

**Successful students use a learning style
that involves thinking deeply about what
they are studying.**

Improving Learning by Improving Thinking

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Current research in the area of human learning and memory suggests that people remember information better when they process it deeply and elaboratively. Deep processing involves devoting more attention to the meaning and classification of an idea suggested by a symbol than to the symbol itself. For example, when asked to remember the word "depression," a person might simply take note of how the word sounds and how it is spelled and repeat it five or six times. This process will yield a shallow encoding. Another person might note that depression refers to an emotional experience that is similar to, and different from, other emotions in certain ways. This process will yield a deep encoding. *Elaborative processing* refers to a way of processing information that enriches it and makes it more concrete and personally relevant. A person can elaboratively process the word "depression" by thinking of examples of depression from personal experience.

Research that has led to these findings usually involves testing three groups of subjects. For example, students in Group I are given a list of words and told to learn them for a memory test. Students in Group II are given the same list of words and assigned a shallow or narrow task, such as rating how easily each word can be pronounced. Group III students are given a deeper or broader task that requires more thought, such as rating the "richness of meaning" possessed by each of the words. Neither Group II nor Group III stu-

dents are told to learn the words or that there will be a test.

A typical finding in this research is that students in Group II, given the shallow orienting task, will remember fewer of the words than those in Group I, who were specifically told to learn the words. However, students in Group III, given the deeper task, will often remember *more* words than those in Group I. These findings suggest that more elaborate and deeper processing of information yields a longer lasting memory trace even when a person is not "trying" to remember the information. It also suggests that the way some students try to learn information is not the most effective way to go about it. Students told to learn but given no orienting task frequently remember much less material than those given deep and elaborative orienting tasks but not told to learn the material.

My own research indicates there are consistent differences in learning styles between students. Some habitually use deep and elaborative processing activities when they are studying and others do not. My colleagues and I made a list of 121 behaviors or activities a college student might perform while studying. Then we asked over 500 college students from many different academic majors and all four grade levels whether or not they engage in each of the listed behaviors while studying. We analyzed their responses by a statistical procedure, factor analysis, which grouped items according to the extent they assess similar dimensions of study behavior. These dimensions were labeled Syn-

thesis-Analysis, Elaborative Processing, Fact Retention, and Study Methods.

Synthesis-Analysis deals with the amount of time and energy the individual devotes to making semantic or categorical judgments about new information. In this sense, it is similar to the concept of deep processing. Elaborative processing assesses the extent to which an individual translates new information to fit into a personal framework. Fact Retention measures an individual's tendency to store detailed, factual information often called for on objective tests. Study Methods concerns the tendency to review regularly, read all assignments, attend all lectures, and generally "study" a lot.

Subsequently, we examined the relationships between these four dimensions and such variables as cognitive organization (ordering and classifying information and tagging it with symbols), grade point average, critical thinking ability, college entrance exam scores, memory for word lists, and learning from textbooks and lectures. We conclude that the major learning style differences between successful and unsuccessful students concerns the extent to which they process deeply (based on the Synthesis-Analysis scale) and elaboratively (based on the Elaborative Processing scale).

As information processors, students tend to be either habitually deep-elaborative (scoring high on the Synthesis-Analysis and/or Elaborative Processing scales) or shallow-reiterative (scoring low on both scales). Deep-elaborative information processors spend more of their

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study time thinking and less time repeating. They classify, compare, contrast, analyze, and synthesize information from different sources. They elaborate by thinking of personal examples, visually imagining personal illustrations, and restating information in their own words. They draw upon the depth and breadth of their experience. Students classified as more thoughtful, or more deep and elaborative, do indeed demonstrate faster learning, better memory, and higher grade point averages. Our research indicates that this type of learner attends more to the semantic features of material, whereas the re-

academic tasks?

These two goals can be accomplished with the same treatments. If the classroom activities of the teacher tend to be deep and elaborative and if the homework exercises require the student to engage in deep and elaborative activities, then the immediate impact will be to counteract the less desirable effects of a shallow-reiterative learning style. The long range effect may be a change in the student's learning style itself.

I have used several techniques to encourage a more deep-elaborative style of learning. During class I place greater emphasis on meanings than on

testing and homework. Tests are, of course, major vehicles for shaping student learning styles. If we demand regurgitation, we encourage shallow, reiterative memorization; if we test for comprehension of meaning, we encourage deeper, more elaborative, and thoughtful information processing. I assure students that their personal experiences are important and relevant to the topic at hand. Rather than rewarding the one and only sacred right answer, I give credit for thoughtful answers. I also ask students to give personal examples and to classify my own examples. In addition, I ask many compare-and-

affection

\ə-fek-shən\:

tender

attachment:

FONDNESS =



petitive and reiterative learner attends more to phonological and structural aspects. Shallow-reiterative information processors spend much of their study time repeating and memorizing information in its original form. They prefer to assimilate information as given rather than rewording, restating, or rethinking it.

As a teacher, I am interested in two important issues related to these individual differences. To what extent can we change a student's style from shallow-reiterative to more deep-elaborative or, more specifically, can we help the learner adopt the style most appropriate to the material to be learned and to the testing conditions? Second, what interventions or instructional activities will most effectively counteract the negative effects of a shallow-reiterative style on many

the symbols used to represent meanings. I do this by expressing ideas in several ways and asking students for alternate ways of conveying basic meanings of the ideas I have discussed. I avoid dictating "sacred" statements to passive "scribes." I encourage students to be certain they understand the meaning of the concept and then use their own words to record it in their notes. I also spend a lot of class time presenting examples of concepts and having students generate their own personally meaningful examples. I try to show how the ideas currently being discussed are interrelated with other ideas, and I encourage students to dredge their memories in search of related concepts.

Another technique for developing a deep-elaborative style is through

contrast questions and have students supply an idea from their personal experience to be compared and contrasted with the idea I provided.

In general, it's important to have the student realize that a fact doesn't exist in isolation but is always related to other information. Furthermore, the student must learn there are alternate ways of expressing any unit of information; its importance is in its meaning, and similar meanings can be symbolized in different ways for different people. The student should explore alternate and personally relevant ways of expressing ideas. Only by searching one's memory for related ideas and restating them can an individual with a shallow-reiterative learning style acquire a more deep and elaborative style and become a more thoughtful learner. ■

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