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Comprehension Instruction for High School Learning Disabled Students

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The purpose of this paper is to present an overview of an alternative instructional approach for helping high school students with learning disabilities comprehend content area instruction. The instructional approach combines the use of Direct Instruction and advanced organizers. This paper begins with a general review of relevant research in each of these areas. This review is followed by a discussion of two recently published studies [5, 6] which provide support for combining Direct Instruction teaching procedures and the use of advanced organizers as a method to enhance the comprehension skills of high school learning disabled students placed in regular classrooms. In the final section of this paper, general methods teachers can use to successfully teach learning disabled students placed in regular classrooms are identified and discussed.

This paper presents an overview of an alternative instructional approach designed to help high school learning disabled (LD) students from low income rural areas better comprehend material in content areas (*e.g.*, science and social studies). This approach combines features from two instructional strategies, Direct Instruction [9] and advanced organizers [18]. Each strategy has a substantial research base supporting its use with low performing students. This paper presents a general review of relevant research, along with a presentation of the results of two recently published studies [5, 6] which support combining Direct Instruction teaching procedures and the use of advanced organizers as a method to enhance the performance of learning disabled high school students. These studies compared instructional approaches for teaching LD students during content area instruction. In each study, procedures from traditional basal programs were contrasted with a combination of direct instruction teaching procedures [11] and advanced organizers. Results of these studies provide guidelines for developing instructional programs for high school LD students. By looking at reasons why traditional forms of instruction often fail to help LD students comprehend from lecture and texts, we may be able to design instructional techniques which are better suited to high school students.

Hedge [14] cogently expresses some of the difficulty in serving "at-risk" populations in rural America:

> Problems traditionally associated with implementing comprehensive special education programs in urban areas are compounded in rural areas. Vast geographical distances, scattered populations, and inadequate services are obstacles to program development, particularly when highly trained personnel and specialized facilities and equipment are required (p. 17).

In addition to these concerns, there are other problems personnel working in low income rural schools often face; problems directly related to providing quality instruction to students in low income rural areas.

Traditional curricula are often not appropriately designed for low performing rural students. This is particularly true when considering the specific academic needs of minority LD students living in isolated rural regions. Typically, these students come from homes which provide very little learning stimulation in the formative years [14]. In addition, many of the parents of the children in rural poverty areas have very little formal education, thereby making changes in their schools very difficult to accomplish. Consequently, many of these students enter school without having mastered many of the academic skills prerequisite to achievement in the classroom. Added to this problem is the fact that many commercial programs assume too much in the way of entry skills of students. The high school LD student, consequently, is frequently "at risk" when placed into content programs in regular classrooms. This combination of factors places enormous pressure on the teacher to augment the specific commercial program being used to ensure that when instructional material is presented to these students, all core concepts are taught to mastery.

The recent wave of professional interest in providing services to LD students directly within the regular classroom [26] also makes it important for the regular classroom teacher to learn to use a variety of teaching techniques to help the learning disabled student achieve in a traditional learning environment. This emphasis will become especially important in rural settings as many of these schools are typically in need of staff specifically trained to work with mildly handicapped students. Because of the emergence of the regular education initiative [26], it is reasonable to project that an increasing number of mildly handicapped students will receive

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their education in regular classrooms. Thus, specific methods and materials will be needed for regular classroom teachers to effectively teach these low performing students. The need for adapted materials and instruction will be particularly critical for learning disabled students placed in regular classrooms where excessive performance demands will sometimes be made.

Review of Relevant Research in Direct Instruction and Advanced Organizers

Research which has examined the results of combining direct instruction teaching procedures with the application of advanced organizers suggests a unique alternative to traditional forms of instruction with low performing high school students. This method may be one by which high school LD students can be helped in the regular classroom. These two research areas provide ideas for the organization and delivery of science and social studies content to high school LD students. Direct instruction is characterized by highly structured presentation of core academic concepts. Rather than spending time on motivational activities, the teacher carefully controls the direction of the lesson by guiding students through highly structured teaching sequences, using carefully worded definitions and carefully selected examples. The exact wording of key concepts and definitions and the selection of examples are clearly specified in the teacher manual. These sequences are designed to help children focus on the most relevant information during content instruction [9]. Because of this specificity in prescribed teaching methods, the direct instruction approach can be easily combined with explicit advanced organizers designed to enhance comprehension of relevant concepts.

