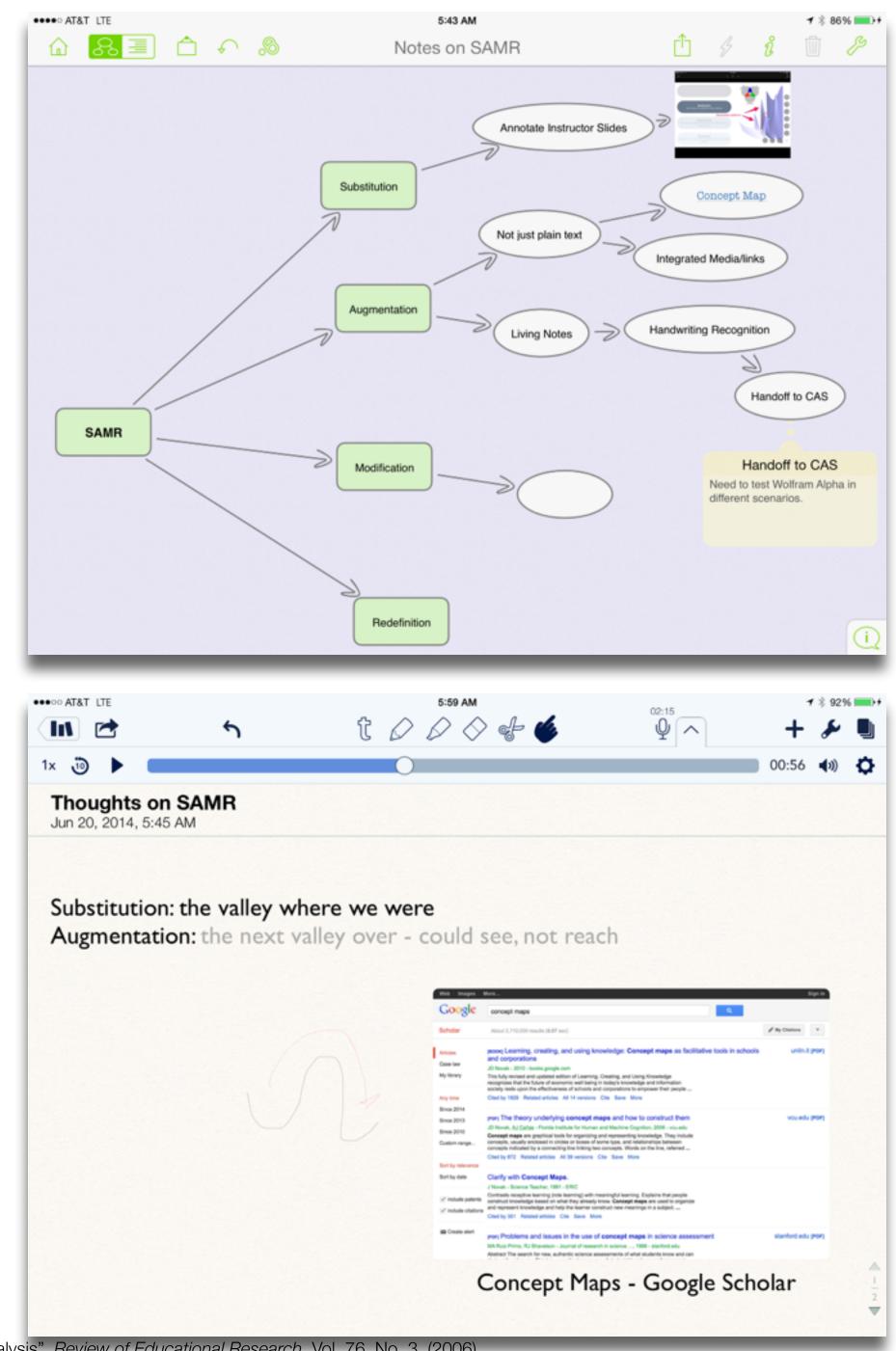
Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution

