THE ROLE OF RELEVANT ACTIVE QUESTIONS IN LEARNING BASED UPON SUCCESSIVE PRESENTATIONS*

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ABSTRACT

Both active questions i.e. questions asked by subjects, and provided (or passive) questions i.e. offered to subjects as problems for solution, had been found to facilitate learning and retention of prose material when subjects were faced with a task of sufficient difficulty to challenge their competence. With difficult prose, boys and low ability subjects had gained most from active questions. These effects were more pronounced in the long term. In this study, the effects of relevant active questions i.e. questions which subjects can put alongside answers, are investigated and compared with those of active and provided questions, over a series of six presentations for both the short and the long term (i.e. after ten months). In the short term, although active questions give greater help than provided questions on the first presentation, and relevant active questions give the greatest improvement between the first and second presentations, provided questions are the most helpful overall. In the long term, however, both the active questions treatments prove to be as effective as provided questions. For low ability boys, the difference between treatments is negligible even in the short term; under the relevant active questions treatment the number of questions asked is greater; and the decline in inspection time over presentations is negligible.

Introduction

Near the end of their review paper, recently published in this journal, Rickards and Denner (1978) note that a number of issues in the area of adjunct question generation remain unexplored. They write, “One such issue concerns the relative effectiveness of experimenter-provided questions versus subject-generated questions for both good and poor readers” (pp. 338–9). However, in Prosser (1974a) a report is given of such an exploration. In comparison with a control group who simply read a passage of prose, both the group who were provided with questions and the group who generated their own questions obtained higher scores in a test for retention of simple facts. Experimenter-provided questions (referred to then as passive questions)

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tended to be more helpful than subject-generated questions (referred to as *active* questions) if the prose passage was relatively easy. With more difficult prose, and particularly in the case of low ability boys, subject-generated questions were the more helpful.

An explanation of these results was offered in terms of an hypothesized "challenge to competence," owing something to the ideas of White (1959). Briefly, whereas provided questions offer the familiar classroom paradigm of test-like events (cf. Rothkopf, 1965 and 1966) and invite a conforming response, viz. try to answer the questions correctly, subject-generated questions are more likely to be elicited by difficulties in the material or by the curiosity which has been aroused in the subject (see e.g. Berlyne and Frommer, 1966).

In a series of supplementary studies (Prosser, 1974b) the effects of retention interval, task timing, and verbal ability in the case of the lowest stream subjects, were investigated. A longer retention interval was found to favour subject-generated questions; and when subjects studied the more difficult prose material the effect of allowing them to work at their own pace was to sharpen the difference in favour of subject-generated questions. It was interesting to note that with the very low ability subjects, questions were no longer helpful, and it may well be that these studies offer further illustration of the applicability of the Yerkes-Dodson law to psychological phenomena. The tendency for subjects to benefit from questions, particularly subject-generated questions, rather than reading may be represented as a challenge to competence curve of the inverted-U type. It appears, moreover, from these studies that this curve begins and finishes later for boys than for girls.

Rickards and Denner complain of the paucity of theory in adjunct questions research which, as far as experimenter-provided questions are concerned, has dealt with such variables as position and frequency of questions, type of verbatim questions, level of inserted questions, and certain subject variables e.g. whether good or bad readers. A movement away from such "variables oriented" research towards "processes oriented" research emphasises a cognitive approach to learning which should be more fruitful in the production of theory. Perhaps the link between the two approaches may be found in Rothkopf's conceptual scheme relating to mathemagenic behaviours, i.e. behaviours that produce learning. According to Rothkopf (1965) these behaviours "include gross postural adjustment of the head and body toward the printed page and the movement of the eyes over the page" (p. 199). Furthermore, "there are other mathemagenic activities that cannot be observed directly and which must be inferred" (ibid.). Accepting, with Rickards and Denner, that the earlier work of both Rothkopf and Frase (e.g. 1968a, 1968b) tended to assume the associative model, we also acknowledge a more cognitive approach in Rothkopf's (1976) re-definition of mathemagenic behaviours as "processing activities".