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Asking Good Questions
Kenneth E. Vogler

Understanding questioning strategies and practicing with a peer can improve teachers' questioning skills.

Since the days of Socrates, asking questions to assess student understanding has been a core component of teaching and learning. Today, verbal questioning is so prevalent in education that it's difficult to picture a classroom in which a teacher isn't asking questions. In fact, researchers note that verbal questioning is second only to lecturing as the most common instructional practice (Black, 2001). Teachers ask about 300-400 questions per day and as many as 120 questions per hour.

However, teachers often use verbal questioning merely as an organizational tool—to check students' class work and homework, review and summarize lessons, and evaluate students' learning (Black, 2001; Goodman & Berntson, 2000; Wilen, 1985). But verbal questioning has the potential to do much more. It can motivate students to pay attention and learn, develop students' thinking skills, stimulate students to inquire and investigate on their own, synthesize information and experiences, create a context for exploring ideas, and enhance students' cumulative knowledge base (Black, 2001; Goodman & Berntson, 2000; Hyman, 1974).

Three Question Taxonomies

Most teachers ask questions that require students to merely recall knowledge or information rather than use higher-order thinking skills (Redfield & Rousseau, 1981; Wilen, 2001). Teachers can improve their ability to ask questions of different cognitive levels by familiarizing themselves with question taxonomies, which classify questions on the basis of the mental activity or intellectual behavior required to formulate an answer (Morgan & Schreiber, 1969). As they answer questions at different cognitive levels—especially higher levels—students develop critical-thinking and communication skills.

Bloom's Taxonomy

The most famous question taxonomy was designed by Benjamin Bloom and his associates in 1956. Called Bloom's Taxonomy of the Cognitive Domain, or, more commonly, Bloom's Taxonomy, it comprises six levels of intellectual behavior. Each question level requires a greater amount of mental activity to formulate an answer than the previous level.
• The first level—*Knowledge*—asks students to recall information. ("Name the three branches of government.")

• The second level—*Comprehension*—asks students to put information in another form. ("Write the chemical equation for water.")

• The third level—*Application*—asks students to apply known facts, principles, or generalizations to solve a problem. ("Use the Euclidean algorithm to find the greatest common divisor of 42 and 100.")

• The fourth level—*Analysis*—asks students to identify and comprehend elements of a process, communication, or series of events. ("Compare and contrast a capitalist economic system with a socialist economic system.")

• The fifth level—*Synthesis*—requires students to engage in original creative thinking. ("Write a script for a television commercial highlighting the dangers of global warming.")

• The sixth level—*Evaluation*—asks students to determine how closely a concept or idea is consistent with standards or values. ("After examining criticism of the U.S. immigration system and proposals for change, which proposed change do you think would be the most democratic? Defend your choice.")

**The Revised Taxonomy**

Developed by some of the same people who created Bloom’s Taxonomy, the Revised Taxonomy is, as its title suggests, a revision of the original Bloom’s Taxonomy (Krathwohl, 2002). The Revised Taxonomy renamed some of the original categories—Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation—and changed them all to verb forms to reflect their more familiar use as part of education objectives. The revised categories are Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating.

The biggest difference between Bloom’s Taxonomy and the Revised Taxonomy is in the latter’s reliance on subcategories. The subcategories provide greater flexibility and responsiveness to the cognitive complexity of the activity. For example, the category Applying requires greater mental activity than Understanding, but "explaining" is a high subcategory of the Understanding category, and "executing" is a low subcategory of the Applying category even though explaining is a more complex activity than executing.

**Gallagher and Ascher’s Questioning Taxonomy**

In Gallagher and Ascher’s hierarchical taxonomy (1963), four different categories describe question levels:

• A *cognitive-memory* question requires only simple processes like recognition, rote memory, or selective recall to formulate an answer. ("Name a novel written by Stephen King.")

• *Convergent thinking* requires analyzing and integrating data to formulate an answer. There is only one correct answer for questions at this level. ("Which is the better temperature setting for a home freezer: -2° Celsius or -2° Fahrenheit?")

• *Divergent thinking* requires a response using independently generated data or a new perspective on a given topic. There is more than one correct answer for such questions. ("Write two different equations for which -5 is the solution. One should be a one-step equation, and the other should be a two-step equation.")

