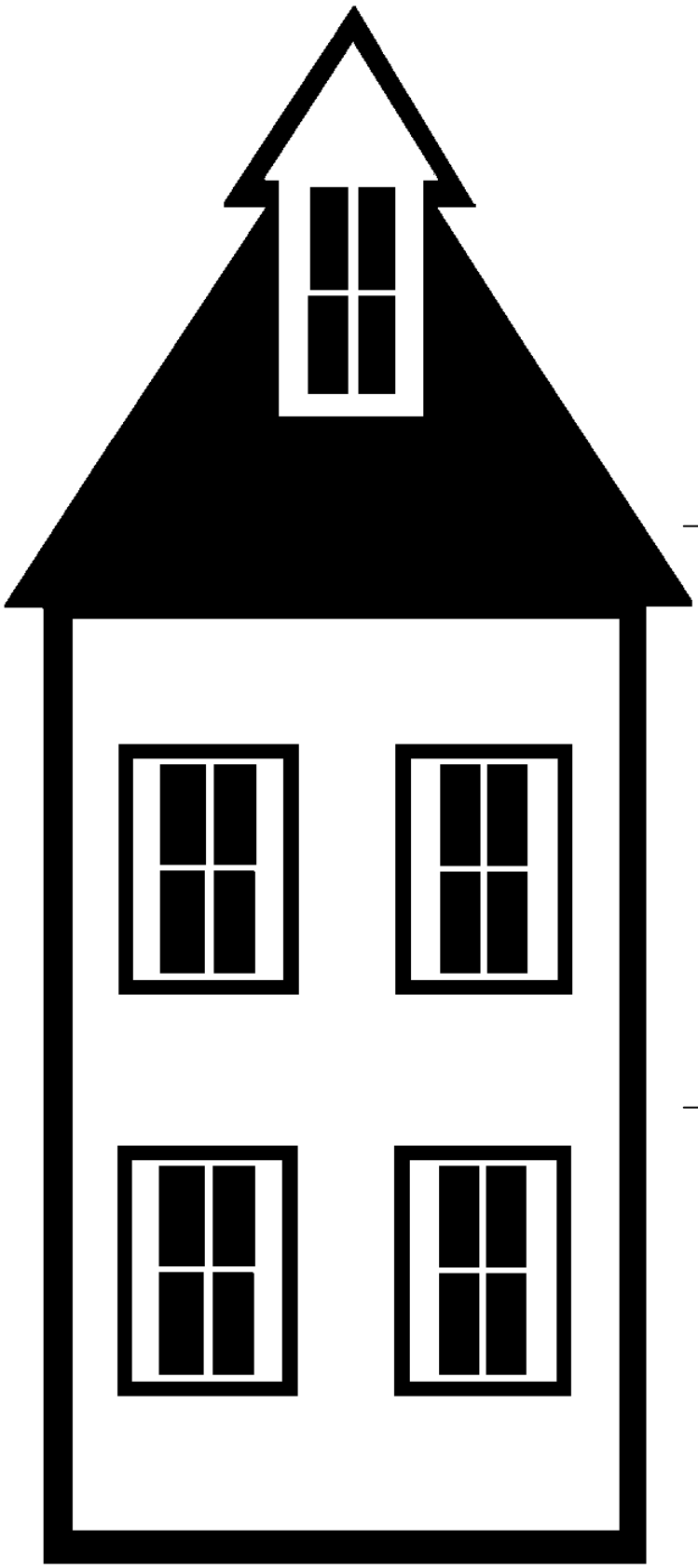
The Three Story Intellect



OUTPUT

Evaluate
Generalize
Imagine
Judge
Predict
Speculate
If/Then
Apply a Principle
Hypothesize
Forecast
Idealize

PROCESS

Compare
Contrast
Classify
Sort
Distinguish
Explain (Why)
Infer
Sequence
Analyze
Synthesize
Make Analogies
Reason

INPUT

Complete
Count
Define
Describe
Identify
List
Match
Name
Observe
Recite
Select

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ENHANCING COGNITIVE LEVELS OF CLASSROOM INTERACTION

I. GATHERING AND RECALLING INFORMATION (INPUT)

To cause the student to INPUT data, questions, and statements are designed to draw from the student the concepts, information, feelings, or experiences acquired in the past and stored in long or short-term memory. They can also be designed to activate the senses to gather data that the student can then process at the next higher level. There are several cognitive processes included at the INPUT level of thinking. Some verbs that may serve as the predicate of a behavioral objective statement are:

completing	identifying	observing
counting	listing	reciting
defining	matching	scanning
describing	naming	selecting

