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From the SelectedWorks of Rick A Stoddart

April, 2015

Capturing Learning in the Library Commons: A Whiteboard Photo-Ethnographic Study

Uta Uta-Hussong-Christian, *Oregon State University*
Rick A Stoddart, *University of Idaho*

Available at: https://works.bepress.com/richard_stoddart/49/

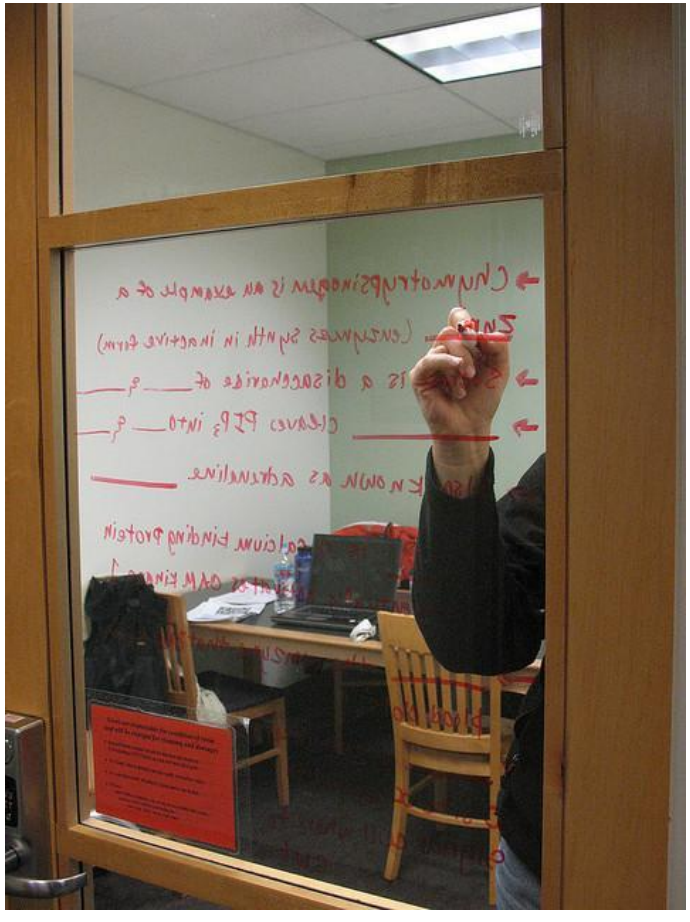
A Whiteboard Photoethnographic Study: Evidence of Learning in Student Centered Spaces

Uta Hussong-Christian
Instruction & Science Librarian

Rick Stoddart
Head of User & Research Services

Oregon Library Association Annual Conference
April 17, 2015

Do you have whiteboards in your library learning spaces?



Learning in the Library?

Learning in the Commons

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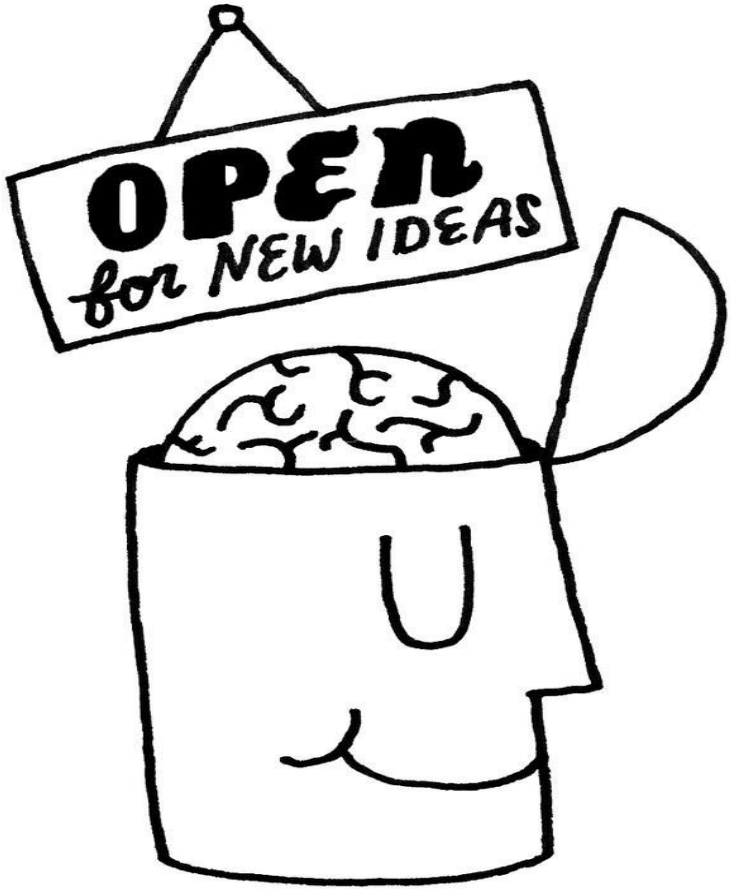
Study

verb: to apply the mind to the acquisition of learning, whether by means of books, observation, or experiment [read: problem solving]



Library Archeology Activity - Student Artifacts

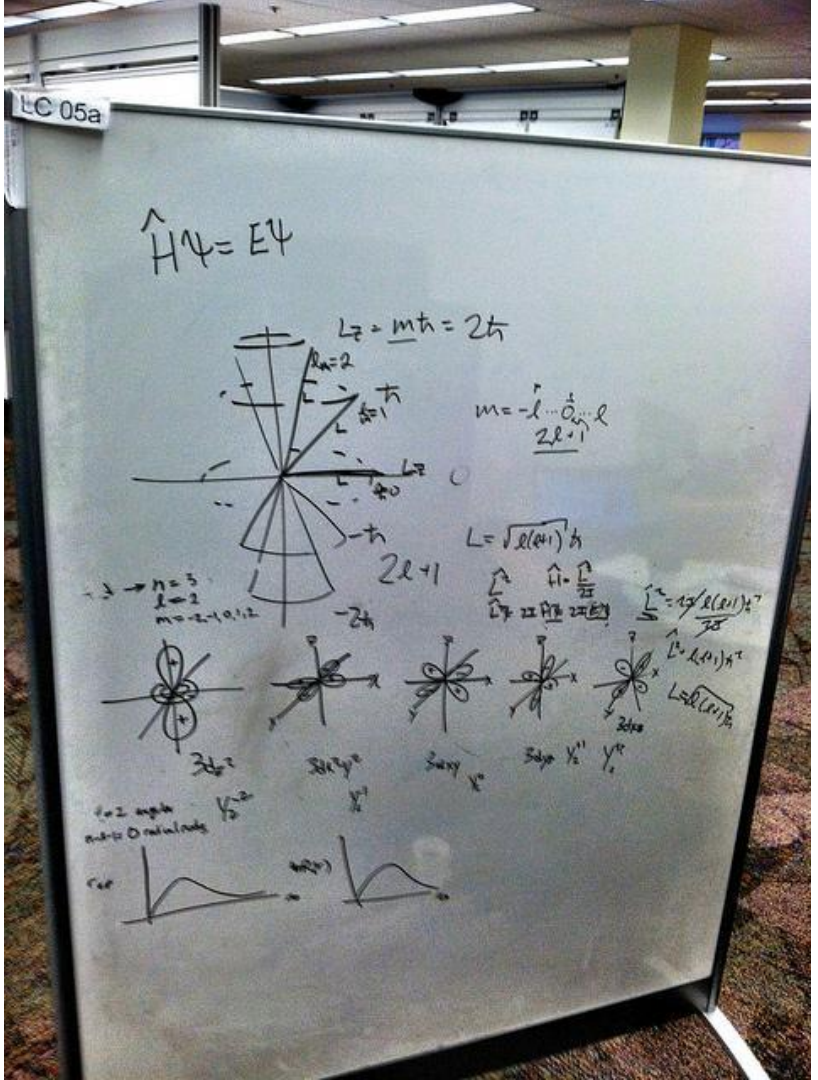
Cave painting from the Lascaux cave

1. Make list of artifacts students leave behind in the library.
   (Both physical and electronic)
2. Compare and combine your list with your neighbor

Cognitive Artifacts

"... informational devices such as maps, white boards, paper pads, etc., which are specifically designed to display and maintain information in an accessible way to several people at the same time."

