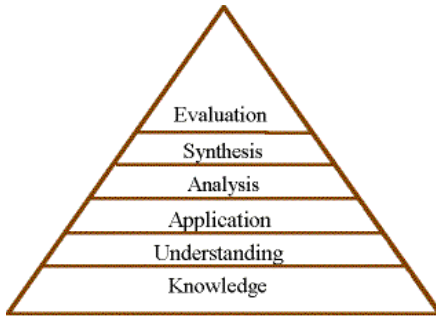


Higher Order of Thinking



In 1956, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behavior important in learning. Bloom found that over 95 % of the test questions students encounter require them to think only at the lowest possible level...the recall of information.

Bloom identified six levels within the cognitive domain, from the simple recall or recognition of facts, as the lowest level, through increasingly more complex and abstract mental levels, to the highest order which is classified as evaluation.

LEVEL	REQUIREMENT	KEY WORDS	SAMPLE QUESTIONS/REQUESTS
Knowledge	--observation and recall information and facts --knowledge of dates, events, and places	who, what, when, where, why, omit, which, choose, find, how, define, label, show, spell, list, match, name, relate, tell, recall, select	What is ...? Where is ...? How did ___happen? How did? Can you list 3...? How is ...? When did ___happen? Why did ? Who were the main...? Who was...?
Understanding	--retell in own words --interpret/infer --predict	summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend, illustrate, outline, relate, show	How would you compare...? What facts show...? Which is the best answer? State in your own words.... Classify this type..... How would you contrast...? Which statements support...? Summarize his ideas? What is the main idea of....?
Application	-use known facts, or information in other classes, work, life, etc. -solve problems	apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover	How would you use...? How would you solve ____ How would you organize to show...? What would result if...? What facts would you select to show...? What questions would you ask in an interview with? What examples can you find to...? Using what you have learned?

LEVEL	REQUIREMENT	KEY WORDS	SAMPLE QUESTIONS/REQUESTS
Analysis	<p>-take information and separate it into important parts</p> <p>-see patterns</p> <p>-recognize hidden meanings</p> <p>-identify components</p>	<p>analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer, categorize, contrast, divide, examine, inspect, conclude, survey, simplify, inspect, dissect, discover</p>	<p>How is ____ related to ...?</p> <p>Why do you think?</p> <p>What is the theme?</p> <p>What motive is there?</p> <p>What conclusions can you draw?</p> <p>How would you classify...?</p> <p>What evidence can you find...?</p> <p>What is the relationship between.....?</p> <p>Make a distinction between...</p> <p>What ideas justify?</p> <p>Put these ____ into the proper groups?</p> <p>How would you organize...?</p>
Synthesis	<p>-take ideas from various sources and form a new whole</p> <p>-relate knowledge from several areas</p> <p>-predict/draw conclusions</p>	<p>combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if, compose, formulate, prepare, generalize, rewrite, build, choose, combine, compile, construct, design, develop, estimate, formulate, imagine, make up, predict, propose, solve, discuss, modify, change, improve, improve</p>	<p>What changes would you make to solve...?</p> <p>How would you improve...?</p> <p>What would happen if...?</p> <p>Elaborate on the reason...</p> <p>Propose an alternative...</p> <p>Can you invent...?</p> <p>How would you adapt _____ to create a different</p> <p>How would you modify the plan</p> <p>What would you design...?</p> <p>How would you test for...?</p> <p>Predict the outcome....</p> <p>Propose a solution for this...</p>
Evaluation	<p>-develop opinions, judgments, and decisions based on knowledge</p> <p>-validate ideas, quality of work</p>	<p>assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize, award, criticize, defend, evaluate, appraise, prove, rate</p>	<p>Do you agree with the actions of...?</p> <p>What are your thoughts on ...?</p> <p>How would you prove...?</p> <p>What would you recommend to...?</p> <p>How would you rate...?</p> <p>Evaluate the...</p> <p>How would you rate the...?</p> <p>Assess the value of...</p>

Gender and Personality

Personality traits give us reasonable ways to describe people and to express differences we observe among them. We can note Kathy's assertiveness and Juan's sociability. We can say that Chuck is friendlier than Steve or that Melissa is more impulsive than Jesse. An issue that intrigues personality psychologists is the extent to which personality traits can be used to characterize groups of people. The two groups that have been studied most closely in this regard are men and women. We have already acknowledged that intelligence, or cognitive ability, is a major component of a person's personality. We also have already seen that with regard to intelligence, there are very few specific differences in intellectual abilities, and none at all in intelligence overall. What about other personality traits?

