Counting What Students in Information-Related Fields See as "Information:" A Content Analysis of Visual Images

Tien-I Tsai

titsai@ntu.edu.tw

Assistant Professor of Library and Information Science

National Taiwan University

Introduction

- Students in information-related fields not only interact with information for everyday-life purposes but also tackle the issues regarding information in their coursework and research
- Although students and scholars in all these disciplines study "information," they may study information from very different perspectives
- Hartel developed the method and coined the term "iSquares"
  - A method and pedagogy to study the concept of "information"
- Research questions:
  1. How do students in information-related fields perceive the concept of information through drawing and writing on the iSquares?
  2. How similar or different their iSquares are?

Methods: Data Collection

- Follow Hartel's (2014) iSquare protocol
- With instructors' permissions, students were recruited from a required course from each department (LIS, IM, and CS)
  - junior-level undergraduate courses
  - first-year graduate-level courses
- All data were collected in classroom settings

Participants

- 219 students at a large research university in northern Taiwan

		Students	*N*=219 (%)
Gender	Male	125	57.08
	Female	88	40.18
	Choose not to identify	6	2.74
Age	19-20	103	47.03
	21-22	54	24.66
	23-25	47	21.46
	Over 26	12	5.48
	Blank	2	.91
Discipline	LIS	68	31.05
	IM	73	33.33
	CS	78	35.62

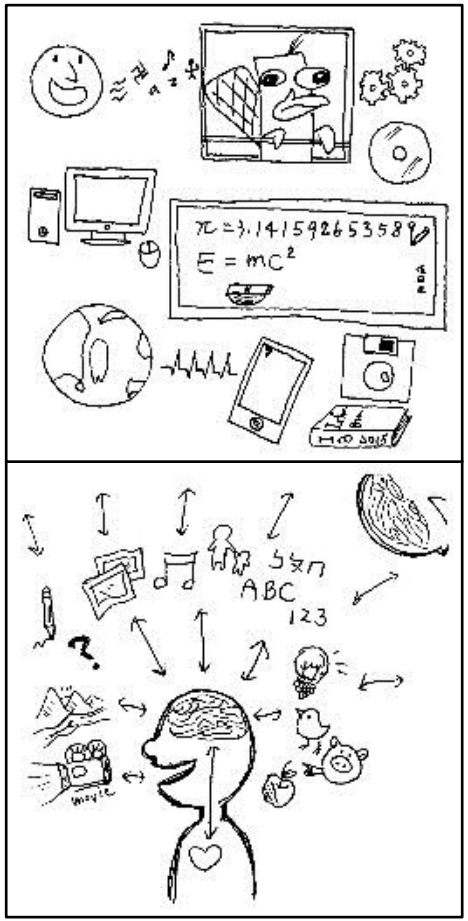
Content analysis

- A 25-question codebook mainly based on Hartel (2014a, 2014b), Tsai (2015), and relevant literature
- Two major parts of the codebook:
  1. Composition and elements
  2. Perspectives and connotations of the information concept
- Three major revisions and several minor adjustments
  - Testing with approximately 5%, 8%, and 10% of the 219 iSquares (i.e., 12, 18, and 21 iSquares) by the researcher and two other coders with LIS background
- Chi-square tests were used to reveal differences among the three disciplines

