



## Teaching Thinking Through Effective Questioning

Presented by: Jill B. Slack, Ph.D.



Adapted from: Dantonio, M. (1990). *How can we create thinkers? Questioning strategies that work for teachers.* Bloomington, IN: National Educational Service.

## **Teaching Thinking Through Effective Questioning Workshop Objectives**

As a result of the workshop activities, participants will:

1. Develop an understanding of the various thinking skills comprising conceptualization and inferential processes;
2. Develop an understanding of the nature and function of questions related to the recitation and discussion of content;
3. Develop initial skills in fielding and sequencing questions as well as utilizing student responses;
4. Develop initial skills in sequencing questions to facilitate student metacognition and higher-order cognitive processing;
5. Develop skills in facilitating classroom discussion and content acquisition;
6. Develop a critical awareness of the research in thinking, metacognition, and questioning;
7. Learn to self-assess instructional methods for conducting lessons in thinking skills and cognitive processing; and
8. Adapt the use of questioning processes to accommodate both student diversity and specific content areas.

### **About the Presenter**

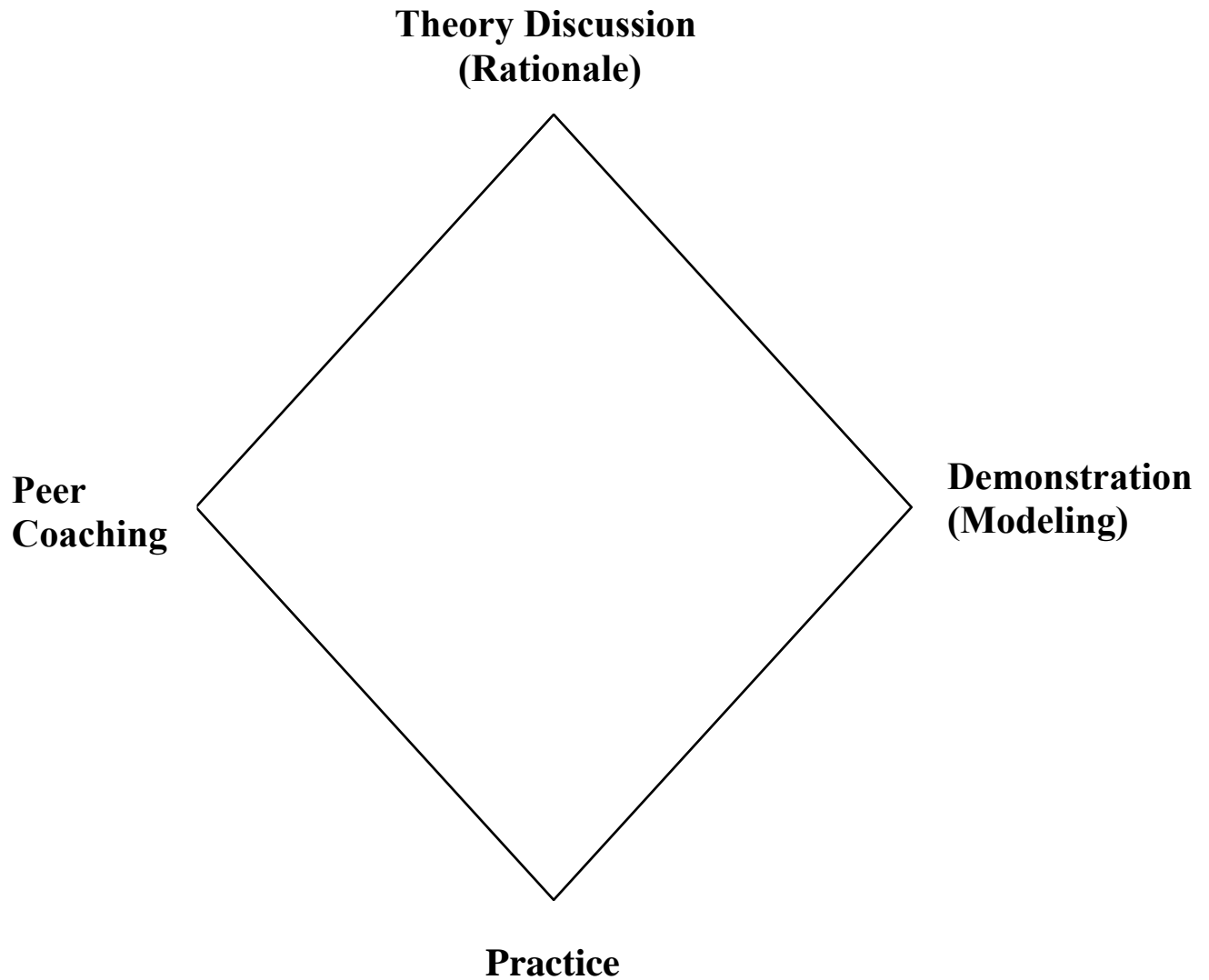
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Prior to joining SECAC in August, 1997, Dr. Slack taught for many years as an elementary school teacher, reading lab teacher and ESL instructor. She also worked as a research associate/site trainer and program evaluator for the Accelerated Schools Project and as an assistant professor in higher education.

