METHODS AND TECHNIQUES

The Effect of Self-Reference on Learning and Retention

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This experiment compared 2 study methods that involved self-referencing. Three groups of college students studied a chapter from a child psychology text. One group used the survey, question, read, reflect, recite, and review method, a second group used a self-referencing method, and the control group received no special instructions on how to study other than "do your best." All students took an exam immediately after studying the chapter and again 2 weeks later. Results support the hypothesis that self-referencing enhances retention. However, there was no significant difference between the 2 self-referencing methods.

Laboratory studies have shown that deeper levels of processing result in better retention of stimulus material. The operational definition of "deeper" has varied from study to study but includes strategies that associate new material with that previously learned. The more elaborate the cognitive framework, the better the retrieval (Kail & Levine, 1976; Nadelman, 1974). The most elaborate cognitive framework is what people know about themselves. Memories of life experiences, thoughts, and feelings make up an important part of what individuals know, and this framework increases in size and complexity as they age. Because how much is already known affects how easily and well a person can master new material, self-referencing can be particularly effective in learning (Lord, 1980; Symons & Johnson, 1997). The more accessible and differentiated network presumably would permit deeper processing of information encoded with a self-referencing strategy.

For example, D. R. Forsyth and Wibberly (1993) asked students to evaluate whether each adjective in an orally presented list was self-descriptive. When later asked to recall the list, the students recalled more self-referent adjectives. Benjamin (1991) found that students gained a better understanding of course material when they were able to relate personal anecdotes to course content. Such studies suggest that self-referencing may aid in the learning and retention of course material. We attempted to apply such research to a practical educational problem, student mastery of textbook materials. A common complaint of teachers is that students remember little of what they learn from their textbooks beyond the course final. If students can see material as an elaboration or a refinement of what they already remember from personal experience, their recall of it should be better than for text material they merely try to memorize by rote for an exam.

Robinson (1970) proposed the survey, question, read, recite, and review (SQ3R) study method as a way to get students to more actively process textbook material. Although more active than merely reading, the steps of SQ3R are primarily those of rote memorization. P. D. Forsyth and Forsyth (1993) proposed an SQ4R technique, including a self-referencing component, referring to this additional "r" as "reflect." Specifically, this step involves having students reflect about how the reading materials relate to their life experiences. G. A. Forsyth, Woodring, and Forsyth (1994) tested the effectiveness of SQ4R training and reported that using the SQ4R strategy enhanced retention of developmental psychology textbook material by college students. Because earlier research stressed the importance of self-referencing over mere rote memory strategies, the G. A. Forsyth et al. finding of enhanced recall of text material for students who used the SQ4R study method may have been due to the addition of the reflect component alone. Thus, self-referencing alone may produce similar results to the more elaborate SQ4R study method.

The purpose of this study was to examine the effect of self-referencing on recall of textbook material. We predicted that students taught a simple self-referencing strategy would remember textbook material as well as students taught the more elaborate SQ4R strategy and that both of these strategies would enhance learning and retention compared to students instructed to use their best learning strategy.

Method

Participants

The participants for this study were 52 students enrolled in Child Psychology classes at California State University, Bakersfield. The 39 women and 13 men earned course credit for their participation. Students read a consent form informing them that we were testing different methods of studying developmental psychology textbook material and that the study would consist of two sessions held 2 weeks apart.
Each student read an instruction sheet that began with a paragraph requesting participants to perform their best using the study method for their group. The SQ4R instructions defined and explained the survey, question, read, recite, and review components of the study method (P. D. Forsyth & Forsyth, 1993). The self-referencing instructions defined and explained just the read and the reflect (self-reference) portions of the SQ4R study method instructions. The control group received instructions to use the study method they had found to be most successful in preparing for tests and that they would be asked to describe their method at the end of the experimental session. All participants read the final chapter of Bee’s (1992a) The Developing Child.

We constructed a 25-item, multiple-choice test primarily from the Test Master to Accompany Bee’s the Developing Child (Bee, 1992b). Each item contained one correct and four incorrect choices. We constructed a second form of this multiple-choice test for the measurement of retention 2 weeks later. It consisted of the same 25 questions, but we randomly arranged the order of the test items and the order of the choices within each item, with the restriction that no item had the same number and no choice had the same letter as on the first test.

