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AUTHOR Stahl, Norman A.; And Others
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ABSTRACT

Intended to make teachers aware of various tactics that will move students toward strategies for independent learning, this paper describes several work-study skills, which--once mastered--can be integrated into the set of tactics the life-long learner might use in his or her independent mastery of text and lecture. The first part of the paper deals with improving textbook study with questioning tactics and presents questioning strategies based on two premises: (1) that questioning strategies can be used to increase students' awareness of the characteristics of expository and narrative text, and (2) that questioning is most helpful when students frame their own questions. The second section presents 14 guidelines for improving study through notetaking tactics, while the third section presents guidelines for using graphic organizers, specifically, various kinds of mapping. The fourth section explores some of the shortcomings inherent to reading strategy training and the need for flexibility, so that each student can assemble individual strategies to suit his or her needs. (HTH)

College Reading and Learning Assistance
Technical Report 85-10

Developing Independent Learners:

Strategies and Tactics for Mastery of Text

Norman A. Stahl
Division of Developmental Studies
Box 872 - University Plaza
Georgia State University
Atlanta, Georgia 30303

William A. Henk
Education
Pennsylvania State University
The Capitol Campus
Middletown, Pennsylvania 17057

William G.Brozo
Curriculum and Instruction
Northern DeKalb University
DeKalb, Illinois 60115

Margo Sickele
Genoa Public Schools
Genoa, Illinois 60135

Running head: Developing Independent Learners

Developing Independent Learners:
Strategies and Tactics for Mastery of Text

During the early years of a youngster's education, the basal reader and the storybook hold center stage. Yet, once a pupil moves past the primary grades, the major emphasis of instruction begins to take on new dimensions. The learner goes through what might be described as a five to ten year weaning process, in which the ultimate goal is independence in life-long learning from text and lecture. Here the student learns to master the varied forms of verbal and written discourse encountered in the academic disciplines of the intermediate, secondary, and post-secondary levels of instruction. As students move towards independence, even in this age of computer assisted instruction, the roles of self-directed study-type reading and listening are of major importance.

Since recurring change is the very soul of our technological society, today's pupils must develop the independent learning skills that will enable them to be the students of the future. As life-long learners, they must be capable of mastering the technological advancements and understanding the sociological changes certain to influence every field or profession well into the 21st century. Therefore, the purpose of this paper is to make teachers aware of various tactics which will move students toward strategies for independent learning. To do so, several work-study skills will be described which, once mastered, can be integrated into the set of tactics the life-long learner might use in his or her independent mastery of text and lecture. The topics center around three major themes: (1) questioning, (2) notetaking, and (3) graphic organizers. The article is directed towards the practitioner and so specific reference to or discussion of individual studies are not included in the body of

the text. Instead, the reader will find references for seminal articles on each of the topics under discussion at the end of the paper.

Improving Textbook Study with Questioning Tactics

Teaching students to use questioning as a way of improving reading comprehension is not new. Researchers in the 1920s and 1930s studied the effectiveness of questioning strategies for increasing students' comprehension and recall of textual material. Then, after a period of relatively little research activity in this area, a resurgence of interest in questioning occurred among researchers and educators in the 1960s and continues today.

Recent questioning research reveals two important findings:

1. Questions are most helpful when students frame their own;

2. Questioning strategies can be used to increase students' awareness of the characteristics of expository and narrative text.

Some specific implications from these findings for teaching students how to improve their study reading through the use of questioning will follow.

Student Self-Questioning

Students can learn to ask themselves questions at each stage of the reading process. The questions students ask before they read can help them set purposes for their reading assignment and engender motivation and interest. Questions during reading can serve to help readers determine if their purposes are being satisfied or whether initial purposes need readjustment. Finally, students can ask post-reading questions to prompt their recall and decide if they remembered what they intended to remember.

A Whole-Group Pre-Reading Questioning Procedure

Teachers can begin a reading assignment by having students generate pre-reading questions.

