

Flipping with Purpose: Refreshing Technology for Classrooms

Dr. Gary Ackerman, Ph.D.

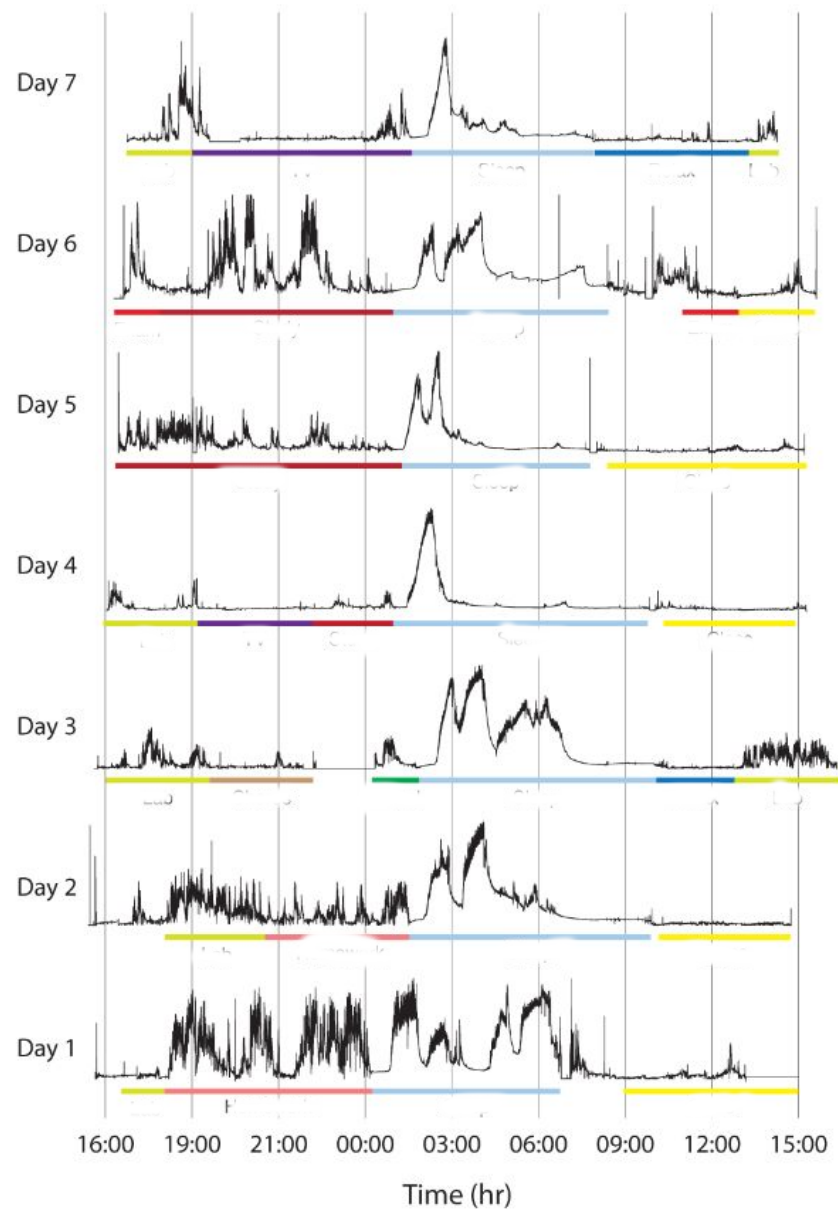
@garyackermanphd

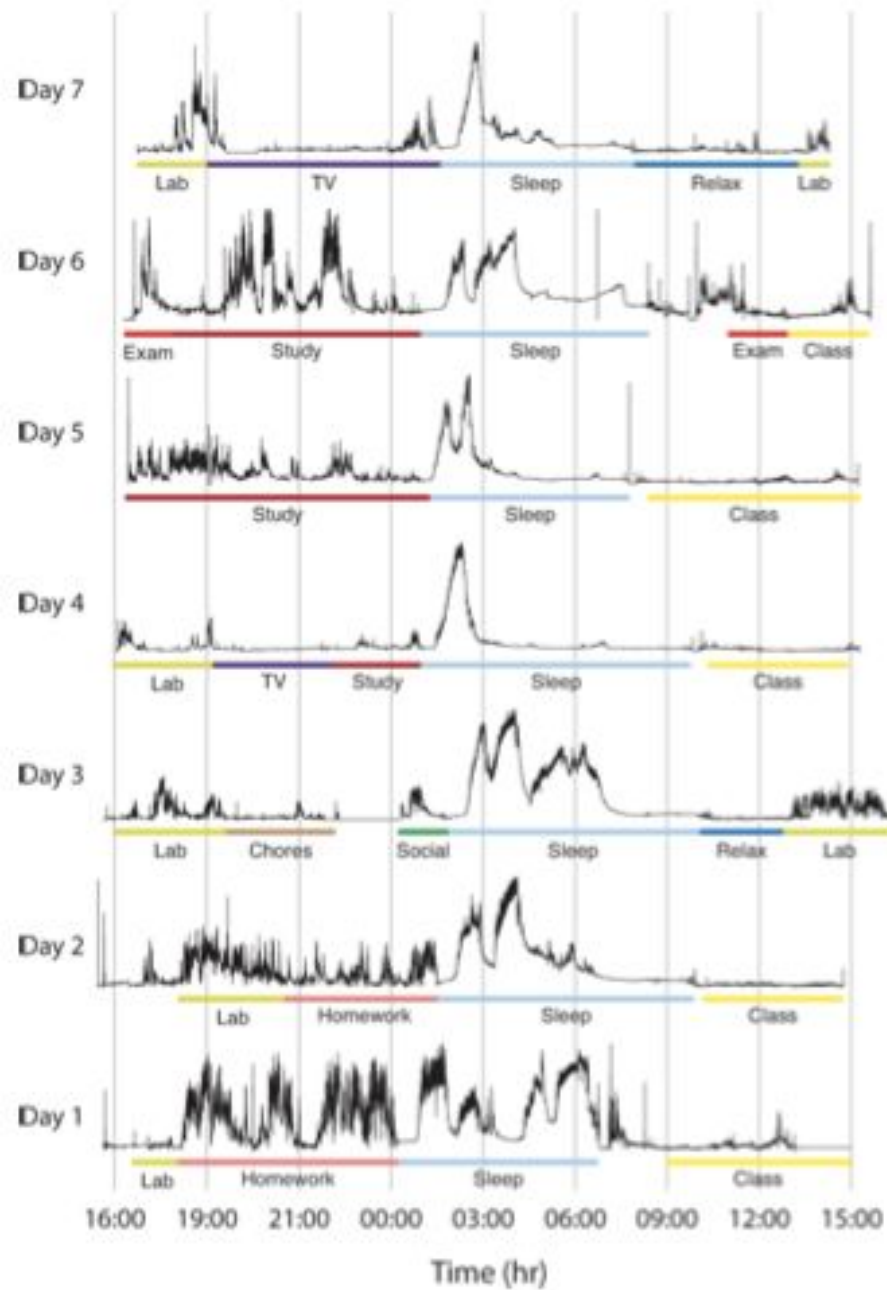
gary@hackscience.net

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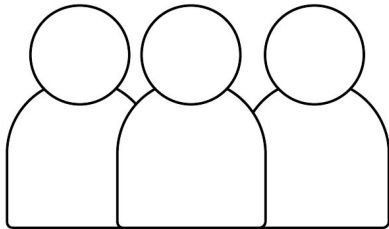
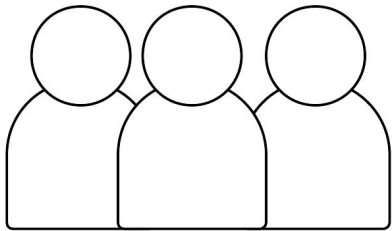
Rutland Southwest Supervisory Union

