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ABSTRACT

This handbook is for use by content area teachers in grades three through six who want to help students improve their comprehension of both oral and written language. The first three chapters discuss the nature of comprehension and establish the general philosophical framework for the strategies and activities that make up the major portion of the book. The activities and strategies are arranged according to one of three levels. Those activities listed at the first level of instruction are designed to concentrate specifically on the language, experience, thinking, or word recognition needs of students in order to build their foundation for comprehension. The activities offered at the second level are intended to establish specific language, experience, and thinking linkages and to enhance concept development. The instructional strategies presented at the third level integrate and link the language, experience, and thinking activities for the first level into more holistic strategies for the purpose of concept development. Appendixes provide assessment samples and techniques, planning considerations for enhancing comprehension in the content areas, and suggestions for applying the techniques to specific content areas. (FL)

COMPREHENSION in the CONTENT AREAS 3-6, STRATEGIES for BASIC SKILLS

Office of Instructional Services/General Education Branch
Department of Education • State of Hawaii • RS 79-7520 • May 1979

FOREWORD

The current explosion of knowledge has drastically changed the role of the teacher from one of dispensing facts and information to one of preparing students to think independently, to relate their own experiences to learning, and to develop basic concepts for continuous learning. In other words, the teacher's role is one that is reductive, that is to:

1. Help students to think so that the myriad number of facts and events is meaningfully related to large and more inclusive concepts.

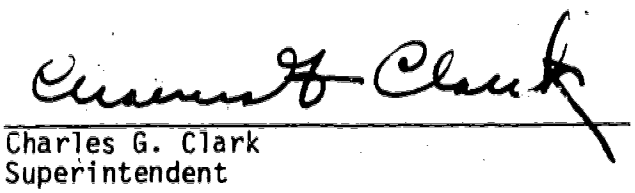
2. Utilize the student's direct and vicarious experiences and extend, rearrange, and apply them to new situations.

3. Help students develop a store of concept-related language so that faster communication and abstract thinking can take place.

4. Assist students to facilitate conceptual thinking so that their internal and external worlds make more sense, making their world more controllable, solvable, knowable, and communicable.

Every teacher, elementary or secondary, is a teacher of comprehension. Regardless of the content area (science, mathematics, social studies, literature), the teacher's main purpose is to help students understand and apply concepts. The attainment of this goal is greatly facilitated when content area teachers, elementary and secondary, understand not only the importance of their role in the development of listening and reading comprehension but also the conceptual benefits which accrue to the student when thinking becomes a major goal of instruction.

This handbook attempts to provide teachers ways to increase communication without jeopardizing their commitment to the concepts of the content areas.



Charles G. Clark
Superintendent

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TABLE OF CONTENTS

		Page
Foreword		i
Acknowledgments		ii
Introduction		v
Chapter 1:	What Is Comprehension?	1
Chapter 2:	The Instructional Process of Comprehension	5
Chapter 3:	Analyzing and Selecting Instructional Strategies	11
Chapter 4:	General Instructional Strategies for Stages I, II, and III	17
	Stage I: Instructional Activities	23
	Stage II: Instructional Activities	35
	Stage II: Instructional Strategies (Includes Stage III)	53
APPENDICES		73
Appendix A	Assessment Samples and Techniques	75
Appendix B	Planning Considerations for Facilitating Comprehension in the Content Areas	83
Appendix C	Application of Techniques to Specific Content Areas	87

INTRODUCTION

This handbook is for all teachers who want to help students improve their comprehension of language--oral and written. It is for teachers of all content areas, grades 3-12. (An earlier document, Language Arts Strategies for Basic Skills, K-2, was specifically addressed to teachers of the first three grades. For convenience, strategies for grades 3-6 are in the volume sent to elementary schools, and strategies for grades 7-12 in another volume sent to secondary schools.)

The first few chapters discuss the nature of comprehension and establish the general philosophical framework for the strategies and activities which make up the major portion of the handbook. The framework focuses on the student: his/her language, experience, and thinking. It also serves as a basis for analysis and decision-making.

The format of the handbook makes it very usable. Assessment leads to selection of strategies in an easy to follow procedure. For maximal effectiveness, a training session for users is recommended.

A few words that are used throughout the handbook should be defined:

Activities refer to teaching techniques which are used to build one or two aspects of the student's language (L), experience (E) or thinking (T) (LET). Activities enlarge the student's LET base, allowing him/her to move to a higher level of comprehension.

Strategies refer to approaches that interrelate and integrate the student's language, experience and thinking abilities. Strategies build ideas and create conceptual closure, allowing the student to evaluate and apply a new concept, idea and/or generalization.

Validating refers to the process of having the student predict or select ideas or concepts prior to involvement in the reading/listening act, then checking these predictions out to determine if they are correct, partially correct, wrong, or unable to be determined.

Documenting refers to the process of having the student verify, prove, or collect evidence to support a particular point of view.

The notions and activities presented in this handbook are not meant to be all-encompassing and complete. They are but a beginning for the informed, creative, and imaginative teacher and school to modify, expand, and/or delete in reinforcing existing district and school efforts in teaching comprehension in the content areas. Teachers are encouraged to add their own effective instructional strategies to the various sections of this handbook and to share them with the state educational specialists through appropriate channels for inclusion in future revisions.

Chapter 1

What Is Comprehension?

A student reads a portion of a social studies text orally, sounding out the words correctly. But when questioned, this student cannot remember what was read. Another student reads a part of a science text silently. And when asked to repeat what was read, the student reports information and ideas that are totally different from what the author had intended.

These problems have traditionally been identified as "reading" problems by content area teachers, and the teaching of comprehension skills has been most often prescribed to solve these problems. Some examples of these comprehension skills are identification of main ideas and details and vocabulary development. Popular approaches used in teaching these skills have focused on repeated practice through end-of-chapter questions and workbook exercises. The emphasis on skills in reading instruction is a widely accepted practice today.