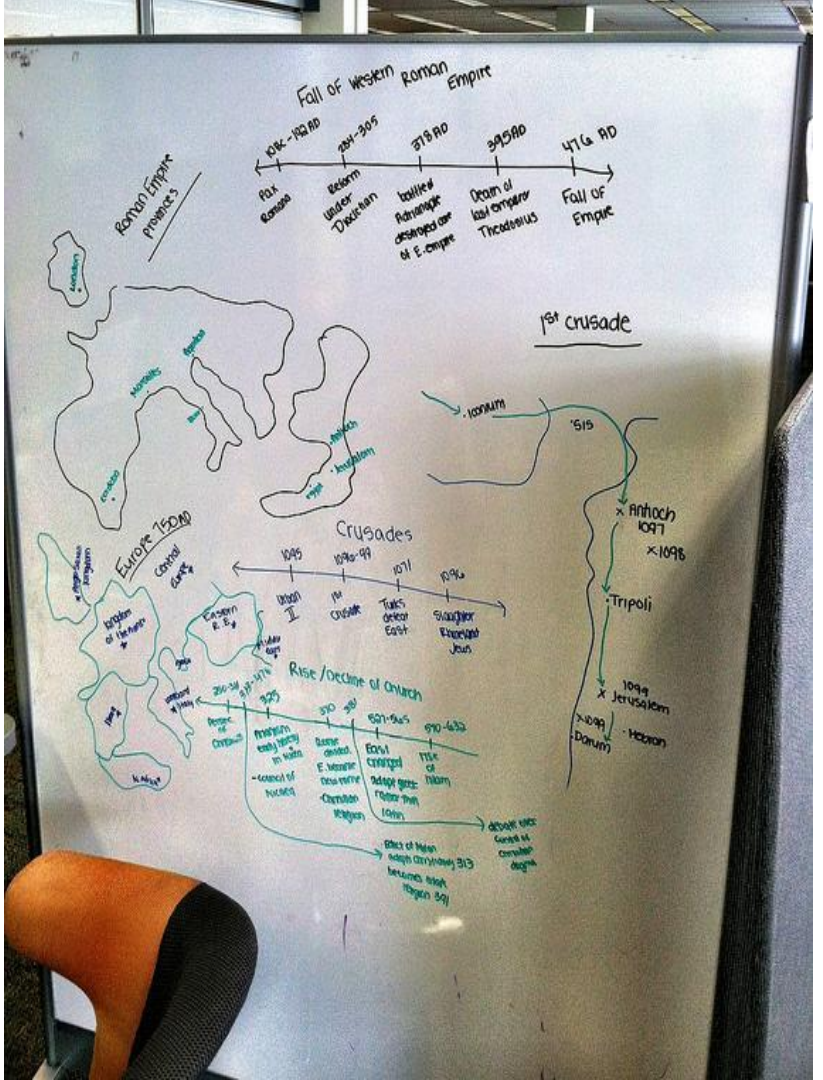
Garbis and Wern, 1999



Whiteboards are a Medium *and* Place

"...the physical location of (a) whiteboard, its users, and the social practice that develops around the use of that whiteboard work in concert to shape its role in an environment."

Tang, Lanir, Greenberg, and Fels, 2009



Transitioning Between Tasks

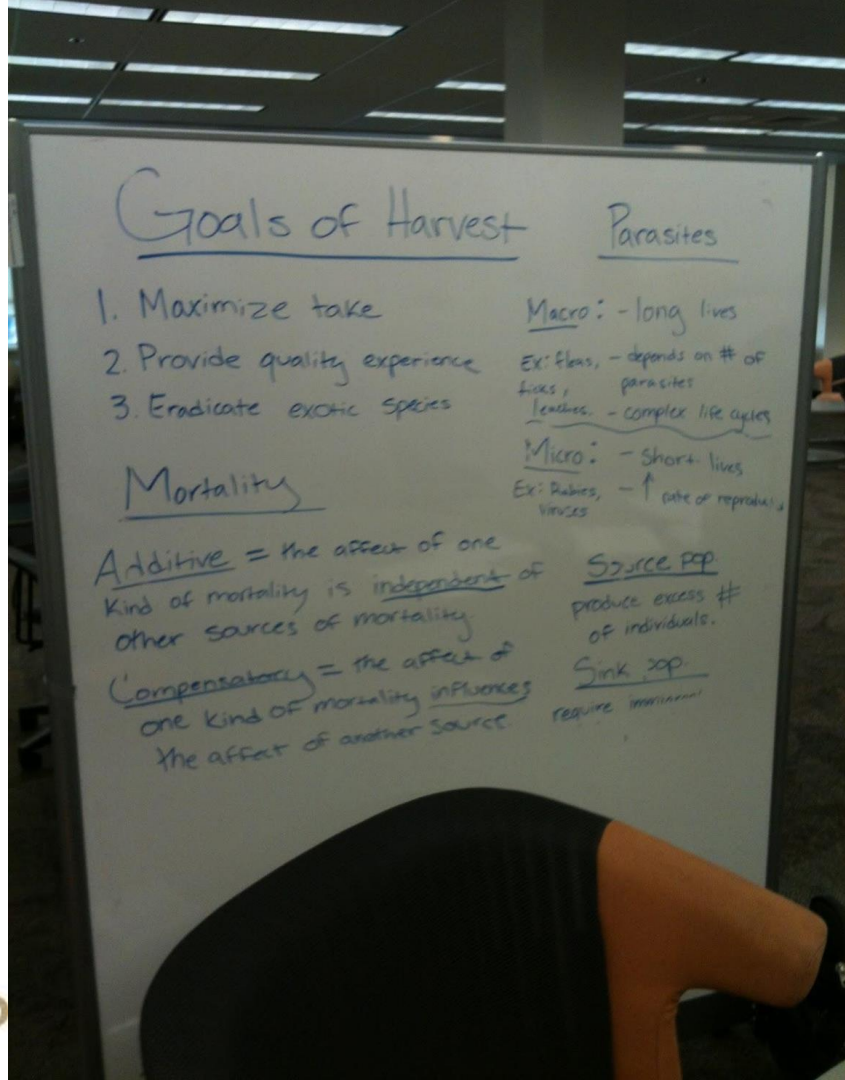
	Independent	**Collaborative**
Synchronous	Work(er) ● Problem solving ● External study notes	Real-Time Interaction ● Brainstorming ● Group work
Asynchronous	Personal Management ● Task list ● Due dates	Ongoing Tasks ● Project to-do list ● Answer keys

