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ABSTRACT

Well-known questioning strategies, built on question classification systems, are examined. Types of question classification systems are identified as: "hierarchical," which are sequential and cumulative; "non-hierarchical," which are based on elements which should not be rank ordered; systems which are "context-bound" to specifics; and "non-context-bound" systems, which are designed for broad issues and ideas. Descriptions and explanations are given of theories on the effectiveness of questioning strategies in four types of classification systems: (1) hierarchical, non-context bound; (2) hierarchical, context bound; (3) non-hierarchical, non-context bound; and (4) non-hierarchical, context bound. Seven implications for teaching questioning strategies to preservice teachers are drawn. Preservice teachers should: (1) be instructed to ask a variety of questions; (2) incorporate higher level questions into lesson plans; (3) pay attention to the quality of each question; (4) take into account the students' ability to respond before asking a question; (5) become knowledgable about the theoretical components of questions so they can adapt and modify questioning strategies to fit their teaching style; (6) learn to ask effective questions through practice; and (7) learn questioning strategies which are effective in specific content areas. (JD)

# Questioning Strategies:

# Implications for Teacher Training

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Questioning is considered to be an important aspect of instruction and learning because the effectiveness of its employment by teachers and students in schools is closely related to the accomplishment of educational goals. Learning theorists and educational researchers find broad agreement on the educational benefits which can be gained through the effective use of questioning. Points of agreement include:

(1) Questioning can develop higher level thinking; (Sanders, 1966; Ruddell, 1974),

(2) Questioning can improve learning from text; (Rothkopf and Bisbicos, 1967; Weaver, 1978),

(3) Questoning can help verify the learning process; (Hyman, 1979; Weaver, 1978),

(4) Questioning can help motivate students; (Hunkins, 1972; Aschner, 1961),

(5) Questioning can aid in planning lessons; (Hill, 1979; Hunkins, 1972).

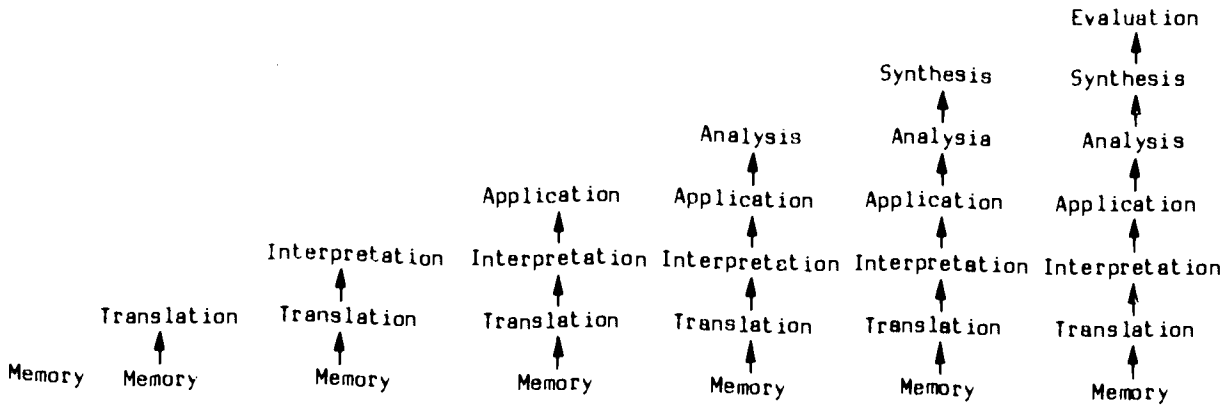
However, there is much disagreement among educators over the ways questions are and should be used in classrooms. Numerous strategies have been developed which incorporate the diversity of ideas about the use of questioning. The purpose of this paper is to examine the most well-known of these

questioning strategies and explore the implications of each strategy for preservice teacher training.

## QUESTION CLASSIFICATION SYSTEMS

Many questioning strategies are built on question classification systems. Much research which preceded the development of questioning strategies attempted to describe the types of questions asked by teachers. To quantify their descriptions, researchers developed sets of categories into which teacher questions could be classified. These categories were based on the type of cognitive process required to answer the questions. At least 11 question classification systems were proposed in the 1960's (Gall, 1970) with many others developed in the last decade. Most of these systems can be described with reference to the presence or absence of two parameters: hierarchy and context.

