ASKING MORE EFFECTIVE QUESTIONS

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Introduction

From the development of the Socratic method, to the 1860 edition of Barnard's *American Journal of Instruction* that states, "to question well is to teach well," educators have long known that questioning is a useful way to aid in the transfer of knowledge from instructor to pupil (Ross, 1860). Over the past 100 years, multiple U.S.-based studies have focused on the use of questioning as a successful and universal pedagogical approach. Yet despite these studies and their findings, not much has changed in terms of the manner in which teachers ask questions. Leven and Long found that teachers in 1912 spent approximately eighty percent of the school day asking questions – a statistic that was replicated by their study of classroom teachers and their use of questioning in the 1980s (Leven and Long, 1981). And Wilen's work shows that the vast majority of questions asked by teachers are low-level cognitive questions that require students to focus on the memorization and recall of factual information rather than questions which foster deeper student understanding (1991).

Questioning plays a critical role in the way instructors structure the class environment, organize the content of the course and has deep implications in the way that students assimilate the information that is presented and discussed in class. Given that questioning can be a tremendously effective way to teach, and recognizing that teachers are willing to engage in the process of asking questions while instructing (Leven and Long's research shows that the typical teacher asks between 300-400 questions per day), the purpose of this paper is to articulate a taxonomy of questions that will help instructors to recognize how to more effectively use questioning as a pedagogical strategy (1981).

A Taxonomy of Question Types

Multiple approaches to classifying questions exist in the education literature. In fact, according to William Wilen, one study which reviewed classification systems for classroom questions found over 21 systems in place in 1974, with many more appearing since then (1991). The taxonomy presented below is based on the research of William W. Wilen, and informed by the work of Angelo V. Ciardiello, both of whom have published extensively on best practices in questioning skills. Wilen's simplified classification system is based on the taxonomy presented by Gallagher and Aschner's research from 1963 and takes into account the Bloom's categories of learning (1956) (See Appendix A).

The taxonomy presented separates questions into four quadrants with paired criteria: Questions can be either high or low order, and can be either convergent or divergent in their design. A *low order* question is one that requires the student to simply recall a single fact, while a *high* order question asks the students to recall facts but to show that they comprehend the topic, situation or solution to a stated problem. A high order question will require that a student understand the relationship between a fact or piece of knowledge within the greater context of the situation.

Comparing Low and High Order questions:

Low order: What color is the lion in that diorama?
This question checks a student's ability to recognize color and identify the color. There is a very narrow range of possible answers (tan, light yellow, fawn)

High order question: Why do you suppose the lion is that color?
This question allows the student to recognize and identify color, but then asks the student to consider the relationship of the lion's color to other things (its environment, other lions, other species of animal, its place on the foodchain)

The descriptor *convergent* refers to the limits placed on the response to a given question. A convergent question by its nature has a more narrowly defined correct answer – the answer is generally short, requires little reflection and requires that the responded recall from memory a bit of factual information. Convergent questions may also be referred to as "closed-ended" questions, meaning that the instructor is looking for an anticipated response that requires little original thought on the student's part. Convergent questions will not require students to put original thought to the development of an answer. In other words, the answer will have been provided within the context of the lecture or readings assigned by the instructor. A *divergent* question on the other hand, is open-ended by nature. To respond to a divergent question, a student must be able to recall some information from memory, but must apply that knowledge and other knowledge to explain, extrapolate or further analyze a topic, situation or problem. Divergent questions are broader in nature, can have multiple answers, and require then a higher level of thinking on behalf of the student.

Comparing Convergent and Divergent questions:

Convergent: What other animals can you think of that use color as camouflage?
This question checks a student's ability to identify what role camouflage and animal coloration play in nature and suggest other examples. (The responses are fairly easily anticipated and require that students recall other examples of animals they have seen or studied).

