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Reading educators' traditional alternatives for improving students' comprehension of expository material have been either to (a) modify the text to make it more "readable," (b) augment the text with adjunct aids designed to assist the reader, or (c) modify students' reading behavior to enable them to deal more effectively with the reading task. While each alternative has had extensive application and study, the effects have been limited because important interactions have been ignored. Investigators have given attention to the text (i.e., how it can be made more "readable" or "comprehensible"), or to the teacher (i.e., teacher-directed activities), or to the reader (i.e., the development of reader-imposed behaviors or strategies); but they have not been inclined to pay much attention to possible interactions among all three. Yet there is good reason to expect that techniques for improving students' comprehension of content-area texts must give concurrent attention to the text, the teacher, and the reader. This point was made and elaborated at a recent Conference on Understanding Expository Text hosted by the Wisconsin Research and Development Center.

AN INTERACTION IN SEARCH OF AN INSTRUCTIONAL TECHNIQUE

A major purpose of the conference was to bring cognitive psychologists' perceptions and foresights to bear on one of reading education's most perplexing problems: how to help students understand their textbooks. The substantive papers that were presented had a clear and dominant theme: Look to the interaction of reader and text. Walter Kintsch put it like this: "Meaning...is the result of an interaction between a text and a comprehender. The purpose of our models is to describe this interaction, or at least some salient aspects of it." Most of the other papers—

which were prepared by Diane Schallert; Mary Naus; Ernst Rothkopf; Steven Yussen, Sam Mathews and Elfrieda Hebert; David Olson and Angela Hildyard; and Thomas Anderson and Bonnie Armbruster—elaborate on the text-reader interaction theme.

(Parenthetically, I should say that I don't expect classroom teachers to be greatly impressed by an acknowledgement that more attention ought to be given to the interaction between reader and text. Their common sense probably tells them as much. But, on the positive side, the acknowledgement is evidence of both (a) a sensitivity to the complexity of the teaching-learning process that has been lacking in much of the compartmentalized research of the past, and (b) an inclination to begin to tackle some of the complex theoretical, methodological, and practical difficulties that reside at the point of interaction.)

Rebecca Barr, Harry Singer and Marianne Amarel prepared formal reactions to the conference papers. They, too, stress the importance of the text-reader interaction; and, as teacher educators, they consider ways in which teachers might begin to deal realistically with the facts of a reader-text interaction. Amarel's discussion, for example, implies that an effective teacher might serve as "interlocutor" between reader and text, thereby enhancing the quality of the reader-text interaction.

A number of other teacher educators prepared more informal reactions to the conference papers. Their essays provide an interesting counterpoint to the dominant theme of the conference. While they pick up on different particulars, the gist of the counterpoint is an expression of concern that teachers and the conventional wisdom of teachers may be passed over too lightly as the implications of theory and research results are sought and elaborated. In addition, the essays make explicit the reactors' inclination to interject

the teacher into the reader-text interacton. The point is an important one, for in a school context teachers can have a crucial role in improving students' understanding of textbooks.

The upshot of all this is that instructional techniques that are expected to enhance readers' comprehension of text must, to be effective, give concurrent consideration to such matters as these:
• the background, abilities, and short- and long-term needs of the reader
• the expectations of the teacher
• the resources of the "schooling" milieu
• the characteristics of the text

In other words, an effective technique must not only look to but go beyond the text-reader interaction that looms so large. It must involve the teacher in an active, constructive role; and it must have an integrative effect.

AN INSTRUCTIONAL TECHNIQUE

With the above stipulations in mind, my associates and I have been working with a technique that involves the use of marginal notes and other extra-text notations to direct readers' attention while they read. We are using the terms "gloss" and "glossing" to designate and describe the technique. Of course neither the idea nor the term "gloss" is new. Both have been around at least since medieval times, when theologians used gloss to elucidate scriptures. We are attempting to refine the technique by moving toward "systematic" glossing procedures that can be used with confidence, both formally, in preparing instructional materials, and informally, in face-to-face teaching in the classroom.

Instead of relying on traditional adjunct aids like questions and advance organizers, we want to be able to direct readers' active attention to places in text where the application of specific skills or

strategies would be appropriate, to instances where a particular strategy could be useful for extracting meaning, and to key words and ideas. In other words, we are trying to share mature readers' perceptions of and insights into the reading process with developing readers. The discussion that follows is an attempt to share some of the thoughts and insights that have guided our developmental efforts so far.

Skills and Strategies

When we began our work with the glossing technique, we thought of it mainly as a means for, first *developing* and, then, encouraging the *application of* specific comprehension skills (e.g., determining the main idea of a paragraph or passage, using context clues to figure out word meanings, identifying relationships in order to reach a conclusion). We still see glossing as an effective way to see to the development and application of specific skills. But, on the basis of literature reviews and interviews with students and teachers, we are convinced that it is equally important to give attention to the more "general strategies" that efficient readers use to understand texts.