Tech acts as a direct tool substitute, with no functional change

John C. Nesbit and Olusola O. Adesope, "Learning With Concept and Knowledge Maps: A Meta-Analysis". Review of Educational Research, Vol. 76, No. 3. (2006)

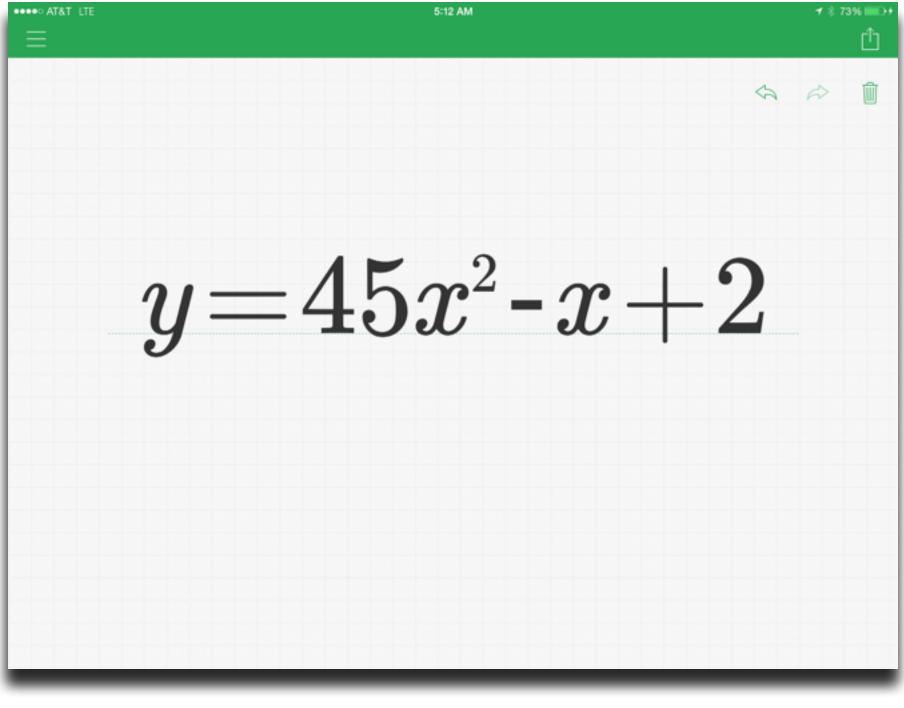


Modification Tech allows for significant task redesign

Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution



•••• AT&T LTE	5:14 AM イ 考 749	6 💼 +
Examples	🗱 Wolfram Alpha	Û
sin(x)	$yØ$	Ø
Mathematics Words & Units & Measures	Input	\gg
Linguistics	$y = 45 x^2 - x + 2$	
ահե 🕵 🚞	Geometric figure	\gg
Statistics & Data People & History Dates & Times	parabola	
Analysis	Properties	
🛠 📬 🏟	Plots	
Chemistry Culture & Media Money & Finance	y 25 20 15 10 -0.6 to 0.6) (x from -0.6 to 0.6) x	
🚵 🧟 11M	y 509 /	
Physics Art & Design Socioeconomic Data	(x from -3 to 3)	
🔊 660 🧚	Alternate forms	\gg
Astronomy Music Health & Medicine	$-45 x^2 + x + y - 2 = 0$	
	y = x(45x - 1) + 2	
o`° 🗺 🐝	Properties as a real function	
Examples History Favorites About	R (all real numbers)	