There have been several types of advanced organizers reported in the research literature: mapping [1]; networking [3]; and visual spatial displays [4]. The rationale for each is similar, an effort is made to help the student better comprehend from either text or lecture by providing an organizational structure to the content being taught. Klauer [18] in a review of this research concluded, "Providing students with advanced instructional objectives leads to an improvement in intentional learning" (p. 334). Other researchers have come to similar conclusions. Gordon [18] reported a study where fourth grade students were taught with the use of structure schemata (*i.e.*, an abstract framework for understanding the components of a specific passage) and content schemata (review of topics addressed in the passage), whereas the other group of students received more generalized training in drawing inferences. Pearson [23], commenting on this study, stated:

> The most remarkable differences favored the content and structure schemata activation group on the free recall protocols; their scores were often two or three standard deviations above the inference group and the placebo control group, particularly on recall measures which were sensitive to the development and use of a story schema. Apparently these students developed an abstract story "map," which served them well in encoding and retrieving information structurally important in a story schema. (p. 229).

Two recently published studies, each designed to evaluate the effectiveness of combining instructional features of Direct Instruction and advanced organizers are discussed below. These studies examined teaching high school learning disabled students using two types of advanced organizers—a detailed pre-reading outline and a visual spatial display of critical concepts. In each study, Direct Instruction teaching techniques were used. Several of the components included were: (a) specified correction procedures, (b) rapid instructional pacing, (c) student unison responding, (d) presentation of explicit study strategies, and (e) group study strategies. In each study, this comprehension instruction was contrasted with a traditional approach to teaching, patterned after the textbooks used in the schools where the studies took place.

Study 1: An Outline Advanced Organizer to Enhance Comprehension

In the first study, two direction-setting activities, each designed to increase high school LD students' ability to comprehend important concepts during content area instruction were contrasted [6]. The subjects for this study were 24 LD students who had been formally placed into an LD program. All the subjects in this study were black and resided in a low income rural setting. These subjects were typical of many minority LD students who live in low income areas in the rural South; they exhibited language deficits along with poor reading comprehension skills. The first group of students was taught with a prereading activity patterned after the approach used by many basal programs to foster student attention. The major focus of this condition was on (a) developing student interest and motivation, (b) highlighting the importance of the passage to the students' past experience, and (c) offering a general introductory discussion. The second group in this study was provided instruction using an advanced organizer in the form of a text outline designed to help students process information from the text. Instruction for both groups consisted of nine consecutive 50-minute lessons. Students in both groups were taught the same information except that the methods of instruction used varied greatly.

Figure 1 provides an example of the type of advanced organizer used in this study. Also included is the related script the teacher used when introducing the advanced organizer to the students (Figure 2). As can be noted, the advanced organizer is in the form of an outline of a small unit of instruction. Prior to being presented with a text, the students, as a group, rehearsed the outline under the supervision of the teacher. This outline preidentified the key concepts in the upcoming lesson. The teacher format for presentation during this portion of

the lesson was based on a direct instruction approach [24]. The teacher asked many questions which required the students to give short, direct answers. The lesson was paced briskly by the teacher. A specific advanced organizer was developed for each of the 3-day units presented to the students in this study. The teacher presented the advanced organizer to the students as a group prior to any student reading the assigned text reading. By having all the students become familiar with the advanced organizer, it was predicted that the students would be better able to organize information in each of the units for initial comprehension and later recall.

Figure 1. Advanced Organizer-lesson outline/overview (Taken from Darch & Gersten, 1986)

Information About Ocean Currents

I. A current moves like a river.
   A. Water moves in parts of the ocean. These are called *ocean currents.*
   B. These currents can be very wide—sometimes as wide as 100 miles wide.

Examples of Ocean Currents and How Weather on Land is Affected

II. Ocean currents that start in the Tropical Temp. Zone are warm.
   A. The Gulf Stream is an example.
   B. This current starts in a Tropical Temp. Zone.
   C. The Gulf Stream is a warm current.
   D. It makes land warmer.