One example of a general strategy is actively relating new information, as it is read, to one's store of knowledge or to information that was acquired from reading the preceding passages. Such a strategy is suggested not only by recent work in cognitive psychology—particularly schema theory—but also by our own observations when we asked students to describe what they do when they read to understand. Successful readers often said that they actively attempt to relate what they read to what they already know or to what they have read previously. Another example is questioning, a strategy which also is suggested by recent work in cognitive psychology— particularly work related to metacognition—and our own interviews with students. Again, successful readers say they use self-questioning as a rehearsal strategy not only for remembering but also for assessing and monitoring their own understanding of what they read.

Whatever the specific skills or strategies, the purpose of gloss notations is, first, to help students become aware of the usefulness of specific skills and strategies in their reading and, second, to help them learn when and how to employ these skills and strategies as they read to understand.

Content and Process

Although we, as reading educators, are mainly concerned with the *process* of reading content-area texts, it has become quite clear that we cannot deal with "getting meaning" without considering *content* as well. There is, then, a need for a dual focus on content and on process as glossing procedures are developed. While no reading specialist can claim to be expert in every content field, certain analytical procedures are available to be applied to materials that were written by content experts. Such procedures as mapping, outlining, and the more formal text analysis techniques described by Kintsch, Meyer, and others can be used to identify the important content that will be given attention with gloss notations.

The suggestion, then, is that gloss notations be prepared for two purposes: (a) to enhance readers' understanding of the specific content at hand, and (b) to shape the development and encourage the application of readers' skills and strategies related to the process of reading. Effective gloss ought to have a specific (content related) and a more general (process related) effect: improved understanding of the glossed material and internalized skills and strategies that enhance readers' ability to cope with a wide variety of reading tasks.

Some Parameters for Glossing

Two points have been stressed so far: (a) glossing text ought to have an *integrative effect*, and (b) gloss notations must have dual foci which direct attention to matters that are related to process and to content. While these points set general parameters for glossing, a remaining task is to elaborate, clarify and refine those parameters to a point where reliable procedures for preparing effective gloss can be specified. A dual focus can direct attention to both process and content concerns; but attention must also be given to (a) complex and interacting constraints and considerations in the learning environment, and (b) any possible need for "excursions" either to augment information in the text-at-hand or to enhance the learner's skills and strategies. First, some comments on the excursions; then the constraints and considerations.

Excursions. By "excursions" we mean instruction that is offered in addition to the regular gloss notations that are provided for a specific text. On the process side, an example of an excursion is instruction that is offered to a reading skill-development group, where a given skill or strategy is taught intensively and in relative isolation. The purpose of such instruction is to introduce and sharpen the learners' awareness of the skill or strategy. We are attempting to design gloss notations that assist acquisition as well as application of specific skills and strategies, but we expect that certain individuals will require intensive preliminary instruction before particular skills and strategies can appropriately be stressed in glossed text. (In fact, we suspect that the introduction and sharpening of most skills and strategies is most effectively handled in the manner described here as an excursion. Whether this is so remains to be seen.)

An example of an excursion on the content side is instruction that is designed to provide basic background information or to elaborate or augment given information in preparation for reading a given selection of text. Again, we expect that from time to time certain individuals will require *additional* information as a precondition to working effectively with a given glossed text. Of course the question of when an excursion is called for and when an anticipated lack of background information can be handled through gloss notations is an important one. It seems almost certain that if gloss gets bogged down with too much basic information it will become cumbersome and sluggish, thereby losing both its appeal and its effect.

For the moment, excursions permit us to acknowledge the likelihood that on certain occasions—yet to be more fully understood—it will be desirable to offer intensive instruction that is related to but not a part of the gloss that is prepared for given texts.

Constraints and considerations. Some fairly obvious categories of

examples of "constraints and considerations" that are aspects of a complex teaching-learning environment are Expectations, The Milieu, The Reader, and The Text. Each of these categories deserves attention when gloss activities are being prepared. Furthermore, if gloss is to have the desired integrative effect, it is equally important that at least the most *potent* factors in each category be given concurrent consideration. Because the universe of factors is virtually limitless, an important task in establishing guidelines for effective glossing is to identify the ones that are likely to have the greatest impact in given situations. The task is one that deserves the careful attention of people who do educational research.

Some thoughts about each of the categories follow.

The nature of gloss activities must, of course, be shaped by the explicit and implicit *expectations* that can be identified. That is, the effectiveness of gloss notations will be largely determined by the extent to which they are in line with and contribute to the attainment of expected outcomes. Both the goals of the overall curriculum and the stated and unstated objectives of content-area teachers need to be considered to give direction and focus to gloss notations. Likewise, the specific measures to be used in assessing the outcomes of reading a given text merit careful consideration, for it is well known that different measures can yield different results.

Consideration of specific factors in the *milieu* makes it possible to deal with the mundane but important matters that often make the difference between failure and success in planning instruction. One obvious factor is the time available; gloss prepared for one hour of available time would undoubtedly be quite different, in terms of degree of elaboration and types of responses required, from gloss prepared for individuals and gloss prepared for groups *might* need to incorporate different directions and different types of activities in order to sustain interest and effective involvement. And of course gloss ought always to be prepared in view of the best technology available: the most appropriate techniques applied in the appropriate manner for a particular individual or group.

