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ABSTRACT

Of all the effective strategies available to college developmental reading students, annotating (noting important ideas or examples in text margins) and underlining have the widest appeal among students and the most practical application in any course. Annotating/underlining serves a dual function: students can isolate key ideas at the time of the initial reading and then study those ideas later as they prepare for tests. Students can be taught to read and mark text in order to separate key ideas from unimportant facts and to identify examples and applications. The following annotate/underline principles are effective for students: (1) use pen or pencil rather than yellow highlighters, (2) think in terms of test preparation, (3) annotate or paraphrase during reading, (4) underline after reading and annotating, and (5) review annotations regularly. The reading instructor must also follow certain guidelines in teaching annotation/underlining, such as providing direct instruction through modeling, giving students time for practice, and offering verbal and written feedback about the strengths and weaknesses of student text markings. The ultimate goals are for students to be able to see how concepts relate to one another and to be able to put these ideas into their own words, for it is only when synthesis and rephrasing occur that instructors can be relatively sure that students understand text. (References and examples of underlined/annotated text are included.) (NKA)

College Reading and Learning Assistance

Technical Report No. 87-02

TEACHING STUDENTS TO ANNOTATE AND UNDERLINE TEXT EFFECTIVELY--GUIDELINES AND PROCEDURES

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Teaching Students to Annotate and Underline Text Effectively--Guidelines and Procedures

Text underlining research basically provides two major pieces of information to the practitioner. The first major finding is the importance of the von Restorff (Wallace, 1965) or isolation effect. The von Restorff effect suggests that if information is isolated from a background, it has a higher probability of being recalled. In the case of text marking, information that has been underlined or highlighted should be better recalled at a later date than nonunderlined or nonhighlighted information.

Second, the consensus is that student-generated underlining is more effective in terms of learning than is researcher (or teacher) generated underlining (Bobrow & Bower, 1963; Rickards & August, 1975). In such studies, subjects who did their own underlining significantly outperformed their counterparts whose text had been underlined by the researcher.

While these two overall findings certainly support the importance of teaching students to underline text, they do not supply the practitioner with methods for teaching the how of text marking. Comments such as "just mark the important ideas" or "don't mark too much information" provide students with little help in figuring out which information is important to underline. A recent article (Blanchard, 1985) provides some generic suggestions for improving underlining capabilities. He suggests that students must possess a repertoire of study strategies, activate prior knowledge about text and topic, and build review time into their studying. Such suggestions, while

helpful, still fall short of providing students with specific underlining techniques and practitioners with workable teaching tools.

Therefore, the three major purposes of this article are (1) to discuss why annotating/underlining is a powerful strategy, (2) to provide guidelines for student behaviors that lead to effective text marking, and (3) to provide instructors with teaching techniques that lead to effective student text marking.

Why Is Annotating/ Underlining a Powerful Strategy?

Of all the strategies I teach to my college developmental reading students, annotating (noting important ideas, examples, etc. in text margins) and underlining have the most transfer to outside courses, appeal among students, and practical application. Quarter after quarter students' course evaluations are filled with statements such as:

> Learning how to underline and annotate was the most important strategy I learned in my reading class. I know it's something I'll continue to use in other classes because it really helps me to prepare for tests.

Although research conducted on underlining is relatively scant, there is support for student testimonials such as the above. A recent study by Nist, Simpson, and Olejnik (1985) found that of six major

study variables (annotating/underlining, recitation strategies, vocabulary, planning for tests, and lecture note format and content) annotating/underlining was consistently more highly correlated with test performance than any other variable. Additionally, when the six variables were entered into a stepwise regression model, annotating/underlining was the only significant variable ($< .05$).

The reasons for the emergence of annotating/underlining as such a powerful strategy are couched in the cognitive demands the task places on the student and in the fact that good text marking leads to deeper levels of processing. However, many students tend to use text marking as a concentration technique. That is, underlining, at the very least, keeps them awake. But when students use underlining for this reason, they generally overmark. A glance at many freshmen textbooks can certainly be a "highlighting" experience. Hence, we can conclude that the sheer act of text marking in itself will not lead to improved performance. Students must be actively involved in the marking in order to more deeply process the information and subsequently perform better.

One reason why annotating/underlining is such a powerful strategy is that it gives students a self testing device from which to study as they prepare for tests. Research indicates that students tend to study text information that is underlined supporting the operation of the von Restorff as an explanation as to why annotating/underlining works (Nist & Hogrebe, 1985). Obviously this finding is a double-edged sword. For

those who are good underliners, part of preparing for tests involves learning the key ideas underlined; poor underliners, however, may also learn their text markings yet perform poorly on tests because they had difficultly in determining the key text ideas. Therefore, annotating/underlining is attractive to students because it serves a dual function--they can isolate key ideas at the time of the initial reading and then study those ideas later as they prepare for tests.