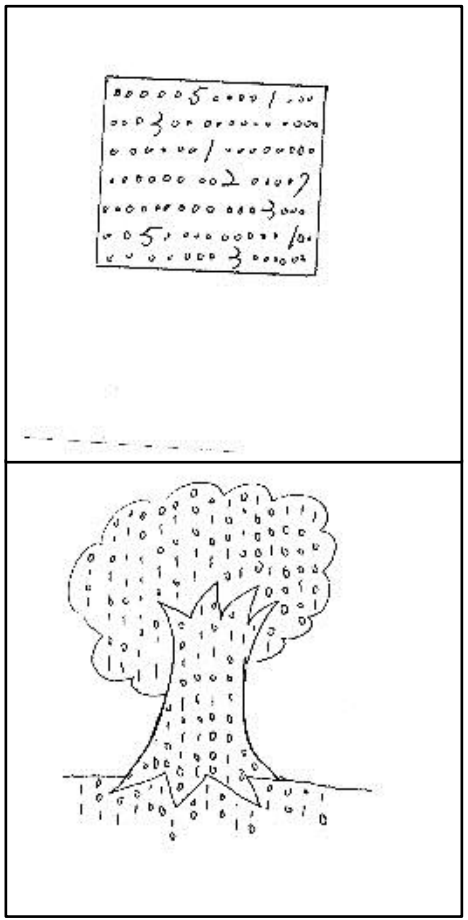
Preliminary Findings

Representation elements

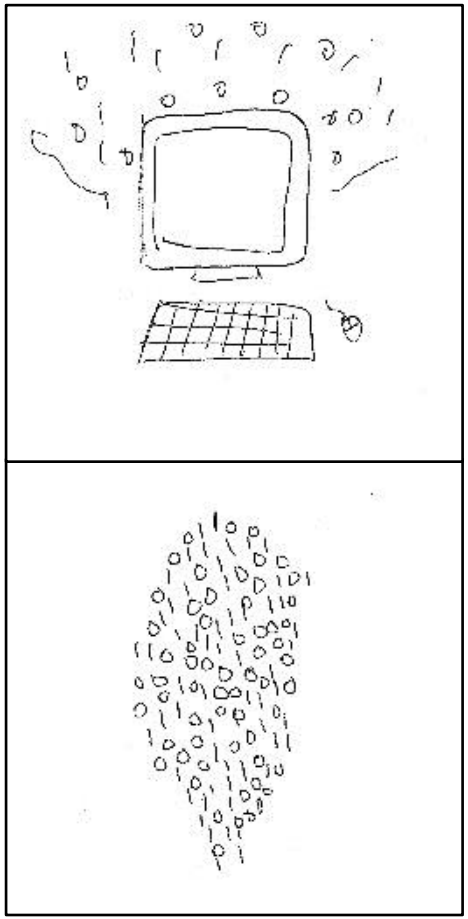
LIS



IM



CS



Expressions of programming languages or binary codes: $\chi^2(2, N=219)=14.622, p=.001$)

*Information is the combination of **0 and 1**/is created through **0 and 1**.*

– IM undergraduates (n=4)

*Information is the combination of **0 and 1**/is typically **binary 0 and 1**/is constructed by **0's and 1's/0101** represents it.*

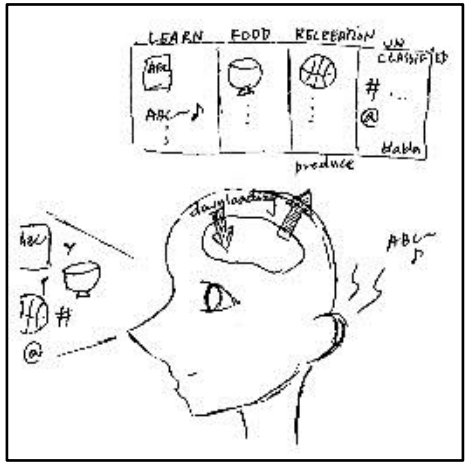
– CS undergraduates (n=4)

*Information is **nothing more than 0 and 1**/ is consisted with **0 and 1/binary** world with algorithm.*

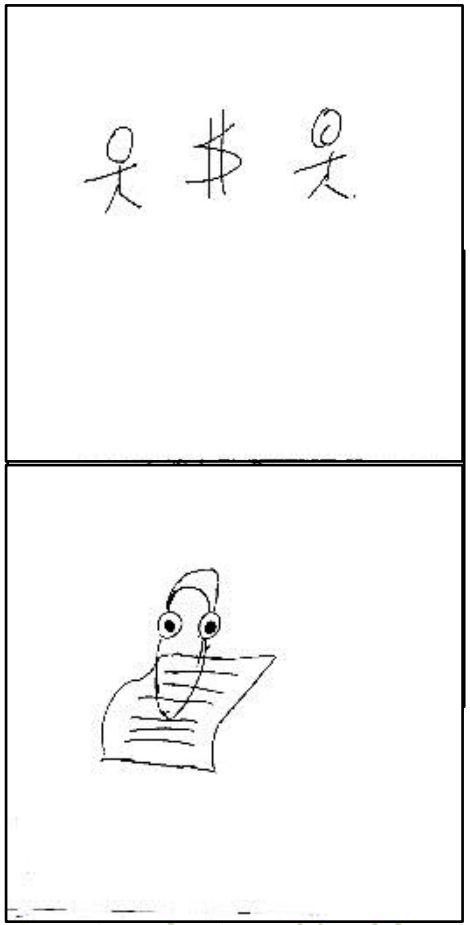
—CS graduate students (n=5)

