Arthur Costa's Levels

Arthur Costa's Model of Intellectual Functioning in Three Levels
from *Developing Minds: A Resource Book for Teaching Thinking*

Level 1:	**defining** **describing** **identifying** **listing** **naming** **observing** **reciting** **scanning**	Ex. What is the definition of "lunar eclipse"? (definition) Ex. How can we express the equation 2x(4 -5y) + 3y = 26 in 3 ways? (list) Ex. Which states seceded from the Union to form the Confederacy? (identification) Ex. How does "The Road Not Taken" (Frost) begin? (reciting)
Level 2:	**analyzing** **comparing** **contrasting** **grouping** **inferring** **sequencing** **synthesizing**	Ex. In "Native Son," how does Bigger Thomas' violence against his gang members reveal a deeply-rooted insecurity & fear of people? (analysis) Ex. In "The Bet" (Chekov) how do the lawyer & the banker differ in their attitudes toward capital punishment? (contrast) Ex. How does the term "manifest destiny" capture the essence of Western expansion in the United States? (synthesis) Ex. If the moon is full August 17, July 18, and June 19, when will it be full in April? (inference)
Level 3:	**applying a principle** **evaluating** **hypothesizing** **imagining** **judging** **predicting** **speculating**	Ex. Using the principle of communicative property, how can we find out the number of apple trees in an orchard having 15 rows, 5 trees in each row? (application of a principle) Ex. Which of the characters in "Great Expectations" suffered the most? (judgement) Ex. In "The Catcher in the Rye," how might Phoebe, years later, describe Holden to her children? (speculation)

COSTA'S LEVELS OF QUESTIONING

LEVEL ONE:

Define
Describe
Identify
List
Name
Observe
Recite
Scan

LEVEL TWO:

Analyze
Compare
Contrast
Group
Infer
Sequence
Synthesize

LEVEL THREE:

Apply
Evaluate
Hypothesize
Imagine
Judge
Predict
Speculate

COSTA'S LEVELS OF QUESTIONING

Level 1:

- The answer can be found in the text (either directly or indirectly)
- Very concrete and pertains only to the text.
- Asks for facts about what has been heard or read
- Information is recalled in the exact manner/form it was heard

Level 2:

- The answer can be inferred from the text.
- Although more abstract than a Level One question, deals only with the text
- Information can be broken down into parts
- Involves examining in detail, analyzing motives or causes, making inferences, finding information to support generalizations or decision making
- Questions combine information in a new way

Level 3:

- The answer goes beyond the text.
- Is abstract and does not pertain to the text
- Ask that judgements be made from information
- Gives opinions about issues, judges the validity of ideas or other products and justifies opinions and ideas

Three-Story House (Costa's Levels of Questioning)

To better understand the content being presented in their core subject areas, it is essential for students to learn to think critically and to ask higher levels of questions. By asking higher levels of questions, students deepen their knowledge and create connections to the material being presented, which in turn prepares them for the inquiry that occurs in tutorials. Students need to be familiar with Costa's (and/or Bloom's) levels of questioning to assist them in formulating and identifying higher levels of questions.

Directions: Read the poem below and review the "Three House Story" on the next page. Both set the stage for Costa's Levels of Questioning.

One-Two-Three Story Intellect Poem

There are one-story intellects,
two-story intellects,
and three-story intellects with skylights.

All fact collectors who have
no aim beyond their facts
are one-story people.

Two-story people compare, reason,
generalize, using the labor of
fact collectors as their own.

Three-story people idealize,
imagine, predict—their best illumination
comes through the skylight.