• *Evaluative thinking*, the highest question level in this taxonomy, deals with matters of judgment, value, and choice. ("What should be done to improve our health care system? Explain your answer.")
Question Sequencing and Patterns

Just as teachers rarely use the higher-cognitive-level questions in these taxonomies, most teachers rarely use question sequencing, in which each question builds on the answer to the previous question (Wragg & Brown, 2001). Researchers studying teachers’ questioning patterns found that 53 percent of the questions that teachers asked stood alone, and 47 percent were part of a sequence of two or more questions. Of this 47 percent, only 10 percent were a part of a sequence having four or more questions (Wragg & Brown, 2001).

Understanding the following question sequences and patterns provides teachers direction and structure for their questions, helps clarify for students what teachers expect of them, and fosters a climate of meaningful classroom dialogue leading to enhanced thinking and learning.

Extending and Lifting

This questioning pattern involves asking a number of questions at the same cognitive level—or extending—before lifting the questions to the next higher level (Taba, 1971). For example, a mathematics teacher reviewing a chapter on geometric figures might ask the following series of questions: “What are the features of geometric points? What is a geometric line? What is a geometric plane? An angle divides a plane into what two regions? What objects in this classroom could be represented by points, lines, and planes?” The first four questions are all at the same cognitive level (extending); the fifth question requires students to think at a higher level (lifting).
Circular Path
This pattern involves asking a series of questions which eventually lead back to the initial position or question (Brown & Edmondson, 1989). A classic example of this circular path pattern is, "Which came first, the chicken or the egg?" A classroom example of this might be the question, "Were Hitler's actions against the Jews a manipulation of—or a reaction to—people's prejudice? Explain."

Same Path
This questioning pattern involves asking questions at the same cognitive level (Brown & Edmondson, 1989). For example, a physics teacher questioning students about motion and speed could ask the following: "What is motion? What is speed? What is instantaneous speed? What is constant speed?" This pattern typically uses all lower-level, specific questions.

Narrow to Broad
This pattern involves asking lower-level, specific questions followed by higher-level, general questions (Brown & Edmondson, 1989; Wilen, 2001). For example, a history teacher discussing events leading up to the U.S. Civil War could ask the following narrow-to-broad series of questions: "What is a writ of habeas corpus? Why did Lincoln suspend habeas corpus and order the arrest of Baltimore's mayor, the police chief, and members of the Maryland legislature? Did Lincoln have the right to do this? Why or why not? Describe other scenarios in which you believe that the government should suspend individual civil liberties for the greater good."

Broad to Narrow
The broad-to-narrow—or funnelling—question sequence begins with low-level, general questions followed by higher-level, specific questions (Brown & Edmondson, 1989; Wilen, 2001). It is the opposite of the narrow-to-broad questioning pattern.
For example, a teacher could ask the following broad-to-narrow questions about ecology and the environment: "What is ecology? What are ecosystems? What are some ways ecosystems can change due to nature? Explain how 'succession' affects an ecosystem. How did Rachel Carson's Silent Spring affect perceptions about the relationship between environment and ecosystem?"

A Backbone of Questions with Relevant Digressions
In this sequence, the focus is not on the cognitive level of the questions but on how closely they relate to the central theme, issue, or subject of the discussion (Brown & Edmondson, 1989). For example, in a lesson on visual literacy, an English teacher might ask the following sequence of questions about a photograph: "What kinds of people are pictured in the photograph? What do you notice about their facial expressions? About their clothing? Where do you think the photograph was taken? Explain. What mood or feeling does the photograph create? Explain."

The Classroom Observation
Colleague classroom observations can develop and strengthen teachers' verbal questioning skills. Teachers work in pairs observing each other and being observed leading classroom discussions. (See "Observing in the Classroom" to learn how two teachers used this process.) To record their observations, teachers should use a classroom observation instrument that accurately depicts the classroom seating configuration (see fig.1).
Figure 1. Classroom Observation Instrument

<table>
<thead>
<tr>
<th>Teacher's Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observer's Name</td>
<td></td>
</tr>
</tbody>
</table>

Front of Classroom

<table>
<thead>
<tr>
<th>Darcy</th>
<th>1 CMV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Luke</th>
<th>2 CTN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Squares indicate student seating in the classroom.