STEP ONE: In small groups, students are asked to skim through the first few pages of the chapter, taking notice of such features as (a) the chapter title, (b) an introductory paragraph, and (c) the major headings and subheadings.

STEP TWO: The teacher then asks, "Now that you have skimmed a few pages of the chapter, what questions come to mind? With your group partners, write three questions you think those few chapter pages might answer."

STEP THREE: After writing, students are asked to share their questions with the entire class. During this step, students are given the chance to respond to each other's questions. The teacher serves as a facilitator, prodding and asking for reclarification. Eventually, students will decide upon a set of class questions they wish to pose before reading; these questions should be written on the board for reference. This activity helps students set their own purposes for reading and encourages them to begin the reading assignment in order to determine the appropriateness of their questions.

STEP FOUR: Students read carefully the few pages they initially skimmed. When they are finished, class discussion should focus on why or why not students were able to answer their own pre-questions. At this point in the instructional strategy, the teacher has the opportunity to model the self-inquiry process for students by asking questions which require answers in the form of questions. For instance, the teacher might ask, "What questions were answered as a result of your reading?" "What questions might have been asked which could have been answered by reading the text?" "Are there any other questions you can ask yourself now to check whether you met your purpose for reading?" If the teacher wishes to reinforce student self-directed questioning, it is advisable to repeat steps one through four for the next few pages of text.

A Generic Questioning Procedure

In order for students to develop and refine their thinking/problem-solving skills, students should be involved in a maximum number of decision making responses during reading of text. To this end, teachers can show students how to ask and answer questions for any content material in a logical and orderly sequence throughout the reading process.

PRE-READING (after previewing): "What questions do I want to be able to answer as a result of my reading?" "What questions can I ask myself that might help me to understand what the author means?"

DURING READING: "What's important in this part of the text?" "Why is it important?" "Where are the clues that help me decide this is important?" "What pre-reading questions are answered in this part of the text?" "Do I understand what I will need to know?" "Can I prove my answers?" "Is there anything else I need to know?"

POST-READING: "Do I remember what I intended to remember?" "How can I remember what I want to remember?" "What is the author's overall message?"

Questioning Expository and Narrative Texts

Students can be taught to capitalize on the predictable rhetorical structures of expository and narrative prose by asking questions based on these structures. Stories, for instance, tend to have a familiar structure: setting, characters, goals, obstacles, outcomes, themes, etc. While expository texts often have structures that are less predictable than stories, certain of these structures are discernible, such as compare-contrast, cause-effect, listing, sequence, definition-example, and problem-solution. By arming students with knowledge of these text structures and teaching them how to ask appropriate

questions, teachers help students learn to control and monitor their attention while reading. As a result, comprehension should improve.

Expository Text Structure and Appropriate Questions

The following are some examples of expository discourse structures and the kinds of questions students might ask of themselves about the content.

DISCOURSE STRUCTURE: Listing

CONTENT: Fire Safety

QUESTION: What are some measures one can take to prevent fires or burns in the home?

DISCOURSE STRUCTURE: Compare-Contrast

CONTENT: The Four Major Kinds of Tides

QUESTION: How is the diurnal tide different from the solar tide? How are mixed and semidiurnal tides alike?

DISCOURSE STRUCTURE: Sequence/Chronological

CONTENT: Artificial Respiration

QUESTION: What is the first step one should take in administering cardiac massage? What is the next step . . .

DISCOURSE STRUCTURE: Cause-Effect/Reason-Result

CONTENT: The Common Cold

QUESTION: What are two factors that are believed to cause the common cold? What are the effects of a cold on the entire body?

DISCOURSE STRUCTURE: Definition-Example

CONTENT: Fungi

QUESTION: What are fungi? What are some examples of fungi?

DISCOURSE STRUCTURE: Problem-Solution

CONTENT: The Brazilian Coffee Boom

QUESTION: What major problem was involved in the production of coffee? What steps did the Brazilian government take to save the situation?