Representation elements

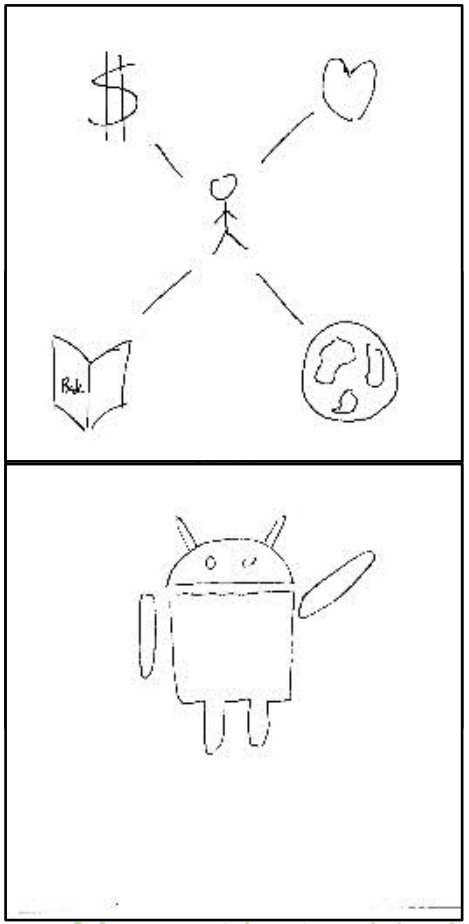
LIS



IM

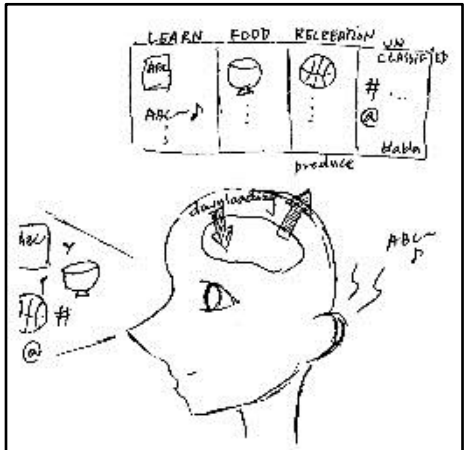


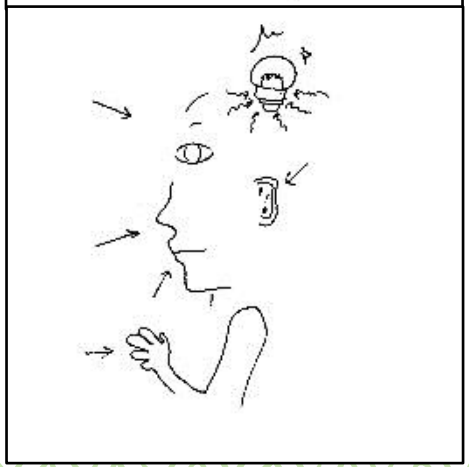
CS



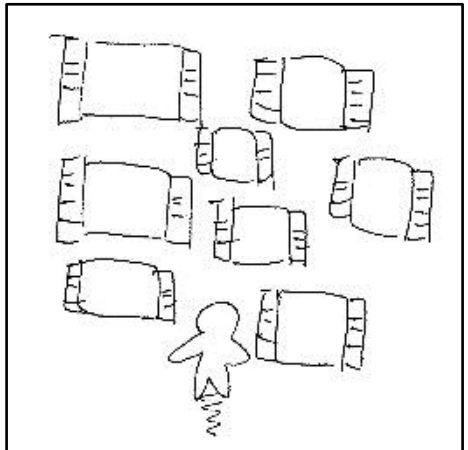
Conceptual elements: Human Images