Key:

- Cognitive Level of Question
  - CM=Cognitive-memory question
  - CT=Convergent-thinking question
  - DT=Divergent-thinking question
  - ET=Evaluative-thinking question

- Question Sequence
  - EL=Extending and lifting
  - CP=Circular path
  - SP=Same path
  - NB=Narrow to broad
  - F=Funneling (broad to narrow)
  - B=Backbone

N=Nonvolunteering student
V=Volunteering student

Note: An observing teacher uses this form to record questioning practices, noting the type of question(s) each student answered in the square corresponding to that student's seat. A blank pdf version you can print out and use for your own observations is available here.
To facilitate the process, partners should get together for a pre-observation conference. There, the teacher being observed writes out the questions and question sequences—the question script—that he or she will use during the lesson. During the observation, the observing teacher is responsible for keeping track of the number of questions asked, judging the cognitive level of each question, indicating which student answered each question and whether he or she volunteered the answer, and recognizing the question pattern used.

For instance, if the first question asked is a cognitive-memory question that a student volunteers to answer, the observer would write "1CMV" in the space on the instrument that corresponds to the student's seating in the classroom. If the next question asked is a convergent-thinking question answered by a nonvolunteering student, the observer would write "2CTN" in the appropriate space on the chart. Observers also label question sequences. For example, if the first question sequence is narrow to broad, the observer would label it "1NB."

Several strategies can facilitate this activity. At the pre-observation conference, colleagues can agree on a formal observation for a limited number of question sequences, perhaps one or two. This way, the teacher being observed doesn't have to write down all the questions that he or she plans to ask during the observation. In addition, after the observer has taken notes on the agreed-on number of question patterns, he or she can sit back and try to recognize the cognitive levels of questions and question patterns without having to write everything down.

During the post-observation conference, team members should discuss whether the question script helped or hindered them and whether the students were able to follow the questioning pattern. Writing and following a question script is typically a new experience for teachers, who seldom think about questions to ask their students ahead of time. As teams become more familiar with the activity and begin to develop their verbal questioning skills, subsequent post-observation conferences can focus on such topics as pacing questions, transitioning to and from question sequences, and trying new question sequences.

Both Knowledge and Practice

Teachers can develop these skills through a combination of knowledge and practice. Once honed, verbal questioning becomes an efficient formative assessment tool, helps students make connections to prior knowledge, and stimulates cognitive growth.

References


**Observing in the Classroom**

To improve their verbal questioning skills, Lisa, a new middle school social studies teacher, partnered with Patty, a veteran social studies teacher. Here are some of their insights.

**Observing Patty**

The teachers decided that Lisa would observe Patty in her classroom during the first 15 minutes of class. Patty didn't bring a question script to the pre-observation conference. She noted that she often makes up questions on the spur of the moment, focusing on students' interests and her instructional goals. She was sure she would use at least two or three questioning patterns during the observation period.

Lisa found the classroom observation instrument easy to complete. Patty used a same-path question sequence and an extending-and-lifting sequence and asked both cognitive-memory and convergent-thinking questions. Lisa also recognized the beginning of a narrow-to-broad questioning pattern, but it quickly turned into a backbone-question sequence. Patty used a good mix of volunteering and nonvolunteering students from all areas of the classroom.

At the post-observation conference, Lisa shared with Patty the results of the classroom observation instrument. Patty was pleased with the high classroom participation but troubled by the lack of divergent- and evaluative-thinking questions, which she had assumed she was asking. She was determined to be more conscious of the level of questions she asked. Patty began jotting down a few higher-cognitive-level thinking questions in her lesson plans to ensure that she included them.

**Observing Lisa**

Unlike Patty, Lisa came to the pre-observation conference with two question scripts that she had worked on the night before. The teachers discussed each question and how the question sequences would help Lisa achieve the objectives of her lesson.

Lisa used her carefully constructed questioning sequences during the lesson. But Patty noticed that Lisa was so focused on following a prescribed path of questioning that she often failed to take student responses into account. Flexibility in using questioning sequences is an important aspect of skillful verbal questioning.
At their post-observation conference, the teachers discussed Lisa's need to become more familiar with questioning patterns so she could tailor her questions to better suit the needs of her students. Lisa's verbal questioning skills improved substantially with practice. "I knew I was on the right track," she said, "when a student came up to me after class and told me I had actually started to make him think."

Return to Article

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Bloom’s Taxonomy

*Using Questions to Teach*

Bloom’s Taxonomy of thinking is listed from most complex to less complex.