Dr. Slack received a B.A. in Elementary Education from the University of Florida, an M.Ed. with a specialty in reading from Our Lady of Holy Cross College, and a Ph.D. in Curriculum and Instruction with a minor in Educational Administration and a concentration in program evaluation from the University of New Orleans.

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# The Talent Development Model



Adapted from: Joyce, B. R. and Showers, B. (1988). *Student Achievement Through Staff Development*. New York: Longman Press.

## Taxonomies and Questioning Systems

### Bloom's Taxonomy

Knowledge	Define, recall, recognize, remember
Comprehension	Describe, compare, contrast
Application	Classify, use, choose, solve
Analysis	Identify causes, draw conclusions, determine evidence
Synthesis	Predict, produce, design, develop
Evaluation	Judge, argue, decide, assess

### Aschner-Gallagher's Questioning System

Level I	Low Order Convergent (cognitive memory)	Questions requiring students to engage in reproductive thinking
Level II	High Order Convergent	Students engage in the first levels of productive thinking
Level III	Low Order Divergent	Students think critically about information
Level IV	High Order Divergent (evaluative)	Students perform original thinking

## **Questioning Processes**

### **Gathering Questioning Processes**

- Observation
- Recall

### **Sorting Questioning Processes**

- Comparing
- Contrasting
- Grouping

### **Organizing Questioning Processes**

- Labeling
- Classifying
- Sequencing

### **Interpreting Questioning Processes**

- Inferring Causes
- Inferring Effects
- Inferring Qualities
- Predicting

## Types of Core Questions

### Attributes

Effective core questions cue and direct the thought experiences of the classroom discourse. Core questions should be:

Clear: In language that students understand

Focused: Identifies content and thinking skill

Open: Uses words that provide learners with opportunities to state complete responses and allows for diverse responses

### Examples

#### Observation and Recall

(OB) What do you notice/observe about the (content)?

(RL) Tell me what you recall/remember about the (content).

#### Comparing and Contrasting

(CM) In what ways are \_\_\_\_\_ and \_\_\_\_\_ alike?

(CT) What differences do you find between \_\_\_\_\_ and \_\_\_\_\_?

(CT) Tell me what discrepancies you noted concerning \_\_\_\_\_ and \_\_\_\_\_.

#### Grouping

Which of the items on the list go together for some reason?

How can we group these items?

#### Labeling

What are some appropriate names for this idea?

Based on the reasons for the groups, what would be some appropriate names or phrases?

#### Classifying

Which of the examples belong in the (label) group?

Find or make up an example of the (concept label).

#### Sequencing

What is the order of the following information based on (criterion)?

#### Inferring Causes/Effects/Qualities

What are the causes of \_\_\_\_\_?

What are some effects of \_\_\_\_\_?

What do you think is true about \_\_\_\_\_?

#### Predicting

What do you think will solve/happen as a result of \_\_\_\_\_?

## **Types of Processing Questions (Probing Questions)**

### **Refocusing Questions**

Needed if learners are not doing the initiated thinking or are talking off the subject.

### **Clarifying Questions**

Need if learners' responses are unclear OR if the teacher feels more appropriate language could be used to express the idea. Also used to help learners define words and bring meaning to their ideas.

### **Verifying Questions**

Provide opportunities for learners to cite or provide evidence for their ideas or information. Learners verify information through/by:

1. Personal experience
2. Stating what authorities say is true
3. Using a principle or a generalization which exemplifies the information

### **Redirecting Questions**

Designed to enhance learner-learner interaction. Use to elicit a variety of responses from different students.