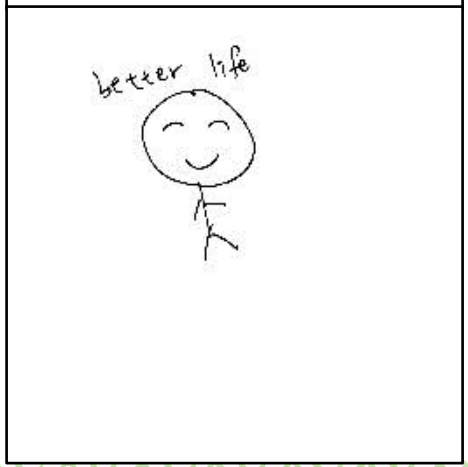
LIS





IM





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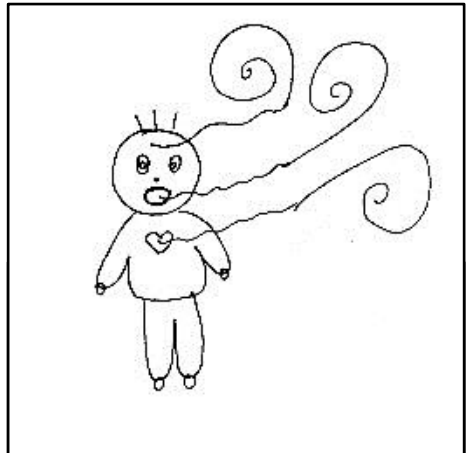
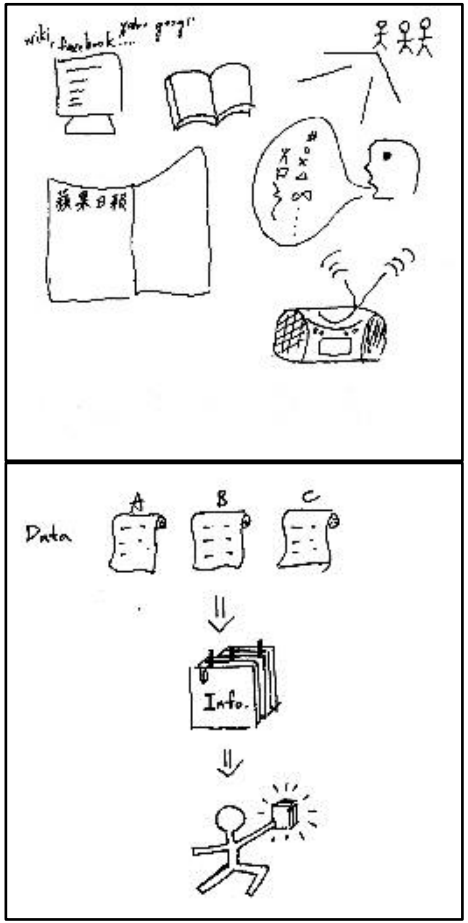


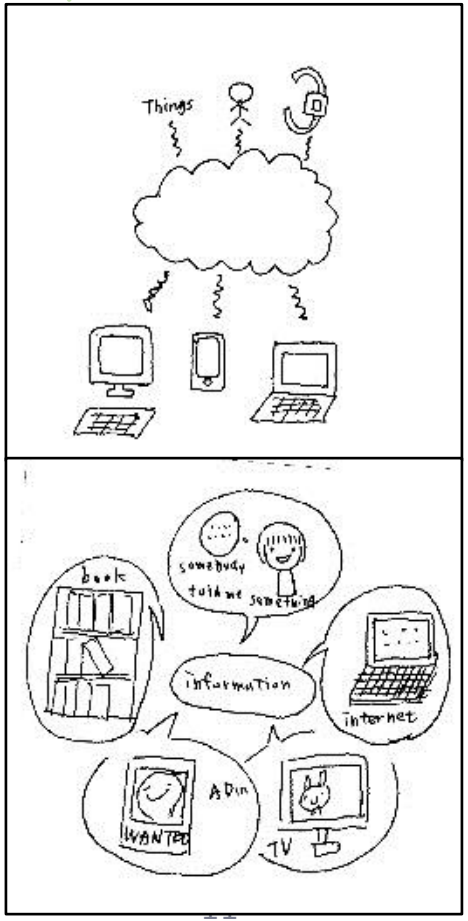
($\chi^2(2, N=219)=17.460, p<.001$)

