Questioning for active learning:

Tools for developing effective questions

Lily Min Zeng

At the end of this workshop, you will be able to:

- Articulate the potential functions questions could serve in teaching
- Differentiate different types of questions
- Analyze the impact of questioning techniques on student's learning
- Design questions purposefully for intended student learning experiences
- Plan for strategies for the potential issues in using questions for teaching

When do you ask questions while teaching?

What can *QUESTION* do …

What do you concern about for questioning?

Generic skills and questioning

Graduate profile/ Graduate attributes/ Educational outcomes

- Academic/professional excellence in the chosen filed of study
- Critical and creative thinking
- Communicate complex ideas effectively
- Problem-soloving skills
- Integrity and ethics
- Openness to ideas and greater understanding of others
- Engagement with local and international communities
- Life-long learning; capacity to manage one's own learning

Active learning and questioning

Active engagement with knowledge, skill, or attitude ***through:***

Experience

Practice

Comparison

Evaluation

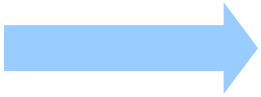
Verification

Application

Synthesize

Reorganize

...



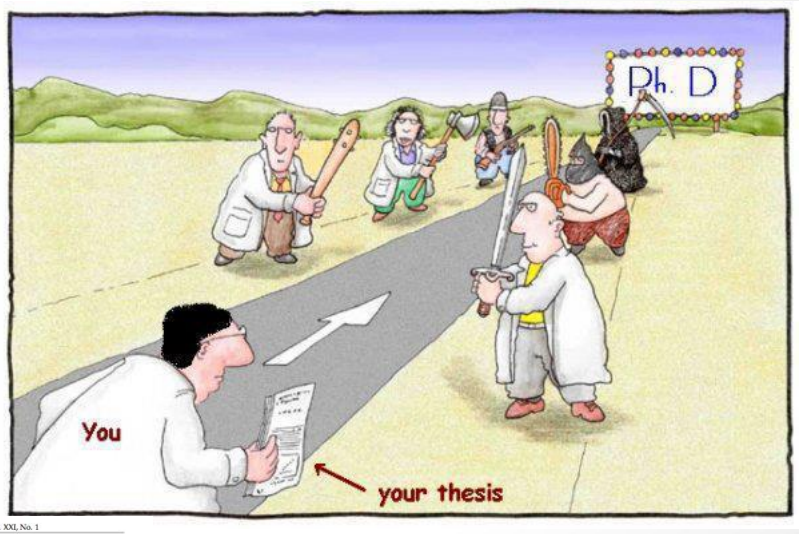
Better understanding/skills

More independent learner

Increased interest & motivation

Some implications from "experienced" / "sophisticated" learners:

- Highest educational degree



- Academics


Running title • August 2012 • Vol. XXI, No. 1

Article Title

John Smith*

University of California

john@smith.com

Abstract

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

I. Introduction

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

II. Methods

Maecenas sed ultricies felis. Sed imperdiet dictum arcu a egestas.

