

Student Questioning as a Learning Strategy

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Students' questions can play a productive role in the learning process as illustrated in the studies reviewed here.

RESearch interest in questioning as a teaching-learning strategy has dealt largely with the measurement and development of teachers' questioning skills. The current focus on the teacher tends to obscure the potential importance of student questioning in the learning process; consequently, this article reviews the literature pertinent to student questioning as an instructional strategy.

Why Should Students Ask Questions?

Advocates of student questioning consider student question-asking to be an essential component of critical reading (Carner, 1963) and independent inquiry (Eisner, 1965). Student questioning is also seen as a source of information about students' current knowledge, thought processes, and feelings (Huenecke, 1973), an indicator of desire for further information or explanation (Cooper and Cooper, 1974), and a "learning

technique" per se (Carpenter, 1964). Zahorik (1971) points out that considerable out-of-school learning occurs through questioning oneself and others and that encouraging student questioning in the classroom is consistent with the schools' goal of promoting continued independent learning. Given that student questions can contribute to the attainment of desired educational outcomes, students should be helped to become question-askers, not merely question-answerers, both in and out of the classroom.

What Questions Do Students Ask?

Available data on the frequency and nature of the questions students ask in elementary, junior high, and high school classrooms indicate that students ask few questions in school (Gall, 1970). In addition, students' classroom questions tend not to be productive in the sense of contributing to the refinement of subject matter knowledge or the development of thinking skills. For example, Davis and Tinsley (1967) found that students in junior and senior high school social studies classes asked more memory (knowledge recall) questions than all other question types combined.



There has been little investigation of the factors that might influence the frequency and types of students' classroom questions. As might be expected, teachers' attitudes and behavior appear to affect the types of questions asked by students (Torrance and Myers, 1970). For example, in classes where the teacher is dominant and students are expected to assume a passive role, most student questions seek permission or procedural information.

In a study of the types of questions asked by elementary, high school, and college students (when they were asked to ask questions), Yamamoto (1962) found changes with age in the frequency of different question types. Students' questions were classified into 11 groups "according to the interrogative pronouns, adverbs, or verbs used" (p. 84). On this basis, it was found that (a) "why" and "what" questions were most common over the entire age range, and (b) "why" questions, although most numerous at all ages except college, declined and "what," "how," and "be" questions increased after the third grade. Using the same method of generating and classifying student questions, Martin (1970) compared the types of questions asked by middle socioeconomic

status (SES) white and lower SES black first graders. The middle SES white students asked significantly more "why" and "what" questions, while the lower SES black students asked more "do" and "be" questions.

The results of these two studies are difficult to interpret, in part because their means of classifying student questions ignores the intent of the questions as well as their cognitive level. For example, Yamamoto concluded that the increase with age in the frequency of "be" questions indicated intellectual growth whereas Martin concluded that the greater number of "be" questions asked by lower SES black students indicated that they were "at a lower developmental level of question-asking skill" (p. 617) than their middle SES white peers.

Can Students Ask More Productive Questions?

General suggestions for encouraging productive student questions have been offered by Carpenter (1964), Cooper and Cooper (1974), Huenecke (1973), Torrance (1972), and Zahorik (1971). More specific guidelines and examples have been provided by Cornbleth (in press), Fancett *et al.*

(1968), Olmo (1969), Suchman (1962, 1966), and Taba (1971). However, there have been relatively few studies of the efficacy of particular strategies designed to promote student questioning.

Several studies have shown that instructor modeling has positive effects on the number of subsequent student questions about pictorial stimuli (Rosenthal, Zimmerman, and Durning, 1970; Rosenthal and Zimmerman, 1972; Zimmerman and Pike, 1972; Henderson and Garcia, 1973). Rosenthal *et al.* (1970) assessed the effects of modeling a particular type of question with lower SES sixth graders and found significant increases in the number of student questions of the types modeled. Using similar procedures with middle SES third graders, Rosenthal and Zimmerman (1972) found that explicit instructions to try to learn the model's way of asking questions resulted in a greater frequency of appropriate student questions than less direct instructions.

Zimmerman and Pike (1972), working with lower SES second graders, found that modeling combined with praise more effectively stimulated student question-asking than either modeling or praise alone. Henderson and Garcia (1973) combined instructor modeling with parent training to model, cue, and reinforce their lower SES first graders' question-asking. Modeling plus parent training resulted in more student questions than modeling alone.

In these modeling studies, students were exposed to the model individually or in small groups outside the classroom. With few exceptions, improved student questioning generalized to new pictorial stimuli. However, generalization of student question-asking beyond the experimental situation was not examined.

Active student involvement as opposed to listening or observing also appears to promote student questioning. In an out-of-class small group setting with both middle SES urban white and lower SES rural black six-year-olds, Torrance (1970) found that student manipulation of unfamiliar objects resulted in more numerous and productive student questions than student observation

of the experimenter demonstrating use of the objects. Productive questions were defined as "puzzling or hypothesis stating" questions that could not be answered by looking at or manipulating the objects.

Does Student Questioning Affect Achievement?