about 60 minutes for presentation... please interrupt

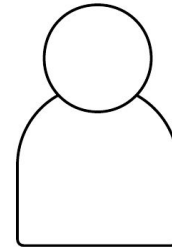




Traditional Classrooms

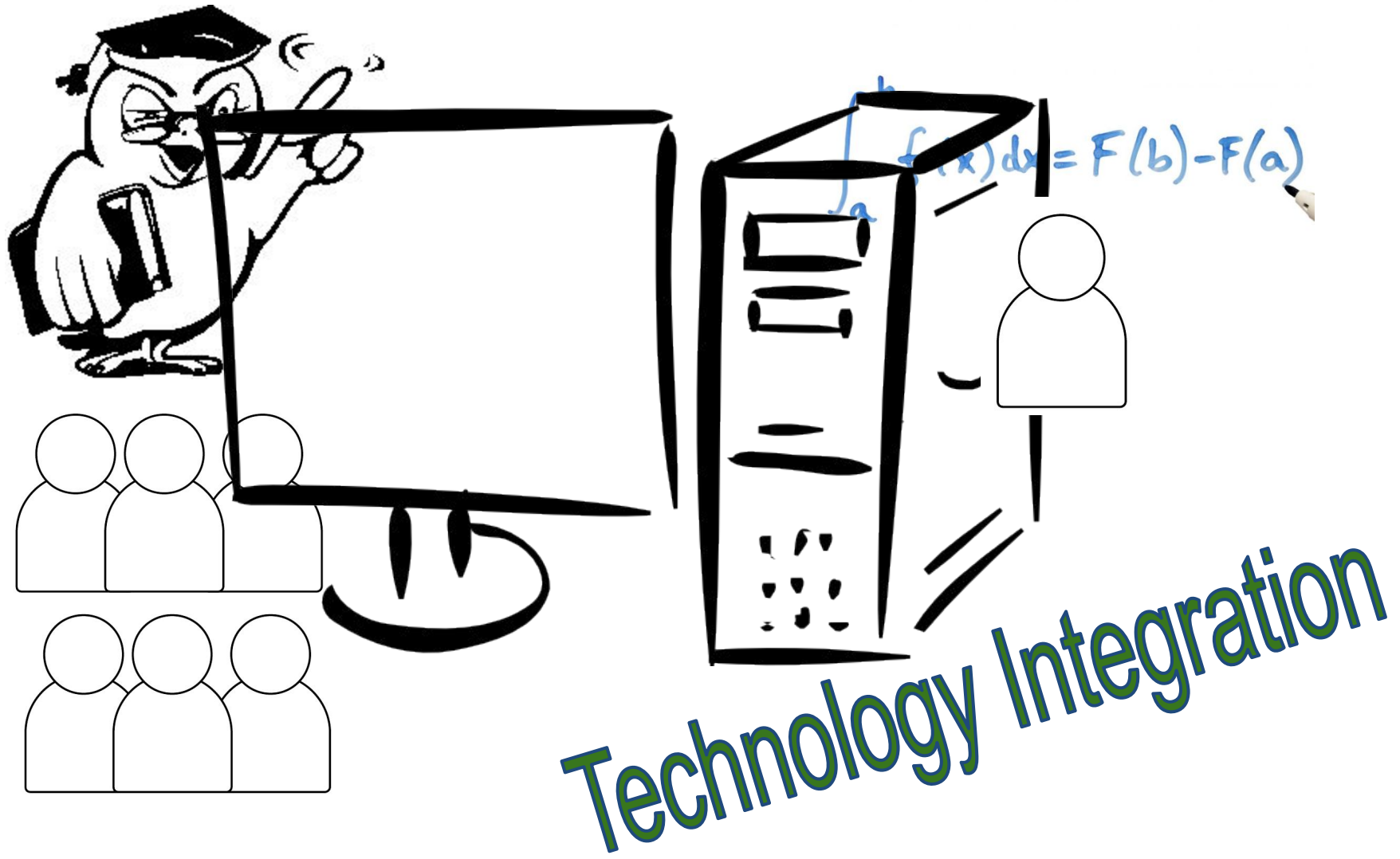


$$\int_a^b f(x) dx = F(b) - F(a)$$

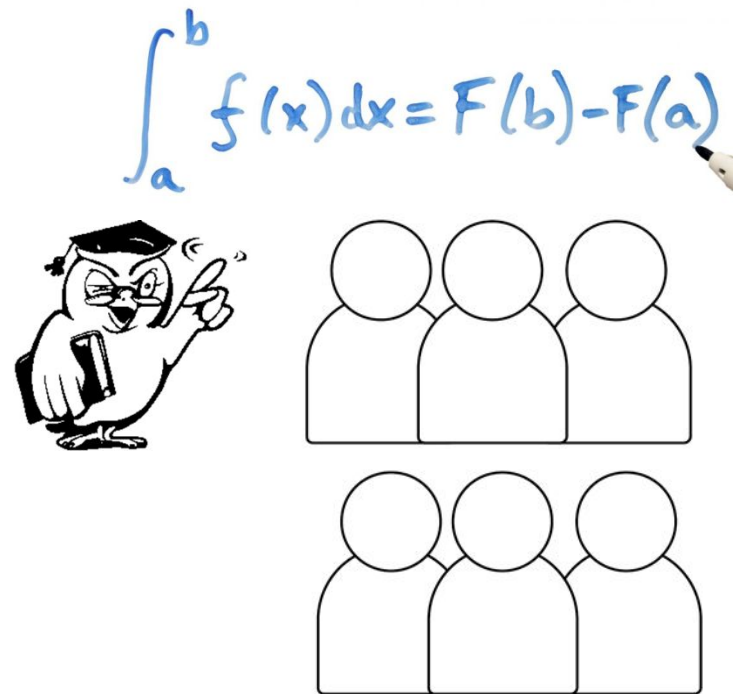
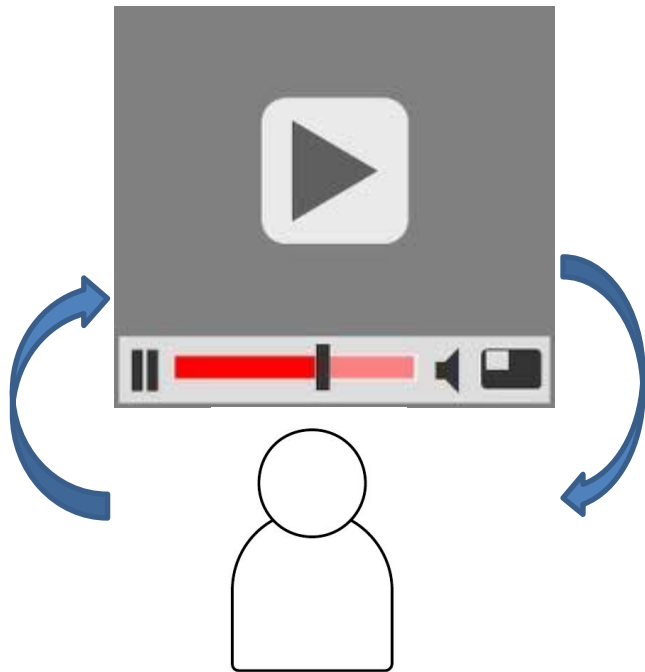