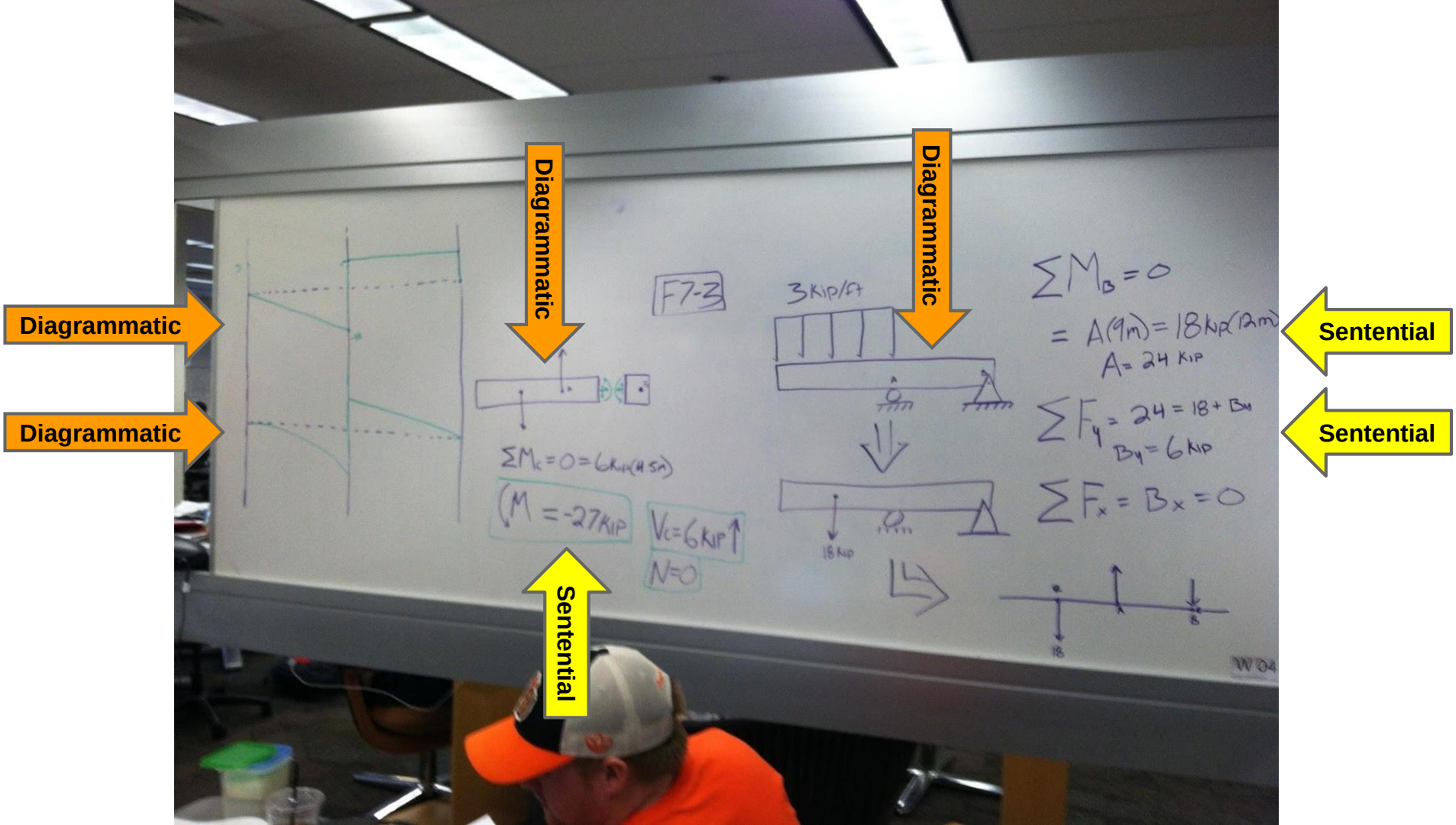
Tang, Lanir, Greenberg, and Fels, 2009

External Representations

1. **Sentential** (verbal) - *expressions form a sequence corresponding on a one-to-one basis, to sentences in natural language descriptions…*
2. **Diagrammatic** (pictorial) - *expressions correspond, on a one-to-one basis, to components of a diagram…*

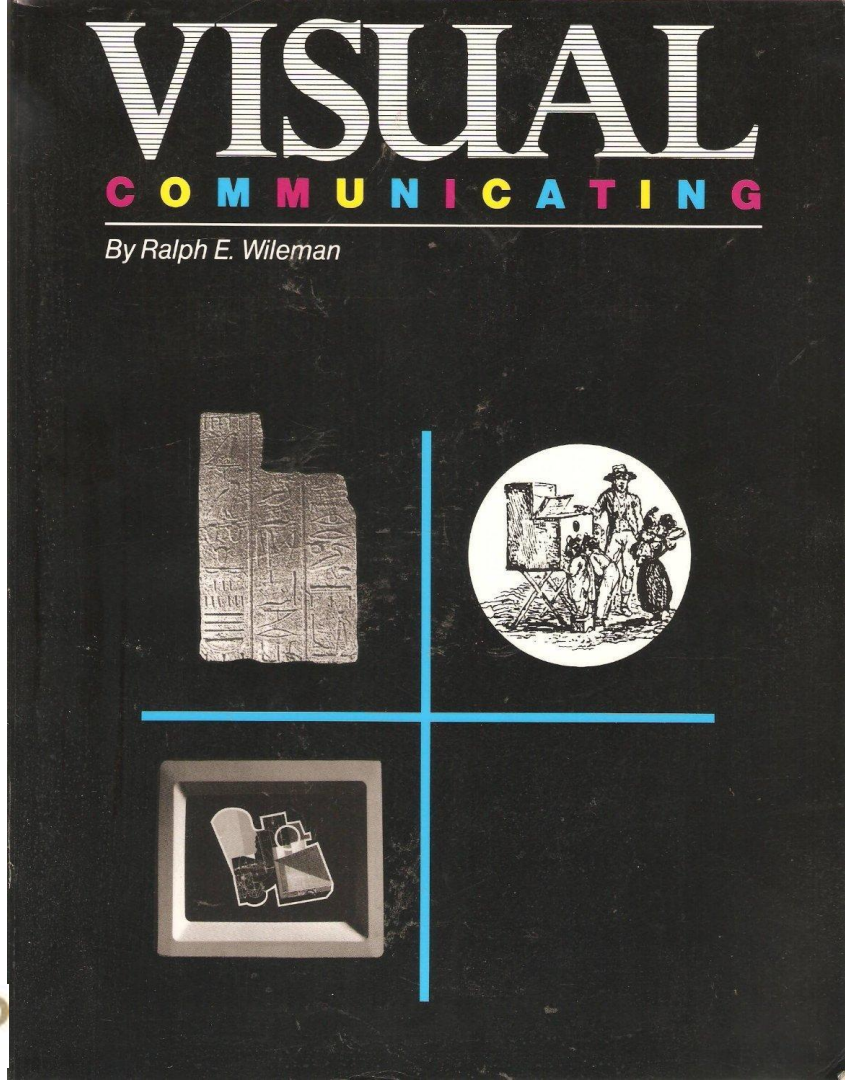
Larkin and Simon, 1987




Diagrammatic
Diagrammatic
Diagrammatic
Diagrammatic
Sentential
Sentential
Sentential
F7-3
3 Kip/ft
$\Sigma M_B = 0$
$= A(9m) = 18 Kip(12m)$
$A = 24$ Kip
$\Sigma F_y = 24 = 18 + B_y$
$B_y = 6$ Kip
$\Sigma F_x = B_x = 0$
$\Sigma M_C = 0 = 6 Kip(4.5m)$
$M = -27 Kip$
$V_C = 6 Kip \uparrow$
$N = 0$
18 Kip
18
B

Visualization in Learning

- Process is important for sense-making (Wileman, 1993)
- Product helps with info retrieval
  - dual coding of information - sentential and pictorial increases likelihood of retrieval of knowledge (Paivio, 1986)