Story Structures and Appropriate Questions

The following are examples of general and content-specific questions on the story "A Rose for Emily" by William Faulkner. The questions are derived from structures common to nearly all stories (adapted from Criscoe & Gee, 1984).

STORY STRUCTURE: Character

GENERAL QUESTION: Who is the leading character?

SPECIFIC QUESTION: Is the story primarily about Emily or the town?

STORY STRUCTURE: Goal

GENERAL QUESTION: What is the leading character trying to accomplish?

SPECIFIC QUESTION: What did the townspeople want to do?

STORY STRUCTURE: Obstacle

GENERAL QUESTION: What obstacles does the character encounter enroute to a goal?

SPECIFIC QUESTION: What problems did Emily face?

STORY STRUCTURE: Outcome

GENERAL QUESTION: Does the character reach the goal?

SPECIFIC QUESTION: Do the townspeople ever gain control over Miss Emily?

STORY STRUCTURE: Theme

GENERAL QUESTION: Why did the author write the story? What does the author want to show us about life?

SPECIFIC QUESTION: What does "A Rose for Emily" tell about society?

With the identification of the text's structure and the interrelated comprehension of the content, students are faced with the need to retain

substantive amounts of the information for future academic tasks or personal endeavors. Several tactics for capturing the comprehended content for long term storage are described in the following sections.

Improving Study Through Notetaking Tactics

Of all the skills necessary for academic success in secondary and post-secondary settings, probably none is quite so critical as notetaking. The ability to take "good" notes is especially important in secondary and post-secondary education because most information is presented by lecture or by independent reading of text. A failure to accurately record key points and supporting details will almost surely result in poor test performance for a majority of students. This is because lecture notes and text notes serve as a rather permanent account of class topics, allowing for purposeful revision, organization, and reconstruction of ideas. Clear, insightful, and thorough notes will facilitate study procedures and subsequent test performance more than will hastily conceived notes taken in an almost mindless, verbatim manner.

Interestingly, most students are never formally taught how to take effective notes. Apparently it is assumed that notetaking is an easily acquired, natural sort of cognitive behavior which students will have little, if any, trouble mastering. Experience with students, however, suggests otherwise. An examination of even proficient students' notes often reveals many shortcomings and deficiencies in their tactics for recording information. Some authorities suggest that the best notetakers are able to record only about 50% of the key concepts presented in a lecture. And the picture for low-achieving students is even more grim.

The purpose of this section is to acquaint teachers with a list of 14 pointers for improving students' notetaking ability. Each of the suggestions is

not only intuitively appealing but has also been supported in a recent extensive review of the notetaking literature that we conducted. By sharing these techniques with students and helping them to achieve mastery, teachers will be nurturing strategies that will assist students in their later academic pursuits. These pointers are equally effective with text and lecture materials.

Guidelines for Taking Effective Notes

1. Date and label notes at the top of the page.

2. Consecutively number each page of notes.

3. Draw a margin about one-third of the way across the page and keep all running (verbatim) lecture or text notes to the right of the margin.

4. Later, use the left side for organizing, summarizing, and labeling the content of the running notes. Before an examination, develop typical test questions.

5. When possible, do not record information without deliberating about it.

6. Paraphrase--put things into your own words.

7. Be selective--record the most pertinent information.

8. Use indentations to show the relative importance of ideas.

9. Skip lines to indicate a change of ideas or themes.

10. Leave space for later elaboration or clarification.

11. Use numbers, letters, and dash (--) marks to indicate details or sub-points.

12. Use easily identifiable abbreviations when possible.

13. Use underlining, circling, or different colors of ink to show the importance of certain ideas.

14. Cover one side of the notes when studying and try to visualize or articulate what is hidden; then cover the other side and do the same.