Since 2000:

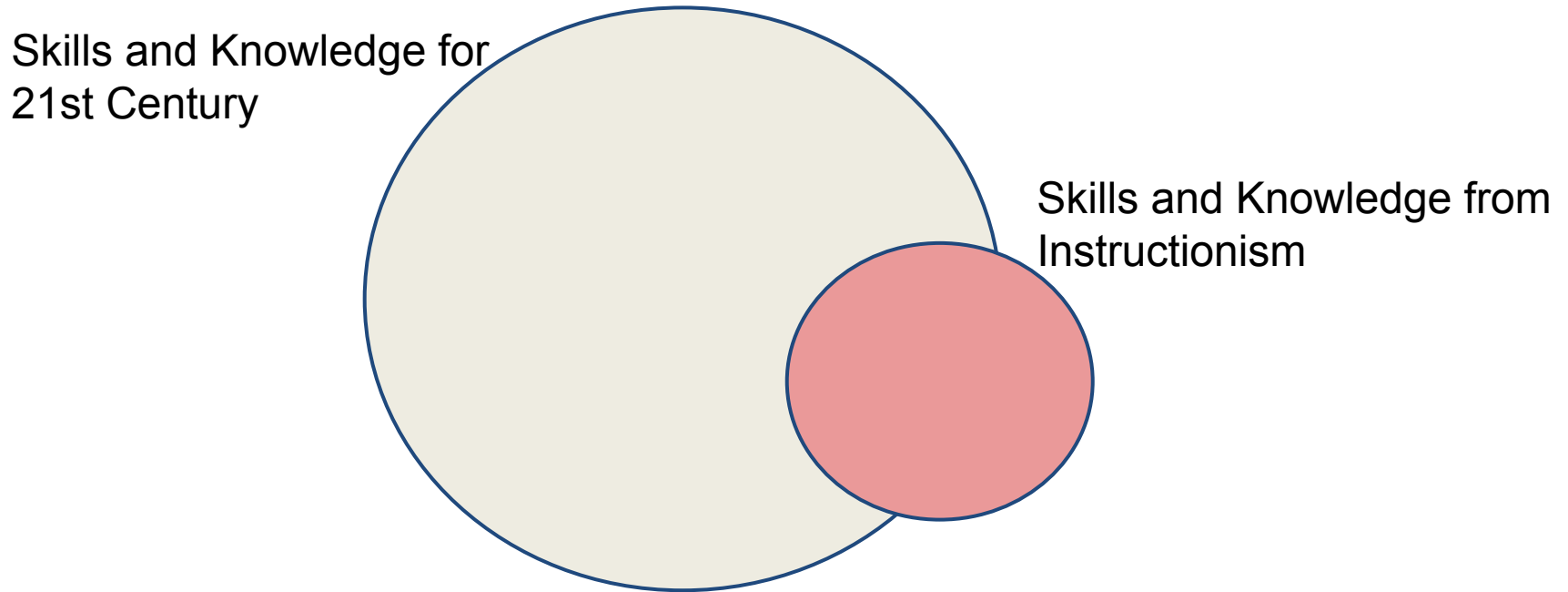
Traditional Classrooms



Advantages: “Flipped Classrooms”



“Flipped” & Traditional Classrooms

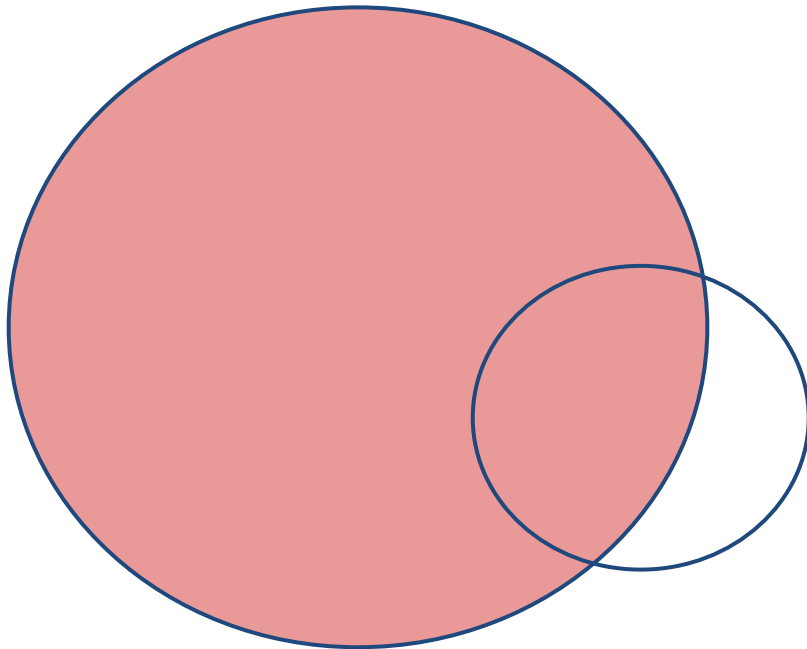


New → **Known**

Upside-Down Classrooms:

Not Unfamiliar to Middle Schoolers

Known → **New**



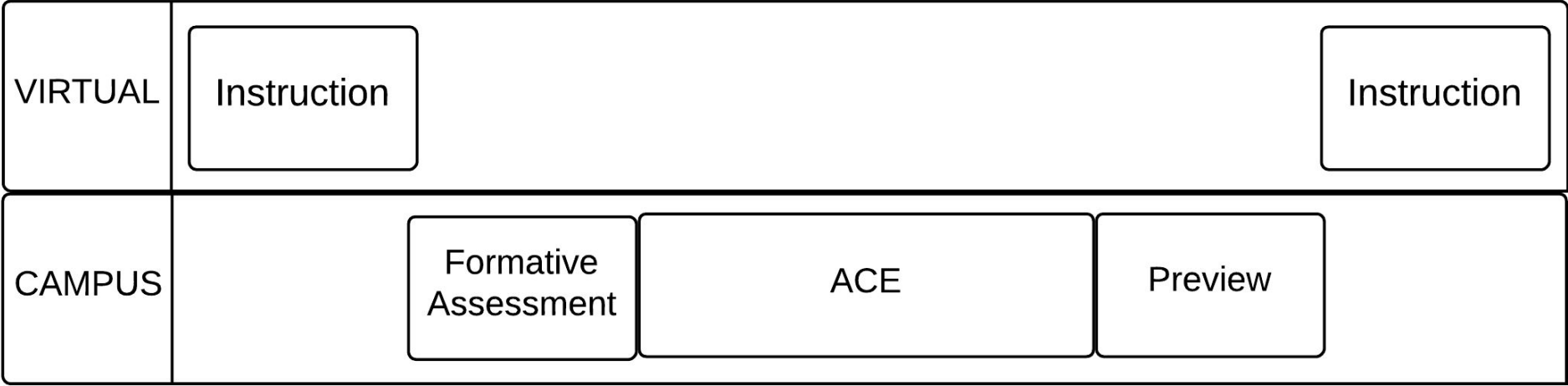
Purposeful and
Sophisticated
Adaptation

Part I: Six Models

Part II: Tips & Habits

for turning classrooms upside-down

Check-ACE-Preview



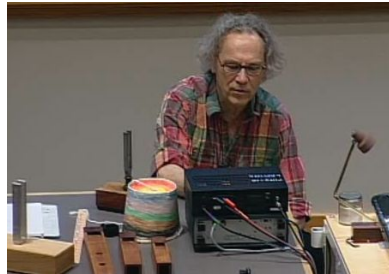
Check-ACE-Preview

ACE

Sound... can we measure it?