Examples of questions and statements designed to elicit these cognitive objectives are:

Question/Statement	**Desired Cognitive Behavior**
"Name the states which bound California."	Naming
"How does the picture make you feel?"	Describing
"What word does this picture go with?"	Matching
"Define the word 'haggard'."	Defining
"What were the names of the children in the story?"	Naming
"What did you see the man doing in the film?"	Observing
"Which ball is the blue one?"	Identifying
"How does the Gettysburg Address begin?"	Reciting
"How many coins are there in the stack?"	Counting
"Which words in this list are rhyming words?"	Selecting
"The Mexican houses were made of mud bricks called…what?"	Completing
"Watch what color it turns when I put the litmus paper in the liquid."	Observing
"List the first four numbers in a set of positive integers."	Listing
"How did you feel about the grade you received in science?"	Recalling

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II. MAKING SENSE OUT OF THE INFORMATION GATHERED (PROCESSING)

To cause the student to PROCESS the data gathered through the senses and retrieve from long and short-term memory, questions and statements are designed to draw some relationships to cause and effect, to synthesize, analyze, summarize, compare, contrast, or classify the data that she/he has acquired or observed. Following are verbs that may serve as the predicate of a behavioral objective statement if the desired cognitive behavior of students is at the level of processing.

analyzing	distinguishing	making analogies
categorizing	experimenting	organizing
classifying	explaining	sequencing
comparing	grouping	synthesizing
contrasting	inferring	

Question/Statement	**Desired Cognitive Behavior**
"Compare the strength of steel to the strength of copper."	Comparing
"Why did Columbus believe he could get to the East by Sailing West?"	Explaining
"From our experiments with food coloring in different water temperatures, what can you infer about the movement of molecules?"	Inferring
"How can you arrange the rocks in the order of their size?"	Sequencing
"What do you think caused the liquid to turn blue?"	Explaining Cause & Effect
"Arrange in groups the things that a magnet will and will not pick up."	Grouping
"What other machines can you think of that work in the same way that this one does?"	Making Analogies
"What are some characteristics of Van Gogh's work that makes you think this painting is his?"	Distinguishing
"What can you do to test your idea?"	Experimenting
"How are pine needles different from redwood needles?"	Contrasting
"How can you arrange the blocks to give a crowded feeling?"	Organizing
"What data are we going to need in order to solve this problem?"	Analyzing
"Arrange the following elements of a set in ascending order: 13/4, 3/2, 5/6, 3 2/5."	Sequencing
"How does the formula for finding the volume of a cone compare with the formula for the volume of a pyramid?"	Comparing

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III. APPLYING AND EVALUATING ACTIONS IN NOVEL SITUATIONS (OUTPUT)

Questions and statements which cause OUTPUT are designed to have the student go beyond the concept of principle that she/he has developed and to use this relationship in a novel or hypothetical situation. Application invites the student to think creatively and hypothetically, to use imagination, to expose a value system, or to make a judgment. Verbs that may serve a s the predicate of a behavioral objective statement if your desired cognitive behaviors of students is at the level of application include:

applying a principle	imagining
evaluating	judging
extrapolating	model building
forecasting	predicting
generalizing	predicting
hypothesizing	speculating

Question/Statement	**Desired Cognitive Behavior**
"What will happen to our weather if a high pressure area moves in?"	Forecasting
"If our population continues to grow as it does, what will life be like in the twenty-first century?"	Speculating
"Since the amount of heat does affect the speed of movement of the molecules, what will happen when we put the liquid in the refrigerator?"	Predicting
"Imagine what life would be like if there were no laws to govern us?"	Imagining
"What can you say about all countries' economies that are dependent upon only one crop?"	Generalizing
"Is there a way you can think of to use this bimetal strip to make a fire alarm?"	Applying
"With this clay, make a model of a plant cell."	Model Building
"What would be a fair solution to this problem?"	Evaluating
"Which of the two paintings do you think is more unique?"	Judging
"From what we have learned, what other examples of romantic music can you cite?"	Applying a Principle
"What do you think might happen if we placed the saltwater fish in the tank of fresh water?"	Hypothesizing

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