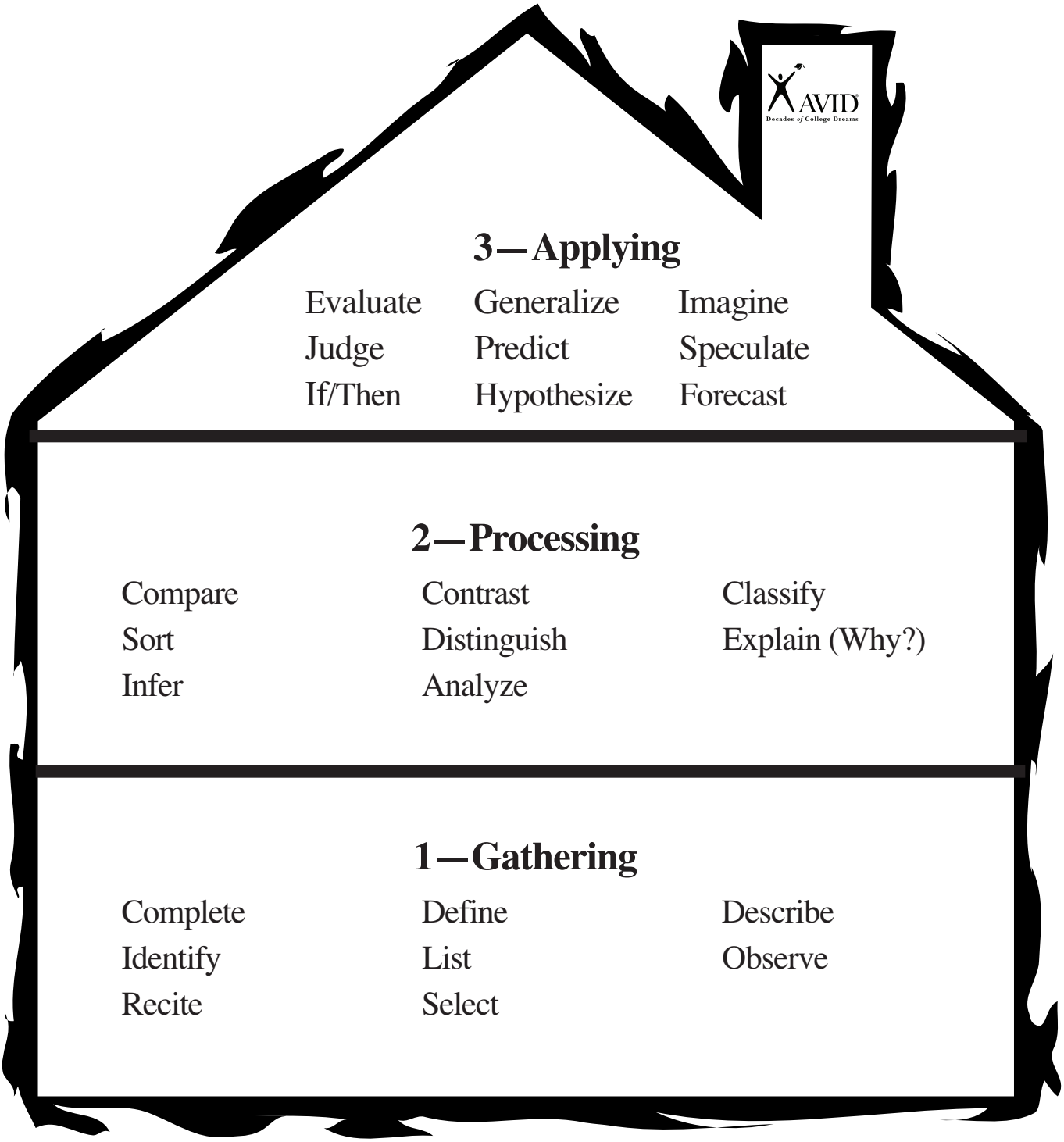
Adapted from a quotation by Oliver Wendell Holmes

The Three-Story House

Level 1 (the lowest level) requires one to gather information.

Level 2 (the middle level) requires one to process the information.

Level 3 (the highest level) requires one to apply the information.



Vocabulary: Costa's Levels of Thinking and Questioning

LEVEL 1

Remember	Define	List	Recall	Match
	Repeat	State	Memorize	Identify
	Name	Describe	Label	Record
Show Understanding	Give examples	Rewrite	Review	Tell
	Restate	Recognize	Locate	Extend
	Discuss	Explain	Find	Summarize
	Express	Report	Paraphrase	Generalize

LEVEL 2

Use Understanding	Dramatize	Use	Translate	Interpret
	Practice	Compute	Change	Prepare
	Operate	Schedule	Pretend	Demonstrate
	Imply	Relate	Discover	Infer
	Apply	Illustrate	Solve	
Examine	Diagram	Question	Analyze	Criticize
	Distinguish	Inventory	Differentiate	Experiment
	Compare	Categorize	Select	Break down
	Contrast	Outline	Separate	Discriminate
	Divide	Debate	Point out	
Create	Compose	Draw	Plan	Modify
	Design	Arrange	Compile	Assemble
	Propose	Suppose	Revise	Prepare
	Combine	Formulate	Write	Generate
	Construct	Organize	Devise	

LEVEL 3

Decide	Judge	Rate	Choose	Conclude
	Value	Justify	Assess	Summarize
	Predict	Decide	Select	
	Evaluate	Measure	Estimate	
Supportive Evidence	Prove your answer.	Give reasons for your answer.	Explain your answer.	Why do you feel that way?
	Support your answer.		Why or why not?	