<table>
<thead>
<tr>
<th>Level</th>
<th>Taxonomy</th>
<th>Example of Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td><strong>Evaluation.</strong> Examine all parts of a concept to evaluate or assess the significance.</td>
<td>Read a passage and evaluate the author’s message and present it.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Synthesis.</strong> Combine a new concept with what you already know to construct new knowledge.</td>
<td>Use the information given with your own ideas to pose an argument.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Analysis.</strong> Separate a new concept into its parts and understand the relationships.</td>
<td>Compare and contrast.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Application.</strong> Solve a problem by applying the knowledge learned.</td>
<td>Use the words in sentences, and make a chart to show what you learned.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Comprehension.</strong> Explain or restate the ideas.</td>
<td>Summarize in your own words.</td>
</tr>
<tr>
<td>1</td>
<td><strong>Knowledge.</strong> Recognize and recall facts.</td>
<td>Memorize or recite.</td>
</tr>
</tbody>
</table>

Use the taxonomy to note the types of questions you are using in your lessons. Also note the types of questions your students are asking in class. Are your students asking questions during your lessons? Why or why not? Copy this chart and collect some data related to your use of questions.

<table>
<thead>
<tr>
<th>Questions YOU Use in a Given Lesson</th>
<th>How Many at Levels 4–6?</th>
<th>Questions YOUR STUDENTS Ask in a Lesson</th>
<th>How Many at Levels 4–6?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td></td>
<td>Examples</td>
<td></td>
</tr>
</tbody>
</table>
Strive to use higher levels of the Taxonomy in your lessons!

Note: Open-ended questions allow students to expand their thinking on a particular topic. They require more than a yes-or-no answer; they require the students to think about the issue in a more complex way. These questions would relate to the higher levels of Bloom's taxonomy.

You may ask open-ended questions as part of your introduction to a teaching unit and explain that students will be learning about this topic in such a way that this question will be answered.

Use the basic questions Who, What, Where, When, How, and Why to develop open-ended questions to bring your students to higher levels of thinking.

**EXAMPLES OF OPEN-ENDED QUESTIONS**

Note: Open-ended questions can be part of your motivator to grab the students’ attention and also be part of the assessment process at the end of the unit.

Review your textbooks and teacher’s edition for examples of open-ended questions. Are questions categorized in your texts? Are questions at the rote knowledge/comprehension level or at higher levels?

Use KWL as a strategy to find out what students Know about the topic, what they Want to know, and what they Learned (at the end of the unit).

Note: Don’t forget to ask the students what their questions are before, during, and at the end of lessons and units. They can write them on index cards and leave them in a “Question Box” for you to answer at a later time. If you are receiving the same questions, you may want to clarify one of your objectives. Formulating good questions is challenging and an important skill for students to learn!

What types of questions are students asking in the classes you observe or teach?
*BLOOM'S ASSIGNMENT WEB

Note to Teachers: Understanding what students are required to do within each of Bloom's thinking level categories helps us to better define our instructional objectives in relation to the content we are teaching. As a result, we can plan more meaningful assignments.

The inside section of this web represents Bloom's thinking level domain. The middle section lists action verbs that identify what students might be expected to do in relation to each thinking level domain. The outside section suggests possible assignments that can be planned for students to match what they are required to do in each domain.

*Information in this table was taken from Taxonomy of Educational Objective for the Cognitive Domain (Bloom, 1956)
Bloom's Revised Taxonomy

Bloom created a learning taxonomy in 1956, and since that time we have learned more about the way that children learn. Teachers have also revised the way that they plan and implement instruction in the classroom. To keep the importance of Bloom's work relative to today's theories, Anderson and Krathwohl (2001) revised Bloom's original taxonomy by combining both the cognitive process, and knowledge dimensions. This new expanded taxonomy can help instructional designers and teachers to write and revise learning objectives.

How can the new table help instructional designers and teachers?

The revised taxonomy (Anderson and Krathwohl, 2001) incorporates both the kind of knowledge to be learned (knowledge dimension) and the process used to learn (cognitive process), allowing for the instructional designer to efficiently align objectives to assessment techniques. Both dimensions are illustrated in the following table that can be used to help write clear, focused objectives.

<table>
<thead>
<tr>
<th>The Knowledge Dimension</th>
<th>The Cognitive Process Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Remember</td>
</tr>
<tr>
<td>Factual Knowledge</td>
<td></td>
</tr>
<tr>
<td>Conceptual Knowledge</td>
<td></td>
</tr>
<tr>
<td>Procedural Knowledge</td>
<td></td>
</tr>
<tr>
<td>Meta-cognitive Knowledge</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: The Revised Taxonomy Table

For teachers, the objectives for an entire unit can be plotted out on the taxonomy table, ensuring that all levels of the cognitive process are used and that students learn different types of knowledge. For example, if a math teacher were planning a comprehensive unit, he or she could use the taxonomy table to make sure that students not only learned different mathematical procedures, but also learned how to think (meta-cognition) about the best way to solve math problems.

