THE EFFECTS OF PROMPTING QUESTION-ASKING UPON ON-TASK BEHAVIOR AND READING COMPREHENSION¹

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This study investigated a teacher-implemented prompting procedure for training students to ask questions. Two special-class (EMR) students who asked no questions were selected as subjects. Baseline data were also collected on reading comprehension and on-task behavior, and these suggested decreasing levels of performance. The results indicated that prompting was effective for initiating question-asking. In addition, increased levels of reading comprehension and on-task behavior were observed.

The asking of questions by students can be viewed as a feedback device, since pupils requesting assistance or information obtain a reply from teachers. Such questions also provide the teacher with feedback regarding the student's level of understanding of the assigned material. From the pupil's questions, the teacher can ascertain level of achievement and thus match difficulty of instruction to the student's ability, avoiding unnecessary repetition or progression beyond the student's capabilities.

If the student asks no questions when confronted with a unique or difficult task, he has no means of communicating his difficulty or obtaining feedback from the teacher, other than emitting incorrect responses (Cantor and Corey, 1953). He may attempt to secure the required information from peers, but these students are often not qualified to offer assistance and the practice is not acceptable in most educational settings. If such students can be taught to request information from the teacher in a manner congruent with classroom structure, then their

opportunities for learning will increase, since they will receive feedback or remedial instruction concerning difficult material.

The importance of obtaining feedback subsequent to responding has been investigated in programmed instructional settings with special-class students (Kliebhan, 1967; Knapczyk and Livingston, 1973; Malpass, 1967; and Skinner, 1968). It was concluded that subjects who did not obtain feedback were at a disadvantage because their probability of emitting incorrect responses increased along with on-task performance time (Parker, 1970). There is little evidence, however, concerning the effect of feedback upon instructional performance and attending to task behavior in a structured special-class setting.

The purposes of the present study were: (1) to determine the level of on-task behavior and reading performance for students who asked no questions, (2) to explore the feasibility of employing a prompting procedure, implemented by the teacher, to initiate question-asking, and, (3) to investigate whether training these students to ask questions improved their performance.

METHOD

Subjects

This study was conducted in a junior high school special-education class (EMR) in the

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Topeka (Kansas) Public Schools. The subjects were selected on a basis of a three-day, prebaseline period during which the daily frequency of questions asked was recorded for each pupil in the class. Two students who asked no questions were chosen as subjects.

Subject 1 was enrolled in the eighth grade and was described by her teacher as having difficulty attending to task and as performing inadequately in the reading material assigned. Subject 2 was a ninth-grade boy characterized as a good student, especially in reading, but very quiet, uncommunicative, and socially immature.

Response Definitions

The data collected were based upon the following behavioral definitions:

(1) *Student question-asking.* Student question-asking included all responses in which the student raised his hand, awaited acknowledgment to verbalize from the teacher or aide, and when acknowledged, verbalized a response requesting information.

(2) *On-task performance.* On-task performance was defined as student orientation toward the task assigned to him by the classroom teacher. This included attending to a reciting student or lecturing teacher, verbally responding when requested to do so by the teacher, engaging in classroom participation or materials when directed, and performing any other activity assigned by the teacher or aide.

(3) *Accuracy of performance.* The measure of accuracy of performance was determined as the per cent of correct responses emitted by the student on the material assigned to him. This value was calculated as the ratio of the number of correct responses to the number of responses possible for the assignment.

Observational Techniques

The frequency of questions asked and the per cent of on-task performance for the subjects were collected by an independent classroom observer. The former data were collected by tallying each question-asking response emitted.

The measures of on-task performance were determined by alternately observing each experimental subject individually for intervals of 10 sec. A 5-sec latency was allowed between each observation. On-task behavior was recorded when it occurred during the entire 10-sec interval.

The accuracy of performance on the assigned reading materials was collected by the classroom teacher, who corrected each student's reading responses when the assignment was completed. Response keys, included within the published reading materials, were used.

Levels of agreement for each variable were determined by the weekly addition of another observer, who likewise collected data for that day. The levels of agreement across all experimental conditions for both subjects were: 99% for question-asking, 98% for on-task behavior, and 96% for accuracy of performance.

Experimental Design

The design utilized to investigate the experimental variables was a multiple baseline design (Campbell and Stanley, 1963; Wolf and Risley, 1971). In addition, a reversal procedure was implemented with Subject 1 to determine the effects of extinguishing the response upon classroom performance. This latter design was also instituted to determine whether intra-subject replication could be demonstrated (Sidman, 1960).

Experimental Procedure

The data were collected during the entire 50-min class designated for reading instruction. During these 50 min, each student worked in a reading series in which there was a story to be read and a number of comprehension questions, based upon the story, to be answered. Each pupil was assigned material that the teacher considered appropriate for his level of reading ability. Thus, various reading series were employed. The instructional personnel consisted of a certified special-education teacher and a teacher aide.

Subject 1

Baseline I. The measures of baseline performance for the subjects were obtained for all variables in the manner specified above. During baseline and all experimental conditions, Subject 1 was assigned reading material in the *SRA Reading Laboratory: Level IIA Skill Builders* (Parker, 1960), with the daily assignment of one reading card.

Training I. Upon completion of the baseline condition, the teacher and aide instructed Subject 1 to raise her hand and ask a question whenever she encountered difficulty with her reading assignment. Statements similar to the following were used as prompts. "Today, I would like you to ask a question if there is a word you don't know or direction which you don't understand." The prompting by the teacher and the aide occurred three times on the first day of this condition and one or two times for three successive days. Whenever Subject 1 raised her hand, either the teacher or aide approached her and asked what she wanted. Each question was promptly answered.