Some Qualifications

Simply sharing these techniques with students is not likely to result in improved notetaking behaviors. Students must be shown meaningful examples of each technique and must be able to experience firsthand the various processes which are involved in each. Cognitive activities like organizing, summarizing labeling, and paraphrasing require not only a greater number of examples but also more time for practice with actual texts or lectures. It is also suggested that only a limited number of techniques be presented at any one time. Overloading students with too many skills to master simultaneously may disrupt the learning process altogether and limit the benefits of the instruction.

Once the component skills are understood, students should be given guidance and practice in "putting it all together." Modeling is a particularly useful technique. For instance, a tape-recorded lecture can be played as students watch the teacher record notes on an overhead projector. In this way, students view notetaking strategies in process. Videotape recordings can also be used successfully in this activity, as can overhead transparencies of textual materials. Whichever is used, initial training segments should be brief and the tapes should be stopped frequently to allow for a discussion of why certain points were or were not recorded, the form of the points which were recorded, and how the information was arranged strategically on the page.

When given more formal training in notetaking, students are apt to transfer their newfound skills to actual lecture or independent study settings. Another form of notetaking is presented in the next section.

Improving Study with Graphic Organizers

Organization is an important factor in helping students understand and recall textual material. One way to assist students in organizing the concepts

presented in a passage is through network representations. These representations, often called maps, semantic webs, or diagrams, all involve the same principle: to represent graphically the relationships between key ideas and concepts in the text. Mapping is often used with expository text, yet forms do exist for use with fictional materials. Such network representations have two major advantages. First, they aid students in organizing concepts for storage and recall, and second, they require active involvement from the student.

Mapping

Teachers can easily instruct students in mapping their texts. Mapping involves active participation on the part of the reader, who must read analytically in order to find relationships among concepts and then translate them into a visual representation. Mapping techniques should be flexible, allowing each person to follow a personalized style or a format that is adaptable to different types of texts and organizational patterns. The actual steps in designing a map may entail following a deductive procedure (e.g., Frederick, 1938; Hauf, 1971) or an inductive approach (e.g., Bird, 1931; Solon, 1980). Brief guidelines for each will be presented.

Guidelines for a Deductive Mapping Procedure

Generally speaking, deductive mapping procedures include five basic steps:

1. First, skim the material to find the main ideas or concepts covered in the selection.

2. D ne the central focus of the passage and write it on a sheet of paper, then circle it. In many cases the major concept will be highlighted as a title or a heading.

3. Next, consider the topic in relation to what you already know so that you can prepare a proper "mental set." (Teacners should be sensitive to the

possibility that students may retrieve inaccurate or inappropriate prior knowledge.) Think about how the expected secondary topics or supporting ideas can fit into your mental set.

4. Now, read, mentally organize, and categorize the secondary topics which support the main idea. Map out these ideas as spokes radiating from the center circle. As an alternative, chapter sub-headings may be used as secondary categories (providing chapter subheadings are not too numerous).

5. Next, read each section carefully for details to complete the map. Fill in details to the map from memory so that you actively assess how well you can recall the details. Pose questions to yourself about how the details related to the secondary topics and to the general topic.

Insert Figure 1 about here

Guidelines for an Inductive Mapping Procedure

The inductive outline/mapping procedure will prove to be of benefit when passages lead from the specific to the more general content. The procedure is comprised of four steps.

1. Write the title of the textbook chapter to be studied across the top of a page of binder paper. Then separate the page into three vertical columns with the following headings: (a) What are the facts? (b) What is their immediate significance? and (c) What is the overall significance?

2. Read a subsection of a chapter on a paragraph-by-paragraph basis. Each of the specific facts you encounter should be jotted down and numbered in column one. Keep an eye open for italicized words, dates, figures, and proper nouns as you read.

3. After reading all the paragraphs in a subsection, glance over your notes in column one, and then skim the entire subsection. Now write a statement in column two which stresses the importance of the observed facts. Check your accuracy by rereading any topic sentences or summaries provided by the author. (Repeat steps two and three until you complete all of the subsections comprising the section.)