Question classification systems which are hierarchical have categories which are sequential and cumulative, such as Bloom's Taxonomy of Educational Objectives. Sanders (1966) describes the hierarchical feature of Bloom's Taxonomy in this way: "each category of thinking has unique elements but also includes some form of all lower categories." This is illustrated in the diagram which follows.




Question classification systems which are not hierarchical are based on categories of wholly unique elements which should not be rank ordered.

Question classification systems are context-bound if they are meant to be applied in specific classroom situations, such as during a reading lesson or an art activity. Non-context bound question classification systems are designed to be used in studying issues related to broad ideas of curriculum, such as the different types of questions emphasized in traditional versus new curricula (Sloan and Pate, 1966).

The following diagram is a concept organizer for a discussion of examples of four types of question classification systems.

| | Non-Context Bound Systems | Context Bound Systems |
|---|---|---|
| Hierarchical Systems | **Type I**<br>Sanders, 1966<br>Hunkins, 1972 | **Type II**<br>Guszak, 1967<br>Ruddell, 1974 |
| Non-Hierarchical Systems | **Type III**<br>Hyman, 1979 | **Type IV**<br>Clements, 1964 |

## TYPE I QUESTION CLASSIFICATION SYSTEMS

The most well-known example of a question strategy based on a hierarchical, non-context bound question classification system (Type I) was proposed by Sanders (1966). Sanders used seven levels of Bloom's Taxonomy for his question categories. These were: memory, translation, interpretation, application, analysis, synthesis and evaluation. The categories were based ultimately on inferential constructs, cognitive processes which cannot be observed, but which must be implied. Sanders intent was to devise a questioning strategy which all teachers could use.

Sanders' rationale for devising his strategy was that "far too many teachers overemphasize those questions which require students only to remember and practically no teachers make full use of all worthwhile kinds of questions." (Sanders, 1966, p. 2) He reasoned that higher level questions would stimulate development of cognitive abilities beyond memorization, that is, to critical thinking.

Sanders' recommendations for classroom teachers were both general and specific. Overall, he urged teachers to use many different types of questions to insure a "varied intellectual atmosphere in the classroom." Specifically, Sanders advised teachers to use his question categories as a standard to identify and evaluate instructional materials (Sanders, 1966, p. 2).

In 1972, Francis Hunkins published Questioning Strategies and Techniques with the purpose of providing teachers and students with tools for increasing their skills in effective question asking. Hunkins proposed a questioning

strategy which used six levels of Bloom's Taxonomy and the idea of question function, which referred to centering, expanding, distributing and ordering. Question functions identified by Hunkins included converging students' thinking on a topic (centering), raising thinking to a higher level (expanding), involving students in working with data (distributing), and classroom management (ordering).

Hunkins' rationale for proposing his questioning strategy was that it was especially valuable for teachers implementing the discovery curriculum, with its focus on motivating students to ask and answer their own questions. However, Hunkins intended teachers in any curriculum to be able to use his questioning strategy. Primarily, he recommended that the classroom teachers construct an instructional plan using sequentially ordered levels of questions and also a variety of question functions for each lesson.

The widespread use and popularity of Sanders' and Hunkins' questioning strategies in teacher training programs attests to a felt need to provide a systematic approach to questioning. By examining the main characteristics of these strategies two implications for teacher training programs emerge. First, Sanders' categorization of questions implies preservice teachers should be instructed in asking a variety of questions during their lessons. Methods like Flanders Interaction Analysis have been useful in this part of teacher training. Second, the complexity of both strategies implies that preservice teachers should receive help in planning lessons which incorporate higher level questions as well as the usual memory level ones.

## TYPE II QUESTION CLASSIFICATION SYSTEMS

A well-known example of a context-bound, hierarchical question classification system (Type II) is the one used by Guszak (1967) in his study which analyzed the questions teachers ask elementary school reading groups. Guszak's system is context-bound because it was constructed and validated for use by teachers in a specific context, the reading group. It is also hierarchical, with its categories closely resembling Bloom's Taxonomy. Guszak chose his question categories after first making a survey of the reading-thinking skills identified in basal series, by reading authors, and in representative thinking models. The categories he chose were: recognition, recall, translation, conjecture, explanation and evaluation.