Ackerman presents, "Here is what Walter will say..."

Preview

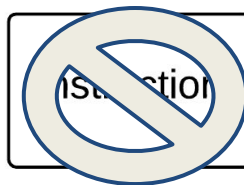


ACE

Design an experiment to.

Students report, "One thing Walter did..."

Formative Assessment



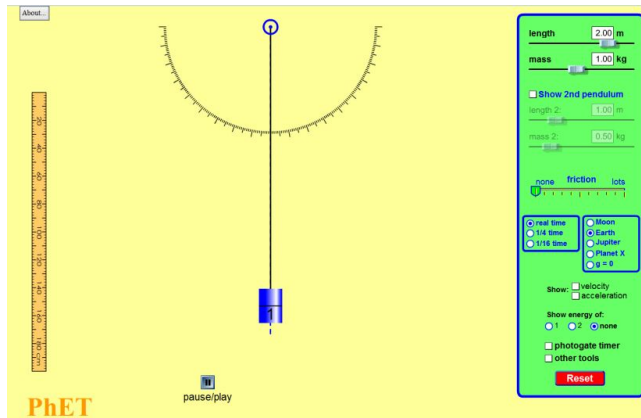
contribute to
learning of

Data Collection

VIRTUAL	Data Collection	
CAMPUS	Model Manipulation and Data Recording	Data Analysis and Knowledge Building

Data Collection

Known



New



Pendulum data ☆

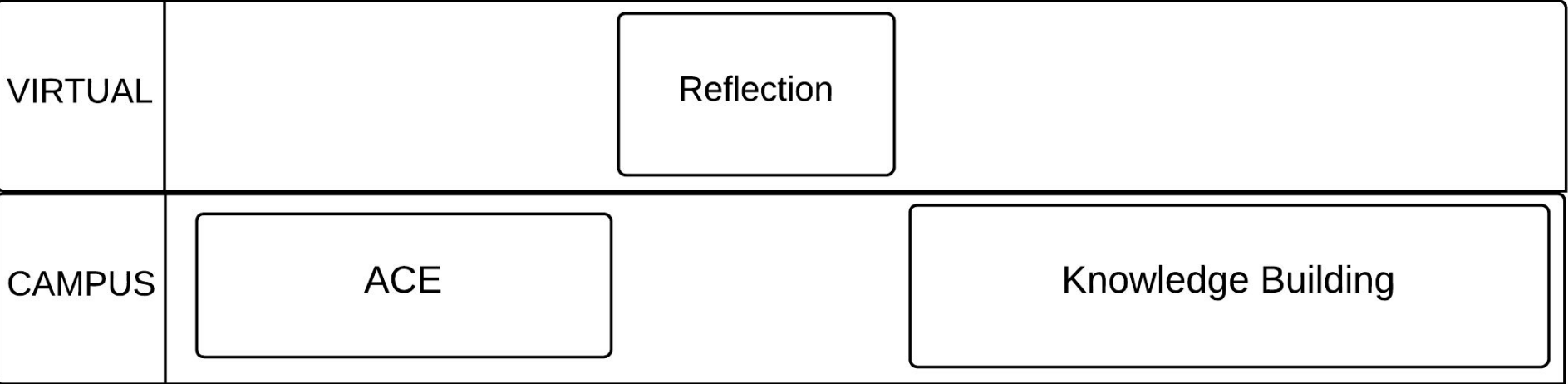
File Edit View Insert Format Data Tools Help All changes saved in Drive

fx

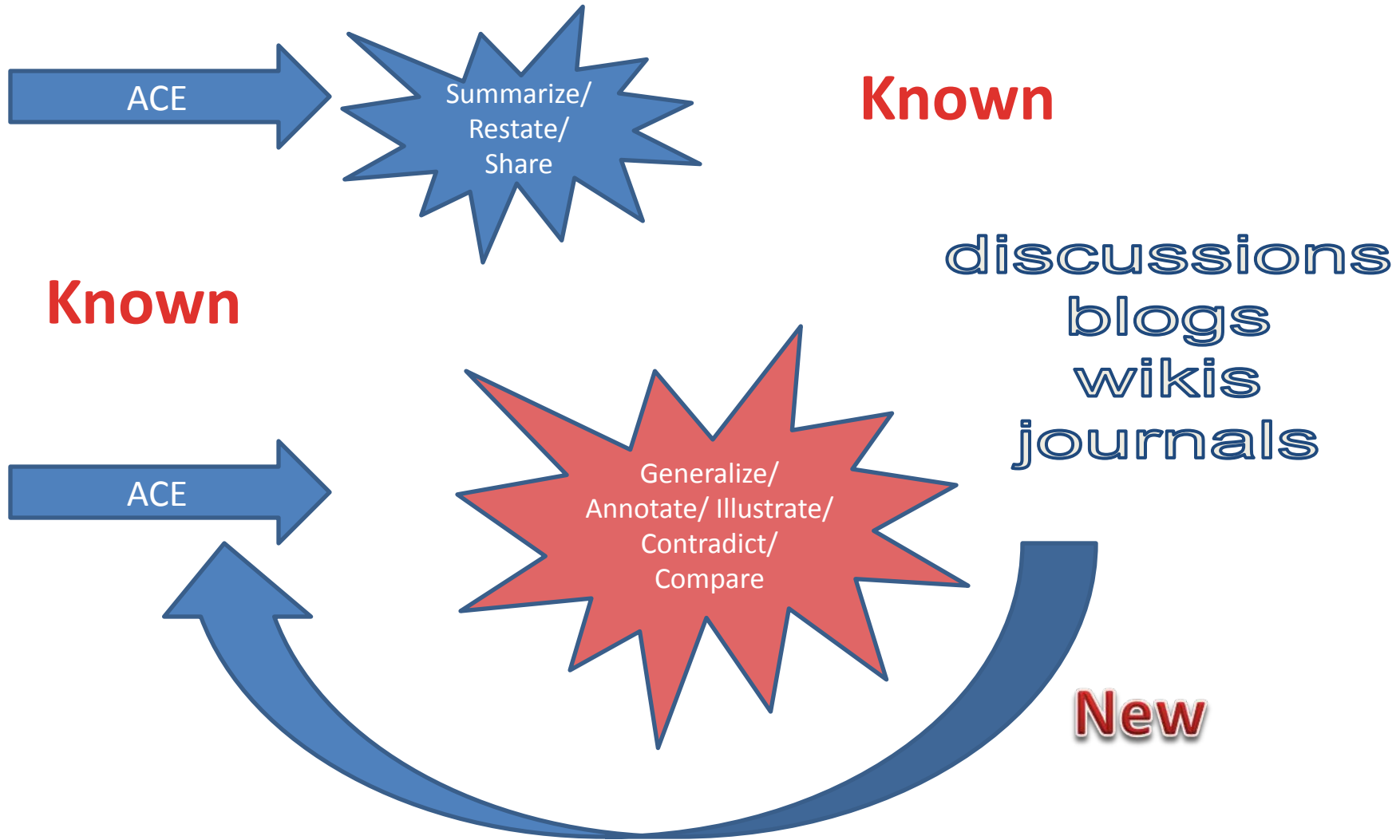
	A	B	C	D
1	Length of the pendulum (m)	Time for 10 swings (s)		
2				
3				
4				
5				
6				
7				
8				