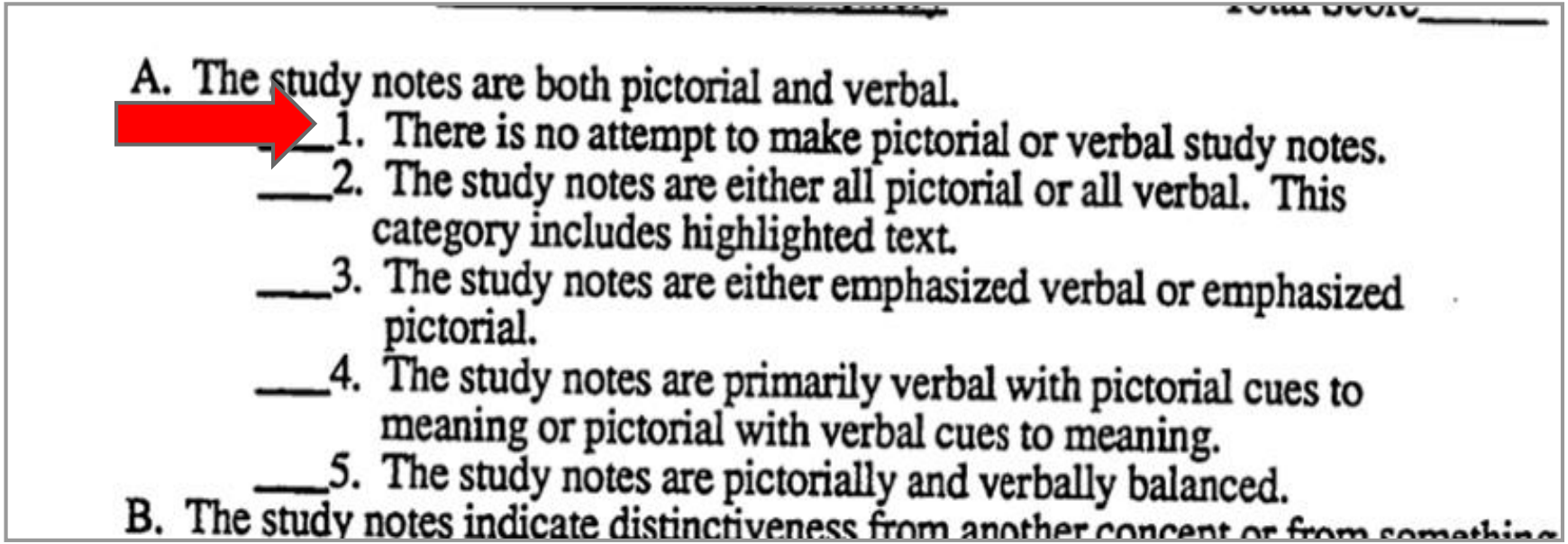


Initial Rubric

A. Study notes both pictorial and verbal
B. Study notes indicate distinctiveness from another concept or from something of personal importance by including highlighting
C. Study notes are organized to show interrelatedness
~~D. Study notes show relatedness to something the learner already knows~~

Cifuentes,1991

Rubric Modification



A. The study notes are both pictorial and verbal.
___1. There is no attempt to make pictorial or verbal study notes.
___2. The study notes are either all pictorial or all verbal. This category includes highlighted text.
___3. The study notes are either emphasized verbal or emphasized pictorial.
___4. The study notes are primarily verbal with pictorial cues to meaning or pictorial with verbal cues to meaning.
___5. The study notes are pictorially and verbally balanced.
B. The study notes indicate distinctiveness from another concept or from something

[Cifuentes, 1991]

Inter-rater Reliability

C. The study notes are organized to show interrelatedness.

___1. There is no attempt to show interrelatedness in the text or in the study notes.

___2. Interrelatedness is shown with highlighting, numbers, arrows, etc. within the text.

___3. Interrelatedness is shown through the generation of an outline or other primarily verbal means.

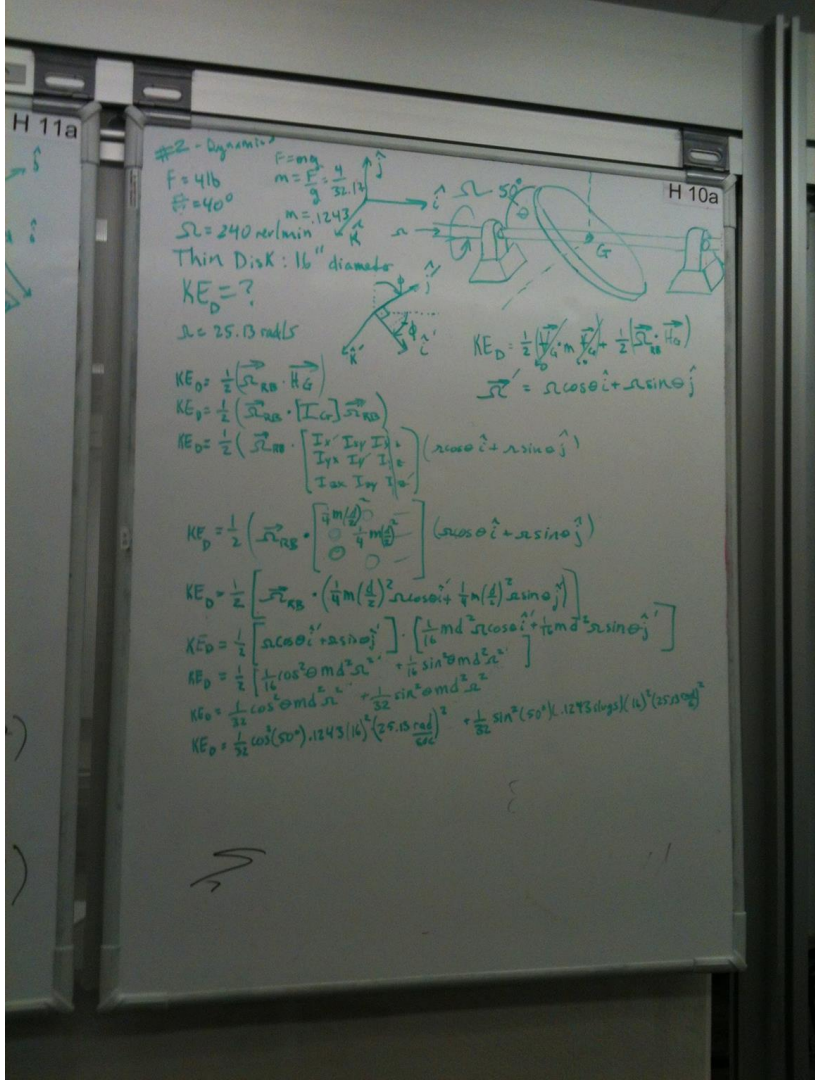
___4. Interrelatedness is shown by a structural diagram or a verbal/pictorial representation showing one relationship.

___5. Interrelatedness is shown by a structural diagram or a verbal/pictorial representation showing more than one relationship. (e.g. Charts, tables, graphs, a series of arrows or numbers, borders and/or symbols.)

[Cifuentes, 1991]

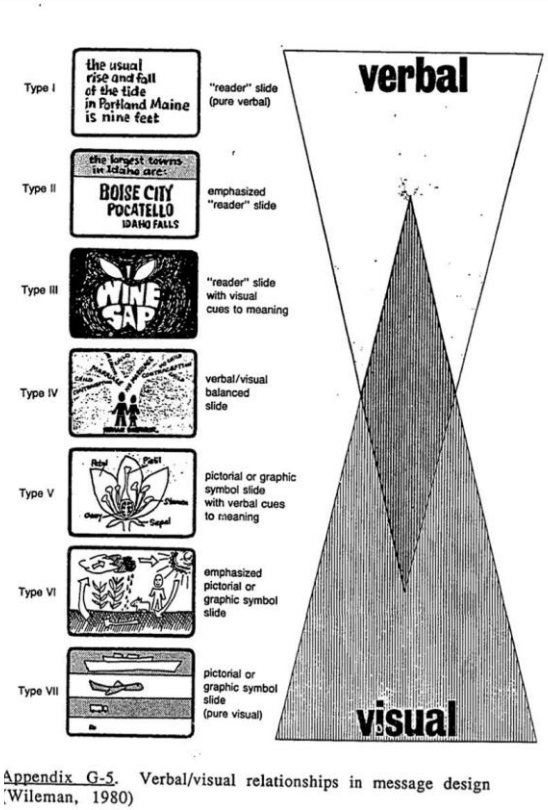
You Try It

- Find a partner
- Review indicators for Skill A Inventory
- Review example sheet for Skill A
- Code 3 images for Skill A (e.g. A2 or A 5)
- What other things would you want to code about each image?