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

Ruben R. Puentedura #thoughtvectors Search Cindy Jennings @cljennings Sad to me: @ChristinaDEI noting that her father had to strive to Timeline 848 share his vision in ways that ppl wanted to hear it. #thoughtvectors Mentions Jon Becker @jonbecker Messages Watch @GardnerCampbell interview @ChristinaDEI, Doug Engelbart's daughter, LIVE youtube.com/watch?v=NBKjI0... #thoughtvectors 🛨 Favorites Q Search Profile Gardner Campbell @GardnerCampbell #thoughtvectors Hangout w Christina Engelbart i≣ Lists (@ChristinaDEI): youtube.com/watch?v=NBKjI0.... Join us there or G+ plus.google.com/events/ 1 Retweets csrjud5... Mute Filters o^o Settings Gardner Campbell @GardnerCampbell Hangout w Christina Engelbart (@ChristinaDEI), discussing her work w #thoughtvectors at VCU. 4:30! plus.google.com/events/csrjud5... Cindy Jennings @cljennings Early mention of Maria Montessori has my attention! (2/2) #qepfdi #thoughtvectors 100 Tweets

5:22 AM

•••• AT&T LTE



Redefinition

Tech allows for the creation of new tasks, previously inconceivable

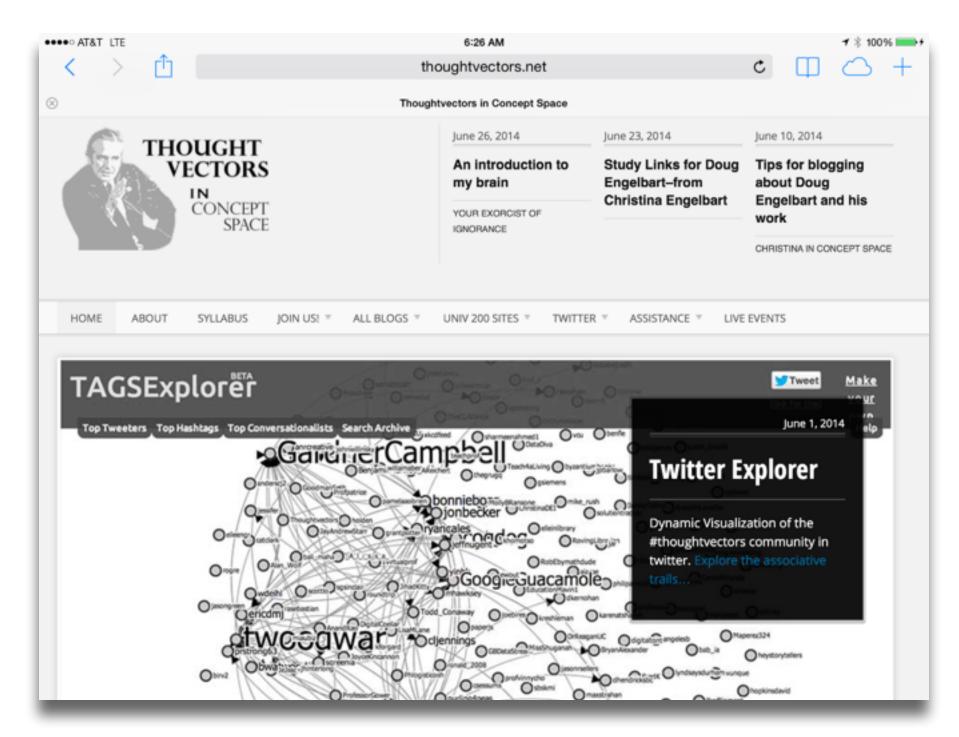
Modification Tech allows for significant task redesign