Costa's Levels of Questioning: English

LEVEL 1	LEVEL 2	LEVEL 3
What information is given?	What would happen to you if...	Design a _____ to show...
Locate in the story where...	Would you have done the same thing as...?	Predict what will happen to _____ as _____ is changed.
When did the event take place?	What occurs when...?	Write a new ending to the story (event)...
Point to the...	Compare and contrast _____ to _____ .	Describe the events that might occur if...
List the...	What other ways could ____ be interpreted?	Add something new on your own that was not in the story...
Name the...	What is the main idea of the story (event)?	Pretend you are...
Where did...?	What information supports your explanation?	What would the world be like if...?
What is...?	What was the message in this piece (event)?	Pretend you are a character in the story. Rewrite the episode from your point of view.
Who was/were...?	Give me an example of...	What do you think will happen to _____? Why?
Illustrate the part of the story that...	Describe in your own words what _____ means.	What is most compelling to you in this _____? Why?
Make a map of...	What does _____ suggest about _____'s character?	Could this story have really happened? Why or why not?
What is the origin of the word _____?	What lines of the poem express the poet's feelings about _____?	If you were there, would you...?
What events led to _____?	What is the author trying to prove? What evidence does he present?	How would you solve this problem in your life?

Bloom's Levels of Questioning: English and Social Science

1. KNOWLEDGE—recalling information

What information is given?

What are you being asked to find?

Locate in the story where...

When did the event take place?

Point to the...

List the...

Name the...

Where did...?

What is...?

Who was/were...?

2. COMPREHENSION—understanding meaning

What are you being asked to find?

Explain the concept of...

Give me an example of...

Describe in your own words what _____ means.

Illustrate the part of the story that...

Make a map of...

This event led to...

Describe the scenario...

3. APPLICATION—using learning in new situations

What would happen to you if ... ?

Can you see other relationships that will help you find this information?

Would you have done the same thing as...?

What occurs when ... ?

If you were there, would you ... ?

How would you solve this problem in your life?

In the library (on the Web), find info about...

4. ANALYSIS—ability to see parts and relationships

Compare and contrast _____ to _____ .

What was important about ... ?

What other ways could ____ be interpreted?

What things would you have used to ... ?

What is the main idea of the story (event)?

What information supports your explanation?

What was the message in this piece (event) ... ?

5. SYNTHESIS—parts of information to create new whole

Design a _____ to show...

Predict what will happen to _____ as _____ is changed.

What would it be like to live ... ?

Write a new ending to the story (event).

Describe the events that might occur if...

Add a new thing on your own that was not in the story.

Pretend you are...

What would the world be like if ... ?

6. EVALUATION—judgment based on criteria

How can you tell if your analysis is reasonable?

Would you recommend this _____ to a friend? Why?

What do you think will happen to _____? Why?

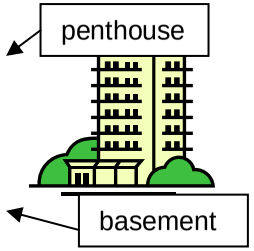
What significance is this event in the global perspective?

What is most compelling to you in this _____? Why?

Do you feel _____ is ethical? Why or why not?

Could this story have really happened? Why or why not?

A Three Story Intellect!



BLOOM'S TAXONOMY and Costa's Levels of Questioning

The Student will...