Guszak's rationale for his study was his observation that "teachers appear to equate reading-thinking skills with the most narrow of literal comprehension skills." (Guszak, 1967, p. 227). His major finding, that 70% of the questions asked by teachers in reading groups were at the recall or recognition level, is widely cited in reading education literature.

In his conclusion to the study, Guszak expressed concern that too many teachers' questions were involved with the retrieval of the trivial factual makeup of stories. Guszak also urged teachers to be more careful in their evaluation questions. This recommendation was in response to a finding in his study that in a reading circle teachers frequently ask children for unsupported value statements. With poor evaluation questions, teachers "condition students to take value positions without the vital weighing of evidence that seems to

separate the thinking individual from the mob member." (Guszak, 1967, p. 234.)

In 1972 Ruddell replicated Guszak's study of questions asked by a teacher in a reading group, but he used a much different question classification system. Like Guszak's system, Ruddell's was context-bound, that is, designed to be used during a reading lesson only. It was also hierarchical; however, Ruddell adopted the simpler factual- interpretive- critical classification rather than the Bloom-like hierarchy used by Guszak.

Ruddell's system also differed from Guszak's in its greater emphasis on the students' responses to teachers' questions. Ruddell analyzed each teacher-question/student-response situation along four dimensions: (1) who talks, (2) functions, (3) levels of comprehension, and (4) strategies. Below is a diagram of the four dimensions of Ruddell's question classification system:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Who Talks | Function | Levels of Comprehension | Strategies |
| Teacher | Question | Factual | Focusing |
| Child | Response | Interpretive | Ignoring |
| | | Applicative | Controlling |
| | | | Receivnig |
| | | | Extending |
| | | | Clarifying |
| | | | Raising |

(Ruddell, 1978)

Two significant findings came out of Ruddell's study. First, about 70% of teacher questions during the reading lesson were at the factual level. This finding lent further credence to Guszak's finding and recommendation that teachers need to ask more higher level questions in reading groups. Second, Ruddell found that about 86% of children's responses to teachers' questions were at the factual level. Ruddell concluded from this finding that many children were not able to handle higher level questions and recommended that "questioning strategies used by the teacher must be designed with sensitivity to child response levels and strategies." (Ruddell, 1978.)

Two implications for training preservice teachers may be drawn from questioning strategies just described. First, Guszak's findings indicate that it is insufficient preparation to train teachers to only be more aware of the variety of questions they ask. Attention should also be paid to the quality of the questions within each category. Second, Ruddell's study indicates the need for preservice teachers to become aware of students' readiness to respond to higher level questions.

## TYPE III QUESTION CLASSIFICATION SYSTEMS

Ronald T. Hyman's work, Strategic Questioning, (1979) is an illustration of the use of a non-context bound, non-hierarchical (Type III) question classification system. While Hyman's system is intended for use by all teachers, it is decidedly different from hierarchical classification based systems, like Sanders' or Hunkins', which are modeled after Bloom's Taxonomy. In fact,

Hyman considers Bloom's work to be seriously flawed. He explains: "Bloom, in his later book on the affective domain, states that it is not known whether his cognitive 'taxonomy' is actually a hierarchical ordering of cognitive objectives or only a simple categorizing of cognitive processes with no rank ordering at all." (Hyman, 1979, p. 8).

Hyman's own system implies no hierarchy and is based on the way one would verify the 'truth claim' of the response to a question. His five categories are: (1) Definitions, (2) Facts, (3) Relations between facts, (4) Opinions, and (5) Justification of opinions.

Hyman's rationale for this classification system is that it is empirically reliable and also easy to use because questions fall clearly into one category or another. The system can be put into practice by teachers in at least fifteen ways. The variables which interact with Hyman's five categories to form the variety of strategies are: (1) inductive and deductive approaches; (2) response clues, like yes/no or selection type question construction; and (3) production type. Hyman also recommends that teachers learn to effectively wait for students to respond to questions, to probe students for additional information, and to check back with another speaker before asking a new question.

The major implication of Hyman's questioning strategy for preservice teacher training is that due to the complex and dynamic elements upon which questioning strategies are designed, preservice teachers should be instructed in the theory of cognitive processes related to questioning as well as in the use, modification, and improvement of questions.