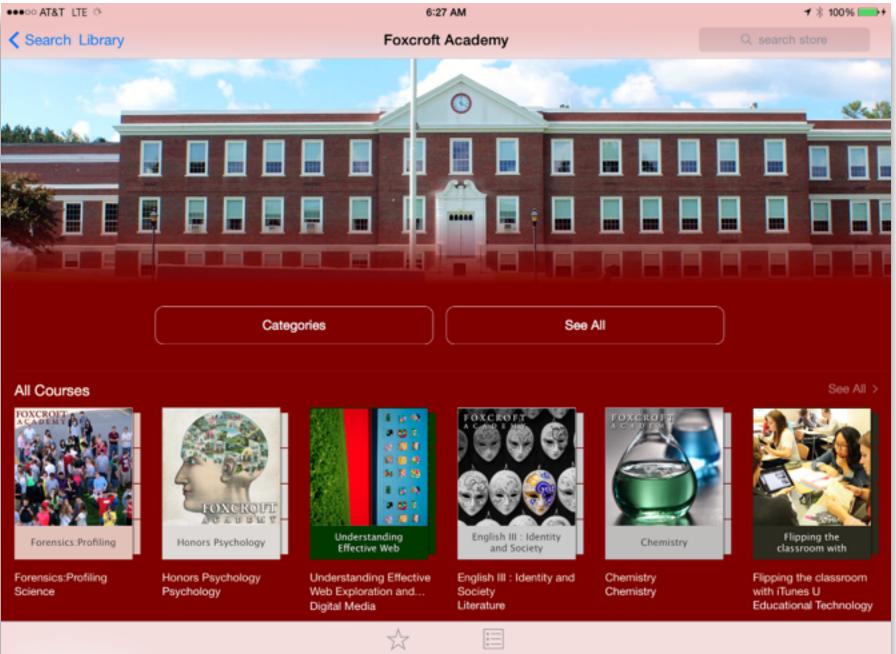
Augmentation

Tech acts as a direct tool substitute, with functional improvement

Substitution

Tech acts as a direct tool substitute, with no functional change

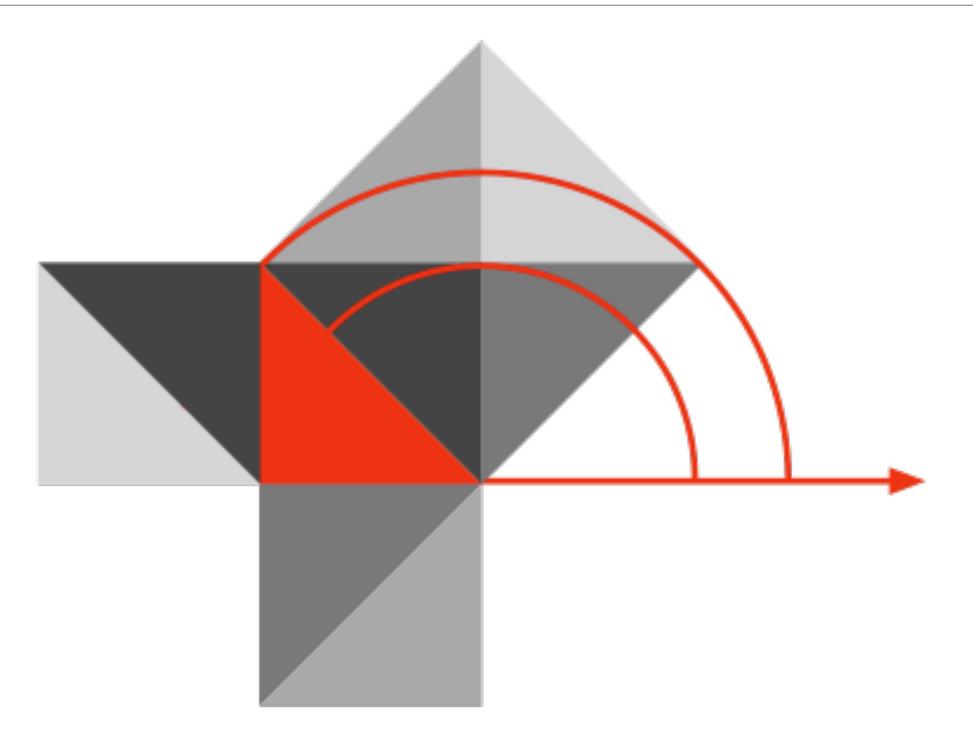




Featured

Top Charts

Hippasus



Blog: http://hippasus.com/rrpweblog/ Email: rubenrp@hippasus.com Twitter: @rubenrp

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License.