$$T = 2\pi \sqrt{\frac{L}{g}}$$

Reflection

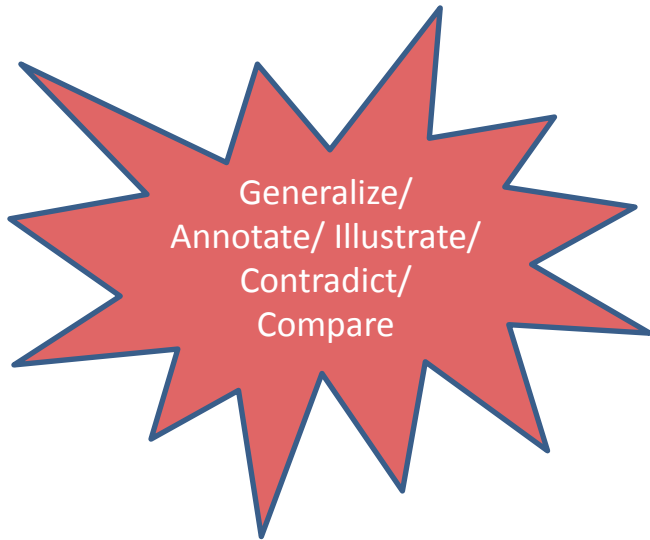


Reflection



Reflection

VIRTUAL	Reflection	
CAMPUS	ACE	Knowledge Building



1) Wicked content

- Multiple defensible answers
- Perspective matters
- Ill-defined
- No rules

2) Original articulation

- "Non-googleable" answers
- "Non-textable" answers

3) Rethink time $1 < 3$

- React - Respond to others - Reflect

4) Discussion as source

Experience/ Context

VIRTUAL	Experience
CAMPUS	ACE/ Knowledge Building

Experience/ Context

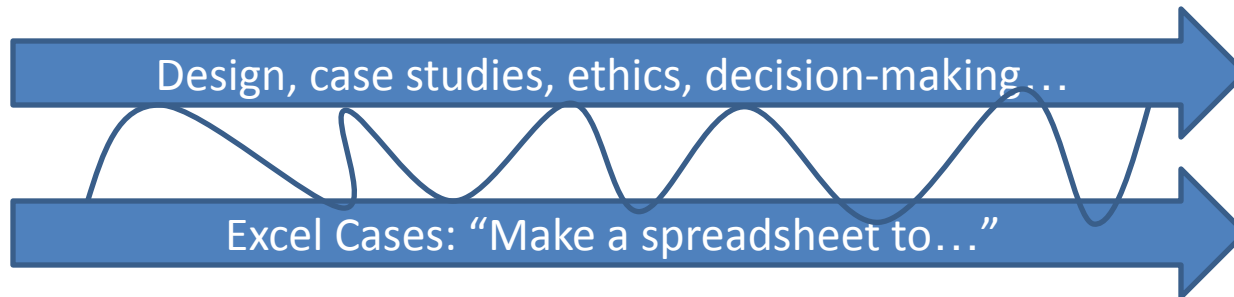
Experience



Find three
poems...
Rewrite them...

VIRTUAL	Related, Connected, and Independent
CAMPUS	ACE/ Knowledge Building

Quest



Face-to-face programming... multimedia

Independent study... Java

Wolfram Problem Generator™

gary.ackerman@rswsu.org ▼

🏠 > ALGEBRA >

One step equations

Difficulty level: Beginner ▼

QUESTION 2

Solve the equation $-2x = 4$.



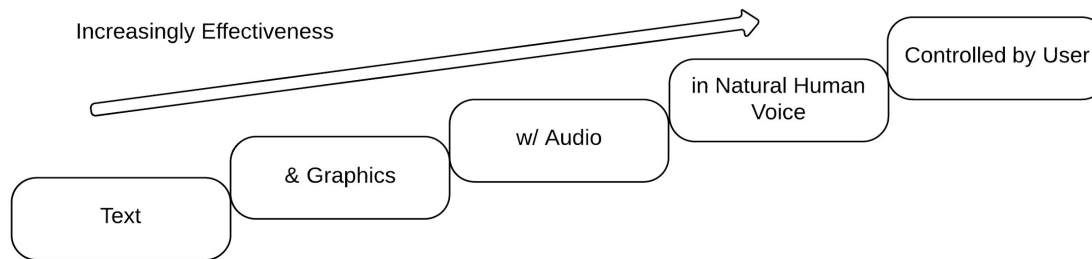
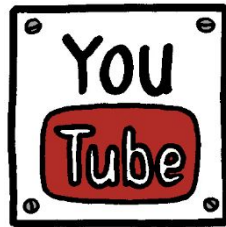
Feedback

Worked Examples

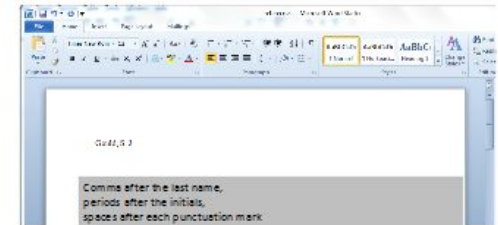
VIRTUAL	Access the Collection as Needed
CAMPUS	ACE/ Knowledge Building

Worked Examples

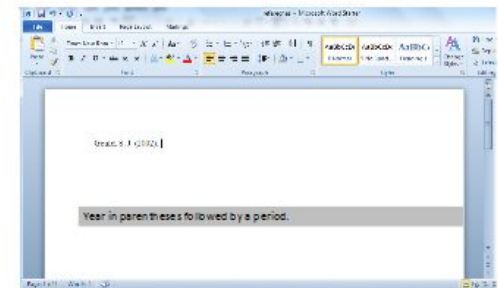
Collaboratively
create and
curate your
collection



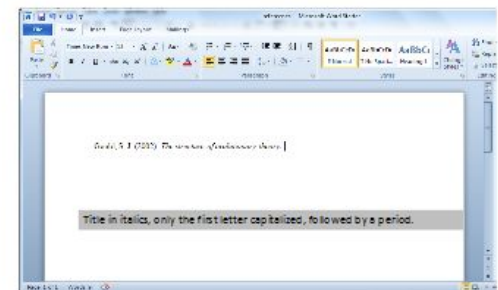
1) Author's last name and initials



2) Year of publication



3) Title



Summary Part I: Six Models

Diversify to Flip with Purpose

1. Check – ACE – Preview
2. Data Collection
3. Reflection
4. Context/ Experience
5. Quest
6. Worked Examples

Part II: Tips & Habits



Blackboard



System-wide virtual classroom

- Control over access/ use
- Similar platform
- Reduced advertisements
- Control over tools/ upgrades
- Improved support





Blackboard






Well-used system-wide virtual classrooms:


- Repository (shared among faculty)
 - Documents (collaborating)
 - Worked examples
 - Links to experiences
- Easy tests = quests
- Discussions, blogs, wikis, chat

Essential Technology: Easy Publishing



Upload 

Gary Ackerman  




Select files to upload
Or drag and drop video files

Upload HD videos in various formats up to 15 minutes. [Increase your limit.](#)

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Tip

- You can upload multiple files at once. [Learn how](#)



 Language: [English](#) 

[Country: Worldwide](#) 

[Safety: Off](#) 

 [Help](#)

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Essential Technology: Embedded Media

The Comment Panel



Record a voice comment with your telephone (free accounts are limited to 3 free phone minutes - 1 hour can be purchased for \$10)

Record a video comment with your web cam

Record a voice comment with a microphone

Type a comment

Upload a pre-recorded .mp3 audio comment (PRO Accounts Only)

Click here to go to the next slide

Google Drive

Keep everything. Share anything.