## TYPE IV QUESTION CLASSIFICATION SYSTEMS

A good example of a context-bound, non-hierarchical (Type IV) question classification system was used by Robert D. Clements, in his study of Art student-teacher questioning. Clements designed his system to classify the questions asked by art student-teachers as they talked with students about their artwork. The system was not hierarchical, but was ordered according to when questions might take place in a lesson. Some of Clements' categories were: (1) Past Experience Questions (How did it feel?); (4) Planning Questions (What will you do then?); (5) Opening Questions (What are you doing?); and (9) Process Recall Questions (How did you do this?) (Clements, 1964, pp. 15-17.) Unlike other question classification systems, Clements' question classes were not strictly based on the type of cognitive process required to answer the question. Instead, the classes reflect emphasis on the art instructional process and classroom management.

Clements felt that the value of his study went beyond the simple description of the questioning of art student-teachers. He maintained that the separation of art questioning into ten distinct and easily understood categories had value in art teacher training. Clements suggested "the novice teacher can be introduced to multiple approaches available to him for motivating individual pupils. Through experimenting with different kinds of questioning, he will find the greatest number that combine effectively with his teaching methods." (Clements, 1964, p. 18).

Clements' remarks imply that teacher trainers should provide instruction in the use of questioning strategies which are effective in specific content areas. As Gall (1970) suggests, "research might be done to identify effective question types in mathematics tutoring, introducing concepts in the science curriculum, role playing in social studies, etc." Question categories which are more precise and observable would be more useful in the measurement of a preservice teacher's performance of a questioning strategy in a field setting or a microteaching situation. The increased precision of measurement would be valuable in providing feedback to preservice teachers and in conducting research related to effective questioning.

## SUMMARY AND CONCLUSIONS

Questioning is an important aspect of instruction and learning; however, there is much disagreement about the different ways questions are and should be used in the classroom. Many questioning strategies have been devised which reflect the diversity of ideas about the use of questions. Seven implications for teaching questioning strategies to preservice teachers may be drawn from four types of question classification systems which have received attention. These implications are:

(1) Preservice teachers should be instructed to ask a variety of questions.

(2) Preservice teacher should be instructed to incorporate higher level questions into lesson plans.

(3) Preservice teachers should learn to pay attention to the quality of each question.

(4) Preservice teachers should learn how to take into account the students' ability to respond before asking a question.

(5) Preservice teachers should become knowledgable about the theoretical components of questions so that they can adapt and modify questioning strategies to fit their teaching styles.

(6) Preservice teachers should learn to ask effective questions through practice.

(7) Preservice teachers should learn questioning strategies which are effective in specific content areas.

A teacher training program which incorporated the guidelines above would need to develop three program components: (1) microteaching, (2) a verbal interaction analysis training program, and (3) a unified approach

in education foundations, methods and field-based courses.

First, microteaching experiences in which preservice teachers would teach a lesson incorporating a questioning competency, such as asking a variety of questions to a small group of students, would be essential. The microteaching lessons would be taped (by audio or video recorders) and played back to give the preservice teachers feedback on their performance of the questioning competencies. The competencies determined to be fundamental to mastery of advanced questioning strategies would be emphasized in the microteaching. These competencies--such as asking high quality questions, asking a variety of questions, and judging students' ability to respond to different questions--would be practiced and incorporated into other teaching strategies learned in the field based courses.

Second, preservice teachers would learn a verbal interaction analysis system, like the Flanders system. In this way students could become more aware of the verbal interaction patterns which facilitate or hinder learning.

The third and most important program component would be the coordination of instruction about questioning in education foundations, methods and field-based courses. In foundation courses preservice teachers would learn the theoretical components of questioning. If the program adopted a questioning strategy based on a question classification system, then that classification would be taught in the foundations courses. Later, through microteaching and other simulations in the methods courses, students would learn how to apply the question classification system through context-specific questioning strategies. Preservice teachers would also learn in the methods courses how to incorporate

higher level questions into their lesson plans. Finally, with a review of question concepts and strategies and appropriate supervision in the field-based course, the result would be a clear translation of theory into practice and better questioning in the schools.

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