Divergent: Suppose the lion had been born with a much darker colored coat, what do you predict would happen to that lion in the wild?
This question allows the student to consider a scenario, use knowledge regarding camouflage, coat coloration and the environment the animal lives in to create an original answer that is logical and correct.

Lower Level Convergent

Emphasis	Memorization, recall, rote drilling
What is required of the student?	Recall or recognize information (identify or name, quote or define).
What Cognitive Operations are involved?	Call for the transfer of information in predictable ways. Questions at this level will determine if students can organize and select facts as well as state the main ideas.
What typifies these questions?	Answers are easily anticipated by the teacher and are often closed – requiring a "yes" or "no" answer. Questions found at the back of the textbook chapter are typically low-level convergent questions.
Signal Phrases	Who, what, where, when
Example	"According to our study of plant physiology, what conditions are required for photosynthesis to occur?"
Aligned to Bloom's taxonomy of learning	Knowledge level
Pros	Easy to develop questions and to anticipate student responses, so directing class discussion becomes routine. Helps identify students with large deficits in general knowledge.
Cons	Least effective method for enhancing knowledge transfer. Students who respond correctly may have memorized material but without understanding it.

Higher Level Convergent

Emphasis	Reasoning and critical thinking which usually requires some direction from the instructor
What is required of the student?	Demonstration of understanding and ability to apply the information (students describe, compare, contrast, rephrase, summarize, explain, translate, interpret or provide an example).
What Cognitive Operations are involved?	Explaining, stating relationships, comparing and contrasting
What typifies these questions?	Students will look for evidence to support their response, and may break ideas, situations or events down into their component parts
Signal Phrases	Why, how and in what ways
Example	"In what way do plant cells differ from animal cells?"
Aligned to Bloom's taxonomy of learning	Comprehension and application levels
Pros	Helps students to make connections between facts and begin to understand relationships. Fosters critical thinking and skills such as comparing and contrasting.
Cons	Can lead to digressions in lesson plan, answers are longer and more elaborate and may not be easily anticipated by teacher.

Lower Level Divergent

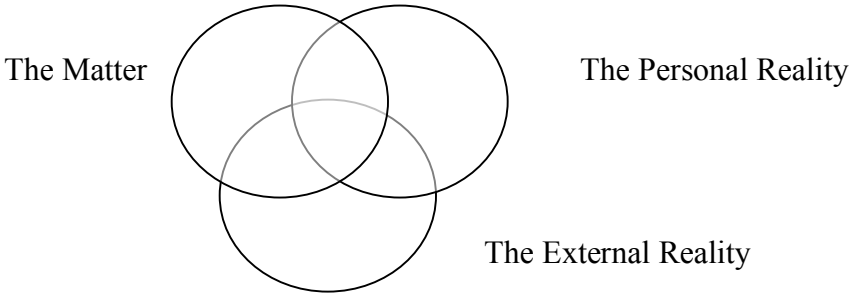
Emphasis	Synthesis of information and analysis of information to develop response.
What is required of the student?	Think critically about information, ideas, opinions. Students discover motives, reasons or causes, draw conclusions, inferences or generalizations.
What Cognitive Operations are involved?	Hypothesizing, reconstructing
What typifies these questions?	Questions that ask students to think of alternative ways of doing something, or require them to synthesize a number of elements to create an original idea.
Signal Phrases	How could…, What are some possible consequences…, Imagine…
Example	"How might life be different if peace was declared in the middle east?"
Aligned to Bloom's taxonomy of learning	Analysis level
Pros	Focuses on critical thinking skills and allows for in-depth student discussions. May lead to more student-generated questions and conversations thus engaging the learner at a deeper level.
Cons	More difficult for teachers to determine in what direction the lesson might be drawn. Requires more pre-planning, energy and effort on behalf of the instructor.