Teachers may also use the new taxonomy dimensions to
examine current objectives in units, and to revise the objectives so that they will align with one another, and with assessments. Using the revised taxonomy by referring to the charted dimensions may give teachers a place to start when revising units to better align with new standards-based requirements as well.

Anderson and Krathwohl also list specific verbs that can be used when writing objectives for each column of the cognitive process dimension.

- **Remember**: Recognizing, Recalling
- **Understand**: Interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining
- **Apply**: Executing, implementing
- **Analyze**: Differentiating, organizing, attributing
- **Evaluate**: checking, critiquing
- **Create**: generating, planning, producing

Because the purpose of writing objectives is to define what the instructor wants the student to learn, using detailed objectives will help students to better understand the purpose of each activity by clarifying the student's activity. Verbs such as "know", "appreciate", "internalizing", and "valuing" do not define an explicit performance to be carried out by the learner. (Mager, 1997)

<table>
<thead>
<tr>
<th>Unclear Objectives</th>
<th>Revised Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will know the dates of important events in U.S. History.</td>
<td>Each student will recall the 10 major events of the Civil War.</td>
</tr>
<tr>
<td>Students will know described cases of mental disorders.</td>
<td>Each student will classify observed or described cases of mental disorders.</td>
</tr>
<tr>
<td>Students will understand the relevant and irrelevant numbers in a mathematical word problem.</td>
<td>Each student will distinguish between relevant and irrelevant numbers in a mathematical word problem.</td>
</tr>
<tr>
<td>Students will know the best way to solve the word problem.</td>
<td>Each student will judge which of the two methods is the best way to solve the word problem.</td>
</tr>
</tbody>
</table>

Figure 2: Examples of unclear and revised objectives

**How to use the revised table**

Learning objectives must fall under one of the four categories
under the knowledge dimension, and under one of the six
categories of the cognitive process dimension. Use the noun in
the objective to determine what is being learned: factual,
conceptual, procedural, or meta-cognitive knowledge. The verb
used in the learning objective will determine which cognitive
process dimension column the objective falls under: remember,
understand, apply, analyze, evaluate, and create. Where the
knowledge and cognitive process dimension intersect, is where
the objective stands on the revised taxonomy table.

Figure 3: Classifying objectives with the revised taxonomy table

Use this technique to analyze objectives. If an objective has a
vague learning procedure for students to complete, such as "to
know", the objective cannot be placed on the table: a clue that
the old objective needs to be revised.

The more teachers learn about the way students learn, the more
instructional techniques will improve by incorporating new
findings into currently existing methods.

Related Articles

Bloom's Taxonomy

Bloom's Learning Domains

More on Bloom's Learning Domains

http://coe.sdsu.edu/eet/Articles/bloomrev/index.htm
<table>
<thead>
<tr>
<th>Level of Thinking</th>
<th>Typical Verbs Used</th>
<th>Examples of Teacher Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>define, repeat, identify, list</td>
<td>Name the author of the book.</td>
</tr>
<tr>
<td></td>
<td>draw, record, label, name</td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>classify, contrast, explain, give examples</td>
<td>Compare the weather today with the weather yesterday.</td>
</tr>
<tr>
<td></td>
<td>compare, translate, summarize</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>apply, complete, illustrate, solve, predict</td>
<td>Complete the sentence using a vocabulary word from the lesson.</td>
</tr>
<tr>
<td></td>
<td>calculate, demonstrate, practice, use, show</td>
<td></td>
</tr>
<tr>
<td>Analysis</td>
<td>analyze, discuss, explain, inspect</td>
<td>Explain why it is important to have classroom rules.</td>
</tr>
<tr>
<td>Synthesis</td>
<td>arrange, construct, design, generalize, plan, categorize</td>
<td>Predict what would happen if a law was passed which made commercials on TV illegal.</td>
</tr>
<tr>
<td></td>
<td>combine, create, develop, organize, predict, rearrange</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>assess, estimate, judge, rate, test, justify</td>
<td>What requirements for hiring a new teacher would you recommend to the principal?</td>
</tr>
<tr>
<td></td>
<td>critique, evaluate, rank, recommend, value</td>
<td></td>
</tr>
</tbody>
</table>
Comprehension Using Bloom's Taxonomy