4. Now review your statements in column two and quickly glance at the subheadings throughout the section. Next, write a general statement in column three concerning the significance of the statements in column two. Check the accuracy of your general statement by skimming over the introductory statements, topic sentences, summary statements, and concluding remarks found throughout the section.

As students become more proficient in the development of maps for independent study, the instructor should urge them to convert mapped statements into questions that assist in their preparation for upcoming tests. Each pupil should at first list study questions on a separate page in a study guide, but later questions can be posed directly on a map.

Insert Figure 2 about here

Format for Organizing Fiction

Both the inductive and deductive forms of mapping have been employed traditionally with forms of expository text. A little known but nonetheless intriguing tactic for mapping short stories, chapters, or full novels is the Format for Organizing Fiction (Jensen, 1979). As one notices in Figure 3, the format leads the student to organize information around five common story

elements: main characters, minor characters, settings, events, and conflicts and problems. A sixth element for mood might also be included in the format.

Insert Figure 3 about here

Before reading a passage, the reader organizes the various story elements on a sheet of paper. As the pupil reads the passage, literal information is listed beneath each story element. Since the conflicts and problems section is dependent upon analyzing the more literal information, the reader should fill in this section upon completing a chapter or during a class discussion.

When first introducing the tactic, the teacher may wish to duplicate and distribute a ready drawn format sheet on which the pupils enter the appropriate information. As with any form of graphic organizer, disabled readers can use a format sheet completed by the teacher to promote both comprehension of a passage and participation in class discussions.

Group Mapping

When teaching students to construct maps, networks, diagrams, or webs, teachers may use group interaction to help refine and sharpen skills. The students are first told to read a passage and then to diagram it using their preferred style of mapping (e.g., radial maps, linear maps, pyramid maps). When the maps are completed, the teacher asks a volunteer to share his or her map with the class by interpreting and explaining it. Others may then ask questions about the relationship of content to the structure of the map. If students do not raise questions, the teacher may initiate a question or two. When students have finished discussing one map, another student is asked to volunteer to discuss his or her map. This discussion encourages critical thinking because

students interact, share their maps, and gain insights about the reasoning processes of other students. As an alternative method, the class could be divided into triads where each group develops a map on a large sheet of butcher paper. Maps are then shared as described above.

Simply stated, the use of network representations aids in the development of students' comprehension of what they read. These tactics use both the reader's schema and the text's structure in the network building process. The goal is for students to learn to use these organizational tactics independently to improve their reading-study strategies.

Improving Study Through Strategy Training

Along with the aforementioned techniques, students have been routinely taught tactics such as previewing, outlining, underlining, and summarizing. Furthermore, students have been directed to utilize several tactics at once in time honored textbook-study systems such as Survey Q3R and its numerous clones (PQRST, OROR, EARTH, OK5R, etc.). The underlying concept of the textbook study system is based upon a coordinated and, in some cases, integrated sequence of study tactics which are thought to promote analysis and retention of information presented primarily in content field texts. Over the years, systems have been based on an author's desire to pull together the best techniques into a package which appears functional.

Most textbook-study systems are identified by catchy acronyms which serve as mnemonic devices. They assist the student in learning, recalling, and mastering the steps of the respective system. Regardless of which one of the more than 100 textbook-study systems a teacher chooses to present, pupils are generally taught (1) a prereading activity which sets the stage for the content to be learned, (2) a reading stage which directs active, purposeful

reading/learning, and (3) a postreading stage which involves varying degrees of both short-term and long-term recitation and review activities. Postreading activities promote limited forms of meta-comprehension and prepare students for tests. Yet, as sound as any system may appear, none seem to provide for individual differences in any appreciable way.

The problems associated with many individual study skills, as well as with textbook-study systems, are not necessarily inherent in the techniques themselves. Such problems are apparently related to instructional presentations that fail to teach students to master and then to use tactics in a pragmatic yet flexible manner. All too often, pupils are forced to follow rigidly the steps of a study-skills technique or a system in a lockstep fashion, regardless of individual learning styles or the unique demands of the learning task.