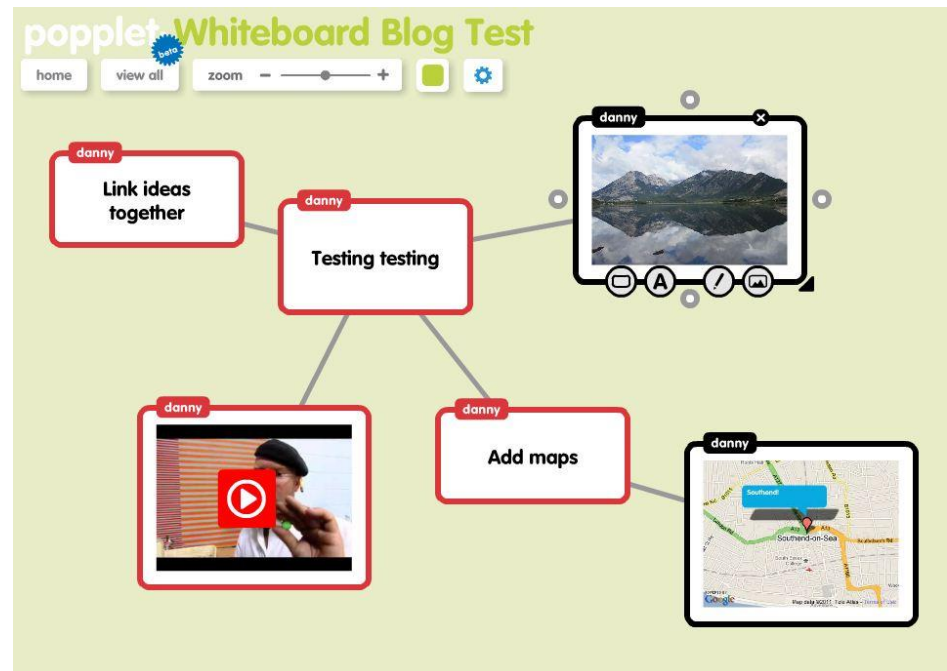
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<iframe width="420" height="315"
src="//www.youtube.com/embed/I1wg1DNHbNU" frameborder="0"
allowfullscreen></iframe>
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<https://drive.google.com>

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<http://www.voicethread.com>



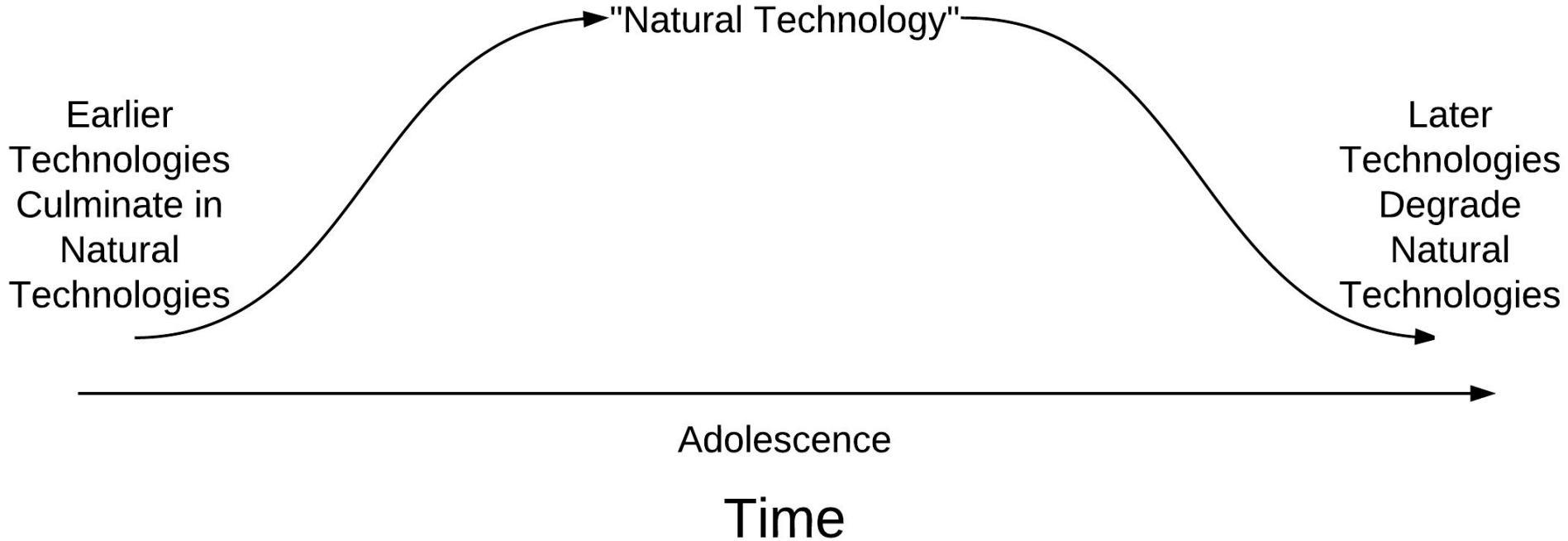
Authentic Learning for the 21st Century: An Overview

- The *judgment* to distinguish reliable from unreliable information
- The *patience* to follow longer arguments
- The *synthetic ability* to recognize relevant patterns in unfamiliar contexts
- The *flexibility* to work across disciplinary and cultural boundaries to generate innovative solutions⁵