### **Narrowing the Focus Questions**

Used to limit the content learners talk about.

### **Supporting Questions**

Used to help learners "hook up" relationships between and among evidence and statements.

## The Questioning Process Map

### Core Stems (Examples)

What do you (thinking skill) about (the content)?  
Tell me what you (thinking skill) about the (content).

### Processing Stems

#### Clarifying

What do you mean by \_\_\_\_\_?  
Define \_\_\_\_\_.  
What are you referring to when you say \_\_\_\_\_?  
State that in different words.  
Draw that for me.

#### Verifying

Point to that characteristic.  
How do you know that?  
Give me an example of \_\_\_\_\_.  
When or where have you experienced this before?

#### Refocusing

What makes you say \_\_\_\_\_?  
You are using another thinking skill, what led you to say \_\_\_\_\_?

#### Narrowing the Focus

What do you (thinking skill) about (identify a specific detail)?  
Tell me more about (a specific detail).

#### Redirecting

What else do you (thinking skill) about (specific detail)?  
Someone else tell me what you (thinking skill) about the (specific detail).

#### Supporting

What is the reason for your grouping? (GP)  
Why do you think \_\_\_\_\_ is an appropriate name for your group? (LB)  
What is it that makes you say \_\_\_\_\_ is an example of \_\_\_\_\_? (CF)  
On what basis did you order these? (SQ)  
What makes you say \_\_\_\_\_ caused/is the result of/is the quality of \_\_\_\_\_? (Inferring CS/EF/QU)  
What is the reason for thinking \_\_\_\_\_ will result in \_\_\_\_\_? (PR)

## Recall and Verification

Verification using the source:

How do you know that is true?  
Where did you find that information in the story?  
Read that passage.

Verification using authorities:

Who says that?  
Name some other authors (or people) using the same idea.

Verification using personal experience:

Where have you experienced this before?  
Tell me about a situation you had like the one in the story.

Verification using principles or generalizations:

What rule says this happens over and over again?  
What moral do you know that exemplifies this?

## The Gathering Process

### Observation

- A thinking skill whereby individuals perceive and collect physical characteristics about an object, event, or situation through the senses
- Primary way in which we make sense of our experiences and environment
- Situation must be real or representational, not symbolic

### Recall

- A thinking skill whereby individuals retrieve specific details derived from their past experiences, written passages, or viewing or listening to media productions
- Learners must comprehend factual information so that it becomes relevant and useful
- Primary or core recall questions must be structured with words that cue recollection (e.g., recall, remember, find out about)

## Talent Development in Questioning

Teachers work in groups to plan a lesson using the framework provided. A volunteer from each group demonstrates the questioning process in a *brief two- or three-minute rehearsal*. Other teachers act as learners for purposes of the demonstration. As the volunteer teacher demonstrates the lesson, careful attention is given to the following discrete questioning and coding issues:

### A. The Core Question

1. Is it clear and open (not prompting yes/no answers)?
2. Does the question have words that cue thinking?
3. Does the question have content focus?
4. Is the response an answer to the core question?
5. Is the response appropriate for the process and content initiated by the core question?

### B. The Processing Questions

1. After listening to the response, does the teacher ask additional questions to assist learners in understanding their responses?
2. Are the processing questions open?
3. Does the teacher provide enough wait-time?
4. Does there appear to be an appropriate pattern of question that paces the lesson and extends learner understanding of the process?
5. Does the teacher appear to be listening to the learner response, or is the teacher concerned about the next question?

### C. The Coding Process

1. What similarities and differences exist between teacher codings?
2. Are there any patterns, appropriate or inappropriate that exist?
3. What is the impact of the observed patterns on the learners?
4. What patterns need to be maintained or changed to facilitate thinking?
5. In what ways can teachers maintain and/or change existing patterns?