III. Ocean currents that start in the Polar Temp. Zone are cold currents.
   A. The Labrador Current is an example.
   B. This current starts in a Polar Temp. Zone.
   C. The Labrador Current is a cold current.
   D. It makes land colder.

The dependent measures for this study consisted of a unit probe test, administered every 3 days, and a posttest covering all content taught. The results of this study indicated that on both measures the LD students who were taught with a combination of direct instruction and advanced organizers outperformed the group taught with the basal approach. These students not only outperformed the basal students, but scored close to an 80% accuracy level on the posttest. The advanced organizer helped create a framework for comprehension. This possibility has been discussed by Beck, McCaslin, and McKeown [2], who stated that structured directional setting activities may form a network of important associations to help students form meaning from written text.

Figure 2: Sample Teacher Script for Advanced Organizer

Teacher:	Today we are going to learn about ocean currents and how these currents can affect the weather on land.
Teacher:	Everybody look at I. A current moves like a river. Say that.
Students:	A current moves like a river.
Teacher:	Everybody look at Ia. Water moves in parts of the ocean. These are called currents. Say that.
Students:	Water moves in parts of the ocean.
Teacher:	Touch Ib. These currents can be very wide—sometimes as wide as 100 miles wide. Say that.
Teacher:	Let's review what we have covered so far: Everybody, can an ocean have currents?
Students:	Yes.
Teachers:	Do these currents move?
Students:	Yes.
Teacher:	Everybody, how wide can these currents sometimes be?
Students:	Sometimes 100 miles wide.
Teachers:	Now we are going to study examples of ocean currents and how these currents can affect the weather on land. There are important things to remember. Ocean currents can be cold or warm depending on where these currents start from. Currents that start in the Tropical Temp. Zone are warm. Everybody say that.
Students:	Currents that start in the Tropical Temp. Zone are warm.
Teacher:	Currents that start in the Polar Temp. Zone are cold. Say that.
Students:	Ocean currents that start in the Polar Temp. Zone are cold.
To correct:	Model the correct statement to students. Represent as an unprompted question. Next, represent the entire segment to students.

Because high school learning disabled students have serious problems learning from text [7], methods to help these students become more competitive in the classroom are needed. The use of an advanced organizer in the form of an outline presented to the students with direct instruction teaching procedures offers a plausible teaching alternative with high school learning disabled students. This method of remedial instruction can enhance comprehension instruction with low performing high