<table>
<thead>
<tr>
<th>Candidate: Steve Holle</th>
<th>Date: Today</th>
<th>Grade level: 3rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject/topic: Language</td>
<td>Single/multi-day lesson:</td>
<td>EL level of students: ELD</td>
</tr>
<tr>
<td>Arts, Reading</td>
<td>3 day lesson</td>
<td>levels 2-5 and EO</td>
</tr>
<tr>
<td>Comprehension</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Teacher Objective: Teacher will assess comprehension of the main character of a piece of children’s literature by asking questions and developing activities using all six levels of Bloom’s Taxonomy.

Learner Objective: The students will demonstrate understanding of the main character by correctly responding to questions, and developing a new ending to the story appropriate to the characteristics of the main character.

CA Content Standards Addressed:
- 2.2 Ask questions and support answers by connecting prior knowledge with literal information found in, and inferred from, the text.
- 2.3 Demonstrate comprehension by identifying answers in the text.
- 2.4 Recall major points in the text and make and modify predictions about forthcoming information.
- 2.5 Distinguish the main idea and supporting details in expository text.
- 2.6 Extract appropriate and significant information from the text, including problems and solutions.

CA ELD Standards Addressed:
- 2.1 (Level EI – Early Intermediate)
  Orally identify, using simple sentences, the basic sequence of events in text that one reads.
- 2.1 (Level I – Intermediate)
  Orally identify, using detailed sentences, the basic sequence of events in text that one reads.
- 2.1 (Level EA – Early Advanced)
  Identify some significant structural (organizational) patterns in text, such as sequential or chronological order and cause and effect.
- 2.1 (Level A – Advanced)
  Identify significant structural (organizational) patterns in text, such as compare and contrast, sequential or chronological order and cause and effect.
Material and/or technology:
Do Not Open by Brinton Turkle, bottle with a message in it, circle map, worksheet.

Vocabulary:
Nursed, repaid, cottage, banjo clock, blustered, chowder, furiously, Halifax, sturdy, stowed, driftwood, horrid, astonished, pounced, wobbling.

Classroom management/room arrangement/student grouping:
Students will work in table groups and independently.

Modifications:
The teacher will keep a post-it on A’s desk which he will make a tally mark each time A speaks out. This is to discourage him from speaking out during lessons.

Procedure

Name of instructional model: Direct instruction and Critical thinking.

Focus/Motivation: (3 minutes)
Have students think about the story Do Not Open which was read the previous day. Have them brainstorm on a circle map what kind of person they think Miss Moody is with their group. Then have them look for support when reading aloud. (This is an example of EVALUATION on Bloom’s Taxonomy. Students are deciding/assessing and supporting/justifying the personality of the main character.)

Instructional Activity/Development: (20 minutes)

Read Do Not Open with students and ask questions throughout to assess for comprehension. (20 minutes)

1. (P.1) Is Captain Kidd grateful that Miss Moody saved him? How can you tell? (COMPREHENSION – Explain and describe). Remember that you are trying to find facts that support what kind of person you think Miss Moody is. She rescued Captain Kidd, so what does that tell you about what kind of person she is?

2. (P.2) Why does Miss Moody like storms? (KNOWLEDGE – tell). What does this tell you about her personality?

3. (P.4) If you were Miss Moody, how would you feel as the storm approached? (ANALYSIS – relating main character’s feelings to their own).

4. (P.9) How do you think Miss Moody opens the bottle? How would you feel if you were going on a treasure hunt? (COMPREHENSION – explain and describe; ANALYSIS – relate to yourself).
5. (P.15) We know that Miss Moody opens the bottle. What would you do if you had a bottle and didn't know what was in it? Let's find out... Call students up and give them the bottle with a note inside. Let them know that it could be something good or bad. Have them decide if they want to take the chance by opening it or not. Ask them how they feel, and why they chose to open the bottle (or not). (APPLICATION – dramatize/illustrate).

6. Miss Moody chose to open the bottle. Why did she choose to open it? How does that support what kind of person she is? (Considerate, kind, caring, etc.). (ANALYSIS – infer).