## Coding Symbols and Practice – Observation (Gathering)

Teacher Techniques:	OB	Observing core question
	<span style="border: 1px solid black; padding: 2px;">OB</span>	Closed core question
	1/2	Core question lacks process or content
	CL	Clarifying question
	VR	Verifying question
	RF	Refocusing question
	RD	Redirecting questions (for more responses)
	NF	Narrowing the focus (adding specifics)
	Tt	Teacher talk
Student Responses:	+	On-focus response
	-	Off-focus response

T: Do you notice the flag? What do you notice about the flag?  
S: It's got stars and stripes.  
S: It's a plastic flag.  
T: What do you mean by plastic?  
S: It's like the one I have at home in my bedroom.  
T: You're telling me how this flag is like your flag, tell me what you mean by plastic?  
S: Something that is flexible.  
T: What is another word for flexible?  
S: Bendable, wiggly.  
T: Give me an example of something that is bendable.  
S: A Ziploc bag.  
T: Okay, that's a good example.  
T: Someone mentioned the stripes. What do you notice about the stripes?  
S: They are red and white.  
S: There are thirteen.  
T: What are you referring to when you say there are thirteen?  
S: There are seven red stripes and six white stripes.  
T: Point to the red stripes and count them for me.  
S: Student points and counts.  
T: Someone else tell me about the stripes.  
S: They represent the thirteen original colonies.  
T: OK, tell me about the stars.  
S: There are 50.  
T: How do you know that?  
S: Because I counted them before and I know there is one for each state.  
T: What else do you notice about the stars?

## Observation Demonstration Lesson Plan (Gathering)

**Purpose:** Provide learners opportunities to gather the physical properties of a flower through observation

**Reason:** Prerequisite to developing the concept of a flower

**Content Characteristics:** Petals, stem, stamens, pistils, color, shape, leaves

**Resources:** Each student or small group of students has a rose, or a daisy, etc.

(Conduct lesson with one type of flower at a time); paper, pencil, board, diagram

**Core Question:** What do you notice about the “rose”?

### Possible Learner Responses

It's pretty – RF

It's not fully bloomed – VR

Lots of petals – CL/VR/RD

The leaves are alternating – CL/VR

My mother grows them – RF

It's yellow in the middle – CL/VR/NF

The yellow comes off my hands – VR/RD

### Processing Stems for Observing

**RF** (Refocusing response to observing)

What are you noticing that makes you say the rose is pretty?

You're telling me about your mother's roses, what do you notice about this rose?

**CL** (Defining and using additional or more precise language)

What do you mean by lots of?

What are you referring to when you say the leaves are alternating?

Draw the leaves coming one after the other.

**VR** (Verifying details)

Show me the yellow part.

How do you know it's not fully bloomed?

**NF** (Narrowing the focus of the critical characteristics)

Tell me more about the middle part.

What do you notice about the stem?

**RD** (Attaining more student participation)

Someone else tell me about the petals.

What else do you notice about the stem?

## Try-Out Lesson Plan Form

**Purpose:**

**Reason:**

**Content Characteristics:**

**Resources:**

**Core Question:**

**Possible Learner Responses:**

**Processing Stems for (Thinking Skill)**

**Refocusing (RF):**

**Clarifying (CL):**

**Verifying (VR):**

**Narrowing the Focus (NF):**

**Redirecting (RD):**

## The Sorting Questioning Processes

### **Comparing**

- A thinking skill whereby learners sort information previously observed and/or recalled
- Learners discover similarities among like things, people, cultures, rituals, etc.
- Similar characteristics often become the distinguishing characteristics for the concepts

### **Contrasting**

- A thinking skill whereby learners sort through information to discover discrepancies between them
- Primary means for distinguishing sub-concepts from major concepts
- Learners must be able to make conditional statements

### **Grouping**

- A thinking skill whereby learners devise the critical characteristics for grouped information or items based on their own discoveries
- Grouping helps learners in developing flexibility in their thinking patterns
- Information can be grouped for attributes of:

- time
- place
- description
- category
- function
- cause-effect relationships

## Grouping Lesson

1. black bear
2. caribou
3. tiger
4. horse
5. owl
6. robin
7. elk
8. pig
9. cardinal
10. ox
11. elephant
12. white alligator
13. chicken
14. rabbit
15. eagle
16. deer
17. cow
18. mockingbird
19. cougar
20. camel

## Grouping Lesson

1. milk
2. mustard
3. frozen yogurt
4. chips
5. ice tea
6. ketchup
7. pizza
8. hamburgers
9. cheese
10. soft drinks
11. sugar
12. lettuce
13. ice cubes
14. coffee
15. ice cream
16. pickles
17. bread
18. pretzels
19. hot dogs
20. onion dip
21. mayonnaise
22. cocoa
23. pepper
24. cherries
25. cinnamon

## Coding Symbols and Practice – Comparing (Sorting)

Teacher Techniques:

CM	Comparing core question	CL	Clarifying question
<u>CM</u>	Closed comparing core question	VR	Verifying question
1/2	Core question lacks process or content	RF	Refocusing question
RD	Redirecting questions (for more responses)	Tt	Teacher talk
NF	Narrowing the focus (adding specifics)		

Student Responses:	+	On-focus response
	-	Off-focus response

T: We've been studying shapes this week. Let's see how we can compare a square and a circle based on what we know about them.