Conceptual elements: ICT and Print Materials

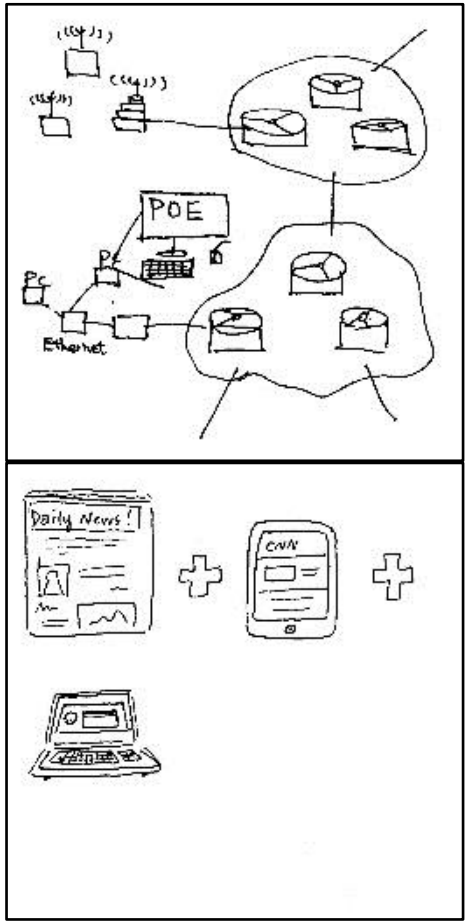
LIS



IM



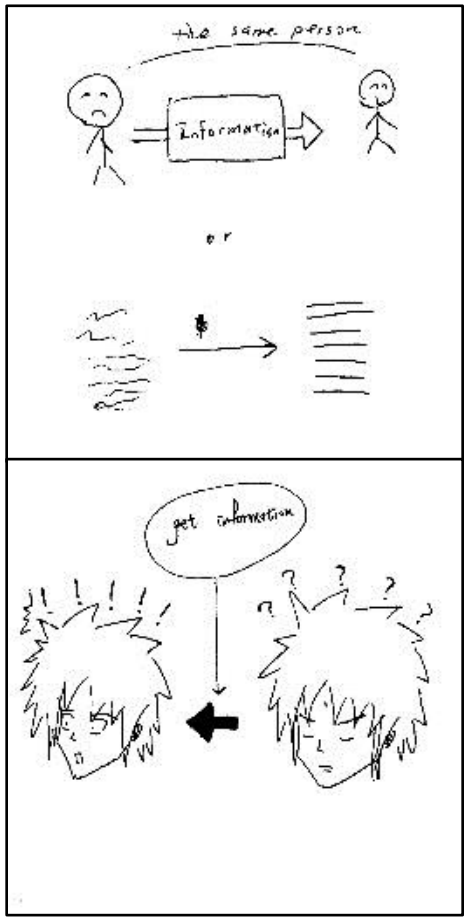
CS



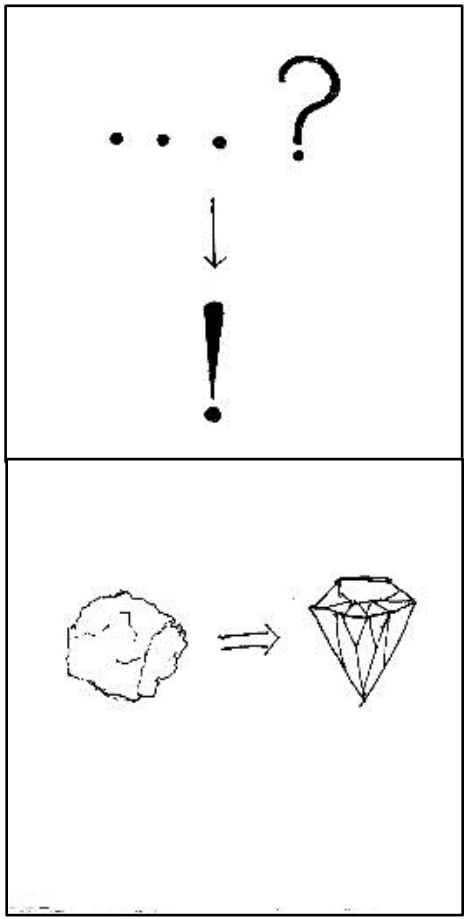
Print materials: ($\chi^2(2, N=219)=11.121, p<.01$)