Procedure

Participants completed a consent form after being informed about the project. We told them there would be a multiple-choice test given at the end of the first study session and that we would give them the results of the test at the second session 2 weeks later. We did not tell them that there would be another test at the second session. We kept the second test secret to avoid the possibility that participants might study the chapter during the period between the first and second sessions. We randomly assigned students to the SQ4R, the self-referencing, or the control group. Each group went to a separate classroom and received the appropriate instructions. Immediately following the 90-min study period all participants took the first 25-item multiple-choice test. Two weeks later all participants took the alternate version of the same multiple-choice test. Following the second test, we provided results from the first test along with a verbal explanation of the various study techniques being compared. Informally, we asked participants in the control group to describe their study methods. We later provided results of the second test to each participant as well as a description of the design and outcome of the study.

Results

The control group reported their favorite study method involved reading and highlighting important concepts, then reviewing whatever they had highlighted. Most control students reported reading the chapter summaries and testing their memories for the definitions of any terms listed at the end of a chapter. Only 2 students reported they were unable to use their preferred study method. One student typically used class lectures to decide what to pay special attention to when reading. The second typically constructed flash cards to help her memorize important terms. No one in the group reported a self-referencing technique.

The self-reference group had a mean percentage correct of 78.06 on the first test (SD = 8.50) and a mean percentage correct of 76.00 on the second test (SD = 7.77). The SQ4R group had a mean percentage correct of 74.47 on the first test (SD = 5.82) and 72.63 on the second test (SD = 8.57). The control group had a mean percentage correct of 74.38 on the first test (SD = 6.36) and 67.50 on the second test (SD = 5.61).

A 2 × 3 (Test × Treatment Group) mixed ANOVA of the percentage correct on each test resulted in a significant main effect for the repeated measures variable test, F(1, 49) = 14.86, p < .01, and for the treatment group variable, F(2, 49) = 3.69, p < .05. These main effects were qualified by a statistically significant Test × Treatment Group interaction, F(2, 49) = 3.22, p < .05.

The simple main effect comparing the three treatment groups on the initial test indicated that the three treatment groups were not significantly different F(2, 98) = 2.30, p > .05. The simple main effect comparing the three treatment groups on the retention test resulted in statistical significance, F(2, 98) = 9.56, p < .01. Protected alpha tests indicated that the control group performed more poorly than the SQ4R group (p < .01) and the self-referencing group (p < .01) on the retention test but that the SQ4R and self-referencing groups were not significantly different (p > .05).

We also carried out simple main effect tests to examine the differences between the initial and the retention tests for each of the three treatment groups. The control group’s examscores declined significantly, from the initial to retention test, F(1, 49) = 18.16, p < .001. The initial to retention test decline was not significant for the SQ4R group, F(1, 49) = 1.30, p > .05, or the self-referencing group, F(1, 49) = 1.63, p > .05.

Discussion

The main purpose of this study was to compare the effectiveness of a self-referencing study method to the SQ4R study method. The results supported the hypothesis that instructing students to use a self-referencing study technique facilitated retention. The hypothesis that self-referencing and SQ4R conditions would be equally effective was also supported.

Results support the findings of D. R. Forsyth and Wibberly (1993) and Benjamin (1991) that strategies involving deeper processing of material lead to better retention. Teaching students to reflect on how their own life experience relates to what they are reading improved their memory of the textbook material.

Although using a more elaborate technique with more steps required for its execution, the SQ4R group was not significantly better than the self-reference group. This finding suggests that what made the SQ4R technique effective was G. A. Forsyth et al.’s (1994) addition of Reflect to SQ3R. The remaining steps perhaps embellish the material but require
more rote memory than deeper processing. The equally good
performance of the self-referencing group compared to that
of the SQ4R group supported the contention of Symons and
Johnson (1997), Benjamin (1991), and Lord (1980) that
self-referencing is an especially important component of
deep processing strategies. Based on these
findings, instructors may decide to teach students to use the
simple self-reference strategy, rather than SQ4R, because
performance outcomes were essentially the same.

Self-reference appeals to students because it requires little
added study time beyond what they now spend. However, in-
structors must specifically teach students to use the tech-
nique. Students in our control group did not spontaneously
think to use self-referencing. Teachers could introduce the
method at the outset of the class with a description and a few
examples. Brief reminders throughout the semester might en-
courage students to try the technique.

A valuable follow-up study would be to examine the effec-
tiveness of self-referencing using assignments throughout a
semester, which foster self-referencing in both the encoding
and review components of studying. The usefulness of the
technique for other psychology courses also merits explo-
rated. Of course some textbook topics are more easily related
to personal experience than others, and topics in develop-
mental psychology may be more conducive to self-referenc-
ing than most. For the most part, if it aids retention,
instructors should encourage students to use self-referencing
whenever possible, whatever the topic.

References


Notes

1. Material for this article was presented at the American Psychological Society’s Third Annual Institute on the Teaching of Psychology, San Francisco, 1996.

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