More recently, however, study skills specialists, particularly in the postsecondary reading movement in this country and in Great Britain, have advocated a form of presentation and practice that promotes the mastery of solitary skills so that they might be included in a personal study skills "bag of tricks." Throughout a student's educational career, this bag of tricks becomes fuller and more adaptive to flexible study for independent life-long learning. At the heart of this recommendation is the concept of strategic approaches to study. Here the concept of strategy goes back to its roots in military science as a large scale plan for achieving a major goal. Within the overall strategy are employed numerous tactics. Should one tactic fail, a commander in the field evaluates the situation at hand and attempts to employ a different, more successful one.

So, too, it is with skillful, flexible learners. The goal setting activity is central to the formulation of a strategy and to the selection of initial

tactics for the study process. Hence, this task demands that the student learn to analyze carefully th reason for studying. For the less skilled or less mature learner, the goal setting task, in itself, may call for the development of a strategy for clarifying and understanding the end point. Practice leading to such a skill can be and should be introduced in the earliest grades of our educational system.

After setting a goal, let us say mastering a chapter on 17th century colonial Virginia for an expected essay test, the pupil mentally develops a strategy with numerous tactics to achieve the goal. Although the step is essentially heuristic in nature, the teacher can promote strategy construction by providing each student with a blank flow chart for formulating a set of objectives and corresponding tactics or back-up tactics leading to successful completion of the stated goal. Upon completion of the study map, members of the class can discuss the unique nature of each person's map. The teacher must be careful, however, to keep the development of the flow chart as a problem-solving activity, rather than as the development of a lockstep algorithm.

The students must understand that the overall strategy is never fixed in stone, but rather calls for ongoing evaluation throughout the study process. For instance, let us assume that a hypothetical student has proposed the initial objective of gaining a bird's-eye view of the chapter on Virginia history. The corresponding tactics might entail a previewing of the chapter's introduction, headings, subheadings, graphics, and summary. Yet the tactic does not end with the completion of the preview. Rather, the student must attempt to determine whether the tactic has been successful in leading to a basic understanding of the chapter's content. If the evaluation is positive, the pupil moves ahead with the next planned tactic within the overall strategy. If the evaluation is

negative, then the pupil reaches into the bag of tricks to employ another possible tactic designed to solve the problem. In our example, the back-up tactics might include reviewing simpler texts, discussing the expected content with peers, consulting a reference source, or talking with the instructor. Obviously, the greater the pupil's proficiency in reading and independent studying, the fuller the bag of tricks from which he or she can select back-up tactics.

When students employ solitary study skills, this aspect of personal evaluation is often ignored because the objective was merely the completion of the immediate task—the previewing of a chapter. It is the overall construct of the strategy which both mandates and supports the evaluation at the tactic level.

A Final Word

Each of the tactics and techniques presented in this paper can be integrated into a student's repertoire of learning strategies and appropriately used in the student's quest for text mastery. Still, the teacher must realize that individuals will differ in designing and using strategies. When a strategy breaks down, the instructor should help the pupil recall or refine previously mastered tactics, or teach the student additional tactics. Instruction should, of course, include long-term practice with varied content that offers opportunities for personal evaluation of the study process. The end point of the instruction will be a student's ability to automatically use the tactic for independent study at the appropriate educational level. Refinement of the usage of individual tactics and development of strategies must begin in the elementary school and be reinforced throughout the secondary school years. Only in this way can independent, lifelong study habits, the true goal of our educational system, be achieved by all.