Higher Level Divergent

Emphasis	Motivate students to higher levels of thinking and encourage creative thinking
What is required of the student?	Students produce original communications, make predictions, propose solutions, create, solve lifelike problems, speculate, construct, devise, synthesize, develop/judge ideas, problems solutions, express opinions, and make choices and decisions.
What Cognitive Operations are involved?	Predicting, inferring, performs original, creative and evaluative thinking
What typifies these questions?	Teachers are required to think of the content they are presenting I different ways by creating different contexts for learning the material.
Signal Phrases	Defend, Judge, Predict, If… then, Can you create, What is your opinion…
Example	"Suppose you are the President of USC. How would you devise a plan to increase the retention rate of minority first-year students?"

Aligned to Bloom's taxonomy of learning	Synthesis & Evaluation Levels
Pros	Stimulate knowledge-seeking and hypothesis generation.
Cons	Difficult and more energy intensive. Teacher must challenge his or her own way of thinking and encourage the learner to as well. More difficult to assign grades as the responses to these questions may be highly original or personal.

Another way to classify or evaluate the level of questioning in a classroom can be illustrated by Christenbury and Kelly's model of the Questioning Circle. The three intersecting circles represent domains of cognition, and rather than presenting a hierarchical approach to classifying questions, they present an overlapping model with a high degree of flexibility. To Christenbury and Kelly, the three circles each represent a different aspect of reality: (1) *the Matter* – the subject of discussion (issue, problem, topic), (2) *the Personal Reality* – the student's relationship with the subject, and (3) *the External Reality* – the broader perspective of the subject. According to the Christenbury-Kelly model, the most significant questions are higher-order and are developed from areas where the circles overlap (Wilen 1991, Christenbury and Kelly, 1983). Bringing the student's personal perspective into the questioning schema begins to introduce a constructivist view towards question generation.



"Following are sample questions representing the circles and their interactions from one incident in *Huckleberry Finn*:

1. The *Matter* – What does Huck say when he decides not to turn Jim in to the authorities?
2. *Personal Reality* – When would you support a friend when everyone else thought he or she was wrong?
3. *External Reality* – What was the responsibility of persons finding runaway slaves?
4. *The Matter/Personal Reality* – In what situations might someone be less than willing to take the consequences of his or her actions?
5. *Personal Reality/External Reality* – Given the social and political circumstances, to what extent would you have done as Huck did?
6. *The Matter/External Reality* – What were the issues during the time which caused both Huck's and Jim's actions to be viewed as wrong?
7. *The Matter/Personal Reality/External Reality* – When is it right to go against social and/or political structures of the time as Huck did when he refused to turn Jim into the authorities?"

(Christenbury and Kelly, 1983)

Research shows that only 5% of teacher directed questions are higher-order divergent (Wilen, 1987). While the taxonomy above articulates a wide breadth of question types and while teachers know that asking multiple types of questions is good pedagogy, the research indicates that teachers consistently revert to asking lower level convergent questions far more often that any other type of question. The following table illustrates a number of studies that sought to determine the number of higher-order or divergent questions teachers asked compared to lower-order convergent questions. The studies are summarized in "Questioning Skills, for Teachers" by W. Wilen (1991). The results of each study illustrate the magnitude of the problem we face in using questions well.

Study	% higher order	% lower order	% operational
Haynes (1935)	17	77	
Floyd (1960)	6	42	
Davis & Hunkins (1966)		90	
Trachtenberg (1974)		95	
Gall (1987)	20	60	20
Wilen (1991)	5		

Study after study reveals that although educators know that the higher-order divergent questions hold significantly more power to engage the learner and ensure transfer of knowledge, we consistently retreat to using lower-order, convergent style questions when teaching and testing students.