More Whiteboard Codes

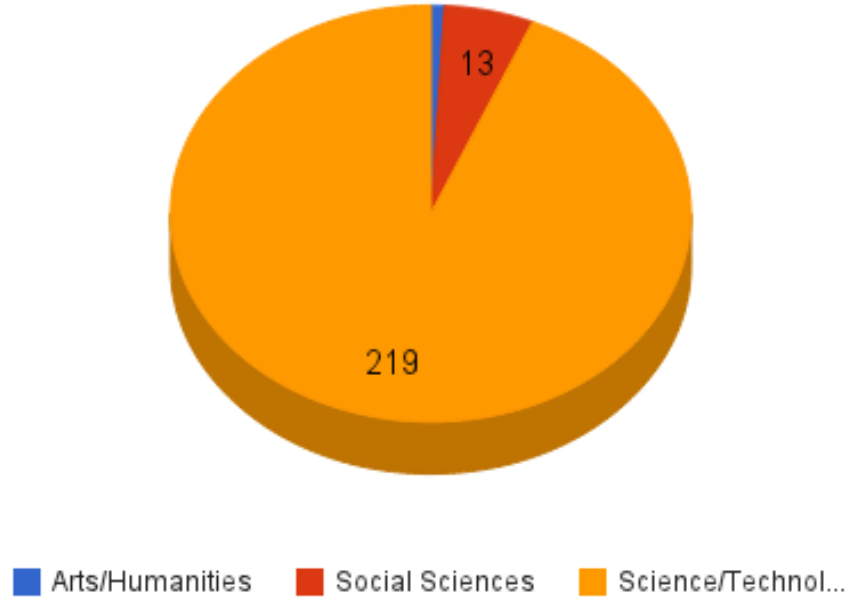
- **Subject** (STEM, Social Sciences, Arts & Humanities, or Misc)
- **Pictorial Types** (matrixes, tables, charts, diagrams, timelines, maps, icons)
- **Verbal Types** (outlines, problem solving, categorization, etc.)



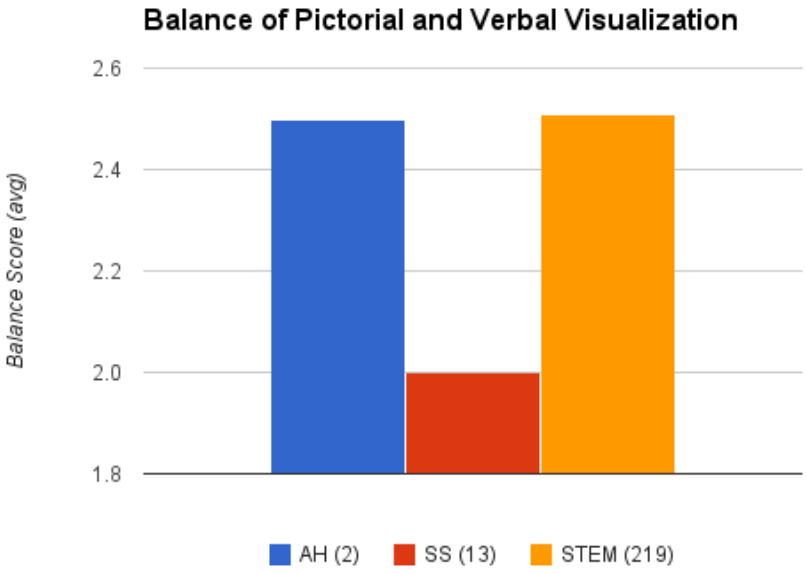
Appendix G-5. Verbal/visual relationships in message design (Wileman, 1980)