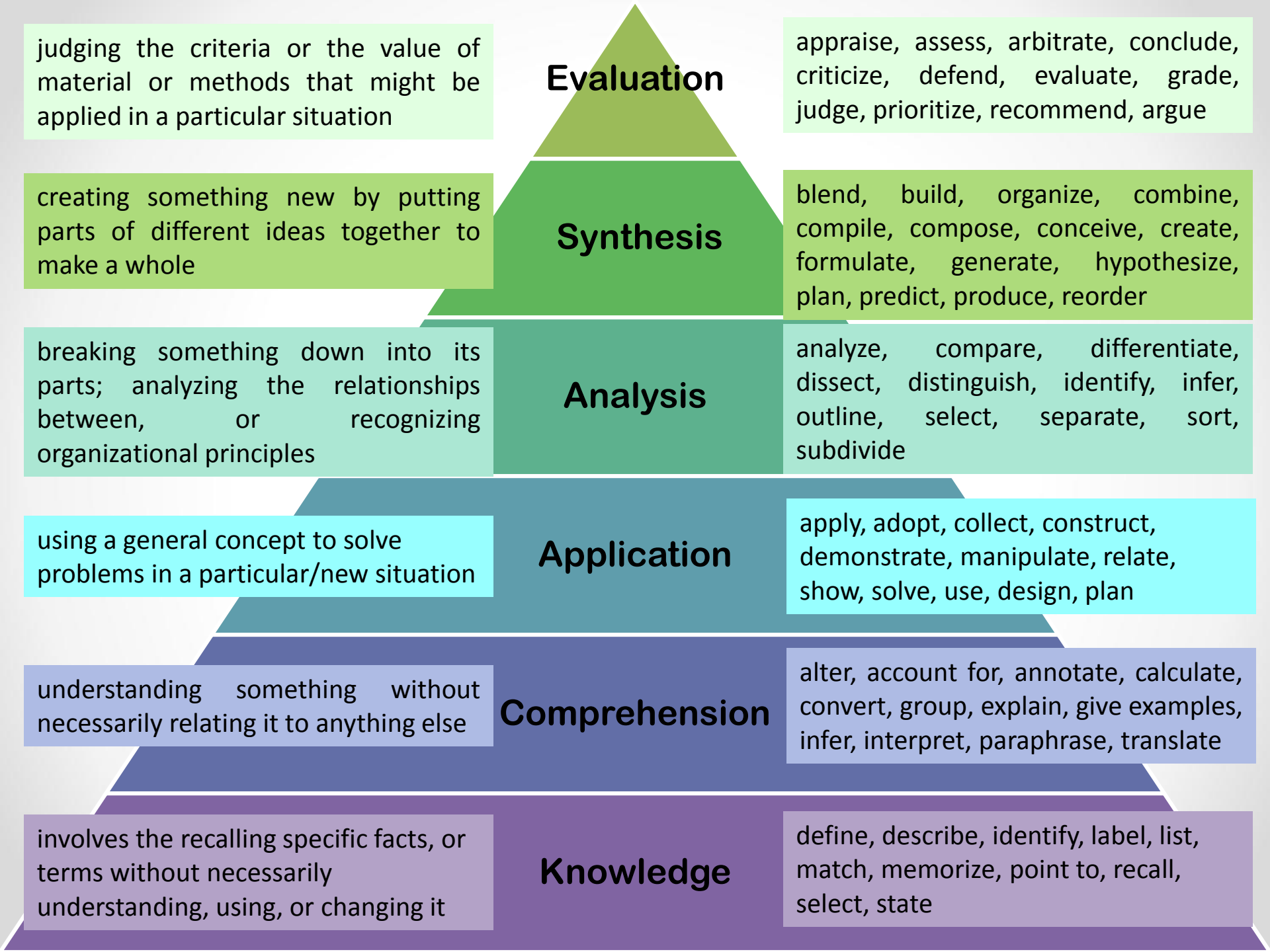
- Donec dolor arcu, rutrum id molestie in, viverra sed diam
- Curabitur feugiat
- turpis sed auctor facilisis
- arcu eros accumsan lorem, at posuere mi diam sit amet tortor
- Fusce fermentum, mi sit amet euismod rutrum
- sem lorem molestie diam, iaculis aliquet sapien tortor non nisl
- Pellentesque bibendum pretium aliquet