Perspectives on Information: Information as Process

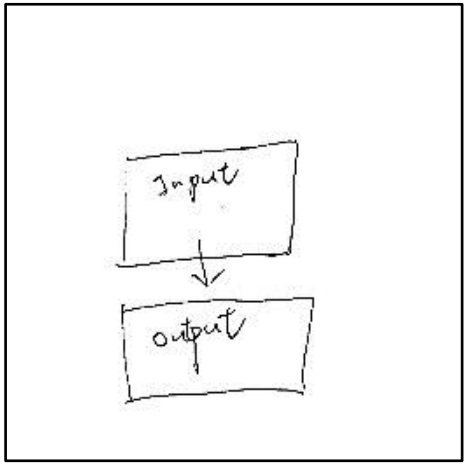
LIS



IM



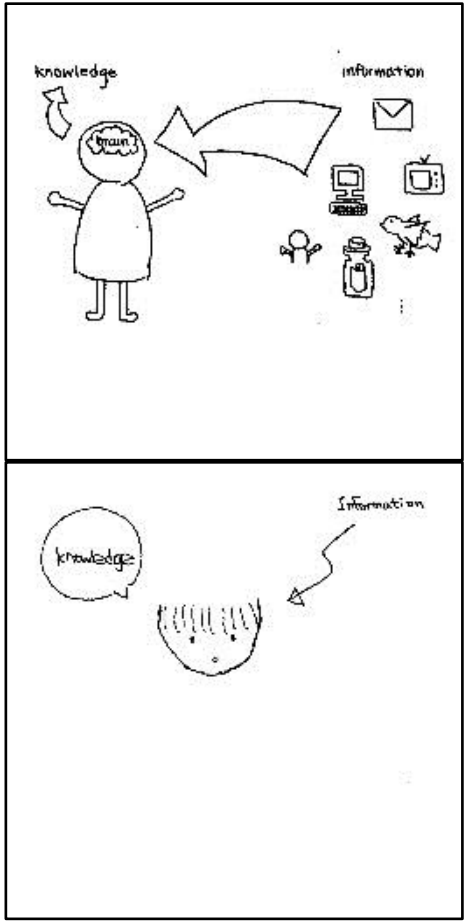
CS



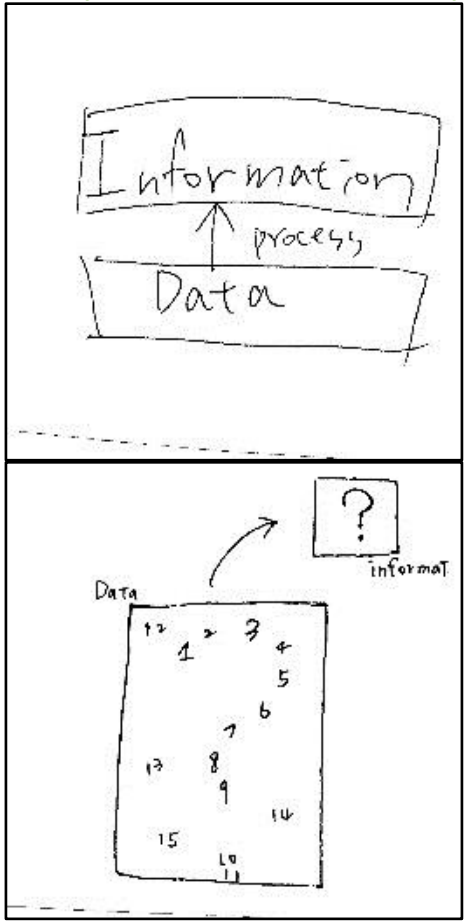
($\chi^2(2, N=219)=14.237, p=.001$)