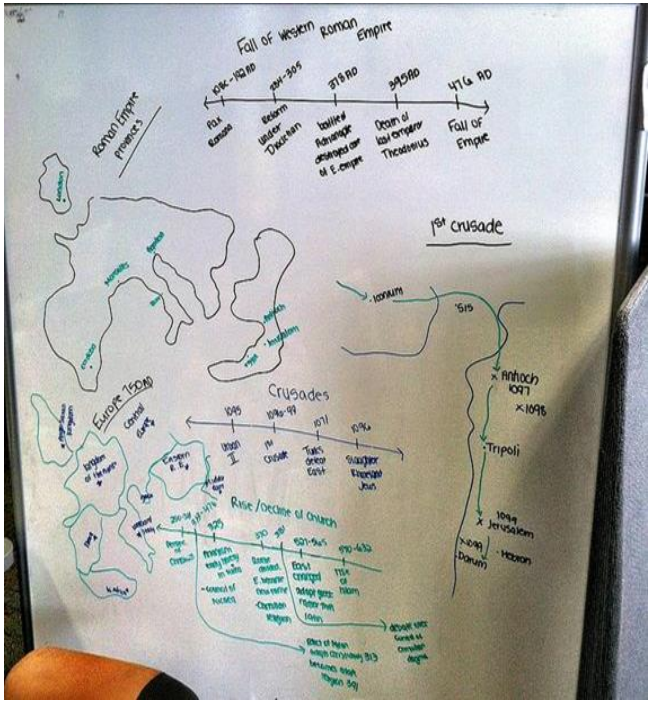
Cifuentes, 1991

Pictorial Visualizations

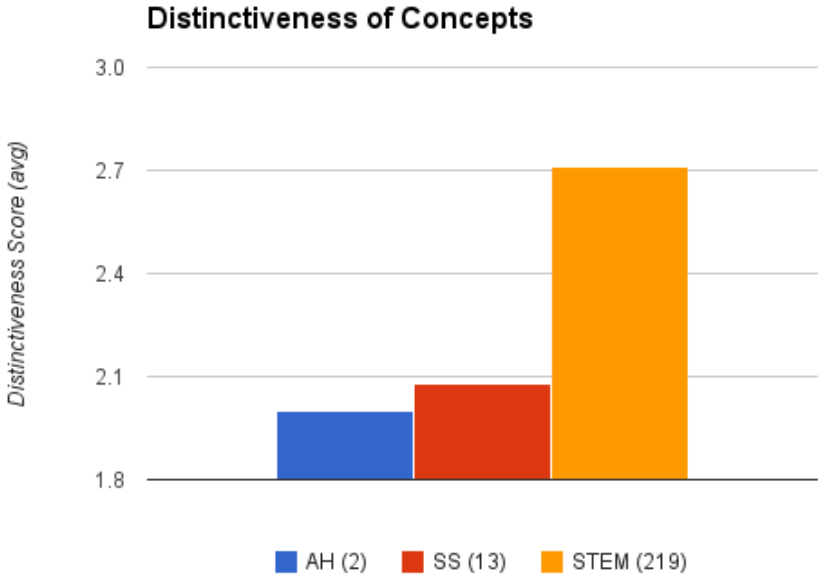


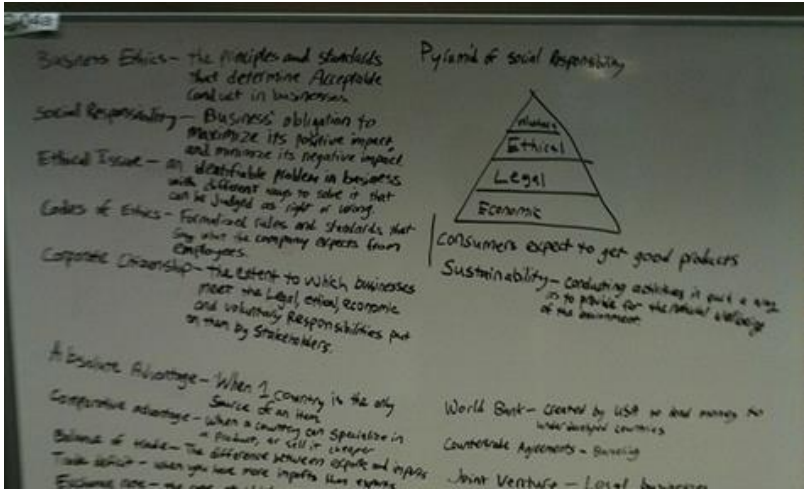
Visualization Skills



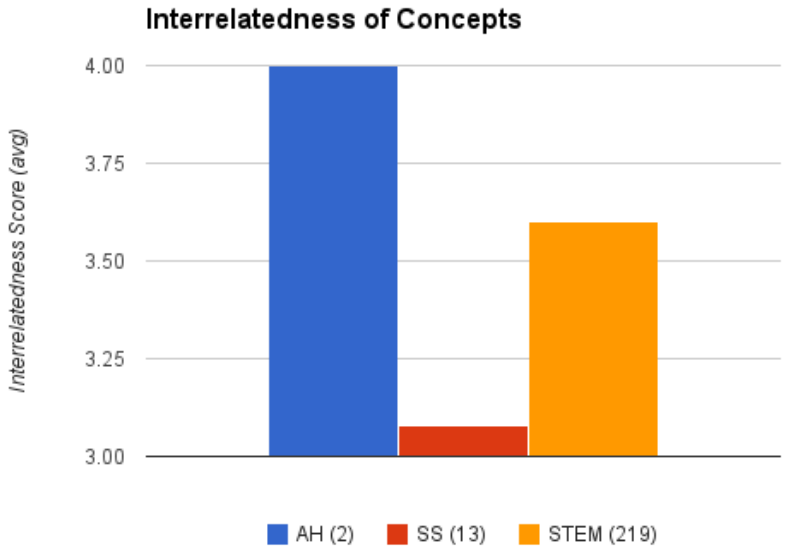


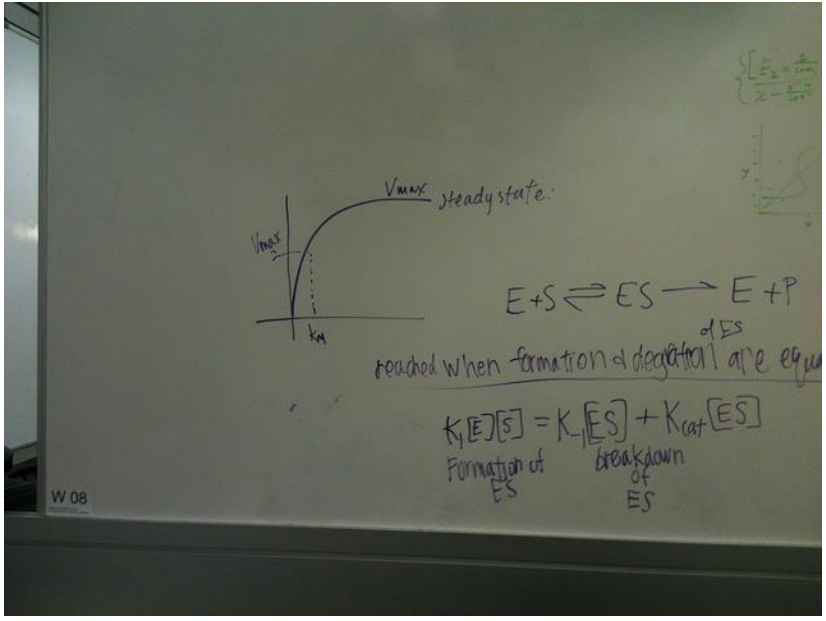
Visualization Skills





Visualization Skills





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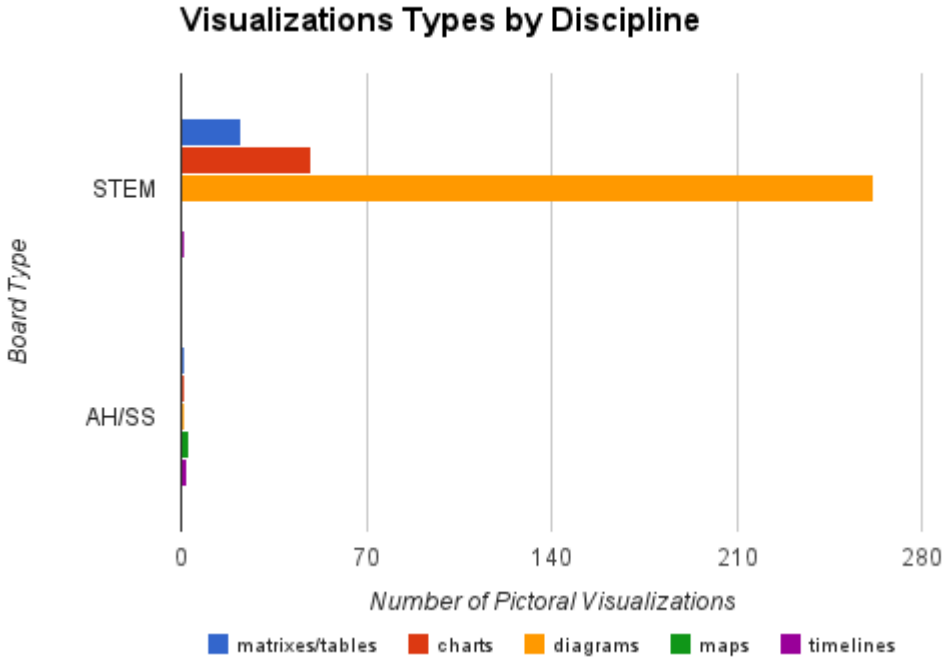
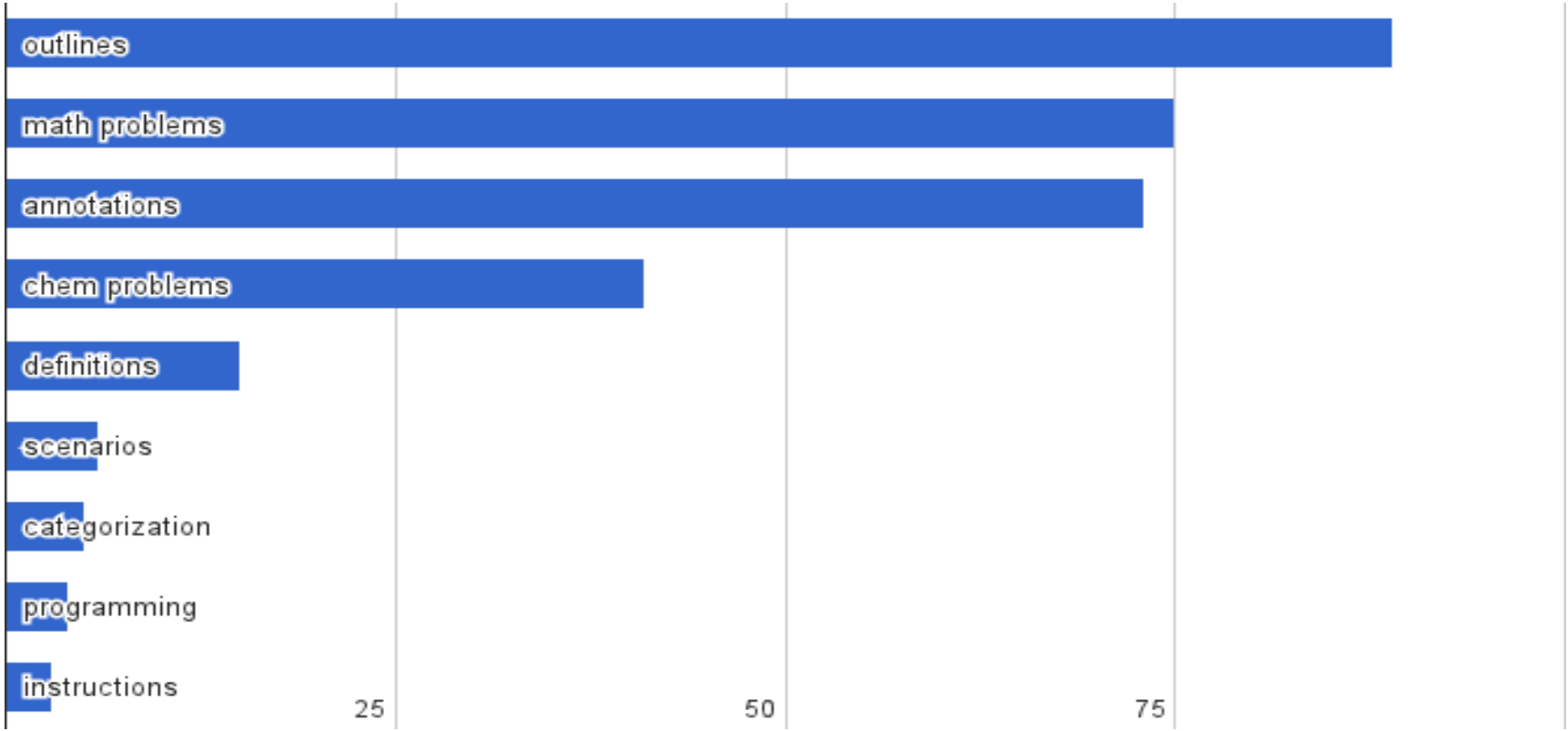
Pictorial Visualization