What do you think about the following statements? Boys have higher self-esteem than girls. Girls are more social than boys. Men are more analytical than women. Men are better at rote learning, but women are more creative. Women are more open to suggestion and influence than are men.

These assertions might sound sensible to most Americans, but there is no research evidence to support any of them. According to Eleanor Maccoby and Carol Jacklin, there simply are no gender differences in self-esteem, sociability, analytic skills, rote learning, creativity, or suggestiveness. These were the findings of the first large-scale exploration of gender differences, reported by Maccoby and Jacklin in 1974. This work was not the first to ask whether there are differences between males and females (there was a meta-analysis of data that existed at the time). It did, however, stimulate others to join in the search for ways in which gender could be used to predict how an individual might behave in a range of situations. That search has turned up little. Gender differences tend to be insignificant and inconsistent (Huston, 1985; Hyde, 1984, 1986; Maccoby, 1990). "There appear to be relatively few basic psychological differences between the sexes, although members of the two sexes are socialized to behave in different ways" (Feshbach, et al.: 1996).

There is one glaring exception, and that is overt, physical aggression, which has consistently been found more commonly in males than in females (Eagly, 1987; Hyde, 1986; Maccoby, 1990). For example, the ratio of male to female murderers in the United States is about ten to one. The difference in aggression found between males and females seems to be there (to varying degrees) at all ages and in all cultural settings (Anderson & Bushman, 2002; Ashmore, 1990; Rushton, et al., 1986). Further, across many cultures, males are more likely to engage in direct aggression, whereas females prefer indirect, non-physical, aggression (Oesterman, et al., 1998). Although we may claim that males are more physically aggressive than females, please recall a caution we have made before: This is a generality made "on the average" for groups of persons.

Any one female might be significantly more aggressive in all regards than any one male. (passage from Psychology: An Introduction by Josh Gerow and Kenneth Borden)

Does this mean the same as aggressive?

There are psychologists who study only personality?

Some of these I think are true!

There are relatively few basic differences in personality traits between male & female. However we are socialized to behave differently.

One exception: overt physical aggression is more common in males and this seems true across cultures.

Does this mean hitting?

Didn't I read in sociology that aggressive females are increasing?

Textbook annotation: An effective and efficient study strategy for college students

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Sherrie L. Nist

Although college students must know how to interact with text if they are to succeed, their study repertoires tend to be limited. We have found, as have others (Anderson & Armbruster, 1984; Doyle, 1983; Snyder & Pressley, 1988), that college freshmen typically use memorizing, rereading, and “looking over” to read and study text. Rather than stimulate active learning, these activities tend to encourage passivity.

Background on text-marking studies

Since most commercial college reading materials recommend text-marking strategies such as underlining and highlighting, we decided to begin with a review of the extant research on text marking. This review enabled us to draw three overall conclusions.

First, the text-marking studies had highly equivocal findings and contained few generalizations useful to the practitioner. As Hartley, Bartlett, and Branthwaite (1980) have pointed out, it is almost impossible to compare the results of these studies because they differ dramatically on key variables such as passage length and type, subjects’ age and variability, retention time, and amount of detail provided.

Second, we found virtually no studies that asked subjects to state key ideas briefly in their own words in the margins of text (i.e., annotate). Instead the studies typically asked subjects to either underline or highlight text or to use researcher-generated underlinings.

Finally, we concluded from our review that most researchers had provided little if any training for the subjects who were told to mark their texts.

Operational definition of annotation

In order to facilitate more active learning, we operationalized the processes involved in paraphrasing, using text structure, and monitoring comprehension. As students annotated, they (a) wrote brief summaries in the text margins using their own words, (b) enumerated multiple ideas (i.e., causes, effects, characteristics) in an organized fashion, (c) noted examples of concepts in the margin by writing EX, (d) put key information on graphs and charts with the text where appropriate, (e) jotted down possible test questions, (f) noted puzzling or confusing ideas with a question mark in the margin, and (g) selectively underlined key words or phrases.

After refining and using this annotation system, we decided to test its effectiveness using lengthy, intact passages from a variety of content areas. We decided to determine the cost/benefit ration of textbook annotation because students will continue to use a strategy only if they see benefit in terms of time spent in relation to achievement.