A second reason why annotating/underlining is powerful is because it is such an attractive and widely used strategy (Anderson & Armbruster, 1985). Students who balk at using other study techniques such as surveying, questioning, or devising recitation strategies will underline. If students can be taught how to effectively mark text, at least they will have one good strategy which can be used in the majority of their coursework.

Guidelines for Annotating and Underlining

In a sense, it is a mystery why underlining is such a widely used strategy among college students. Since high school students are generally not permitted to write in their texts, freshmen come to college never having had much experience in text underlining. Yet, they jump in with both feet, though they are often ill equipped to carry out the task effectively.

The fact that college freshmen have had little experience underlining text can be advantageous to both instructors and the students since students usually do not bring with them a preconceived notion of how to underline. Few have ever heard of annotating. Students are generally willing participants in learning how to mark textbooks since they view this strategy as the one they can consistently use in a variety of situations. The instructor, then has a captive audience.

Before I teach students specific guidelines for annotating/underlining, I have already taught them the importance of preparing their mind for the task of text reading. The strategies are similar to those Blanchard (1985) proposes: activate prior knowledge, assess potentially important ideas through surveying and reviewing class lectures, break learning into managable chunks, monitor understanding, and formulate questions to guide reading. Annotating/underlining effectively demands that students have some knowledge of these strategies since text marking encompases so many cognitive processes which operate simultaneously. Students must be able to be selective, to determine key ideas from unimportant facts, and to identify examples and applications from their reading. Hence, annotating/underlining becomes part of a study system and not the system itself. It is no wonder that it takes time, patience, an abundance of practice, in addition to a great deal of feedback from the instructor for students to learn effective annotating/underlining techniques.

Guidelines for Students. I teach my students the annotate/underline system of text marking. The system is effective because it forces them to be selective and it helps them to be more active readers. At the beginning of the term, most of my students underline or highlight everything, which is just about as effective as underlining nothing. However, using this method, by the end of the term, the majority are proficient at marking text. To help my students become efficient and effective text markers, I teach the following principles:

1. Throw away the yellow highlighters. Students must use a pen (I suggest a fine felt-tip pen in red, green or blue) or a pencil. Since students are required to annotate key ideas in the margins of the text, switching back and forth from pen to highlighter is bothersome. Additionally, it is just as easy to underline with a pen as it is with a highlighter.

2. Think in terms of test preparation. Good annotating/-underlining, like good lecture notes, stands the test of time. I tell students to think about the test they will have over the material. Predict test questions. Do the annotations make sense? Are they phrased in such a way that they can be used several weeks later at test preparation time? I constantly remind students that good annotating/underlining prevents having to reread large portions of text. Time should be spent in studying and learning the material, not in rereading.

3. Annotate during reading. As students read a section, they should annotate in their own words. At this point, no underlining is done. Annotations consist of key concepts, examples, definitions, etc. written in the margins of the text. Additionally, annotations also consist of symbols to note important information, potential test items, or information that is unclear and requires further questionning. Whenever possible, annotations should use abbreviations. Figure 1 presents an example of annotation for a section of a geography text. Notice how the important information is written in the margin, the list of innovations is numbered, and symbols and abbreviations are used. This annotation could easily be used to study and review for exams by covering up the text and rehearsing the key ideas. The fact that it is written in the student's own words suggests understanding and a deeper level of processing.

Insert Figure 1 about here

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4. Underline after reading and annotating. After students read and annotate a section of text, they are instructed to stop and think about the important ideas. Then, using their annotations as a guide, they are to go back and underline. This procedure is quite different from what is suggested in the majority of current study strategy texts. These texts generally encourage underlining while

reading and rarely offer any suggestions relating to annotating. To encourage students to underline after they have read a section of text, I have them annotate sections of text during the regular class period and then discuss, in pairs, the important information. We follow this procedure on several different occasions before students are permitted to underline information.

As a general rule, and shown in Figure 2, there should be no underlining if there is no annotating. However, the reverse need not be true. Often students will annotate something they think is important only to discover as they read further, that it was a trivial piece of information. When errors in judgement occur, it is much easier to cross out the unimportant annotation than it is to try to delete underlining.

Insert Figure 2 about here

This step in the annotate/underline system is quite important. Students must stop and think about the important information. Those who underline as they read, rather than waiting until after they have read and annotated, run the risk of underlining too much unimportant material. My question to students is this: "How can you know if something is important enough to underline if you haven't read the entire section so that you can see the bigger picture?"

5. Review annotations regularly. Since students benefit at test time when they have reviewed information daily, I show them how to cover the text and to use their annotations as a way of "talking" themselves through the chapter. If they cannot remember key ideas, examples, and applications from their annotations, they can uncover the text and reread only that underlined portion of text which accompanied the annotation in question. This self-testing aspect of the annotate/underline system is important because it allows students time to rehearse the key material rather than rereading the entire chapter or large chunks of the chapter. It also encourages students to learn good text marking behaviors so they won't have to take tedious chapter notes or do long, involved chapter outlines. Like rereading, time spent on such activities could be better spent in rehearsal.