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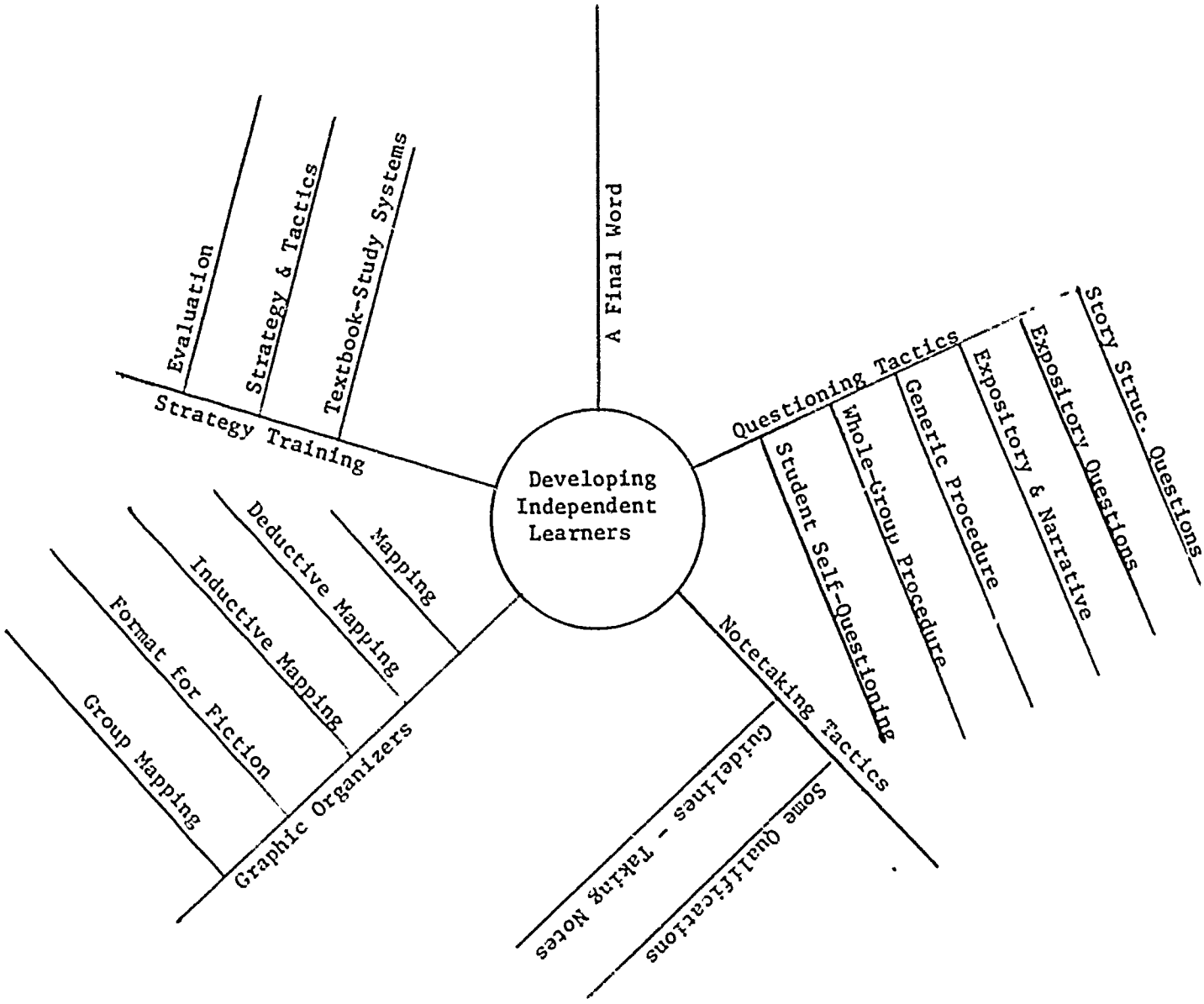
Figure Caption

Figure 1. Deductive Mapping Procedure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Textbook-Study Systems
A Final Word
Questioning Tactics
Story Struc. Questions
Expository Questions
Expository & Narrative
Generic Procedure
Whole-Group Procedure
Student Self-Questioning
Notetaking Tactics
Some Qualifications
Guidelines - Taking Notes
Graphic Organizers
Mapping
Deductive Mapping
Inductive Mapping
Format for Fiction
Group Mapping