Perspectives on Information: Information as Knowledge

LIS



IM

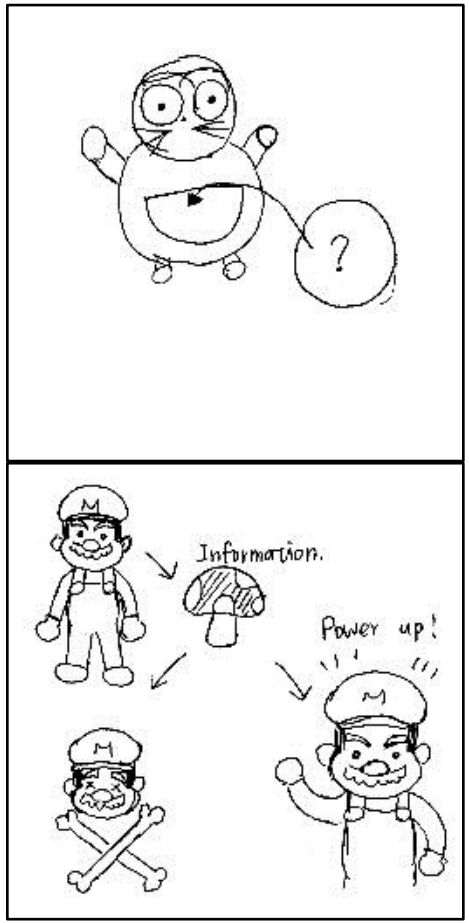


CS

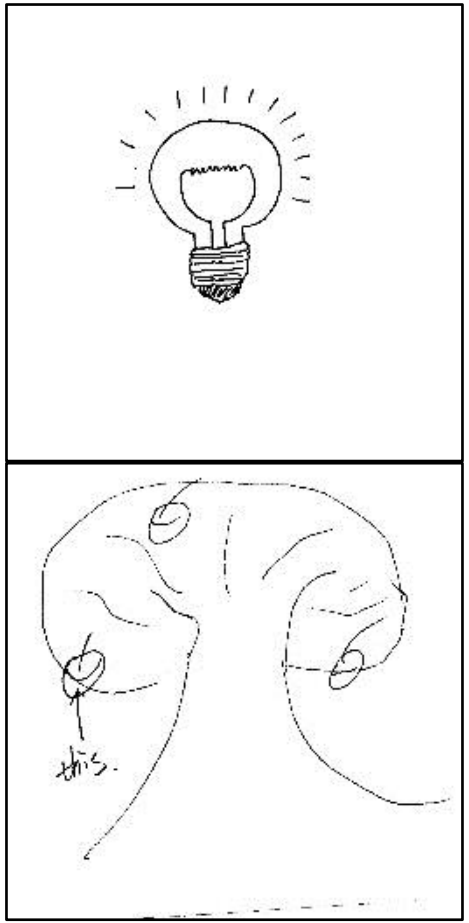
Nothing found in this category

Perspectives on Information: Information as Thing (metaphor)

LIS



IM



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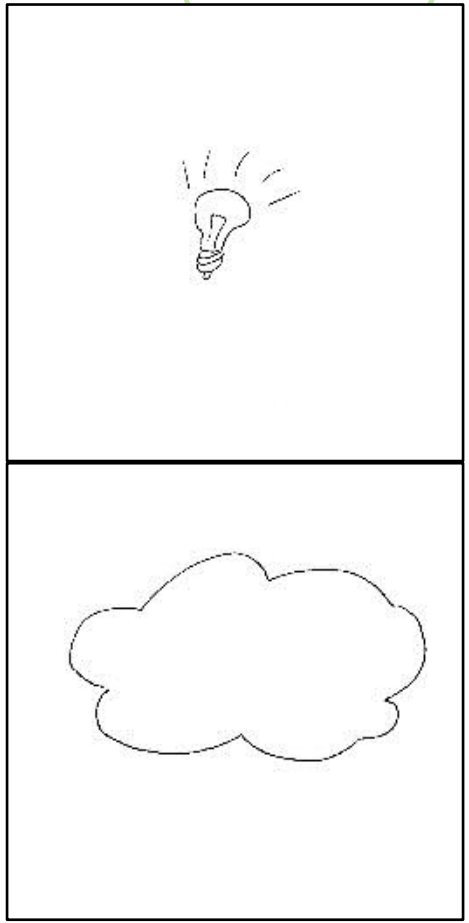
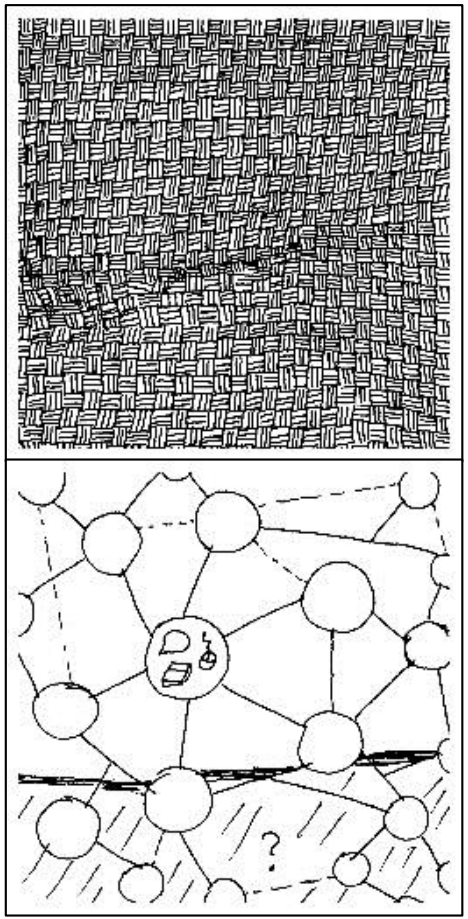