Guidelines for Instructors. Teaching students to annotate and underline effectively requires three key elements: direct instruction through instructor modeling, time for practice, and verbal and written feedback about the strengths and weaknesses of student's text markings. I follow these steps in the instructional process:

1. Model the desired behavior for the students. Using a two or three paragraph selection (such as the one in Figure 1), talk through the process for students. Show them when you annotate and share your thinking with them. Explain the symbols and abbreviations you use. Then go back and underline appropriately,

again explaining aloud why certain ideas are underlined. Stress the importance of underlining thought units, not necessarily entire sentences. Show them that underlining only one or two words is useless because it requires extended rereading in order to get the idea. Encourage students to question your annotating so that they can clearly understand the thinking process of an expert.

2. Allow time for practice. When students are just beginning to learn text marking, it is best to give them class time to practice and apply the procedure. This gives you time to circulate and give immediate feedback on student applications. Additional practice with lengthy text, preferably entire text chapters, must also be given outside of class and then discussed in class. Instructors need to be aware of the fact that it takes time for students to get to the point where they can do an effective job of text marking. I have found that at least five weeks of modeling, practice, feedback, and reteaching, is necessary. This does not mean that only annotating/underlining should be taught for five weeks. Certainly additional study strategies should be introduced at this time.

3. Give students feedback. All the practice in the world is ineffective unless students know their strengths and weaknesses. Therefore, instructors must be willing to invest the time to look carefully at their student's annotating and underlining and provide both written and oral comments. One way to expedite written feedback is by developing a checklist which addresses the key

elements of good text marking. These checklists can then be attached to student's annotating/underlining assignments.

Another way to minimize the amount of time involved in feedback is to jot down problems that many students seem to be encountering. These problems can then be discussed with the class as a whole, thus cutting down on the amount of time necessary for individual conferences.

Conclusion

Becoming proficient at annotating and underlining is a difficult goal for some students--difficult, but not impossible. Because so many cognitive processes must be operating simultaneously, students must practice text marking and receive instructor feedback many times before the process reaches automaticity. In a sense, students must be able to bring to bear all aspects of an expert learner in order to effectively annotate and underline. They must be able to be selective and, in that selectivity, distinguish important concepts from extraneous information. This selectivity itself, is a major stumbling block for many. In addition, they must be able to see how the concepts relate to one another and put these ideas into their own words, for it is only when synthesis and rephrasing occurs that instructors can be relatively sure that students understand text.

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Industrial Revolution

(I.R.)
The Industrial Revolution is characterized by a countless number of innovations. These range in complexity from the paper clip to interplanetary flight. The age of invention apparently arrived, and each new idea seemed to spawn many others. Muscle power from people and animals was replaced by inanimate power: the steam engine, water turbine, and the internal-combustion engine. In the argicultural sector the use of the tractor and its attachments has made the farmer so productive in some parts of the world that only a fragment of the labor force is needed to supply an abundance of food. In the United States, for example, farmers now account for only 3 to 5 percent of the labor force. Not all of this productivity can be attributed to the tractor; other scientific advances, such as improved higher-yielding seed, application of fertilizer, herbicides and insecticides, have contributed substantially.

Inanimate energy (coal, water, wind, oil) greatly facilitated the growth of cities. More raw materials from agriculture, mining, and forestry combined with new energy sources spurred industrialization. Especially since the eighteenth century, energy and manufacturing innovations have made the factory worker many times more productive. Manufactured products have become cheaper and more readily available. Craftsmen and small guilds have gradually given way to the modern factory where the worker is primarily a machine tender. Other factors also encouraged city growth. Cities from small to large became service, financial, educational, governmental, wholesale, and retail centers. From 1800 to 1975 many cities grew several times over.

As the Industrial Revolution continues and its effect spreads, urbanization is expected to increase. The revolution, which began primarily in Western Europe, moved quickly to Anglo-America and other areas where European colonists settled. It moved more slowly into Eastern Europe, the Soviet Union, southern Europe, and Japan. Since the end of World War II, industrialization has become a major force nearly everywhere.

* I.R. - brought about many innovations + inventions

1. inanimate power
2. use of tractor - lessened labor force
3. other agricultural changes
4. cities grew (1800-1975 → several times over)
5. more industry → cheaper goods

Urbanization should increase

I.R. began in W. Europe

Figure 1. Annotations from a geography text.

Source: Don R. Hoy. Geography and Development: A World Regional Approach. Copyright 1978 by Macmillan Publishing Co., Inc. p. 7.

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Figure 2. Annotations and underlining from a geography text.

Source: Don R. Hoy. Geography and Development: A World Regional Approach. Copyright 1978 by Macmillan Publishing Co., Inc. p. 7.

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