Figure Caption

Figure 2. Inductive Mapping Procedure

DEVELOPING INDEPENDENT LEARNERS
Section II, "Improving Study Through Notetaking Tactics"

What are the facts?	What is their immediate significance?	What is their larger significance?
1. Poor notes lead to poor test scores. 2. Clear notes facilitate study and test scores.	A. Notetaking is a critical skill.	
3. Students have many shortcomings and deficiencies in notetaking. 4. Students record only about 50% of key concepts.	B. Most students are never formally trained to take notes.	
5. Date and label notes daily. 6. Number each page consecutively. 7. Draw 3" recall column on left. 8. Summarize content in recall area. 9. Deliberate information. 10. Paraphrase information. 11. Be selective about recording ideas. 12. Use indentations to highlight ideas. 13. Skip lines between ideas. 14. Leave space for revision. 15. Indicate details or subpoints with numbers, etc. 16. Use identifiable abbreviations. 17. Show import of ideas with underlining, circling, etc. 18. Cover running notes and study for tests.	C. Research and experience suggest that 14 pointers will help students produce better notes from text and lecture.	When given formal training with notetaking tactics, students are likely to transfer them to independent study.
19. Present a limited number of techniques at one time. 20. Once component skills are understood, give help in "putting all together." 21. Modeling is a useful teaching technique.	D. Students should observe examples and receive firsthand experience with notetaking tactics.	

Figure Caption

Figure 3. Format for Organizing Fiction from You Can Succeed: The Ultimate Study Guide for Students by E. Jensen, p. 110. Copyright 1979 by Barron's Educational Series, Inc.

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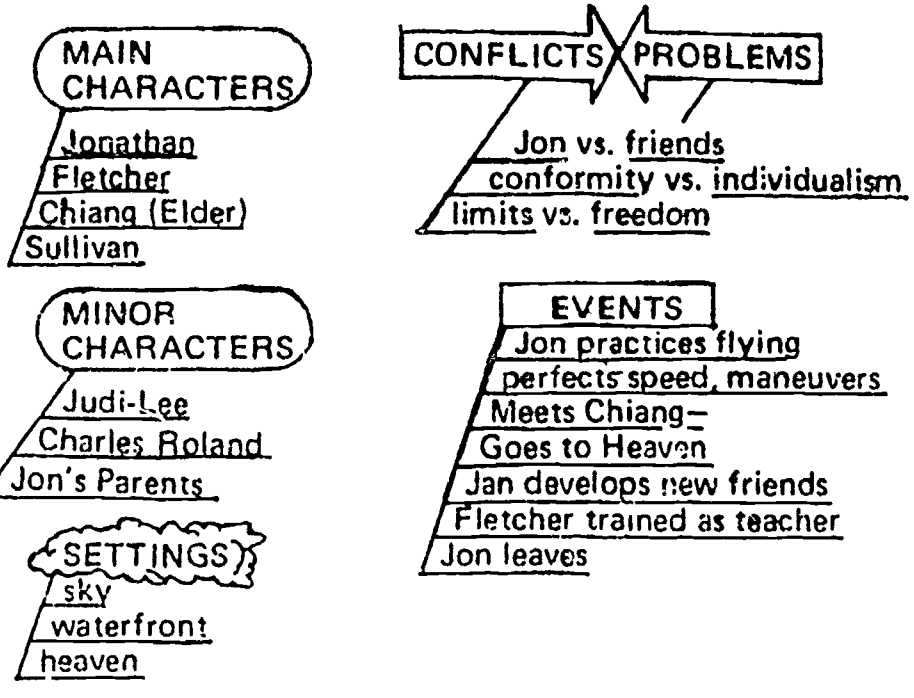

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