S: Their shapes are different.

T: Yes, their shapes are different. We will discuss differences later. But for now, look at these two pictures and tell me in what ways a square is like a circle.

S: They are closed figures.

T: What do you mean by closed figures?

S: There is no opening.

T: Come point to that similarity.

S: Student points to that characteristic.

T: Some one else tell me in what ways a square and a circle are alike?

S: They have angles.

T: What are you referring to when you say they have angles?

S: That they have corners or edges.

T: What are you noticing that makes you say a square and a circle have corners or edges?

S: Well, a square has corners but, ah...a circle, it's round, so ah...it doesn't.

T: That's right. You appear to have noted a difference, how are they alike?

S: A square and circle are two-dimensional.

T: Define two-dimensional.

S: Having two dimensions, like width and height.

T: What else makes a square and a circle two-dimensional?

S: I don't know, but they are examples.

T: Okay, tell me about the similarities in their surface.

S: They have a flat surface.

T: Can we say that something that is flat and has width and height is two-dimensional?

S: Yes, I guess so.

T: Tell me more about how the shape of a square and a circle are alike.

S: Well, they are geometric shapes.

## Comparing Demonstration Lesson Plan (Sorting)

**Purpose:** Provide learners opportunities to compare the attributes of today' space exploration and the fifteenth-century global explorations

**Reason:** Extends students' understanding of the attributes, relationships, and reasons for peoples' exploration of new worlds

**Content Characteristics:** Uses of traveling devices and equipment, reasons for exploring, exploration of the unknown, etc.

**Resources:** Library materials and notes on fifteenth-century explorers and twenty-first century space program, paper, pencil, overhead projector

**Core Question:** From your reading, what similarities are there between today's exploration of space and the fifteenth-century exploration of the new world?

### Possible Learner Responses

They were trying to discover unknown territory – CL/VR/RD

Both traveled in ships – CL/VR

Both were venturesome – CL/VR

The fifteenth-century explorers were traveling for monarchies – RF/CL/VR

### Processing Stems for Comparing

**RF** (Refocusing response to comparison core question)

You said that the fifteenth-century explorers traveled for their countries; how is that like today's explorations?

**CL** (Defining and using additional or more precise language)

What do you mean by venturesome?

What are you referring to when you say unknown territory?

**VR** (Verifying details)

How do you know both groups of explorers are venturesome?

Where did you find \_\_\_\_\_ information?

How do you know both groups traveled in the name of their countries?

**NF** (Narrowing the focus of the critical characteristics)

Tell me more about the technology of the times and how the uses of it are similar.

**RD** (Attaining more student participation)

Someone else give me information about people's desire to explore the unknown.

What other information have you found regarding the similarities between the two exploration times?

## **Try-Out Lesson Plan Form**

**Purpose:**

**Reason:**

**Content Characteristics:**

**Resources:**

**Core Question:**

**Possible Learner Responses:**

**Processing Stems for (Thinking Skill)**

**Refocusing (RF):**

**Supporting (SP):**

**Clarifying (CL):**

**Verifying (VR):**

**Narrowing the Focus (NF):**

**Redirecting (RD):**

## The Organizing Questioning Processes

### Labeling

- A thinking skill whereby learners collect their own information, synthesize it, and determine the best name(s) for the attributes of the set of items
- The labels that learners use to describe or name something have more meaning
- Support question is required to elicit the relationship between the characteristics and the label

### Classifying

- A thinking skill whereby NEW examples of concepts are placed into known categories
- There are several ways of conducting classifying lessons:
  - Listing examples and non-examples of a concept and asking learners to determine which of the items are examples of the concept
  - Asking learners to generate or find an example of a concept or category
  - Asking learners to change non-examples to examples of the concept or category
- Support type questions are required

### Sequencing

- A thinking skill whereby learners arrange information by ordering or ranking it to a given criteria:

serial	time-space
alphabetical	functional
historical	descriptive (size, age, cost, etc.)