Baseline II. Immediately following the Training I condition, the subject's question-asking was extinguished by ignoring Subject 1 when she raised her hand. An attempt was made to replicate Baseline I during which this subject made no requests for assistance with her assignments.

Training II. In this phase, the subject was again prompted to raise her hand and ask questions when difficulty with the assignment was encountered. Two prompts were made on the first day and none thereafter. Generally, prompts were made either before class started or during the early part of the period.

Subject 2

Baseline. Measures of baseline performances were collected for the second subject in the same manner as that prescribed for Subject 1. During this condition, Subject 2 was assigned reading material in the *SRA Reading Laboratory: Level*

IIIA (Parker, 1957). One reading story was assigned each day.

Training. Upon completion of baseline, the teacher and the aide instructed this subject to raise his hand and request assistance whenever he encountered difficult material. On the initial day of this condition, five prompts were emitted by the teacher. One to three prompts were made during the next three days. Throughout this condition, all questions asked were immediately answered. The reading material assigned was a continuation of that presented during the baseline condition.

RESULTS

Figure 1 illustrates the daily frequencies of question-asking responses. During baseline conditions, both subjects exhibited a stable zero rate of questions asked.

When the prompting procedure was instituted with Subject 1, her frequency of questions asked increased, ranging from 6 to 13 questions and averaging 10.3 questions per day. Upon instituting the extinction procedure during Baseline II, Subject 1's Baseline I rate of response was approximated. Again prompting this subject to ask questions resulted in a replication of the Training I condition.

The rate of questions asked also increased for Subject 2 when the prompting procedure was implemented, and varied from 3 to 7, with an average of 5.3 questions per day during the experimental condition.

Figures 2 and 3 present the data collected on per cent of on-task behavior and accuracy of reading. These data indicate that before training in question-asking, the subjects were responding with variable performance in classroom reading activities. Daily variations of nearly 25% for on-task behavior and 35% for reading comprehension were observed. Generally, the levels of performance on these variables suggest deceleration of appropriate classroom response patterns.

Simultaneous to increased rates of questions asked, higher levels of on-task behavior and

Fig. 1. Frequency of question-asking responses emitted during reading instruction.

reading comprehension were observed. These increments over baseline performance represent percentages of 27 and 22 for on-task behavior and 28 and 23 for reading comprehension for each subject respectively.

DISCUSSION

The results suggest that a prompting procedure could be employed to initiate question-asking. This procedure seemed well suited to the

educational environment because it required a minimum amount of teacher time to institute, involved little or no record keeping, and necessitated no alteration of the ongoing classroom structure. In addition, it provided a definite mode of communication between the teacher and student, concerned material that was both familiar to the student and that provided for discriminative stimuli for the target response, and taught a response that was educationally relevant. In addition, prompting can be readily

Fig. 2. Per cent of on-task behavior observed during the 50-min reading period.

faded when higher grades and social reinforcement are sufficient for maintaining the response.

Data were also collected on the per cent of on-task behavior and the per cent of reading comprehension for each subject. During baseline, the performances for both variables suggested decreasing levels of on-task behavior and scores on reading comprehension tasks. However, the results indicate that a reversal of this trend was observed when the subjects initiated and maintained a question-asking response.

Several factors characteristic of both the ex-

perimental procedure utilized and the target response learned may have contributed to these results. First, a response chain between the teacher and subjects was structured by this procedure: student raises his hand, teacher acknowledges, student asks a question, and teacher provides information. This chain provides the subjects with a clear mode of both securing information about the work assigned and obtaining teacher acknowledgement of the work performed. Both of these factors may have served to maintain question-asking and to re-

Fig. 3. Per cent of performance on assigned reading comprehension tasks.

inforce on-task behavior and appropriate reading skills.

Similarly, the information obtained by the subjects from this feedback procedure may have affected performance, since verification of appropriate responses was immediate. Remedial information concerning the task was provided by the teacher as difficulties were observed. Also, feedback to the teacher from the questions asked could facilitate more effective instructional procedures for these subjects than was provided during baseline.

The present results suggest that student question-asking is an important learning skill because of the feedback it provides and the interaction pattern it establishes.

REFERENCES

Campbell, D. and Stanley, G. *Experimental and quasi-experimental designs for research*. Chicago: Rand-McNally, 1963.

Cantor, N. and Corey, S. M. *The teaching-learning process*. New York: Holt, 1953.

Kliebhan, J. M. Effects of goal-setting and model-

- ing on job performance of retarded adolescents. *American Journal of Mental Deficiency*, 1967, 72, 220-226.
- Knapczyk, D. R. and Livingston, G. Self-recording and student teacher supervision: variables within a token economy structure. *Journal of Applied Behavior Analysis*, 1973, 6, 481-486.
- Malpass, L. F. Programmed instruction for retarded children. In A. Baumeister (Ed.), *Mental retardation*. Chicago: Aldine, 1967. Pp. 212-231.
- Parker, D. H. *Reading laboratory series*. Chicago: Science Research Associates, 1957.
- Parker, D. H. *Reading laboratory series*. Chicago: Science Research Associates, 1960.
- Parker, D. H. *Schooling for what?* New York: McGraw-Hill, 1970.
- Sidman, M. *Tactics of scientific research*. New York: Basic Books, 1960.
- Skinner, B. F. *The technology of teaching*. New York: Appleton-Century-Crofts, 1968.
- Wolf, M. M. and Risley, T. Reinforcement: applied research. In R. Glaser (Ed.), *The nature of reinforcement*. New York: Academic Press, 1971. Pp. 310-325.

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