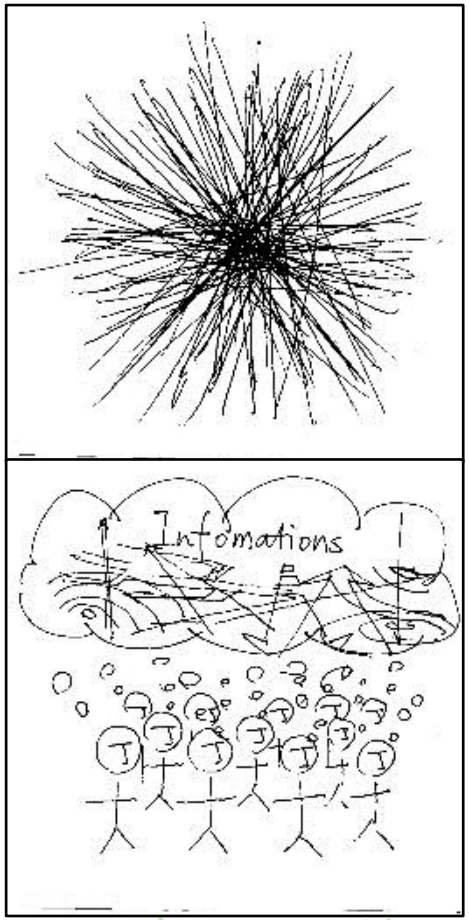
($\chi^2(2, N=219)=8.746, p<.05$)

Perspectives on Information: Big Data

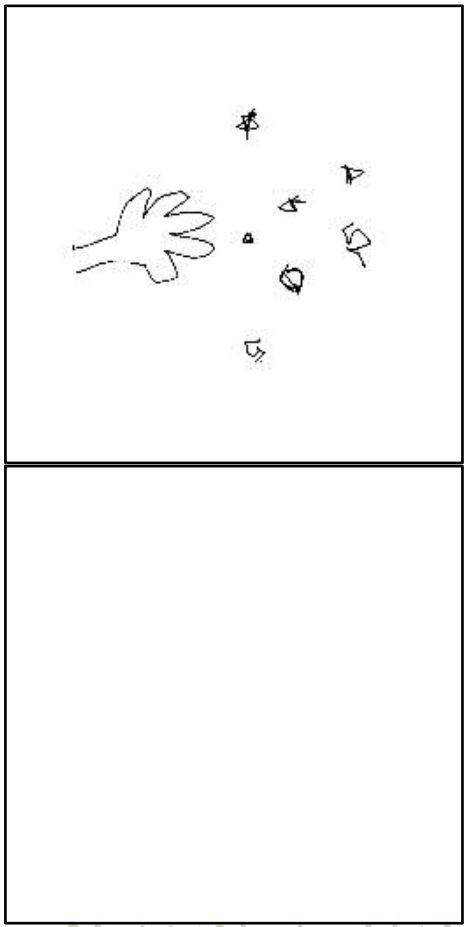
LIS



IM



CS



($\chi^2(2, N=219)=6.776, p<.05$)

Information is ***anything****/can be* ***everything/everything*** *on earth/****everything*** *we learn/****everything*** *in the universe.*

Information is like the air—it is ***everywhere****.*

– IM undergraduates (n=13)

Information is ***everything*** *around you/****everything*** *happened/****almost everything everywhere***

–CS undergraduates (n=7)

Conclusion

- LIS students tend to use more complex compositions and metaphor, include image of human beings, print documents, and express the concept of uncertainty, information-seeking processes, and the DIKW hierarchy
- IM students tend to express the concept of big data
- CS students tend to use simple coding/icon as representations

Next Step

Future studies can further (1) investigate other individual differences (i.e., age, gender) from iSquares and (2) incorporate an image-elicitation interview so that we can better understand and interpret the concept of “information” in this rapidly changing world.

THANKS!

Any questions?

You can find me at titsai@ntu.edu.tw