Knowledge (Remembering)	Comprehension (Understanding)	Application (Applying)	Analysis (Analyzing)	Synthesis (Creating)	Evaluation (Evaluating)
Learn specific facts, ideas, vocabulary; remembering/recalling information or specific facts.	Ability to grasp the meaning of material; communicate knowledge; understanding information without relating it to other material.	Ability to use learned material in new and concrete situations; use learned knowledge and interpret previous situations.	Ability to break down material into its component parts and perceive interrelationships.	Ability to put parts together to form a new whole; use elements in new patterns and relationships.	Ability to judge the value of material (statement, novel, poem, report, etc.) for a given purpose; judgment is based on given criteria.
Introduction of knowledge		***Practice knowledge learned***		***Demonstrates mastery of knowledge learned***	
Level One—the basement		*Level Two— the ground floor*		*Level Three—the penthouse*	
By doing the following...		*By doing the following...*		*By doing the following...*	
collect, copy, define, describe, examine, find, group, identify, indicate, label, list, locate, match, name, omit, observe, point, provide, quote, read, recall, recite, recognize, repeat, reproduce, say, select, sort, spell, state, tabulate, tell, touch, underline, who, when, where, what	alter, associate calculate, categorize, change, communicate, convert, distinguish, expand, explain, inform, name alternatives, outline, paraphrase, rearrange, reconstruct, relate, restate (own words), summarize, tell the meaning of, translate, understand, verbalize, write	acquire, adopt, apply, assemble, capitalize, construct, consume, demonstrate, develop, discuss, experiment, formulate, manipulate, organize, relate, report, search, show, solve novel problems, tell consequences, try, use, utilize	analyze, arrange, break down, categorize, classify, compare, contrast, deduce, determine, diagram, differentiate, discuss causes, dissect, distinguish, give reasons, order, separate, sequence, survey, take apart, test for, why	alter, build, combine, compose, construct, create, develop, estimate, form a new…, generate, hypothesize, imagine, improve, infer, invent, modify, plan, predict, produce, propose, reorganize, rewrite, revise, simplify, synthesize	appraise, argue, assess, challenge, choose, conclude, criticize, critique, debate, decide, defend, discriminate, discuss, document, draw conclusions, editorialize, evaluate, grade, interpret, judge, justify, prioritize, rank, rate, recommend, reject, support, validate, weigh

Knowledge—Level 1A (Remembering)	***Comprehension—Level 1B*** (Understanding)	***Application—Level 2A*** (Applying)	***Analysis—Level 2B*** (Analyzing)	***Synthesis—Level 3A*** (Creating)	***Evaluation—Level 3B*** (Evaluating)
Skills Demonstrated: • Observation and recall of information • Knowledge of dates, events, places • Knowledge of major ideas • Master of subject matter	Skills Demonstrated: • Understanding information • Grasp meaning • Translate knowledge into new context • Interpret facts, compare, contrast • Order, group, infer causes • Predict consequences	Skills Demonstrated: • Use information • Use methods, concepts, theories in new situations • Solve problems using required skills or knowledge	Skills Demonstrated: • Seeing patterns • Organization of parts • Recognition of hidden meanings • Identification of components	Skills Demonstrated: • Use old ideas to create new ones • Generalize from given facts • Relate knowledge from several areas • Predict, draw conclusions	Skills Demonstrated: • Compare and discriminate between ideas • Assess value of theories, presentations • Make choices based on reasoned argument
What is…? How is…? Where is…? When did ____ happen? How did _____? Why did…? How would you describe…? When did…? Can you recall…? How would you show…? Can you select…? Who were the main...? Can you list three…? Which one…? Who was…?	How would you classify the type of…? How would you compare/contrast…? Will you state or interpret in your own words…? How would you rephrase the meaning…? What facts or ideas show…? What is the main idea of…? Which statements support…? Can you explain what is happening…what is meant…? What can you say about…? Which is the best answer…? How would you summarize…?	How would you use…? What examples can you find to…? How would you solve_____using what you have learned…? How would you organize _____to show…? How would you show your understanding…? What approach would you use to…? How would you apply what you learned to develop…? What other way would you plan to…? What would result if…? Can you make use of the facts to…? What elements would you choose to change…? What facts would you select to show…? What questions would you ask in an interview with…?	What are the parts of…? How is_____related to…? Why do you think…? What is the theme…? What motive is there…? Can you list the parts…? What inference can you make…? What conclusions can you draw…? How would you classify…? How would you categorize…? Can you identify the different parts…? What evidence can you find…? What is the relationship between…? Can you make a distinction between…? What is the function of …? What ideas justify…? How would you estimate the results for…? What facts can you compile…? Can you construct a model that would change…? Can you think of an original way for the…?	Do you agree with the actions…? with the outcomes….? What is your opinion of…? How would you prove…? Disprove…? Can you assess the value or importance of…? Would it be better if …? Why did they (the character) choose…? What would you recommend…? How would you rate the …? What would you cite to defend the actions…? How would you evaluate…? How could you determine…? What choice would you have?	Do you agree with the actions…? With the outcomes…? What is your opinion of…? How would you prove…? Disprove…? Can you assess the value or importance of…? Would it be better if…? Why did they (the character) choose…? What would you recommend…? How would you evaluate…? How could you determine…? What choice would you have made…? What would you select…? How would you prioritize…? What judgment would you make about…? Based on what you know, how would you explain…? What information would you use to support the view…? How would you justify…? What data was used to make the conclusion…? Why was it better that…? How would you prioritize the facts…? How would you compare the ideas…?