7. Why does Miss Moody say that she is only afraid of mice? (KNOWLEDGE – tell).

Independent Practice: (15 minutes)
Remind students about the judgment they made about Miss Moody, and all the support they collected while reading the story. Tell them if they want to add anything to their judgment they may.
“Now we will write a new ending to the story.” Knowing what kind of person Miss Moody is, how would she react if something different came out of the bottle? Everyone is going to get a paper saying what is going to come out of the bottle when Miss Moody opens it. Knowing what kind of person Miss Moody is, YOU must decide how she will react, and what she will do when she finds out what is in the bottle. (SYNTHESIS – design/invent new ending).

1. Start with “The smoke cleared away and Miss Moody was staring at...”
2. Tell what is in the bottle.
3. How does Miss Moody react? (remember what kind of person Miss Moody is when you decide what she would do).

Closure: (5 minutes)
Have students share their stories.

Assessment:
Ask questions during reading to check for comprehension. Students will design their own ending to demonstrate understanding of the main character.

Logical Follow-up:
Students will draw a picture to go along with the new ending they have created. Pages will be bound together to form a class book to sit next to the original book in the class library.

Lesson Reflection:
What parts of the lesson were particularly effective?
What changes would you make in this lesson?
DO NOT OPEN

By __________________________

1. "The smoke cleared away and Miss Moody was staring at . . . ."

2. Tell what is in the bottle.

3. How does Miss Moody react? (Remember what kind of person Miss Moody is when you decide what she would do).
Your group looses 3 points
Your group is awarded 3 points
Your table looses 3 points
Your table is awarded 3 points
Your team looses 3 points
Your team is awarded 3 points
Goldilocks and the Three Bears

LEVEL I – KNOWLEDGE:
• List the characters in the story.
• Whose bed was Goldilocks in when the bears found her?

LEVEL II – COMPREHENSION:
• Retell the events of the story in your own words.
• Why were the bears upset with Goldilocks?

LEVEL III – APPLICATION:
• Tell what might have happened if Goldilocks had also made a mess.
• Retell the story from the point of view of breaking and entering.
• Using the information from the story, draw a sketch of the bears’ house.

LEVEL IV – ANALYSIS:
• How was Goldilocks’s experience different from that of Little Red Riding Hood?
• Identify parts of the story that could have happened to you.
• Make a list of all the events in the story that indicate it is not true.

LEVEL V – SYNTHESIS:
• Suppose that Goldilocks had found the home of the Three Skunks. What might have happened?
• What if Goldilocks had come home and three bears were sleeping in her bed? What would she do?

LEVEL VI – EVALUATION:
• Judge whether or not Goldilocks made a good decision by running away from the bears. Explain.
• Evaluate Goldilocks’s behaviour as a guest in the bears’ home.
• Pretend that Goldilocks was on trial for “breaking and entering”. Decide whether or not you would find her guilty. Justify your decision.
The True Story of The Three Little Pigs

LEVEL I – KNOWLEDGE:
- What arguments was the Wolf using to claim his innocence?
- Have you ever had to defend yourself for something someone said you did?

LEVEL II – COMPREHENSION:
- Explain your thinking about the wolf’s argument that eating the pig was the same as not wasting a hamburger if it was just lying there.
- Do you believe the wolf’s explanation of why he was visiting the first pig’s house? Why?

LEVEL III – APPLICATION:
- How is this adaptation of the story more like what happens in courtrooms today?
- How have you argued your innocence when someone blamed you for something you did?

LEVEL IV – ANALYSIS:
- How is this approach to The Three Little Pigs different from the original story?
- Why is the wolf always seen as the villain in so many stories? Is this perspective justified?

LEVEL V – SYNTHESIS:
- What do you think the pigs would do if the wolf was found to be innocent?
- When the wolf gets out of prison after his sentence, do you think he will have learned from his mistake or will he seek revenge?

LEVEL VI – EVALUATION:
- Is this version of the wolf’s innocence more interesting than the original? Why?
- If you were the judge, what sentence would you have given the wolf?
Sentence starters for developing activities based on Bloom’s Taxonomy

Note that some of these starters fit into more than one category; these are just suggestions.

LEVEL I – KNOWLEDGE (RECALL):
1. What is the definition for ...?
2. Trace the pattern....
3. Recall the facts....
4. Name the characteristics of ....
5. List the steps for....

LEVEL II – COMPREHENSION:
1. Tell why these ideas are similar.
2. In your own words retell the story of....
3. Classify these concepts. (could also be analysis)
4. Provide some examples.
5. Construct a model of....
6. Draw a picture to...or role-play what happened.