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultri-

* A thank you or further information

1

Types of questions…


judging the criteria or the value of material or methods that might be applied in a particular situation
Evaluation
appraise, assess, arbitrate, conclude, criticize, defend, evaluate, grade, judge, prioritize, recommend, argue
creating something new by putting parts of different ideas together to make a whole
Synthesis
blend, build, organize, combine, compile, compose, conceive, create, formulate, generate, hypothesize, plan, predict, produce, reorder
breaking something down into its parts; analyzing the relationships between, or recognizing organizational principles
Analysis
analyze, compare, differentiate, dissect, distinguish, identify, infer, outline, select, separate, sort, subdivide
using a general concept to solve problems in a particular/new situation
Application
apply, adopt, collect, construct, demonstrate, manipulate, relate, show, solve, use, design, plan
understanding something without necessarily relating it to anything else
Comprehension
alter, account for, annotate, calculate, convert, group, explain, give examples, infer, interpret, paraphrase, translate
involves the recalling specific facts, or terms without necessarily understanding, using, or changing it
Knowledge
define, describe, identify, label, list, match, memorize, point to, recall, select, state

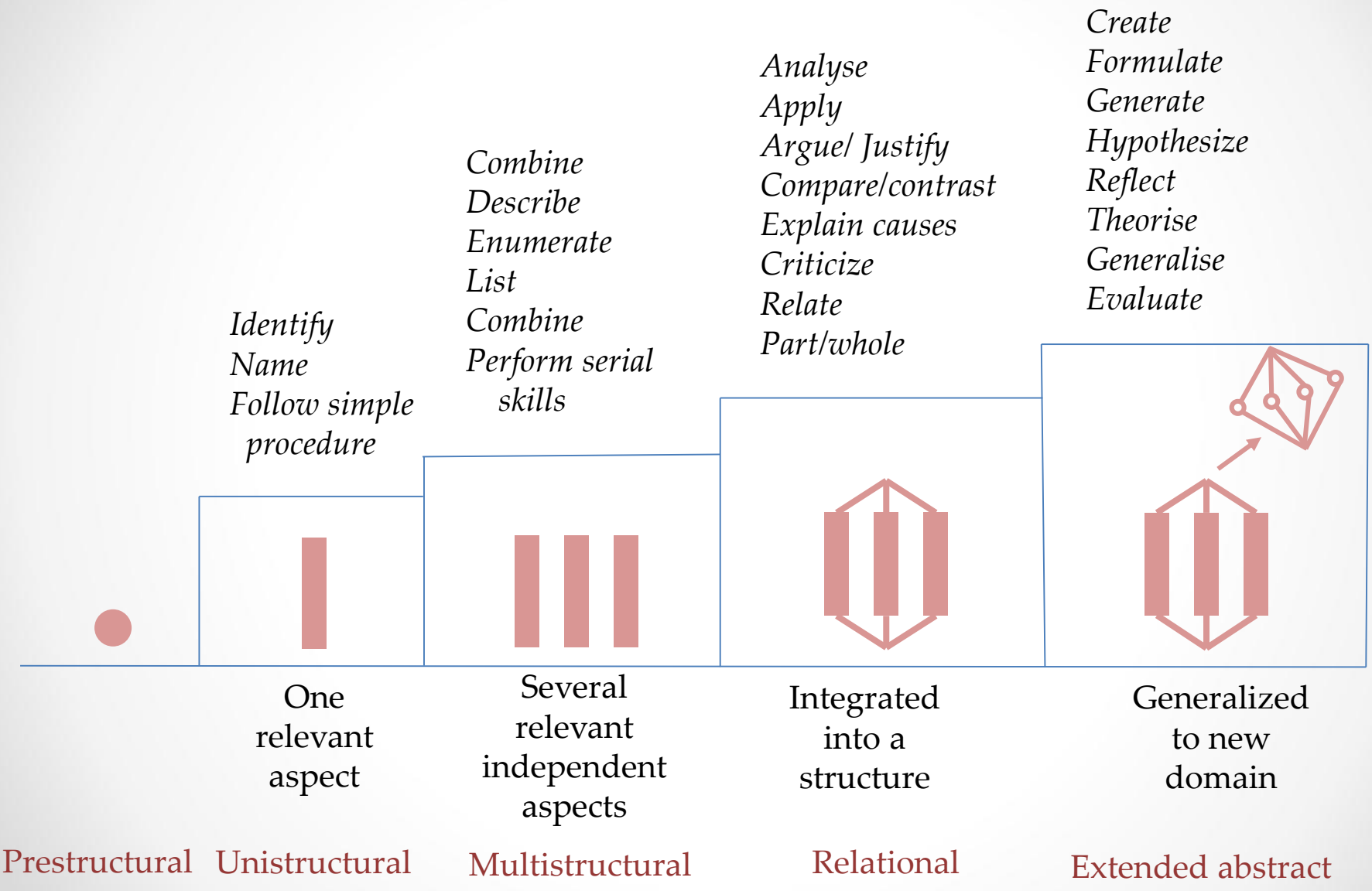
Types of questions based on Bloom's Taxonomy