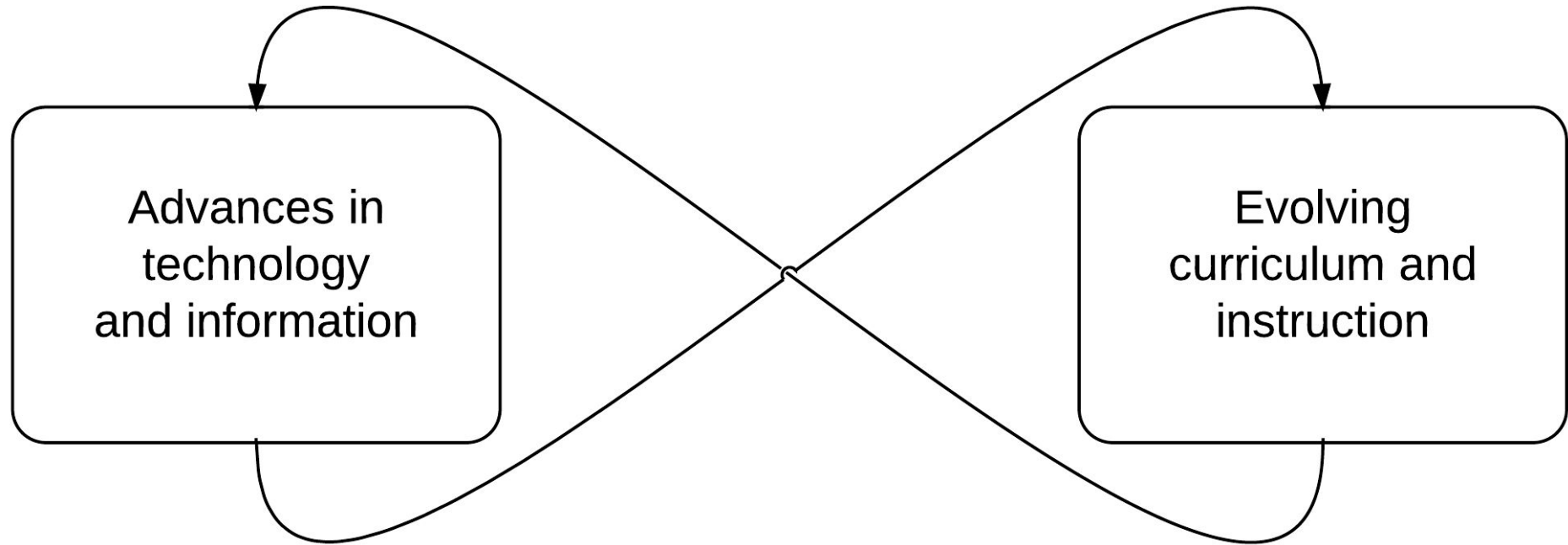
Roles of Mentor-in-the-Middle:

- Facilitator (create syllabus)
- Coach (individual performance)
- Artist (take existing and create new)
- Critical reflector (metacognition)
- Model (demonstration of)
- Scholar (formal structure)

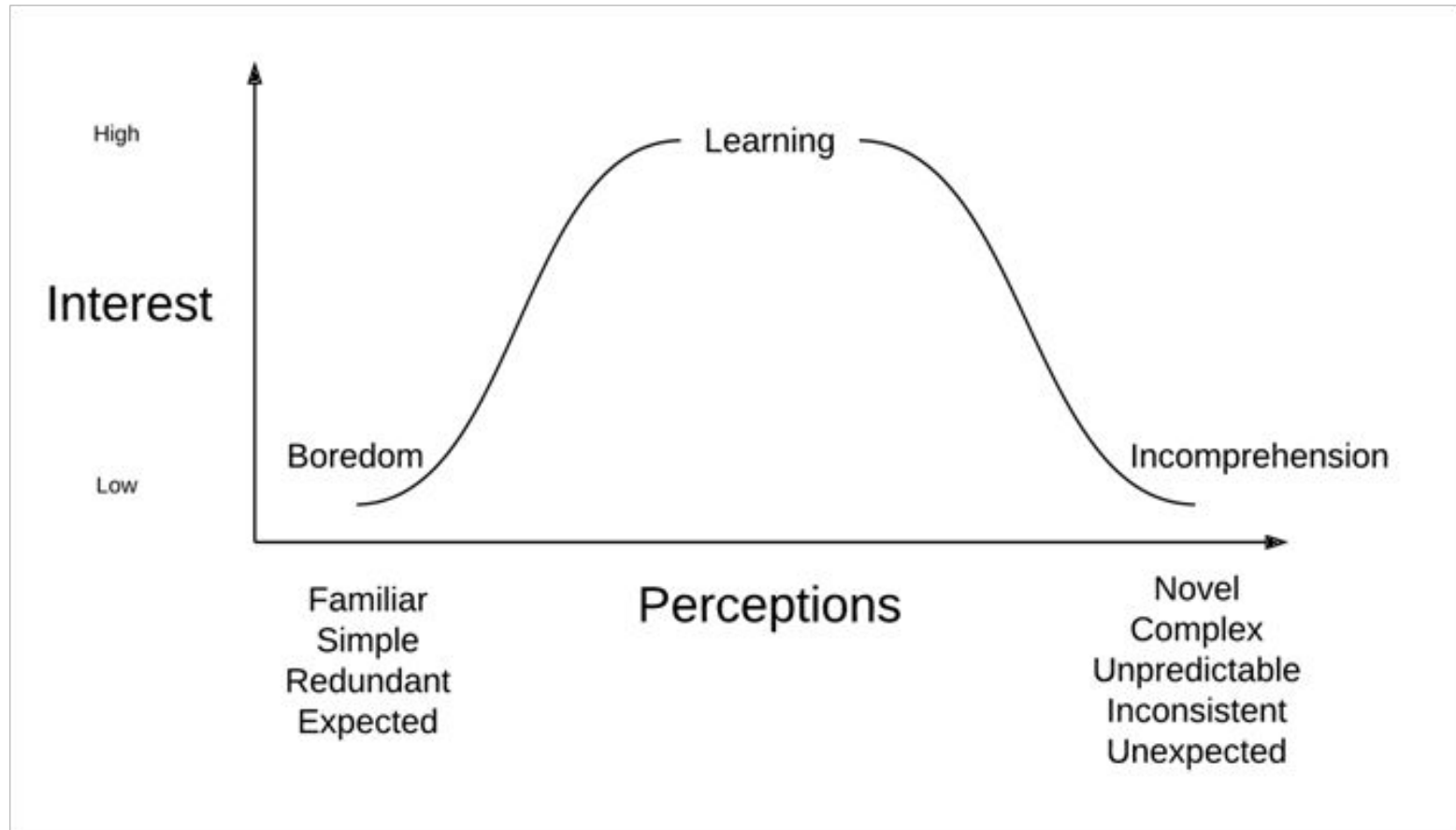
Habits for Upside-Down Design: Natural Technology