- Learners rank or order and provide reasons for the sequence
- Different sequences are appropriate given learners can support their responses

## Coding Symbols and Practice – Classifying (Organizing)

Teacher Techniques:	CF	Classifying core question
	<span style="border: 1px solid black; padding: 2px;">CF</span>	Closed classifying core question
	1/2	Core question lacks process or content
	SP	Support or relationship question
	CL	Clarifying question
	VR	Verifying question
	RF	Refocusing question
	RD	Redirecting questions (for more responses)
	NF	Narrowing the focus (adding specifics)
	Tt	Teacher talk
Student Responses:	+	On-focus response
	-	Off-focus response

T: Which of the drawings shown belong to the invertebrates?

S: The jellyfish.

T: What makes you say that the jellyfish is an invertebrate?

S: It does not have a solid mass.

T: How do you know that the jellyfish does not have a solid mass?

S: Because it has a hollow body cavity, and it's filled with liquid.

T: Where did you get that information?

S: The book I have on jellyfish...I'll show you...right here on this page.

T: (Looking at the drawings) Someone else give me an example of an invertebrate.

S: The sponge because it has no skeleton.

T: Define skeleton.

S: A structure made up of bone and cartilage that protects the organs and tissues.

T: (Looking at the drawings) What are some other examples of invertebrates?

S: I think...snails.

T: On what basis do you think snails are invertebrates?

S: They are soft and spongy.

T: What do you mean by spongy?

S: Like a kitchen sponge.

T: You're giving me an example of something that is spongy. Think about the characteristics of a sponge and define spongy.

S: Something with elasticity, absorbency, and that is porous.

T: Someone mentioned the jellyfish as an example of an invertebrate. The jellyfish is also described as a coelenterate because of its symmetrical body and saclike internal cavity.

(The class discusses the meaning of symmetrical and saclike.)

T: Give me an example of a coelenterate (from the drawings).

## Sequencing Demonstration Lesson Plan (Organizing)

**Purpose:** Provide learners opportunities to arrange in a continuum the various events of a fairy tale

**Reason:** Develop understanding of plot sequences in literature as well as other means of ordering story information

**Content Characteristics:** time, plot line, and importance to the pigs

**Resources:** List of events recording devices, “The Three Little Pigs” story

**Core Question:** From what you know about the “The Three Little Pigs,” place the events on the handout (e.g., in the order in which they happened in the story; in the order of importance to the pigs).

### Possible Learner Responses

#### *Plot Line*

Mom asks pigs to move out  
Pigs move out  
First one builds a house  
The wolf blows it down  
Second wolf builds a house  
(Reason: That is the way the story is written.)

#### *Most important – least important*

Moving out  
Building homes  
The wolf blowing down house  
Cooking the wolf  
(Reason: They are more concerned about having to move and don’t know about the wolf until after the move.)

### Processing Stems for Sequencing

**RF** (Refocusing response to sequencing core question)

You are telling me reasons for your sequence. What are the specific items in your continuum?

**SP** (Citing the reasons for the sequence)

Thinking about the events that you have ordered, what are your reasons for thinking that they belong in this order?

**CL** (Defining and using additional or more precise language)

What do you mean by “concerned about moving out”?

**VR** (Verifying details)

How do you know “blowing down the house” came before building the second house? Read that part.

**RD** (Attaining more student participation)

Who has the same order/another order for different reasons?

## **Try-Out Lesson Plan Form**

**Purpose:**

**Reason:**

**Content Characteristics:**

**Resources:**

**Core Question:**

**Possible Learner Responses:**

**Processing Stems for (Thinking Skill)**

**Refocusing (RF):**

**Supporting (SP):**

**Clarifying (CL):**

**Verifying (VR):**

**Narrowing the Focus (NF):**

**Redirecting (RD):**

## The Interpreting Questioning Processes

### Inferring Causes/Effects/Qualities

- A thinking skill whereby learners make hypotheses or educated guesses about objects, events, and/or situations in which all the facts are not present
- Inference of cause relates to reasons for situations or contributing factors
- Inference of effect is the result or consequence of something
- Inference of quality is the assumptions made about the characteristics or attributes of something