Techniques for Asking More Effective Questions

The first step in asking better questions is to identify the types of questions we are currently asking, why we are asking them, and finally, what techniques can we utilize to improve the questioning that occurs in our classrooms. Questions help teachers fulfill multiple agendas in the classroom. Questions are used to help teachers ascertain the level at which their students understand (or misunderstand) concepts presented during lecture, they are used to engage or encourage students' active participation in a lesson, they are used to allow students to express their thoughts and hear explanations offered by their peers, and they are used to keep students alert or on task during class time (Brualdi, 1998). Focusing on why questions are asked leads us to ask the deeper question of how questions are being asked. When we look within the broader context of classroom interaction, how questions are asked has a tremendous impact on learner-outcomes. These outcomes are shaped not just by how the instructor phrases and uses questions, but are also shaped by the ways in which students are encouraged to generate their own questions (Wilen, 1991). How questions are asked and answered has broader implications than mastering content. Effective instructors "model the process of inquiry and organizing the search for solutions for their students" (Teach Talk, 1995).

Teach Talk, a newsletter for educators dedicated to promoting best practices in the classroom, suggests that successful questioners utilize several skills when crafting and asking good questions. These include: phrasing and sequencing questions effectively, responding to questions so that class time is used efficiently, keeping questions from leading to digression (unless the

digression is useful), and using the right tone and delivery both when asking and responding to question. (1995)

Techniques for Successful Questioning

1. Phrasing; teacher communicates the question so that the students understand the response expectation (ie: no run-on questions).

2. Adaptation; teacher adapts the question being asked to fit the language and ability level of the students.

3. Sequencing; teacher asks the questions in a patterned order indicating a purposeful questioning strategy.

4. Balance; teacher asks both convergent and divergent questions and balances the time between the two types. The teacher uses questions at an appropriate level or levels to achieve the objectives of the lesson.

5. Participation; teacher uses questions to stimulate a wide range of student participation, encouraging responses from volunteering and non-volunteering students, redirects initially asked questions to other students.

6. Probing; teacher probes initial student answers, and encourages students to complete, clarify, expand or support their answers.

7. Wait Time (Think Time); teacher pauses three to five seconds after asking a question to allow students time to think. The teacher also pauses after students' initial responses to questions in class.

8. Student Questions; teacher requires students to generate questions of their own.

The techniques listed above are straightforward points that most instructors are familiar with. However, even though we know that these simple techniques make for best practice in the classroom, many of us simply forget to employ them regularly. Most often forgotten is the practice of "wait time." Research shows that instructors wait between .7 seconds and 1.4 seconds for pupils to respond to questions. Furthermore, teachers will wait less than .7 seconds if they believe that their students might not know the answer to the question posed. "Wait time" – or the time an instructor waits silently between asking a question and expecting an answer – can impact the classroom dynamic tremendously. Mary Bud Rowe first described the positive outcomes associated with "wait time" in 1972. Rowe's research indicated that when teacher-directed questions were followed by at least three seconds of undisturbed silent time for students to formulate responses, the students answered the question more successfully. Student success in formulating answers was not the only positive outcome observed when "wait time" techniques were introduced to classrooms. Other researchers found that regular use of "wait time" had positive impacts on both students and teacher attitude and behaviors.

Student behaviors observed when increased "wait time" was introduced to the classroom:

1. Decrease in "I don't know" responses
2. Length and accuracy of answers increased
3. The number of volunteered, appropriate responses by larger number s of students increased.
4. Achievement test scores rose.

Teacher behaviors observed when increased "wait time" was introduced to the classroom:

1. Questioning strategies became more flexible and varied.
2. The quantity of questions asked decreased, while the quality and variety of questions increased.
3. Higher-order, divergent questions were asked more often.

In 1985, Stahl updated Rowe's conception of "wait time" with the introduction of "think time". Stahl's idea is based upon Rowe's research, but goes a step further, defining this time as a "distinct period of uninterrupted silence by the teacher and all students so that they can both complete appropriate information processing tasks, feelings, oral responses and actions" (Stahl, 1994). Stahl articulates his preference for the term "think time over "wait time" in a 1990 article published by the Arizona State University:

1. It [think time] names primary academic purpose and activity of the period of silence thus allowing students and teachers to complete "on-task" thinking.
2. There are numerous places where periods of silence are as important as those "wait time" periods reported in the literature.
3. There is at least one exception labeled "impact pause time" that allows for periods of less that 3 seconds of uninterrupted silence.

