

GUIDELINES FOR 5-QUESTION/4-ANSWER ASSIGNMENT

"It is in the answers to the questions we ask that our knowledge consists."

Aristotle, Posterior Analytics, 89b

Rationale

Research shows that student questions are one key to their thinking and learning. The act of questioning signals that attention has been engaged, thought stimulated, expression given, inquiry joined, and learning sought. Nevertheless, students do not often ask questions of perplexity in science classrooms. Students are schooled to become masters at answering questions and to remain novices at asking questions. Thus questioning in education mirrors and serves questioning in society. Those who ask questions in schools - teachers - are not seeking knowledge. Those who would seek knowledge - students - are not asking questions. As a result, classrooms are full of questions while empty of inquiry. This activity focuses on student questions, and invites you to become skilled at posing questions.

Criteria for 5-Questions/4-Answers

1. From your notes, class activities, and/or textbook, prepare five questions.
2. The first four questions and answers should be recitation questions that could be answered by anyone who has done the activities. The questions should have answers which you find interesting and which you feel are somehow important. No more than two questions should represent any level of Fraenkel's taxonomy (see attached).
3. Question Five should be one of "perplexity" - one for which you don't have a satisfying answer. It may be something you want to know more about or something that perplexes you. Be certain to phrase it in the form of a question.

5-Questions/4-Answers Standards

1. Page number for answers must be cited after the question.
2. Questions must be in complete sentences.
3. Answers must be complete.
4. The level of Fraenkel's taxonomy should be noted in the left margin.

Student Recitation Process

1. Student A asks a question from his/her list of questions 1 - 4.
2. All students dictate Student A's question. (If necessary, Student A will repeat question.)
3. Student A identifies Student B to answer his/her question.
4. Student B gives an answer.
5. Student A evaluates answer.
If answer is accepted, Student B asks a question and so it goes...
6. If the answer is rejected, Student A gives the answer and asks another question.
7. If anyone disagrees with Student A's evaluation, brief discussion will take place.
8. All students are responsible for accepted answer.
9. At the end of the recitation, all students are present their Question 5 - their Question of Perplexity.

Student Recitation Standards

1. Questions and answers should be recited in a clear and loud voice.
2. When more than one student volunteers to answer, Student A should call on a student who has not answered other questions, if possible.
3. Only the student called upon by Student A answers the question.
4. Only Student A initially evaluates Student B's answer.
5. When a Question 5 is posed, all students are invited to respectfully and reflectively listen.
6. Students are responsible for all recited questions on the test, with the exception of Question 5s.

Fraenkel's Taxonomy of Questions

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| RECALL REPRODUCE | <ul style="list-style-type: none"> • Remember what was learned • Provide the correct answer | <p>What is the definition of photosynthesis?</p> |
| DESCRIBE COMPARE | <ul style="list-style-type: none"> • Organize data • Describe, compare, contrast, or differentiate | <p>What is the difference between floating and buoyancy?</p> |
| EXPLAIN ANALYZE | <ul style="list-style-type: none"> • Analyze reasons • Determine cause/effect | <p>Under what circumstances did the period pendulum change?</p> |
| SYNTHESIZE SUMMARIZE CONNECT | <ul style="list-style-type: none"> • Formulate or identify relationships and conclusions • Make connections between disparate things • Mash-up or remix information, ideas, or media | <p>What building practices are justified by the theory of plate tectonics?</p> |
| JUDGE EVALUTE | <ul style="list-style-type: none"> • Assess or form an opinion about the quality of a relationship, product, or conclusions | <p>How valid are the company's efforts to reduce environmental pollution?</p> |
| SUPPOSE IMAGINE | <ul style="list-style-type: none"> • Imagine multiple possibilities • Visualize future possibilities • Go from 0-to-1 | <p>What kind of world might exist if there was no sound?</p> |