Adapted from http://wed.siu.edu/faculty/JCalvin/bloomstax.pdf accessed August 28, 2012

Level of complexity

Category		Model questions
Knowledge	recalling or remembering specific facts, terms, concepts, principles, or theories without necessarily understanding, using, or changing it	- What are the main characteristics of …? - According to our study of …, what conditions are required for … to occur?
Comprehension	understanding something that has been communicated without necessarily relating it to anything else	- Can you describe the major differences between X and Y? - Could you give an example of …?
Application	using a general concept to solve problems in a particular situation; using learned material in new and concrete situations	- How might this relate to…? - Apply the theory of … to explain … (a real-world problem)
Analysis	breaking something down into its parts; may focus on identification of parts or analysis of relationships between parts, or recognition of organizational principles	- What assumptions …? - What can you infer from the data?
Synthesis	creating something new by putting parts of different ideas together to make a whole	- Which is most important…? - Evaluate in terms of…
Evaluation	judging the value of material or methods as they might be applied in a particular situation; judging with the use of definite	- How would you test …? - How else would you …?

SOLO taxonomy (Biggs & Collis, 1982; Biggs & Tang, 2007)



Accountable talk

- Theoretical basis: social interaction is important in the development of individual mental processes (Dewey, 1966; Mead, 1967; Wertsch, 1991)
- Lenses: Sociolinguistics + psychology
- Focus:
  - How discussion methods are used in classrooms
  - Why such discussion may support learning of subject matter and the process of reasoned participation
  - The role of certain kinds of structured talk for learning with understanding

(Michaels, O'Connor, & Resnick, 2008)

Accountable talk moves

(Michaels, O'Connor, & Resnick, 2008; Resnick, Michaels, & O'Connor, 2010)

Goal 1: Help individual student share, expand and clarify their own thinking
Goal 2: Help students listen carefully to one another
Goal 3: Help students deepen their reasoning
Goal 4: Help students think with others

Three facets of accountable talk

- Accountability to the community
- Accountability to acceptable standards of reasoning
- Accountability to knowledge