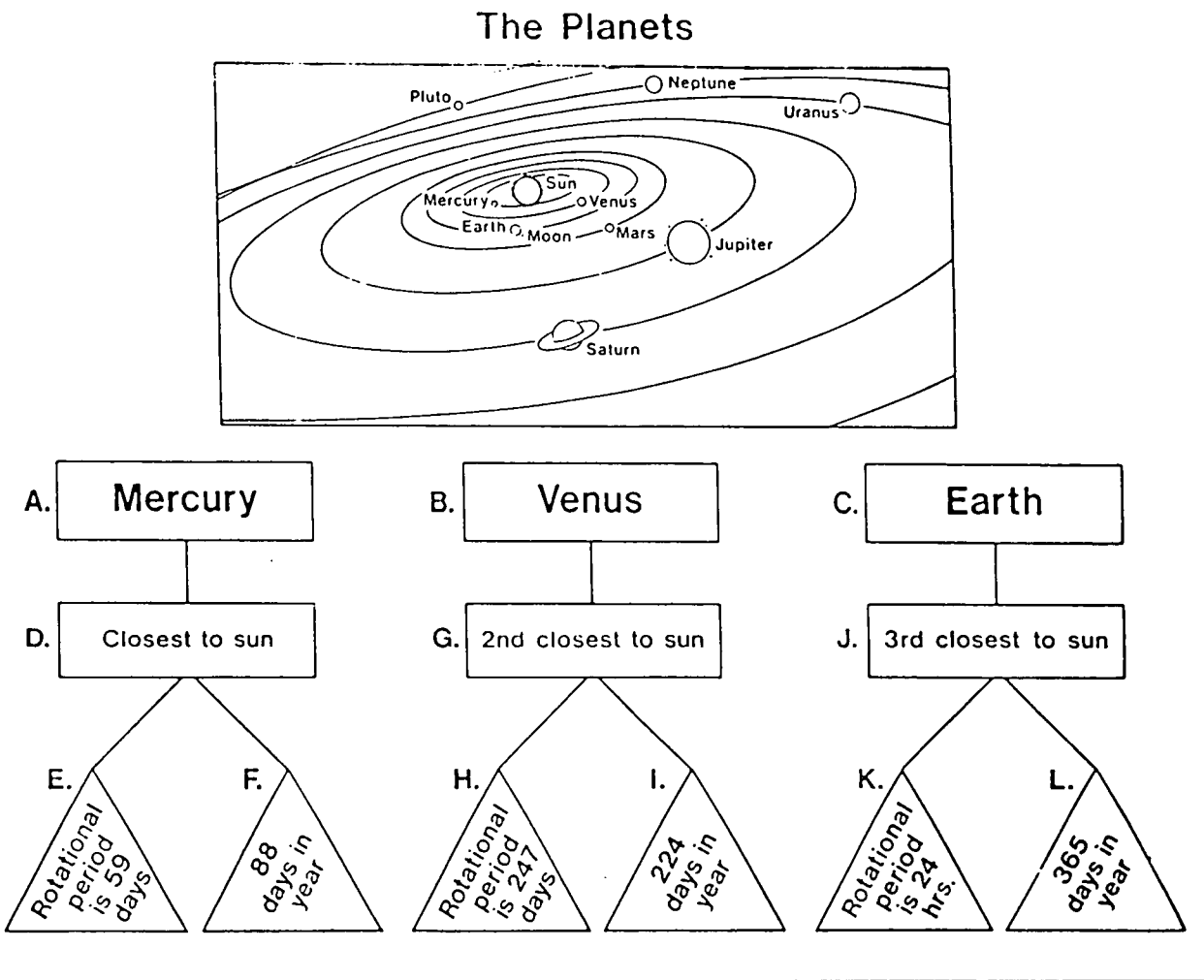
school students. This approach may be especially pertinent for learning disabled students as their ability to select and attend to the relevant aspects of text is often weak [7]. Given the manner in which most traditional texts are designed, they provide little help for high school learning disabled students placed in regular classrooms.

Study 2: The Use of a Visual Spatial Display to Enhance Comprehension

The second study that is directly related to the present topic was designed to examine the relative effectiveness of visual spatial displays in improving the comprehension of critical concepts during content area instruction of adolescent learning disabled students [5]. As was the case in the study described above, subjects were taught science with one of two distinctly different instructional approaches. One group of students was taught with the use of an advanced organizer, presented in the form of a visual spatial display of critical information. The other group was taught the same information except that the content was presented from written texts, typical of those often used in regular education classrooms. Figure 3 presents an example of one of the visual spatial displays used in this study. These displays helped students to see the spatial relationships of the main concepts in each unit of study. In this study, the students were presented with three science units. As shown in Figure 3, the displays attempted to increase student understanding of the unit by presenting lines, arrows, and spatial arrangements that described text structure, content, and important unit concepts.

Both short term unit tests and a posttest designed to assess retention of key instructional concepts were used. Students in both instructional groups were taught for a total of 12, 55-minute instructional sessions.

Figure 3: An example of a visual spatial display



The results of this study revealed that when students were evaluated on their ability to recall critical information on both the unit tests and the posttest, students who were taught with the visual spatial display advanced organizer scored much higher on the recall measures. Not only did the advanced organizer/direct instruction group outperform the students who were taught with traditional methods and materials, but the advanced organizer group achieved close to 85% accuracy on the posttest measure. In spite of the learning problems of students, when their comprehension instruction utilized both the direct instruction teaching presentation and the visual spatial display advanced organizer, they were able to retain important concepts.

Conclusions and Implications for Instruction

Considered together, these two studies illustrate the effectiveness of an alternative approach to helping learning disabled high school students learn during content area instruction. Advanced organizers, when presented with direct instruction teaching techniques, better prepared students to understand and recall the key concepts of an instructional unit than the less structured alternative approaches.