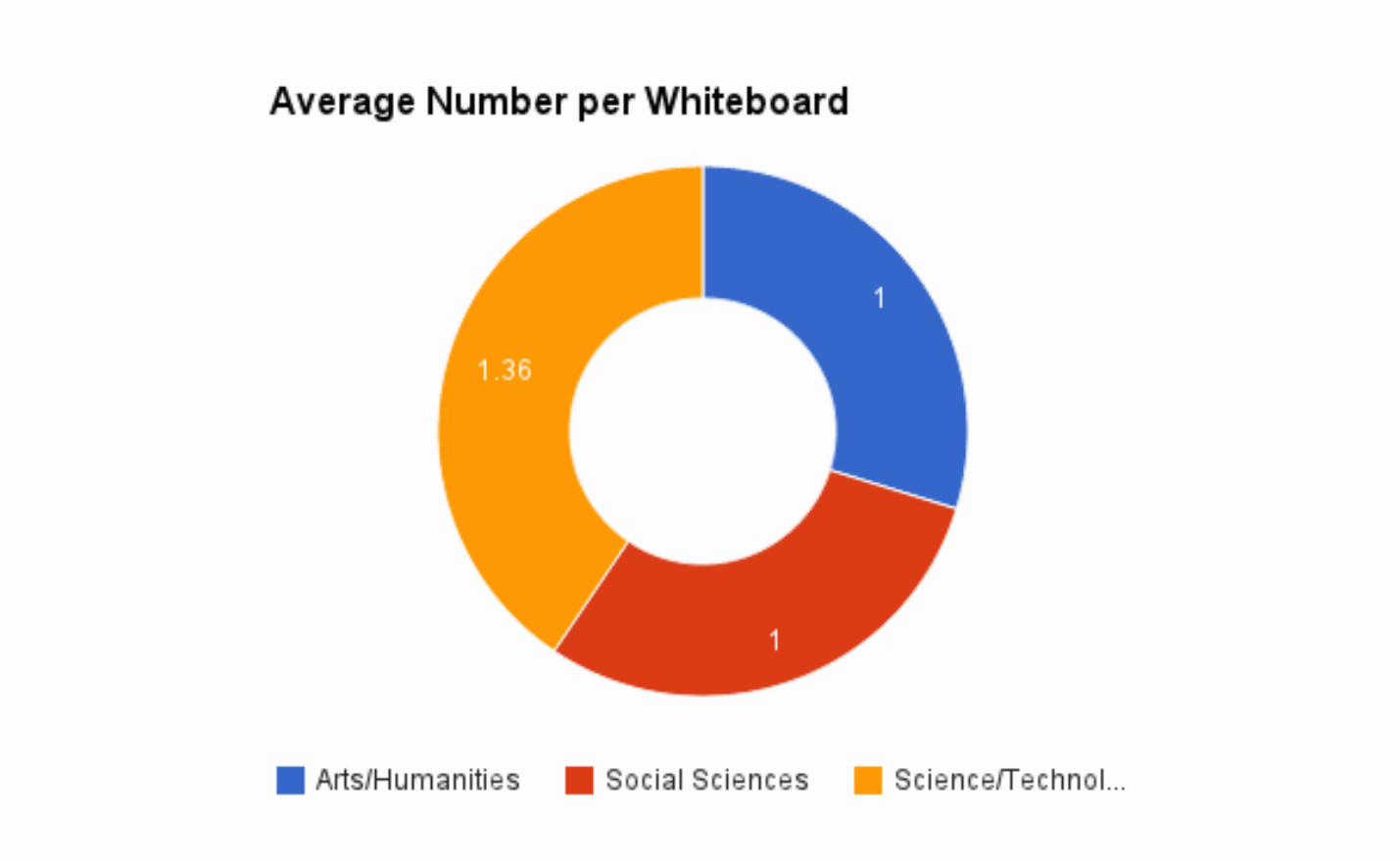


# Boards	Pic Type
133	Diagram
26	Chart
17	Table
12	Icon
3	Timeline
1	Map

Types of Verbal Visualizations

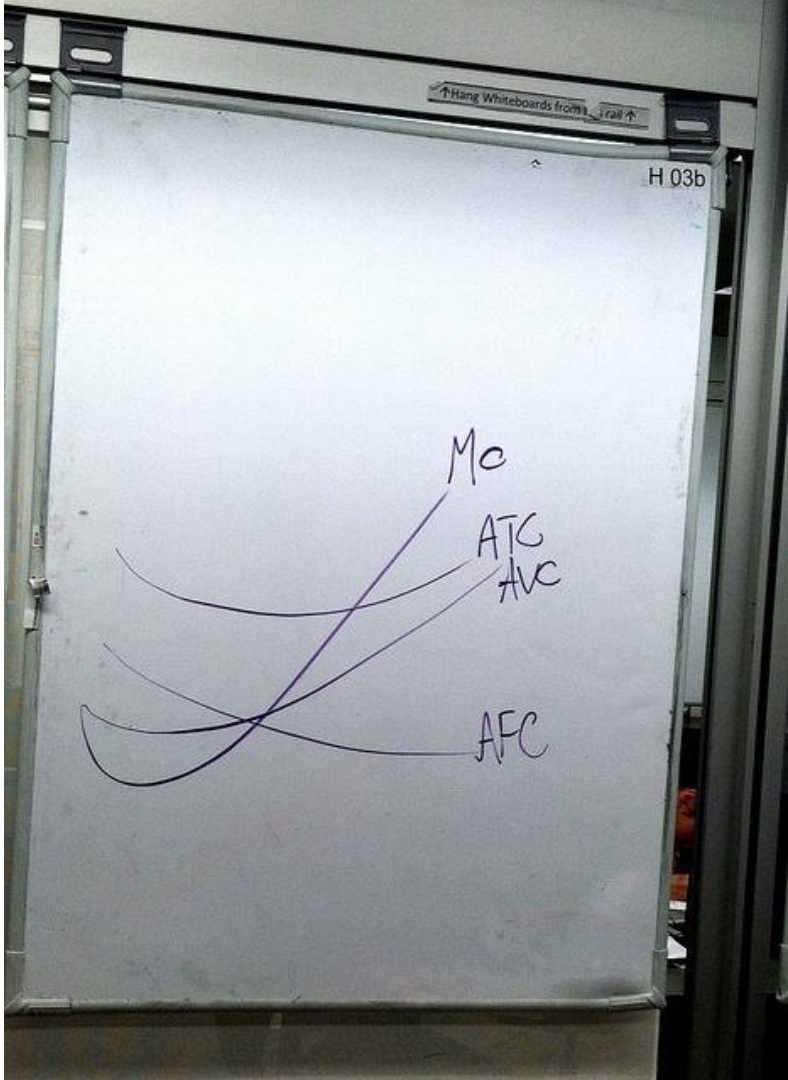


Verbal Visualization Types Used



Summary

- Whiteboard visualization is discipline-dependent
- Whiteboards support STEM learning at OSU per evidence of heavy use
- Low technology = High learning impact