Whether calling it "wait time" or "think time," instituting breaks between the questions and anticipated student responses proves to be a technique that makes questions more powerful teaching tools.

Questioning at post-secondary level

Few students, even those at graduate levels are skilled at asking higher-cognitive questions in class, and observations of college-level instructors reveal that even at the post-secondary level, teachers are not modeling high level divergent questioning for their students (Ciardiello, 1991).

APPENDIX A

BLOOM'S TAXONOMY OF THINKING SKILLS WITH BEHAVIORIAL OBJECTIVES

Illustrative General Instructional Objectives	Behavioral Terms for Learning Objectives
KNOWLEDGE **Remembering or recalling learned material**	*Example; List the bones or muscles in the arm.*
Knows common terms Knows specific facts Knows methods and procedures Knows basic concepts Knows principles	Define, describe, identify, label, list, match, name, outline, recognize, reproduce, select and/or state
COMPREHENSION **Understanding or grasping meaning of material**	*Example; Explain how muscles operate in pairs.*
Understands facts and principles Interprets verbal material Interprets charts and graphs Translates verbal material to mathematical formulae Estimates future consequences implied in data Justifies methods and procedures	Convert, defend, distinguish, restate, rephrase, estimate, explain, extend, generalize, infer, give examples, paraphrase, predict, rewrite, summarize
APPLICATION **Using learned information in new situations**	*Example; Show the similarities between the bones and muscles of the arms and legs.*
Applies concepts and principles to new situations Applies laws and theories to practical situations Solves mathematical problems Constructs charts and graphs Demonstrates correct usage of a method or procedure	Apply, change, compute, demonstrate, discover, illustrate, manipulate, modify, operate, predict, prepare, produce, relate, show, solve, use
ANALYSIS **Critically reducing arguments to elements to see their relationships, organization and principles**	*Example; Show the similarities between the bones and muscles of the arms and legs.*
Recognizes unstated assumptions Recognizes logical fallacies in reasoning Distinguishes between facts and inferences Evaluates the irrelevancy of data Analyses the organizational structures of a work (art, music, writing)	Break down, diagram, differentiate, discriminate, distinguish, identify, infer, outline, point out, relate, select, separate, subdivide
SYNTHESIS **Forming a new whole from various parts**	*Example; Design an artificial limb that will have the structural and functional abilities of an arm or leg.*
Writes a well-organized theme Gives a well-organized speech Writes a creative short story (or poem, or music, etc.) Proposes a plan for an experiment Integrates learning from different areas into a plan for solving a problem Formulates a new scheme for classifying objects (or events, or ideas, etc.)	Categorize, combine, compile, compose, create, devise, design, explain, extend, generate, modify, organize, plan, propose, question, rearrange, revise, reconstruct, relate, reorganize, restructure, rewrite, summarize, tell, write
EVALUATION **Judging based on defined criteria**	Example; Compare the parts of a human limb and an artificial limb in terms of durability, flexibility, etc.
Judges the logical consistency of written material Judges the adequacy with which conclusions are supported by data Judges the value of a work by use of internal criteria Judge the value of a work (art, music or writing) by using external standards of excellence	Appraise, assess, compare, conclude, contrast, criticize, describe, differentiate, discriminate, document, explain, interpret, judge, justify, relate, summarize, support

APPENDIX B
THE AFFECTIVE DOMAIN

The taxonomy of objectives in the affective domain extends from least committed to most committed:

1. **Receiving:** Being aware of or attending to something in the environment, this is the I'll-listen-to-the-concept-but-I-won't-promise-to-like-it level.

2. **Responding:** Showing some new behavior as a result of experience; at this level a person might applaud after a concert or hum some of the music the next day.