Two classes were randomly assigned to the textbook annotation treatment, and two classes were randomly assigned to the alternative or preview-question

Freshmen use passive reading strategies **TQ**

Studies of textbook marking are so different that they cannot be easily compared.

No studies asked students to annotate. Instead studied highlighting and underlining.

There was no study where students were trained on how to mark text.

Ways of annotation **TQ**

1. brief summaries
2. marked ideas like cause & effect
3. marked examples EX
4. added clarification to graphs and charts
5. possible test questions
6. confusing ideas ?
7. underlined key words & phrases

4 classes were used
2 teachers taught one annotation & one preview-question group each

treatment. To control for teacher variable, we each taught one annotation and one preview-question group.

The materials were drawn from three content areas that college freshmen usually encounter: history, sociology, and psychology. In the 3 weeks of data collection, the students took a weekly 20-item multiple choice test on an excerpt. Each test contained approximately 60% memory level questions and 40% higher level questions that asked students to synthesize or apply concepts to new contexts. In addition, students kept track of their studying time, including the time it took to do the initial reading.

Annotating is better

We used two dependent measures to analyze the data: the raw scores of the three multiple choice tests and the self-reported studying times (in minutes) for each of the three passages.

In order to obtain descriptive information about the students' studying processes, we also analyzed their text excerpts and description of how they prepared for each of the three exams. As shown in Table 2, the annotation group performed statistically better than the preview-question group. Across the three tests, the annotation group scored an average of 73% whereas the preview-question group had a mean score of 67%.

Study method used	Test 1 - history mean	Test 2 - sociology mean	Test 3 - psychology mean	Grand mean
Annotation (n=30)	13.89	13.96	16	14.62
Preview-question (n=30)	12.56	12.73	15.05	13.45

Table 3 indicates that the annotation group was also statistically more efficient in learning as measured by the amount of time spent in studying the information. The preview-question group spent 77% more time in learning the material than did the annotation group. Considering that we did not specify a required amount of study time for either group, this finding is especially intriguing.

Minutes reported spent in study				
Study method used	Test 1 - history mean	Test 2 - sociology mean	Test 3 - psychology mean	Grand mean
Annotation (n=30)	38.54	34.16	36.04	36.25
Preview-question (n=30)	69.31	62.27	60.90	64.16

As reported by the students in the annotation group and validated by the marked passages that we collected, only a small number used test preparation

3 content areas were used with a 20 point quiz for each test
60% memory & 40% higher level questions

Over 1 point higher on average for annotation

Is this really all that much better?

Preview-question group spent 77% more time studying

That's a lot of time

strategies in addition to annotation. The most widely reported additional strategy was memorizing, followed by rereading.

The results were considerably different for the preview-question group with an average of 82% using additional strategies. The most widely reported strategy for the preview-question group was rereading, followed by outlining, taking notes, memorizing, and “looking over” the material.

The results of this study indicated that training students to annotate text enabled them to perform effectively over time. The students in the annotation group maintained test scores that fell in the B/C range, but the preview-question group were lower, falling into the C/D range. Training over time also increased studying efficiency. The students in the annotation group not only performed more effectively than those in the preview-question group, but also did better with less test preparation time. Finally, the data indicated that the annotation group consistently used the strategy.

Thus, we concluded that students receiving intensive training who chose to use textbook annotation would subsequently perform efficiently and effectively.

Annotating is active learning

In explaining these findings, we agree with Anderson and Armbruster’s conclusion that it is not necessarily the strategy itself, but rather the special elements of the strategy that can increase student performance and learning. In this study, the annotation group did better in less time because they were actively involved in constructing ideas and monitoring their learning.

When students wrote in their own words, enumerated ideas and examples, posed test questions, and noted puzzling materials, they received immediate feedback about whether or not they understood the information. Hence, when it came time to study for the test, they did not have to begin by trying to decide what was important and what was not; they had already taken care of this task during the initial reading.

Rather than spending time rereading or outlining, as did the preview-question group, the annotation group’s actual study time was spent in talking through and testing themselves on their annotations—both essential aspects of recitation and learning.

Annotation-only a small number used other strategies besides annotation (rereading & memorizing)

82% of the preview-question group used other strategies (rereading, outlining, taking notes, memorizing, looking over)

It’s important to train students in annotation

Annotation grades were B/C

Preview-question grades were C/D

Annotation group got better grades with less study time because they used active learning & monitored their progress. The strategies gave them immediate feedback. They identified the important material when they annotated and then could spend their time reciting and practicing the material