Many factors related to *the reader* could and should be identified and clarified. Most important are the reader's prior knowledge of text content (i.e., content knowledge) and the reader's knowledge of and ability to apply specific skills and strategies (i.e., process knowledge). The preparation of gloss—and decisions about when and how to take planned excursions—will always be heavily influenced by both of these factors. Together, they are, in effect, the "givens" to which new information must be related.

Similarly, *the text* is a given that can, presumably, be brought closer to a match with the reader's background through glossing. To help accomplish this, important concepts and ideas must be identified through some type of text analysis; likewise, the skills and strategies a reader needs in order to understand a text must also be identified through systematic analysis. Reliable identification of the concepts, skills and strategies that are needed in order to read and understand a given text is the essential basis for specifying effective guidelines for preparing gloss activities.

"Levels" of Gloss Notations

The ultimate goal is to help students not merely to *acquire* but to *internalize and apply* the skills and strategies that enable them to be independent readers of the full range of materials they encounter. Once students know how to learn, they can get knowledge by themselves! If gloss is to contribute to a goal of independent learning, then we need to do more than simply provide gloss that improves students' comprehension of a given text. We must systematically provide for internalization of important skills and strategies by "fading" the support that gloss notations provide. On the basis of our experience and observations so far, we envision four distinct levels or "stages" of gloss notations: (a) demonstration, (b) development, (c) internalization, and (d) fading. Each stage can be briefly characterized in terms of focus and function as we see them now.

The purpose of activities at the *demonstration stage* is to create awareness of the "helping" features of a text (e.g., things so mundane as chapter heads and subheads, and things so relatively esoteric as different organizational patterns and styles) and of the skills and strategies that can be used to read that particular text with understanding. The main function of gloss notations at this stage is to provide immature readers with insights that approximate mature readers' perceptions relative to extracting meaning from text. In other words, gloss notations for demonstration include reflections, queries and directions that guide students through thought processes that are similar to those of mature readers as they read and study expository texts. The gloss notations describe what is—or ought to be—happening as one reads. Through effective demonstration gloss, we hope to develop students' enthusiasm for working with glossed materials. The goal is to win them over by showing them that it works and is worth the effort.

Just as demonstration gloss notations provide descriptions of *what* is happening, gloss notations at the *development stage* provide *explanations* that help students to develop an understanding of *how* to make active use of the skills and strategies they need to read and comprehend the content. As we see it now, gloss at this stage should include clarification of behaviors related to specific skills and strategies, explanation of how to use the skills and strategies, and opportunities to apply the skills and strategies in reading content-area texts.

At the *internalization stage* gloss notations provide opportunities for students to continue to use the skills and strategies that were introduced and sharpened at the development stage in a wide variety of contexts. At this stage we envision notations that are designed to help students move closer to independence by helping them move toward a level of metacognition. The notations would go beyond providing opportunities for application and practice; and the focus would be on developing students' awareness of *when* they could apply skills to understand text and *which* skills and strategies might be most appropriate in different situations.

By the time students reach the final stage, *fading*, they will, presumably, have internalized the skills and strategies (i.e., they will

have become aware of skills and strategies and be able to apply them in a variety of contexts). The function of gloss notations becomes, simply, to remind readers to think about their own efforts to understand what they are reading, to think about the skills and strategies that help them to comprehend given information, and to correct any miscues or misconceptions that may be clouding their understanding. In other words, gloss notations at the fading stage serve mainly to remind students to "debug" their understanding (i.e., eliminate false perceptions) as they read. Students who reach the fading stage, then, will not merely possess the skills and strategies they need to comprehend content-area texts; they will be aware of their ability to use the skills and strategies and know when an how to apply them.

Informal and Formal Glossing

As we look toward the refinement of the glossing technique, we see a need for both formal and informal guidelines. "Formal" guidelines will permit the development of prototype materials for demonstration and study. Such guidelines can also be useful to publishers, both for preparing adjunct materials for content-area texts and for preparing instructional materials designed to improve students' general skills and strategies for understanding expository texts. "Informal" guidelines, on the other hand, are intended for day-to-day use by teachers.

The empirical base for formal guidelines will be a long time in coming. But, fortunately, informal guidelines can be formulated on the basis of conventional wisdom, existing theory and research results, and common sense. They can be based on a melding of facts about such things as (a) skills and strategies that work with different types of learners, (b) procedures for analyzing and dealing with the characteristics of given texts, (c) students' background knowledge related to a given text, (d) students' command of skills and strategies for dealing with a given text, and (e) procedures for helping students internalize worthwhile skills and strategies. We know a growing number of teachers who are developing their own guidelines and their own gloss for use in their work with students who need help in understanding content-area texts.

Formal or informal, glossing is a technique that promises much. We expect to pursue that promise. So can you.

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