3. **Valuing:** Showing some definite involvement or commitment; at this point a person might choose to go to a concert instead of a film.

4. **Organization:** Integrating a new value into one's general set of values, giving it some ranking among one's general priorities; this is the level at which a person would begin to make long-range commitments to concert attendance.

5. **Characterization by value:** Acting consistently with the new value; at this highest level, a person would by firmly committed to a love of music and show it openly and consistently.

Krathwohl, D.R., Bloom, B.S. and Masia, B.B. (1964). Taxonomy of educational objectives. Handbook II: The affective domain. New York: David McKay and Co.

Asking Better Questions

Transcript of Questions from Teaching Video: BSAP (South Carolina Science Program)
Soil Texture and Color – 8th grade science class. Even without watching the video itself, you can examine the questions asked and make judgments about their level and potential to engage students.

Segment A 06:53:08 – 09:52:00

T "Okay now what did we get on that sheet of paper? When we poured those layers out, where you very surprised about our results? Sean, what did we get? What did that first layer look like? Do you remember that?

S "Rocks"

T "Okay it was mostly rocks right? What else might have been in there?"

S "Um little grains"

T "Okay, good, grains. Okay, what else?"

S "Sticks or roots"

T "Sticks, roots, acorns, very good. But mostly it was very large pieces and then these were graded down to the very finest pieces, and Ryan, what did that very finest layer feel like to you?"

S "It was rough"

T "Okay some particles were very rough, but *mostly* what did it feel like? Latrika?"

S "Like powder"

T "Okay, like powder, like powder that you would even, like face powder like talcum powder or something, okay it was very fine. Okay, so that one thing we noticed. Another thing that we noticed from that activity were the different colors of the soil, right? Alright Corey, the different colors of the soil, name a few of the colors that we saw.

S "Dark orange and like an orangey color"

T "A dark orange and orangey color, alright, what else? April, do you remember? Help him out a little bit."

S "Brown"

T "Okay some different shades of brown, alright now where did our soils come from? Sean? Where did our soils that we used in that seive activity come from?"

S "Around the surrounding areas of Saluda"

T " Alright around the surrounding areas of Saluda, and if you look up on the map of Saluda County, we have a different soil sample from various areas of the county. If you can see that okay? And what you see mostly –up at the top up here – are the reddish soils, alright, then these are more brown over in here and these types of soils down here by Ridge Spring, Willy, what type of soils do you mostly find in the Ridge Spring area?"

S "Clay"

T "Okay some clay, and what else? Brian?

S "Sand"

T "Sandy soils right? A little bit of clay in there, but mostly a lot of sand mixed in with that clay because that's a very sandy area.

T "Today's activity is going to be about the texture of soil, okay? Now what does texture mean to you? Brian, texture, tell us a little bit about texture. What are you going to do?"

S "Um, you're going to observe it and perhaps run your fingers through it, and it'll give you how it feels and how it looks."

T "Okay, how it feels and how it looks. And what is that thing Robby that we call when we use or 5 senses? What skill are we using when we use our 5 senses to look or feel at something?"

S "A guess or hypothesis"

T "Right, okay we could be doing that. April?"

S "Observation"

T "Observation, very good, we're going to observe."

Section B 28:15:00 30:31:0

T "Okay, now what is the manipulated variable here? Willy, which is the manipulated variable ?

S "The type of soil"

T "The type of soil. We changed the kind of soil, right? Now when we changed that type of soil, Tamika, which is the responding variable?

S "How much water you get (out of it)" *( )*

T "Alright how much water over here, so those are the 2 things we're looking at, those are the 2 variables in this activity. Now, who can tell me what a control is? Name Corey a control that we have in our activity here.

S "How much water we put in it."

T "That was what?" That was how much water we put in initially?"

S "That was how much water we put in all 3 of them."

T "Well, not really, that's not really a control." Okay? A control, remember is something that stays the same. It's something that we're going to control for in the activity. Sean, what is a control?"