### Predicting

- A thinking skill related to inferring that asks learners to anticipate outcomes of something and verify and support their thinking
- Predicting involves speculating about future outcomes or anticipating next steps and supporting the conditions and consequences of the expected results or outcomes; consequences are similar to inferring effects
- The condition stem is “What has to be true for \_\_\_\_\_?” and the consequence stem is “What do you think will result from \_\_\_\_\_?”
- Support type questions are required for learners to link the conditions and consequences to the stated prediction

## Coding Symbols and Practice – Predicting (Interpreting)

Teacher Techniques:

PR	Predicting core question	CL	Clarifying question
<u>PR</u>	Closed predicting core question	VR	Verifying question
1/2	Core question lacks process or content	RF	Refocusing question
SP	Support or relationship question	CQ	Consequences
RD	Redirecting questions (for more responses)	CD	Conditions
NF	Narrowing the focus (adding specifics)	Tt	Teacher talk

Student Responses:	+	On-focus response
	-	Off-focus response

T: Now that we have read most of “To Kill a Mockingbird,” what do you think will happen in the conclusion?

S: The townspeople will be more sensitive to minorities in the community.

S: Atticus will quit practicing law.

S: The kids will continue to try to make Boo come out.

T: What do you mean by more sensitive?

S: You know—not jump to conclusions about certain groups of people committing crimes.

T: What will have to be true for that to happen?

S: People will have to be less prejudiced.

S: Laws have to be passed for equal rights.

T: What makes you think that laws will have to be passed in order for the characters in “To Kill a Mockingbird” to have more sensitivity toward minorities?

S: Well, if they are not going to do it by themselves, then the government will have to take care of it.

S: Yes, the townspeople have to be made aware of the injustices if everyone is going to have a fair trial.

T: What do you think will result from the laws being passed?

S: People will test them.

T: How do you know that people will test the laws?

S: In the ‘sixties, this happened.

T: Give me an example.

S: When the separate-but-equal rules were replaced by the Eighteenth Amendment to the Constitution, riots broke out.

T: Going back to your original prediction that the townspeople will have to be more sensitive, why do you think this will be part of the ending of the story?

## Predicting Demonstration Lesson Plan (Interpreting)

**Purpose:** Provide learners opportunities to predict and support possible solutions for saving and protecting the environment

**Reason:** Contribute to learners' understanding of the complexity of solving environmental problems

**Content Characteristics:** Facts about pollution, environmental protection efforts, etc.

**Resources:** Articles on the environment, textbook, notes, recording devices

**Core Question:** What do you think are some ways in which we can assure protection of the earth's environment?

### Possible Learner Responses

#### *Predictions*

Make it a policy priority  
Fine violators severely  
Develop other ways of  
safe disposal

#### *Conditions*

Elect only officials  
who have policies  
Judges must enforce  
penalties  
Break mind-sets

#### *Consequences*

Citizens would take it  
more seriously  
Less polluting  
More jail space needed  
Safe disposal  
Fewer cases of cancer

### Processing Stems for Sequencing

**RF** (Refocusing response to sequencing core question)

You are giving me a reason for protecting the earth's environment. What are some ways we can do it?

**CD** (Conditions for solution or anticipated results)

What would have to be true in order to make policies a priority?

**CQ** (Consequences of solution or anticipated results)

What will happen if we make policies a priority?

**SP** (Citing reasons for the inference)

On what basis do you claim that making policy priorities would work?

**CL** (Defining and using additional or more precise language)

What do you mean by "other ways of safe disposal"?

**VR** (Verifying details)

How do you know policies are necessary? Give me examples of policies.

**RD** (Attaining more student participation)

Someone else give me another solution.