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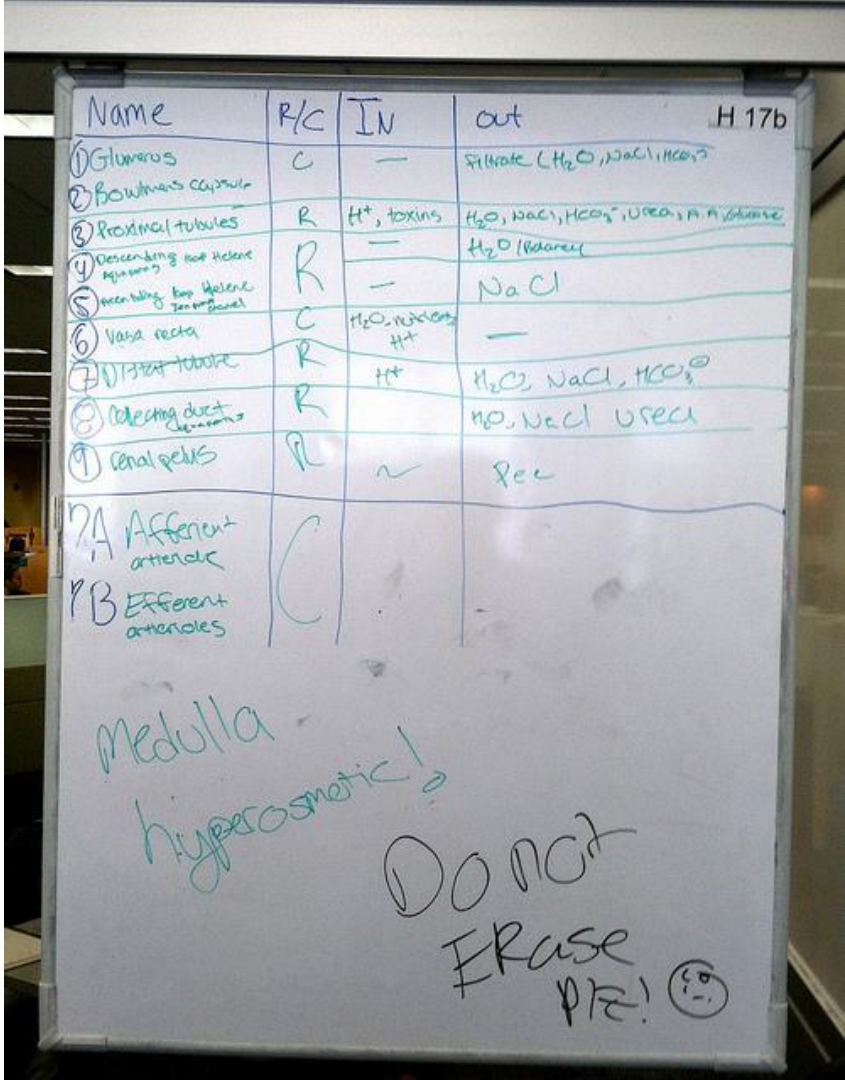
Possible Study Outcomes

- **Graph whiteboards** to support STEM visualizations
- **Whiteboard checkout** to support asynchronous learning
- **Visualization / Visual Literacy workshops** to enhance study skills, cognition, and information retention



ACRL Visual Literacy Competencies

ACRL Visual Literacy Competency Standards for Higher Education

In an interdisciplinary, higher education environment, a visually literate individual is able to:

- ***Determine the nature and extent of the visual materials needed***
- Find and access needed images and visual media effectively and efficiently
- Interpret and analyze the meanings of images and visual media
- Evaluate images and their sources
- ***Use images and visual media effectively***
- ***Design and create meaningful images and visual media***
- Understand many of the ethical, legal, social, and economic issues surrounding the creation and use of images and visual media, and access and use visual materials ethically

Proxy for Collaborative Learning?

Marker Checkout	OSU	UI
2011		384
2012		1079
2013	7546	1561
2014	8591	1998
2015	2862	385

Further Research

- How do *students* characterize the usefulness of visualizations?
- Why the library? Just about space/whiteboards?
- How can the library better help students learn?

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Library Archaeology Activity: What tools do you have?

Make a list of the technology, tools, or methods that you can capture/uncover student activity in your library.

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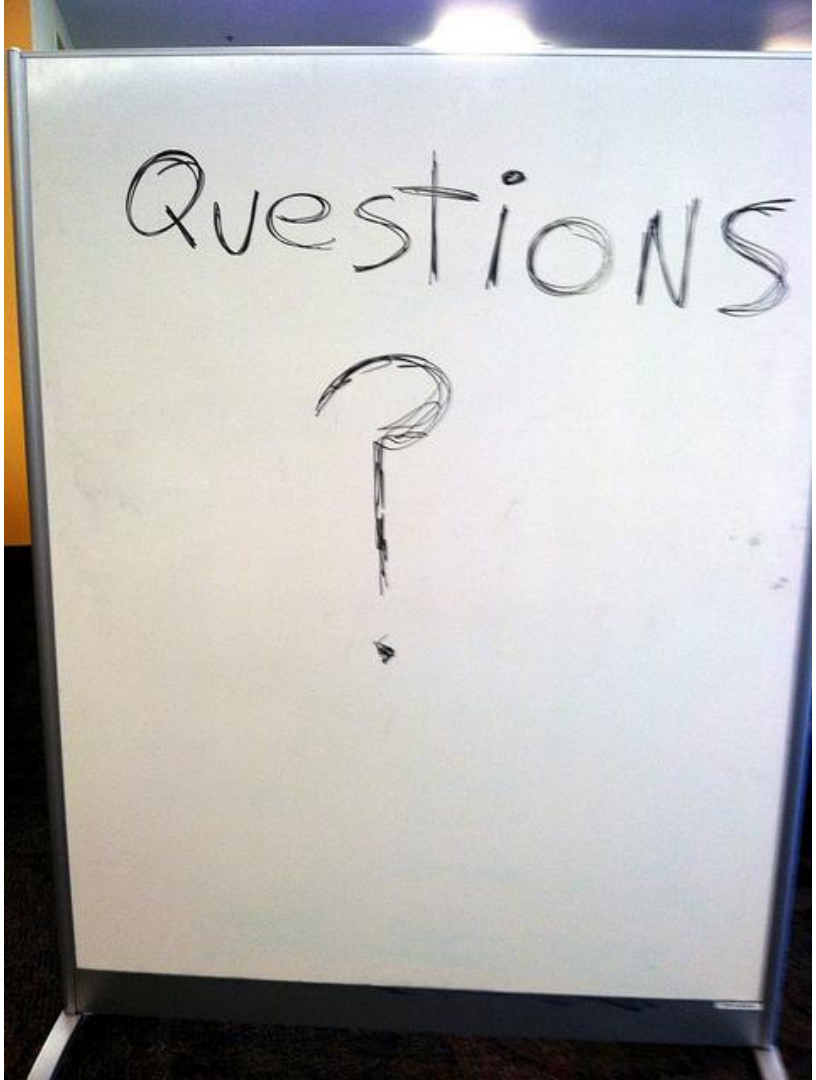
Taking Notes on a Door (flickr user, Valley Library (OSU)): https://www.flickr.com/photos/osuvalleylibrary/2322614912/in/set-72157600785507433
Open for New Ideas: https://www.flickr.com/photos/sirwwoods/5019863323/
Cave painting, Anthropos (2): https://commons.wikimedia.org/wiki/File:Cave_painting,_Anthropos_%282%29.jpeg
Visual Communicating: http://www.amazon.com/Visual-Communicating-Ralph-E-Wileman/dp/0877782482
Archeology Tool Kit: http://www.archtools.eu/



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