The effect of the amount of underlining on comprehension and retention of textbook prose Material

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This study was designed to investigate the relative effectiveness of the amount of underlining on comprehension and retention of textbook prose material, when high concept sentences were increasingly underlined, given both subject-generated and experimenter-provided conditions of underlining. The subjects for the investigation were 120 college undergraduates enrolled in Educational Psychology courses at the University of Oregon. The subjects were randomly assigned to one of six conditions (n = 20) and required to read the experimental material, a 16-paragraph passage. The six experimental conditions were: (1) experimenter-provided underlining of the highest concept level sentence per paragraph; (2) experimenter-provided underlining of half the number of sentences per paragraph; (3) subject-generated underlining of the highest concept level sentence per paragraph; (4) subject-generated underlining of half the number of sentences per paragraph; (5) subject-generated free choice underlining in the amount and concept hierarchy of sentences; and (6) no underlining of any sentences. All the underlining was in accordance with the hierarchical structural importance of the material in each paragraph.

The dependent variables were immediate and 48-hour delayed comprehension scores, measured by a 38-item multiple choice test developed by the author. The estimate of reliability of the test was .69 as determined by the Kuder-Richardson formula No. 20. Seven hypotheses were investigated with regard to the effect of the amount of underlining and the type of presentation of underlining. A one-way analysis of variance, and Dunnett's test were performed to analyze the data.

The results of this study indicated that there was no significant difference between the treatment groups on the total comprehension of prose material. The lack of differences in comprehension held irrespective of whether the highest concept level sentence of the paragraph was underlined, or half the number of hierarchically important sentences were underlined. Additionally there was no significant difference observed as a result of either the experimenter-provided or the subject-generated underlining condition. A significant difference was found only in the comparison between the self-generated free choice underlining condition and no underlining condition. The result was consistent with the generative model of learning (Wittrock, 1974) where learners use their past experiences in constructing special meanings.
for sentences.

With material of lower-structural importance, subjects who used self-generated, free choice underlining in the concept hierarchy or in the amount also demonstrated higher immediate comprehension than did subjects in the other five conditions. However, 48-hour delayed comprehension scores did not yield significant differences. With the higher concept level material, the readers in six groups performed about as well.

When non-habitual underliners (as established by subject's self-ratings) were forced to underline, they performed significantly better than non-habitual underliners who used their own non-underlining strategy or those for whom underlining was provided. However, no signifi-
cant differences were found with the 48-hour delayed comprehension scores.

From the present study, it was concluded that: (1) there is no isolation effect with underlining of meaningful prose material; (2) if underlining is to be used to facilitate prose learning, the way each learner utilizes underlining in the free situation has to be considered; (3) underlining has minimal effect on retention. Suggestions for future research include exam-
ining the effect of underlining over longer periods of retention, with a larger number of non-habitual underliners. It is suspected that previous researches in this area were significantly affected by the measurement methods used.