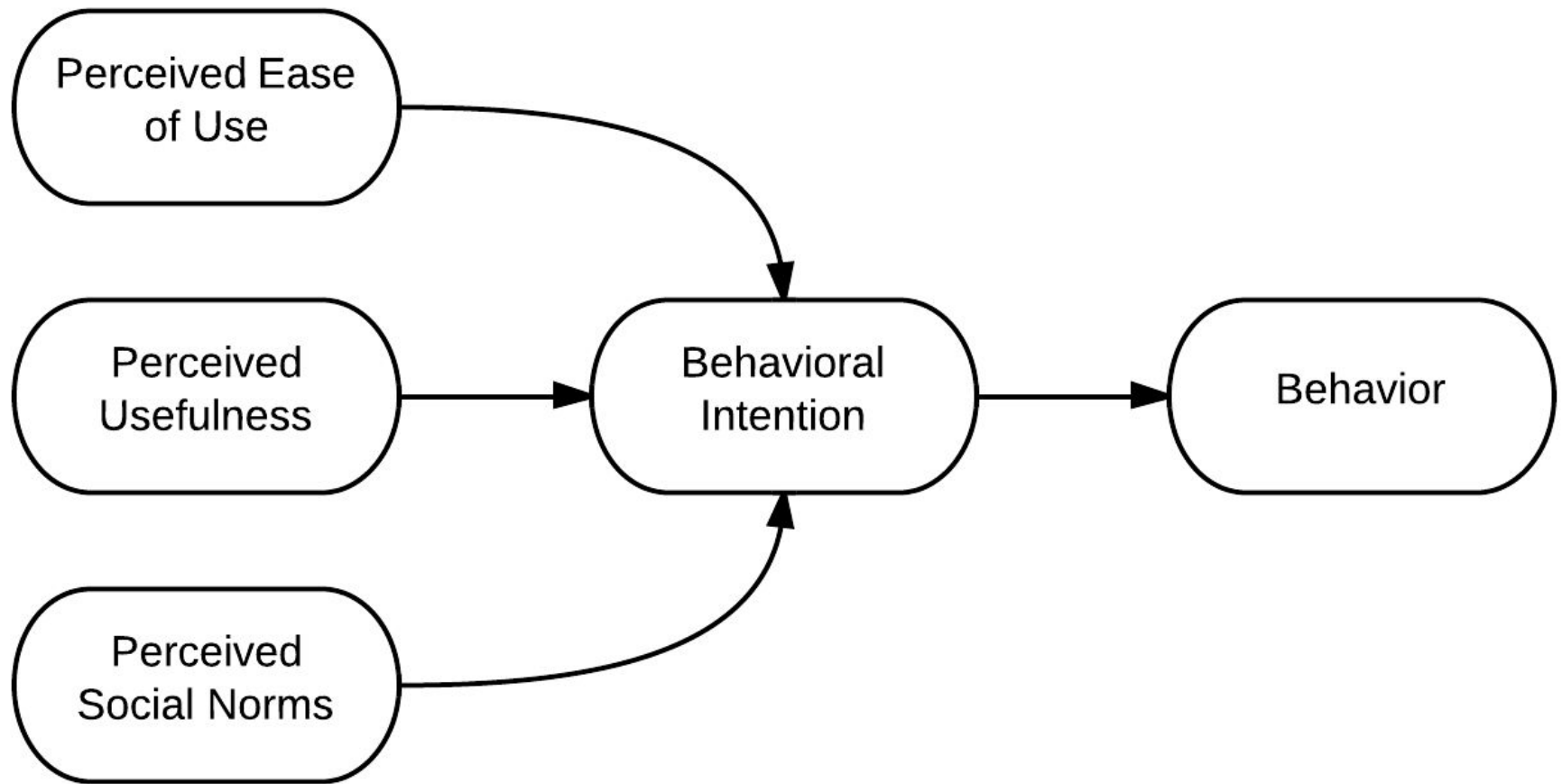
Habits for Upside-Down Design: Reflexivity



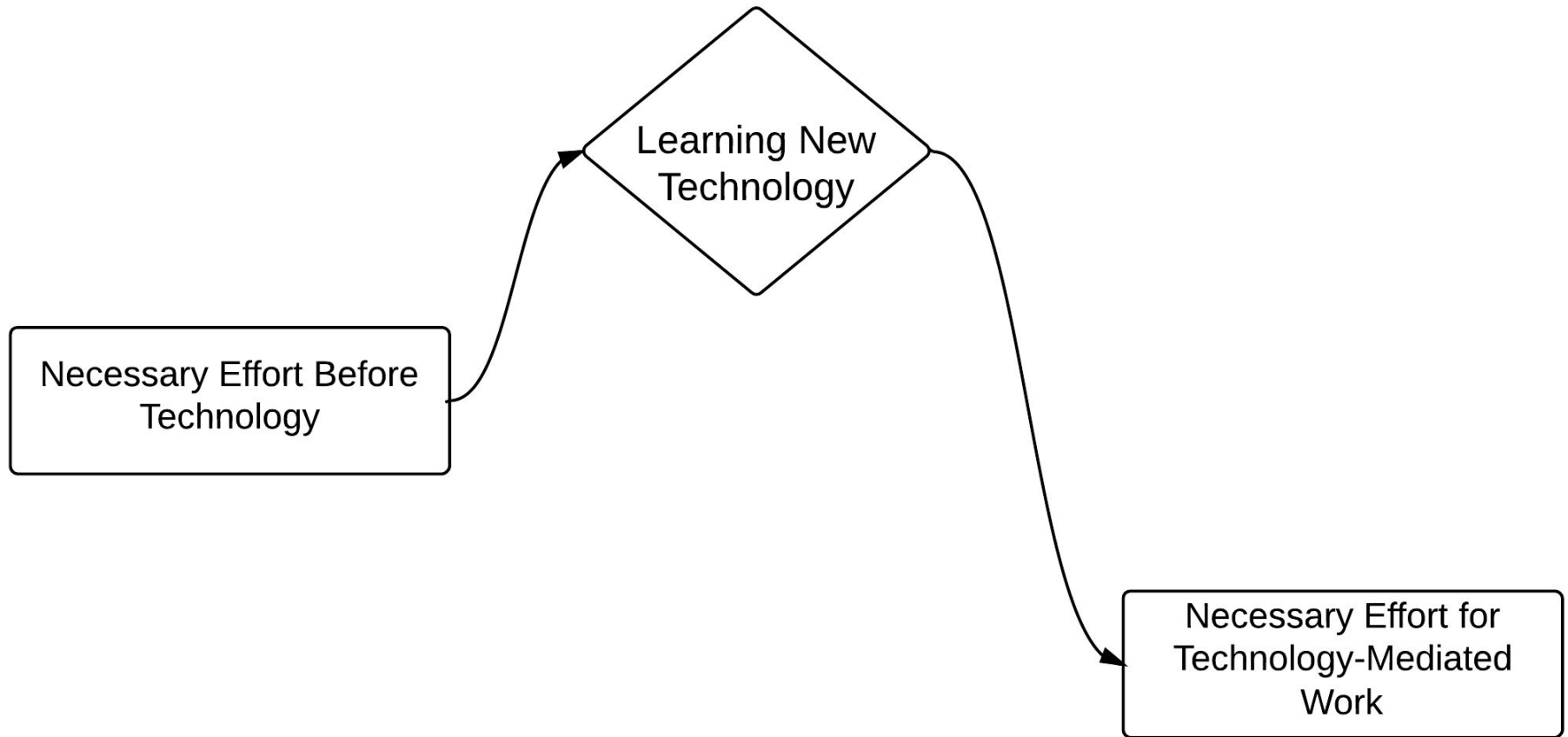
Habits for Upside-Down Design: Increasing Sophistication of Media



Habits for Upside-Down Design: Technology Acceptance



Habits for Upside-Down Design: “Activation Energy”



The Nature of Learning

Using Research to Inspire Practice

- ❖ Learners at the centre
- ❖ The social nature of learning
- ❖ Emotions as integral to learning
- ❖ Recognizing individual differences
- ❖ Stretching all students
- ❖ Assessment for learning
- ❖ Building horizontal connections



ACE-ing Curriculum:

- [Authentic Learning for the 21st Century](#) (from Educause)
- Scardamalia, M., & Bereiter, C. (2006). [Knowledge building: Theory, pedagogy, and technology](#). In K. Sawyer (ed.), *Cambridge Handbook of the Learning Science* (pp. 97-118). New York: Cambridge University Press.
- [The Nature of Learning: Using Research to Inspire Practice](#)

Ackerman, G. (2013). *Flipped with Purpose: Refreshing Technology in Classrooms*.

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