

5-23-2019

# Active—Constructive—Interactive: A Taxonomy for Designing Learning Activities for Subject-Specific Information Literacy Instruction

Omer Farooq

*University of Nebraska at Omaha*, ofarooq@unomaha.edu

Follow this and additional works at: <https://digitalcommons.unomaha.edu/crisslibfacproc>

 Part of the [Library and Information Science Commons](#)

---

## Recommended Citation

Farooq, O. (2019). Paper Presentation: Active—Constructive—Interactive: A Taxonomy for Designing Learning Activities for Subject-Specific Information Literacy Instruction. Workshop for Instruction in Library Use, May 23, 2019. Winnipeg, Canada.

This Presentation is brought to you for free and open access by the Dr. C.C. and Mabel L. Criss Library at DigitalCommons@UNO. It has been accepted for inclusion in Criss Library Faculty Proceedings & Presentations by an authorized administrator of DigitalCommons@UNO. For more information, please contact [unodigitalcommons@unomaha.edu](mailto:unodigitalcommons@unomaha.edu).





# Active—Constructive—Interactive

A taxonomy for designing learning activities for subject-specific information literacy instruction

Omer Farooq, PhD

Assistant Professor—Social Sciences Librarian



# Fundamental Questions

How do students learn?

How do students learn to do research?

What are the instructional strategies that scaffold their learning?



# Pedagogical Toolkit: Learning Activities & Learning Techniques

## Active

Rereading

Highlighting (underlining)

Summarization

Keyword mnemonic

## Constructive

Imagery use of text

Practice testing

Distributed practice

Interleaved practice

## Interactive

(Chi, 2009)

Self-explanation

Elaborative interrogation

(Dunlosky, 2012)



## Active—Constructive—Interactive Framework

### Active

#### Characteristics

Doing something

#### Overt Activities

Look, gaze,  
underline,  
paraphrase,  
select,  
repeat

#### Cognitive Processes

*Attending Processes*

Activate existing  
knowledge, assimilate,  
encode, or store new  
information, search  
existing knowledge  
(Chi, 2009)



# Active—Constructive—Interactive Framework

## Constructive

### Characteristics

Producing outputs with ideas that go beyond the presented information

### Overt Activities

Self-explain or elaborate, provide reasons, construct a concept map, self-monitor, connect, predict outcomes, generate hypothesis

### Cognitive Processes

#### *Creating Processes*

Infer new knowledge, integrate new information with existing knowledge, organize own knowledge for coherence, repair own faulty knowledge, restructure own Knowledge (Chi, 2009)



# Active—Constructive—Interactive Framework

## Interactive

### Characteristics

Dialoguing  
acknowledging  
partner's  
contribution

### Overt Activities

Respond to  
Scaffolding,  
revise errors,  
argue, defend,  
confront

### Cognitive Processes

*Jointly Creating Processes*  
  
Creating processes  
that incorporate a  
partner's contributions  
(Chi, 2009)



## Learning Techniques

### **Techniques:**

Rereading  
Highlighting (underlining)  
Summarization  
Keyword mnemonic  
Imagery use of text  
Practice testing  
Distributed practice  
Interleaved practice  
Self-explanation  
Elaborative interrogation  
(Dunlosky, 2012)

### **Relative utility across four variables:**

Learning conditions  
Student characteristics  
Materials  
Criterion Tasks  
(Dunlosky, 2012)





## Self-explanation & Elaborative Interrogation

### **Self-explanation:**

Explaining how new information is related to known information, explaining steps during problem solving  
(Dunlosky, 2012)

### **Elaborative Interrogation:**

Generating an explanation for why an explicitly stated fact or concept is true  
(Dunlosky, 2012)



## Self-explanation & Elaborative Interrogation

### Examples of prompts:

Why would the distribution of oxygen (a system wide function) be less efficient if there is a hole in the septum (a structure of the septum)?

Identify the differences between the concepts. Generate an example

In what ways is Japan related to other civilizations we learned?

Why does an object speed up as its radius gets smaller?

Why does the Richardson's ground squirrel live in underground tunnels?

Why would that animal do/have that?  
(Dunlosky, 2012)



## Self-explanation & Elaborative Interrogation

### Cognitive mechanisms involved:

Critical distinctive features to the explicit attention of the learner

Prior knowledge and its connection with to-be-learned material

Assess knowledge gaps

Compare and contrast, develop concept map, synthesis of ideas from multiple documents

(Dunlosky, 2012; Perfetti, 1999)



## The “So What” or Why Should We Care?

Retention and transfer of higher-order cognitive tasks in information literacy knowledge practices

Using elaborative interrogation prompts and other learning techniques in our instructional practice

Designing constructive and interactive activities to scaffold learning

Learning techniques as assessment tools

“Instruction is assessment & assessment is instruction”

-Omer’s advisor



## Research Process in Political Science

Why do some countries have democratic political systems while others have non-democratic systems?

What explains democratization (transition from non-democracy to democracy) in Spain in the 1970s?

What explains variation in success of social movements in Latin America?

What explains variation in informal public goods provision in neighborhoods in the Indian cities of Jaipur and Bhopal?



## Subject-Specific IL Instruction

What is the puzzle behind the question?

What would you need to know to answer the question?

Where would you go to answer the question? How would you answer the question?

What do you already know? What questions come to mind when you think about...?



## Subject-Specific IL Instruction

What platforms/venues of information would be appropriate? How are these organized/structured?

Who might produce this information?

What search strategies would you employ? Why?

How would you manage the results?



## Subject-Specific IL Instruction

How are format, process, and delivery related?

What unique value does each format provide for your RQs?

What is the value of examining different formats of information for specific information needs?

What is the value of peer-reviewed sources?

What factors do you look for in your assessment of authority?





## Subject-Specific IL Instruction

How do you give credit to the ideas/opinions of others? Why?

How do you value information in various online venues?

What are the issues related to this diversity of venues?

Do you value information differently using different platforms/venues of Information? Why?



## Subject-Specific IL Instruction

What are the key issues surrounding this topic? Who are the people in the conversation?

Where are these conversations taking place? Venues of scholarly communication?

What new themes emerge? How are they related to what you already know?

What are the products of the conversation? Citation chaining/paradigm shifts?

How has the perspective evolved over time?



## References

- Chi, M. T. (2009). Active-constructive-interactive: A conceptual framework for differentiating learning activities. *Topics in Cognitive Science, 1*(1), 73-105. doi:10.1111/j.1756-8765.2008.01005.x
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, 14*(1), 4-58. doi:10.1177/1529100612453266
- Perfetti, C. A., Rouet, J. F., & Britt, M. A. (1999). Toward a theory of documents representation. In H. van Oostendorp & S. R. Goldman (Eds.), *The construction of mental representations during reading* (pp. 99-122). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

# Thank you!

Email: [ofarooq@unomaha.edu](mailto:ofarooq@unomaha.edu)

UNIVERSITY OF  
**Nebraska**  
Omaha



The University of Nebraska does not discriminate based on race, color, ethnicity, national origin, sex, pregnancy, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, marital status, and/or political affiliation in its programs, activities, or employment.