Strong evidence emerges, when these two studies are considered in the context of the broader research areas of direct instruction and advanced organizers, of a framework of an effective technology to improve the comprehension abilities of high school learning disabled students. Undoubtedly, there is more than one approach to teach comprehension to high school students, but it appears that effective instructional approaches will contain many of the same characteristics, and differ considerably from the teaching methods traditional basal programs often promote. It appears that successful programs for instruction of high school learning disabled students would include consideration of the following:

Comprehension Instruction Must Be Intensive

The results of these studies suggest that high school learning disabled students may best be served by approaches that include intensive rehearsal of important information and concepts if they are to benefit from instructional activities prior to being asked to read textual material. Students must be exposed to core concepts a number of times in order to achieve mastery level performance. By providing students with an explicit overview of a lesson and requiring students to repeatedly rehearse the core concepts, they will be able to comprehend key elements in the instructional unit. As the visual spatial display study above illustrates, it may be necessary to include a group study format to ensure that students are intensively involved in studying content. Activities such as peer tutoring [8], carefully monitored homework, or built-in review segments during classroom teaching will probably be necessary for learning disabled students to comprehend completely.

Prereading Activities Must Prepare Students to Organize Key Concepts

Explicit teacher directed instruction using relevant schema (or advanced organizers) is more effective than activities developed to increase students' motivation or activities geared towards indirectly activating pre-existing schema [23]. In both studies described here, the former approach was found to be superior to more loosely structured procedures that relied heavily on discussions based on students' experiences.

Since many high school LD students are placed in regular classrooms for content-area instruction (*e.g.*, science, social studies), the finding that a detailed structured overview helped students organize material is important. Using such schemas will provide teachers with a format for designing direction-setting activities that will assist students in comprehending from text. If such direction-setting activities are loosely structured and without systematic, direct instruction, poorer performance can be expected. The type of instruction advocated in basal guides is inappropriate for learning disabled high school students, particularly during content instruction.

Instruction which does not explicitly direct students to organize concepts may result in the students not being able to appropriately organize lesson content. An advanced organizer can also serve as a visual reminder for students of what the purpose of the lesson is and the areas of daily discussion for reading.

Instruction in Comprehension Should Actively Involve All Students

Learning disabled students have been characterized as passive learners [21]. This has been suggested as one reason some LD students have trouble comprehending material from text. The two studies reported in this paper illustrate the effectiveness of involving the students in rapidly-paced instruction which requires some type of unison responding on the students' part. This active teaching kept students involved in the lessons, kept interest high, and helped students better grasp key concepts in the unit. It is recommended that teachers require less able students to actively participate in the lesson. Instruction which meanders may be particularly troublesome for LD students whose ability to attend to relevant information is well documented [7].

Student Errors in Comprehension Need To Be Corrected Systematically

An important component of the instructional packages discussed here were the specified correction procedures which served to ensure that students who were confused were corrected immediately within the framework of the advanced organizer. In each of the direct instruction and advanced organizer treatments, students were not just supplied a correct answer, but rather were given the correct information in relation to the conceptual framework of the advanced organizer. Thus, students did not

memorize isolated facts but learned information which had a clear and precise organization. Several authors make the point that [12, 13, 19, & 22] information which is clearly organized with an advanced organizer will allow for more efficient recall. The less precise correction procedures utilized in the traditional treatments were not particularly effective in helping learning disabled students learn from their initial errors. It was clear from the results of these studies that high school learning disabled students need explicit feedback when they make comprehension errors and, most importantly, these students need to be provided with a specific learning strategy so that similar errors in comprehension occur less often.

Classroom Management Is Critically Important During Comprehension Instruction

The importance of effective classroom management was evident during the implementation of the studies discussed in this paper. It was apparent that for instruction to be effective for secondary LD students, teachers needed to control the learning situation, particularly during the direct teaching phase of the lesson, the time when students were presented with and practiced the advanced organizer. Students were the most difficult to manage during this phase of instruction. A lack of attention put students at "academic risk," as it was critical that they carefully attended to the presentation of the advanced organizer and accompanying study strategy. The group study procedures included in these studies were very helpful in managing some of the less attentive students. This group activity increased the motivation of the less interested students which intensified the learning experience for the class. The two traditional approaches discussed in these studies made classroom management more difficult for the teacher. Comprehension instruction, often a difficult and confusing time for secondary LD students, typically left students distracted and frustrated. Therefore, instructional interventions should include a component to ensure the attention of these students. Without such a component, poor student performance can be expected during content area instruction.

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