TITLE: ***Teaching Levels of Questioning***

OBJECTIVES:

- Students will learn the concept of Higher Order Thinking
- Students will practice formulating questions of increasing complexity
- Students will reflect on how questioning skills can help them learn

Time in minutes/ Materials	ACTIVITY
Start - 10 **Cut Pictures**	**Group students with cut pictures** • Give each person a piece of a picture, instruct him or her to find the people with the rest of the picture and form a new group.
11 – 15	**Explain the Purpose of Improving Inquiry Skills** • Good questioning techniques are very important in learning. Effective learners use questioning to help motivate themselves to pay more attention in class and to remember information better. • Questioning can be used to help us to reason through problems and to put pieces of information together in new ways—like we just did with our pictures..... • All levels of questions are important, necessary, and serve a purpose depending on the situation. Sometimes, we need low levels of questions to gain information, but, being able to define a word or remember a fact isn't an end in itself. It's how we use that information that helps us truly learn, and it's how we apply that information that is most important. All levels of questions work together to helps us learn—no one level is "better" than another—they're all needed for learning, and our ultimate goal is to get to the top levels. • Levels of Questioning are part of the way we communicate with each other. It helps you not only to read, but to understand and relate to what you're reading. There's a difference between asking and answering questions. It takes real understanding of a topic to ask a good question...a question that really makes someone consider and THINK.

Adapted from: www.scoe.org/docs/**avid**/inquiry_script.doc

TOTAL TIME: 55 minutes

11 - 20 • **Blooms/Costa's Handout**	**Levels of Questions Instruction** • Distribute handout • I like to begin with a metaphor of a building. There's the basement, the ground floors, and the penthouse. All are necessary. The basement helps you store important things for later. You can enter on the ground floor. And the penthouse, that's the icing on the cake—you've arrived! • Review each of the different levels of questioning: ❖ Level 1 is like the basement—important information you need to have. These would be definitions, numbers, formulas. ❖ Level 2 is where you take those definitions, numbers and formulas and put them to use. It's where you enter the building of thinking. You use the formulas, you translate the words, you back up ideas, you compare and contrast. ❖ Level 3 is the big time. You're "moving on up to that deluxe apartment in the sky," to quote the Jeffersons. This is where you make the information your own. Here is where you synthesize, judge, create, • Be sure to give some examples of questions from each level. You can use the handout. It combines Costa's levels and Blooms Taxonomy, it explains what each level means, skills used, and provides question starters.
21- 40 • **One picture for each group (the one they put together)**	**Practice Generating Questions** • Have each group use a picture to create one question from each of Costa's three levels • Read questions aloud and evaluate to level as a class
41-55	**Reflection/Debrief** • Discuss as a group how this concept of levels of questions could be used in all their other classes (i.e., they can identify which type of tasks they are being assigned, they can create questions of their own, they can evaluate benchmark or other exam questions for complexity)
Alternative Ways to present this information	• Some teachers like to read a fairy tale to their class and have them make questions about the fairy tale rather than off a picture, as is suggested in this lesson. This gets fun when you get questions such as "How is the first little pig different than the third little pig (level 2)", or "What would happen if Hansel and Gretel did not push the witch into the oven (Level 3)?"

Extensions	Each day, have students practice identifying levels by finding where on Bloom's or Costa's the tasks you assign them fall • Teach one (Costa) or two (Bloom's) level(s) per day, review the definitions of signal words, practice each level before moving to the next by creating questions with homework and/or notes. • When reading for information or watching a video for information, have students create questions from each level and answer them. This could be extended further into a Socratic seminar (this strategy to come later!) • When reviewing for a test, have students create their own test made up of 5 level 1 questions, 3 level 2 questions, and one level 3 question. Have them discuss and defend why each question is of that level. Then, they can use those questions as study guides. • Make a poster of the handout to hang in your classroom.

Adapted from: www.scoe.org/docs/**avid**/inquiry_script.doc

Mon.	Tue.	Wed.	Thur.	Fri.	Sat./Sun.

Noelle Combs – Site Coordinator East Bakersfield High School

Region 8 Kern County