S "How much drained of the soil when we put water in and let it drain."

T "Well, that would be our responding variable wouldn't it? How much water that drained out. Alicia?"

S "The amount of water we started with."

T "Alright you started with what?"

S "150 ml"

T "150 ml Very good. Okay, on all of them. That could be one control. Brian, what is another control?"

S "The size of what we put the soil (samples in)."

T "Alright, did we all use the same size tuna fish cans here? We did, didn't we? Everybody had the same size can. We all had one giant can and one small can. That's one control. Alright, what about the minutes we let it sit? Franklin?

S "We let it sit about at least five or ten (minutes)."
T "Alright, about the same range of time. You let them sit all exactly the same time. What about the way Sylvester, what about the way that the soil was put into the can? Did you really pack it in on one and just leave it laying loose in another sample?"

S "No ma'am."

T "What did you do?"

S " We hung it, we put it on the side and let the water just drain out from the side."

T “Right, that’s exactly right. You let the water drain out the same way and you had the types of soil samples packed in there the same way, didn’t you? So all those things are controls.”

Segment C 38:29:12 – 39:54:05

T “Okay, most of you are finished with your graph right now, let’s think a little bit about the activity that we just completed, alright? Let me ask you some questions. Okay, first of all, Brian, we stated that we were going to find out about soil texture right? Okay, what did you find out about the texture of your soils? In other words, what did you find out about the water that drained in and drained out?”

S “It was sometimes the color of the soil and it had many particles in it (the soil).”

T “What did that tell you when it was the color of the soil? For example, clay, right? That clay, when that clay drained out, man that water was muddy wasn’t it? You could tell it came from clay couldn’t you? What did that tell you about that soil sample?”

S “That when the water drained out of it washed away with it.”

T “Okay it washed away that clay, didn’t it? How many of you have driven by roads in our county that have been cut or stripped and you see that red clay? What do you notice about that red clay? Robby?

S “Its been washed (away)”

T “Its been washed. Right and what color, and we had all those rains a few weeks ago, what color was that water running out in front of that ditch in front of school?

S “(red)”

T “Red,what did that tell you? Where did that water wash over?”

S “Clay”

T “Alright some clay, that’s exactly right. Good.”

APPENDIX C

HOW DOES YOUR QUESTIONING BEHAVIOR RATE?

1. How often do you challenge students by asking questions that arouse their curiosity? Do you make them want to know more?

2. How often do you use questions to establish a foundation for new work?

3. To what extent do your questions encourage students to listen to each other's responses, opinions?

4. How do your questions help reveal or clear up misconceptions?

5. To what extent do your questions verify the degree of comprehension of your students?

6. To what extent do your questions promote self-evaluation by your students?

7. To what extent do your questions ask students to interpret, to analyze, to think critically, to see relationships, or to judge?

8. Does your question asking regime help build class rapport?

9. Do you ask questions to discover special interests of your students?

10. Does your question asking regime help students to feel that each one has something positive to contribute to the class?

11. To what extent do you preplan key questions you want to ask during the lesson?

12. To what extent do you consider possible responses to these key questions and strategies to use in the event that something goes astray?

13. To what extent do your questions call for students to think for themselves?

14. Do you ask a variety of questions— recall vs. thought questions?

15. Do you get all students involved in class discussions?

16. Do you distribute your questions both to students who volunteer to answer and to those who do not?

17. Do you distribute your questions in a widespread fashion rather than limiting them to one group of students or one part of the room?

18. Do students speak to each other when responding or only to you?

19. Do you wait a reasonable time for students to think about their responses before calling on them or permitting them to speak?

20. Do you accept student responses in a neutral manner or do you use verbal rewards (Good! Fine idea! Great!) or sanctions (No! Wrong!)?

21. Do you consistently repeat students' responses?

22. Do you encourage your students to ask questions?

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