LEVEL III – APPLICATION:
Note: (applying without understanding is not effective application)
1. Graph the data.
2. Demonstrate the way to....
3. Practise....
4. Act out the way a person would....
5. Calculate the....

LEVEL IV – ANALYSIS:
1. What are the components of...?
2. Which steps are important in the process of...?
3. If ... then....
4. What other conclusions can you reach about ... that have not been mentioned?
5. The difference between the fact and the hypothesis is...?
6. The solution would be to....
7. What is the relationship between ... and...?
8. What is the pattern of...?
9. How would you make a...?

LEVEL V – SYNTHESIS:
1. Create a model that shows you new ideas.
2. Devise an original plan or experiment for....
3. Finish the incomplete story so that....
4. Make a hypothesis about....
5. Change ... so that it will....
6. Prescribe a new way to....

LEVEL VI – EVALUATION:
1. In your opinion....
2. Appraise the chances for....
3. Grade or rank the....
4. What solution do you favour and why?
5. Which systems are best? worst?
6. Rate the relative value of these ideas to....
QUESTIONS TO HELP STUDENTS DEVELOP NUMBER SENSE AND CLARIFY THINKING

Tell how you did that?
What went on in your mind when ____?
When have you done something like this before?
What would be your criteria for ____?
What do others think about what____ said?
Do you agree? Disagree? Why or why not?
Does that make sense? Why or why not?
Does that always work? Why or why not?
Is that always true? Explain.
Do you see a pattern? Explain
Can you predict the next one? What about the last one?
How did your prediction compare with your results?
How can you find out?
How did you know ____?
What might you do next?
What's another way you might approach this?
How might you be able to use this in other situations?
What do you think would happen if_____?
What would it look like if?
How does this relate to _____?
Have we ever solved a problem like this one before?
What is alike and/or different about the solutions?
Questions

By Katie, 10
Santa Lucia School, Templeton

The world is full of questions. Questions and questions and questions. There are more questions than you would ever think to ask. More questions than hairs on your head (and even more if you are bald). There are questions like, “Have you seen my shoe?” or “Where’s my coat?” and there are questions like, “Want to go to the movies?” or “Can you come to my party?” There is “What is 5 x 8?” and “What’s the best thing since sliced bread?” There is even “Why is ‘abbreviation’ such a long word?” But then there is always, “Have you ever thought what a world would be like without questions?”
Critical thinking is critical.
A Picture is Worth 20 Questions

William B. Russell III

Teachers routinely pose questions to the class, but asking students to formulate good questions is a teaching tool that we often overlook. The questioning game discussed below not only helps students review lesson content, but improves critical thinking skills such as reasoning deductively and interpreting data.

Choose an image of a historical person, object, or event that is depicted somewhere in the textbook, on display in the classroom, or has been shown during a lesson. Be sure that you’ve discussed the image earlier in the unit of study, but do not call attention to it now. The example below uses a famous painting by John Trumbull, Declaration of Independence, as the basis of information about an historical event: The painting is a mural on the Rotunda of the Capitol.¹

Share a small amount of information with the class by posing a leading question or two. Then invite the students to pose questions that can be answered with “Yes” or “No” (or, if the teacher is unsure of the answer, it can be “I don’t know,” or “It’s unclear.”)

For example,
Teacher: There is a man at table. On the table there is a pen, and some paper. Who is he? Why is he there?

Student: Is he sitting at the table?
Teacher: Yes.
Student: Is he an old man?
Teacher: He is 39 years old.
Student: Is it present day?
Teacher: No.
Student: Is he the only person at the table?
Teacher: No.
Student: Was he president?
Teacher: No.
Student: Are the other people standing around the table?
Teacher: Yes.

The game continues until the students are able to answer the questions that the teacher posed at the beginning of the activity. In this case, the person is John Hancock and he is signing the Declaration of Independence.

This version of the 20 Questions game is easy to use and has endless possibilities. It motivates and excites students, and it leaves them wanting more. By only using yes/no questions, students are required to do all of the thinking, synthesizing what they know at each step with the next new bit of information and then formulating a new query.²

References

Note
1. Trumbull’s painting, which hangs in the Capitol Rotunda in Washington, DC, was painstakingly created, but it is not entirely historically accurate. See www.american-revolution.org/decim.html and www.aoc.gov/co/art/mural/declaration_independence.cfm.

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