Given that students can be taught to ask questions, what relationships exist between student questioning and achievement? For example, to what extent does student question-asking enhance academic performance? Two classroom studies found a positive relationship between teaching strategies intended to encourage student questioning and student achievement in upper elementary science classes (Blank and Covington, 1965; Renne, Kass, and Nay, 1973). Using Suchman's (1962) yes-no questioning procedure, Renne *et al.* (1973) found that, with IQ controlled, participants (students who asked three or more questions during three inquiry-questioning sessions) outscored non-participants on the higher cognitive level questions of the achievement post-test (Bloom's categories of application, analysis, synthesis, and evaluation) but not on the lower levels of knowledge and comprehension. Since question-asking was not varied experimentally in this study, it is not clear whether the results indicate that question-asking enhanced achievement or that high achievers asked more questions. However, the assumption that question-asking facilitates achievement is supported by the findings of Blank and Covington (1965). They found that programmed instruction, including sections on question-asking, resulted in more relevant student questions and higher achievement than the same programmed instruction without sections on question-asking.

What Conclusions Seem Warranted?

Given opportunities, explicit instructions, and support, students can ask productive questions and can learn to ask particular types of questions. Teaching strategies that

increase the frequency and influence the nature of student questions have been identified by several researchers, and the two studies that investigated student question-asking and achievement found positive relationships. Short term generalization of increased student questioning has also been demonstrated. However, the extent to which favorable results obtained with strategies such as modeling generalize to varied class-

room, extracurricular, and out-of-school situations has not been examined.

Additional research is needed, not only to assess the generalization of question-asking behavior, but also to clarify the relationship between question-asking and achievement and to determine what frequency and types of student questions are associated with what types and levels of achievement. □

References

- Stanley S. Blank and Martin Covington. "Inducing Young Children To Ask Questions in Problem Solving." *Journal of Educational Research* 59: 21-27; September 1965.
- Richard L. Carner. "Levels of Questioning." *Education* 83: 546-50; May 1963.
- Helen M. Carpenter. "Study Skills: Asking Good Questions." *Instructor* 74: 27-28; November 1964.
- Frayda H. Cooper and J. D. Cooper. "Tune in Your Turned-off Students." *Instructor* 83: 20; January 1974.
- Catherine Cornbleth. *Questioning and Discussion Strategies in Teaching Social Studies*. Morristown, New Jersey: General Learning Press, in press.
- O. L. Davis, Jr., and Drew C. Tinsley. "Cognitive Objectives Revealed by Classroom Questions Asked by Social Studies Student-Teachers." *Peabody Journal of Education* 45: 21-26; July 1967.
- Elliot W. Eisner. "Critical Thinking: Some Cognitive Components." *Teachers College Record* 66: 624-34; April 1965.
- Verna S. Fancett, Eunice Johns, Warren L. Hickman, and Roy A. Price. *Social Science Concepts and the Classroom*. Syracuse, New York: Social Studies Curriculum Center at Syracuse University, 1968.
- Meredith D. Gall. "The Use of Questions in Teaching." *Review of Educational Research* 40: 707-21; December 1970.
- Ronald G. Henderson and Angela B. Garcia. "The Effects of Parent Training Program on the Question-Asking Behavior of Mexican-American Children." *American Educational Research Journal* 10: 193-201; Spring 1973.
- Dorothy Huenecke. "Promoting Student Questions." *Elementary English* 50: 647-50+; April 1973.
- Felix Martin. "Questioning Skills Among Advantaged and Disadvantaged Children in First Grade." *Psychological Reports* 27: 617-18; October 1970.
- Barbara M. Olmo. "Questioning: Heart of Social Studies." *Social Education* 33: 949-52+; December 1969.
- Thomas Renne, Heide Kass, and Marshall A. Nay. "The Effect of Verbalizers on the Achievement of Non-Verbalizers in an Enquiring Classroom." *Journal of Research in Science Teaching* 10: 113-24; 1973.
- Ted L. Rosenthal and Barry J. Zimmerman. "Instructional Specificity and Outcome Expectation in Observationally Induced Question Formulation." *Journal of Educational Psychology* 63: 500-504; October 1972.
- Ted L. Rosenthal, Barry J. Zimmerman, and Kathleen Durning. "Observationally-induced Changes in Children's Interrogative Classes." *Journal of Personality and Social Psychology* 16: 681-88; December 1970.
- J. Richard Suchman. *The Elementary School Training Program in Scientific Enquiry*. Title VII, Project 216. Urbana: University of Illinois, 1962.
- J. Richard Suchman. *Inquiry Development Program in Physical Science*. Chicago: Science Research Associates, 1966.
- Hilda Taba and others. *A Teacher's Handbook to Elementary Social Studies*. Reading, Massachusetts: Addison-Wesley Publishing Company, 1971.
- E. Paul Torrance. "Freedom To Manipulate Objects and Question-Asking Performance of Six-Year-Olds." *Young Children* 26: 93-97; December 1970.
- E. Paul Torrance. "Influence of Alternate Approaches to Primary Educational Stimulation and Question-Asking Skills." *Journal of Educational Research* 65: 204-206; January 1972.
- E. Paul Torrance and R. E. Myers. *Creative Learning and Teaching*. New York: Dodd, Mead & Company, 1970.
- Kaoru Yamamoto. "Development of Ability To Ask Questions Under Specific Testing Conditions." *Journal of Genetic Psychology* 101: 83-90; 1962.
- John A. Zahorik. "Questioning in the Classroom." *Education* 91: 358-63; April 1971.
- Barry J. Zimmerman and E. O. Pike. "Effects of Modeling and Reinforcement on the Acquisition and Generalization of Question-Asking Behavior." *Child Development* 43: 892-907; September 1972.

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