## **Try-Out Lesson Plan Form**

**Purpose:**

**Reason:**

**Content Characteristics:**

**Resources:**

**Core Question:**

**Possible Learner Responses:**

**Processing Stems for (Thinking Skill)**

**Refocusing (RF):**

**Supporting (SP):**

**Clarifying (CL):**

**Verifying (VR):**

**Narrowing the Focus: (NF)**

**Redirecting (RD)**

## **Curriculum Applications for Observing**

Money: coins, bills  
Maps: the world, country, states  
Sentences: word placement, punctuation, capitalization  
Math: number placement, symbols, mistakes  
Plants: growth, shape, size, color, etc.  
Animals: habitats, fur, shape, size, coloring, etc.  
Architecture: line, space, decoration, etc.  
People: races, physical features, situations, events

## **Curriculum Applications for Recalling**

Recollection of events of field trips  
Remembering lines from a play or poem  
Citing details from a commonly viewed movie  
Recalling steps in solving a problem  
Retrieving specific details of prior observing lessons  
Citing facts for building concepts  
Reciting rules, procedures, taxonomies, etc.  
Recalling situations or experiences

## **Curriculum Applications for Comparing and Contrasting**

Distinguishing between governments  
Analyzing types of poetry  
Discovering relationships among animals  
Distinguishing between political candidates  
Identifying similarities and differences in mathematical operations  
Comparing synonyms  
Discovering qualities of habitats

## **Curriculum Applications for Grouping**

Household items grouped for shape, color, function, time, place  
Organs and systems of the human body  
Animals  
Grammar: nouns, verbs, adverbs, adjectives, conjunctions, etc.  
Characters in a story  
Functions of government/countries

### **Curriculum Applications for Labeling**

Naming types of literature  
Naming scientific concepts and processes  
Generating names for inventions  
Naming periods in history  
Naming characters, songs, animals  
Naming grammatical concepts

### **Curriculum Applications for Classifying**

Examples of types of government  
Examples of various diseases and cures  
Grammar concepts: examples of nouns, verbs, adjectives, adverbs, etc.  
Mathematical concepts: examples of fractions, shapes, decimals borrowing, etc.  
Examples of social customs  
Examples of media

### **Curriculum Applications for Sequencing**

Events by time, ordinal number, historical importance  
Evolution of life on earth  
Plot lines  
Intensity of colors  
Development of types of literature  
Importance of situations, people, issues, etc.

### **Curriculum Applications for Inferring Causes/Effects/Qualities**

Events in history or reasons for actions or decisions (causes)  
Results of decisions, problems, science experiments, etc. (effects)  
Characterization or impact of artist painting or sculpture (qualities)

### **Curriculum Applications for Predicting**

Discovering new inventions or designing products  
Changes in historical events  
Story resolution

## Annotated Bibliography

**Beyer, B. (1997). *Improving student thinking: A comprehensive approach, 1/e.* New Jersey: Allyn & Bacon.**

In this book, Beyer provides instruction in specific teaching skills integrated into subject matter teaching. Features a practical, how-to-do-it emphasis. Full of sample materials, explanations and examples for creating thoughtful questions, thoughtful classroom environments, how to encourage and guide student thinking and provide opportunities to think.

**Collins, C. & Mangieri, J. M. (1992). *Teaching thinking: An agenda for the 21<sup>st</sup> century.* Philadelphia, PA: Research for Better Schools.**

This book provides practical ideas and strategies for the teaching thinking, and the findings from research on teaching thinking in diverse populations.

**Dantonio, M. (1990). *How can we create thinkers? Questioning strategies that work for teachers.* Bloomington, IN: National Educational Service.**

This manual addresses types of questions, how to manage learners during classroom interactions, how to code and critique questioning lessons, and how to conduct various types of rehearsal situations.

**Kruse, J. (1988). *Classroom activities in thinking skills.* Philadelphia, PA: Research for Better Schools.**

Kruse presents over 40 tested activities in critical thinking, creative thinking, problem solving and decision making.

**Presseisen, B. J. (1988). *At-risk students and thinking.* Philadelphia, PA: Research for Better Schools.**

This text examines students at risk in America's schools, the need for thinking instruction, and implications for practice; includes chapters by national experts.

**Sousa, D. A. (1988). *Questioning strategies for effective teaching.* Philadelphia, PA: Research for Better Schools.**

This videotape focuses on developing thinking skills through effective questioning in the classroom; discusses types of questions, strategies for questioning, and how to utilize student responses.

**Sternberg, R. J. & Spear-Swerling, L. C. (1996). *Teaching for thinking.* Washington, DC: American Psychological Association.**

This book addresses questions such as, What is "good thinking"? Which strategies promote thinking to learn as well as learning to think? Can asking the right questions enhance student thinking? How can teachers prepare for the challenges of teaching for thinking? Lively classroom vignettes, sample classroom activities and self-study questions are included.

# NOTES



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