

Steps in Learning— Thinking Skills

- **The Cognitive Domain: *Bloom's Taxonomy***

Bloom's Taxonomy is a classification system for the domain of knowing or knowledge, i.e., cognition. The higher the category or class of cognition, the more complex the thinking skill required. Consequently, a person proceeds from the acquisition of simple facts to apprehension and interpretation of material to the ability to analyze and synthesize information, and finally to evaluate it. The work developed on cognition can be found in *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain*,. by Benjamin S. Bloom (Ed.,) New York: Longman. 1956.

- **Levels/Types of Cognition in Teaching**

1. **Knowledge**

Knowledge represents the lowest level of objectives. The definition of knowledge for this level is remembering previously learned material. The requirement is to simply **recall**. The range of information may vary from simple facts to complex theories, but all that is required is to remember the information.

2. **Comprehension**

Comprehension is the first step beyond simple recall. It is the first level, demonstrating and understanding the information. It is the ability to **apprehend, grasp, and interpret** the meaning of material.

3. **Application**

Application is the ability to show the pertinence of principles to different situations. At this level, student may **apply concepts or methods to actual concrete problems**. This thinking skill tells you that a student can transfer selected information to a life problem or a new task with a minimum of direction.

4. **Analysis**

Analysis requires more than knowledge, comprehension, and application. It also requires an understanding of the underlying structure of the material. Analysis is the ability to break down material to its functional elements for better understanding of the organization. Analysis may include identifying parts and clarifying relationships among parts. This thinking skill tells you that **a student can examine, take apart, classify, predict, and draw**

5. **Synthesis**

Synthesis requires the formulation of new understandings. If analysis stresses the parts, synthesis stresses the whole. Components of concepts may be reorganized into new patterns and new wholes. **A student can originate, combine, and integrate parts of prior knowledge into a product, plan, or proposal that is new.**

6. **Evaluation**

Evaluation is the highest level of learning results in the hierarchy. It includes all the other levels plus the **ability to make judgments, assess, or critique based on evidence and clearly defined criteria.**

Trowbridge, L., Bybee, R., and Powell, J. (2000) Teaching secondary school science, strategies for developing scientific literacy. Upper Saddle River, NJ: Prentice-Hall.

Wong, H., & Wong, T. (1991) The first days of school. Sunnysvale, CA: Harry K. Wong Publications.

- **Sample Questions for Types of Cognitive Levels**

(Sample questions are generally appropriate for children and teens, but can be adapted upward for adults. See the criteria above, for the levels and types of cognition.)

A. Knowledge Level Questions

What people were in the story/event?

Where does the story/event take place?

When or at what time does the story take place?

Describe the setting of the story.

Tell 3 things that happened in the story?

Match the characters with the things they do (did).

Write 3,4,5,6,?? facts from the story.

Name all the characters in the story in the order in which they appeared.

Which character appears first in the story?

Does this person play a central role in the story?

From what you read in the story, describe the main character and how he/she looked.

How does the story end?

B. Comprehension Level Questions

Tell me about the main character— use your own words.

Tell the main problem of the story and how it was solved.

Tell another thing that could have happened that makes sense.

What was the cause of the main happening in the story?

Tell this story in only three sentences.

Explain what is happening in the first picture of the story.

Tell in your own words what the story is about.

How did the main character feel at the beginning of the story?

How did the main character feel at the end of the story?

Think of a main event in the story. Why did it happen?

Explain why the story has the title that it does. Would you want to give the story a different title? What would it be and why?

Draw a picture of a main event in the story?

If there is a picture in the story: write what happened before the picture and write what happened after the picture.

C. Application Level Questions

What could you do that is like what the person in the story did?

Tell how you would (could) have solved the problem.

What would have happened if you were there?

If you were in this story, what would you do?

What could happen if your last sentence were different?

Tell me about a time when something similar happened to someone you know.

Think of a situation that occurred to a person in your story and decided whether you would have done the same things or something different. Write what you might have done.

Give some examples of people who have had the same problems or have done the same kind of thing as the person in your story.

Select any of the people in the story and think of some things each would do if he came to your school during reading. Or during recess. Or during lunch.

What would the main character do if he came to your house to visit?

What would your mother do if she were in the story?

If you had to cook a meal for the characters in the story, what kind of food would you make?

D. Analysis Level Questions

Find the words that rhyme in the story and write them in pairs.

Identify the different parts of the story.

Tell me the parts of the story that could be real.

What parts of the story are necessary? Unnecessary?

Who is the most important character in the story? The least important?

Find your spelling words in the story. How are they used? (nouns, verbs)

What part of the story was the funniest? The most exciting? The saddest?

Tell what things happened in the story that couldn't have happened in real life.

Some of the things in the story were true and some were only opinions of someone. List the things that were true.

Organize the story into parts and think of a good title for each of the parts.

What could you do that was just like what the person in the story did?

Find five words in the story that begin with the same sound.

Name two things in the story that happened outside. Or, inside.

E. Synthesis Level Questions

Make a story like this one but use only your friends in it.

Make up a story about what would happen after this story. (the next day, etc.)

Make a picture about this story. Be sure to put everyone in it.
Draw a picture of the place where most of the story took place. Do not copy the book.
Be ready to act out the story with no words.
Make a different problem for the main character to solve.
Rewrite the story from an animal's point of view.
Use your imagination to draw a picture about the story. Then add one new thing of your own that was not in the story.
Write another ending to the story that is different from the author's ending.
Write a poem about the story.
Pretend you are the main character in the story. Write a diary about what you are doing each day.
Rewrite the story briefly, but change someone or something in it. For example, substitute a lion for a wolf in the Three Little Pigs.

F. Evaluation Level Questions

Did you like this story? Why or Why not?
Why do you think the author wanted to write this story? Would you? Why or why not?
Could this story happen on another planet? Or in the days of the cavemen? Why or Why not?
Do you think this is a good story for a _____ grader? Why or why not?
Compare this story to the last. How are they the same? How are they different?
Does this story seem interesting to you? Why or why not?
Was the main character in the story good or bad? Why?
Compare two characters in the story. Tell which one you think is braver, and why? Or better, and why? Or more cunning, and why?
Compare and contrast the setting in this story and the setting in Little Red Riding Hood. Tell which is better, and why?
Do you think the main character acted in the best way? Why or why not?
Was this the best ending for this story? Why or why not?
Could this story have happened in the year 2100? In the year 1600? Why or why not?