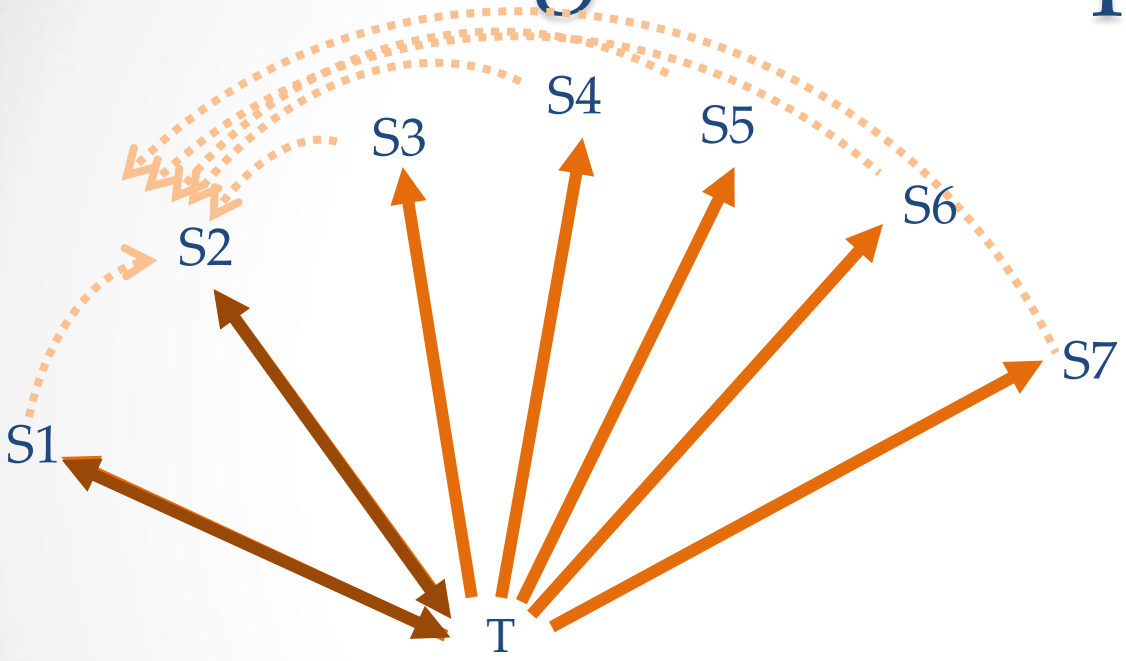
(Michaels, O'Connor, & Resnick, 2008)

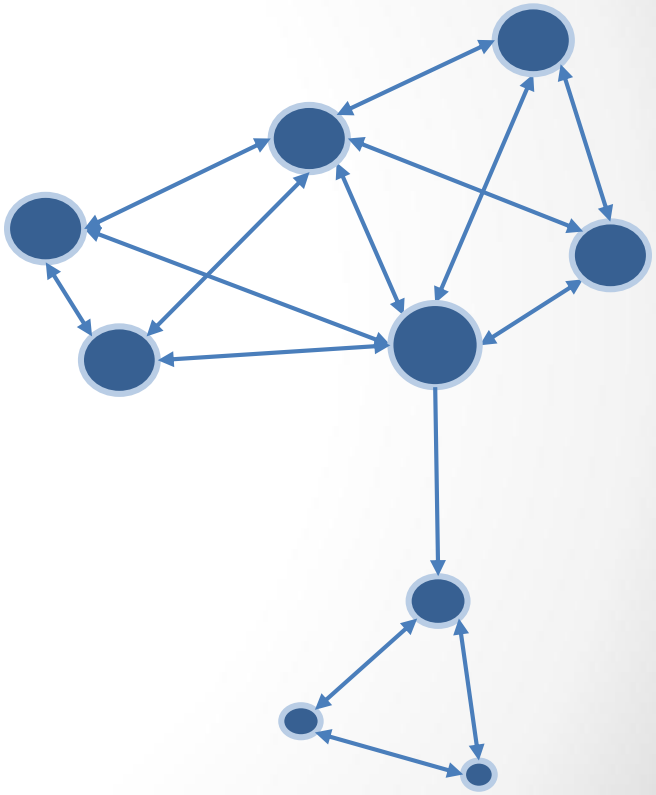
Prompts

- Cognitive prompts
- Metacognitive prompts

(Berthold & Nückles, Renkl, 2007; King, 1992; Reigeluth & Stein, 1983)

Learning network perspective





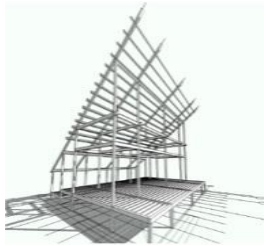
- Density of the interaction
- Centrality (T/S): stars, brokers, isolates
- Cliques,
- Paths
- Structural holes

Questions for thoughts

Goal

Types of questions

Wording



Structure

Metacognitive