This handbook attempts to provide an alternative approach to teaching comprehension which, when used in conjunction with existing practices, can help students become better readers. Moreover, such an approach is crucial in providing the structure and basis for instructional decision-making.

This approach is characterized by the following:

1. It lets students use their present experiences and knowledge as a basis for learning content area concepts.

2. It involves teachers and students in discussing, sharing and interacting so that the learning process attends to the immediate correction of any misconception.

3. It emphasizes thinking in <u>both</u> listening and reading activities.

4. It focuses on teaching broad ideas and concepts to help students learn language (vocabulary) and recognize or guess at unknown words. This results in developing independent learners.

5. It accepts the student's prior knowledge and ideas as starting points for instruction rather than the ends.

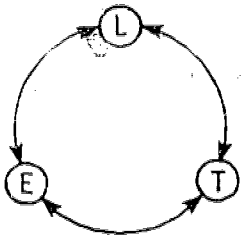
Comprehension is viewed as a product; it is the end result of the interaction of the student's Language (L), Experience (E), and Thinking (T).

Language (spoken and written): capacity of the student to express himself/herself in spoken and written language.

Experience: The sum total of the usable experiences of the student, both concrete and vicarious.

Thinking: What associations and relationships the student sees.

Language + Experience + Thinking = Potential to Comprehend



The degree of interaction among these three factors determines what is comprehended. Since every student has different experiences (E) and may have thought (T) about them differently using different terms (L), it often happens that students listen to or read the same materials but arrive at completely different interpretations.

For example, three students may read a short article on the Roadrunner bird. (The article describes the physical characteristics and behavior of the bird.). One student with no prior knowledge of this bird may think the animal is a rat. Another student who may be from Arizona would immediately recall experiences with the bird. And another student may visualize the bird as the one depicted in the Saturday morning TV cartoon series.

Each student had different experiences which greatly influenced his/her structuring of the information and the final interpretation of the article.

To minimize such differences and to help the students comprehend, teachers can:

1. Fill in any gaps the students may have in language, such as:

    a. Vocabulary (Unfamiliar words).
    b. Sentence structure (Complex sentences).

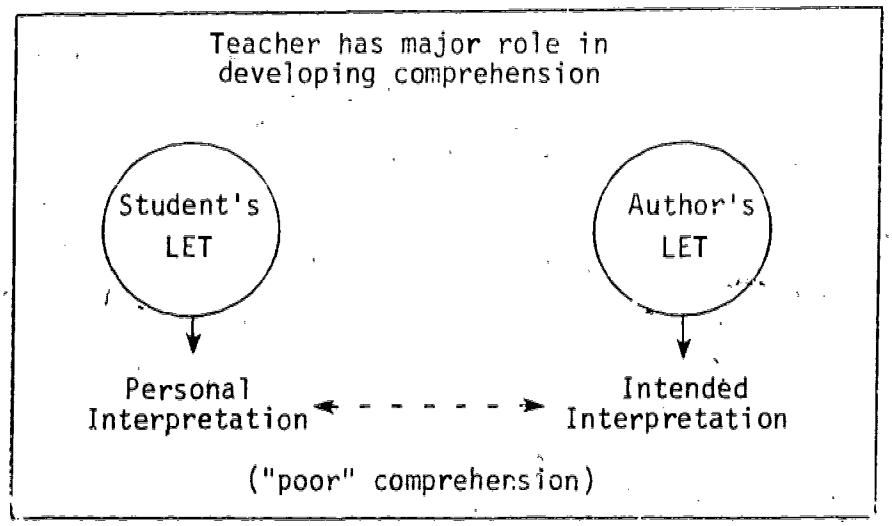
2. Determine the extent of the student's previous experiences and utilize them to develop concepts.

3. Guide the thinking process when students do not:

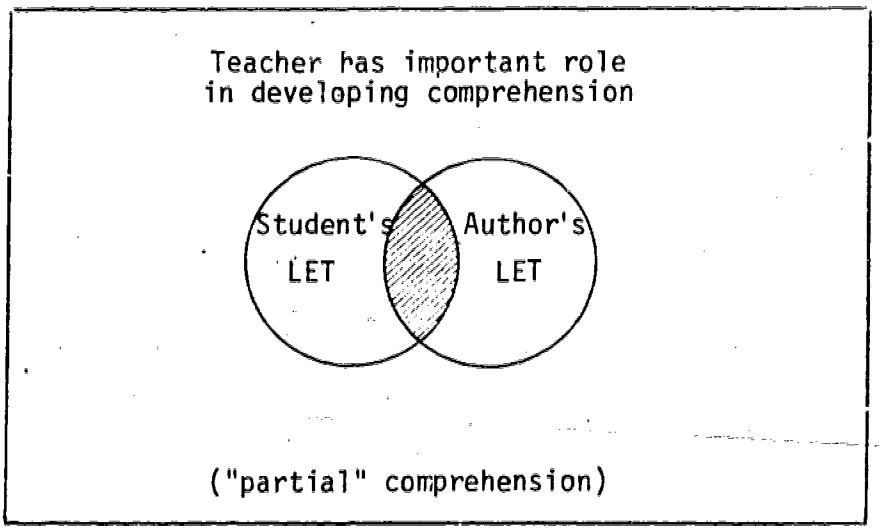
    a. Have enough or accurate information (Cognitive Memory).
    b. See relationships (Structures).
    c. See the main idea (Convergent).
    d. Apply the ideas (Divergent).
    e. Critically evaluate the ideas or their use (Evaluation).

The teacher has a crucial role in the process of narrowing the Language, Experience and Thinking (LET) gaps between the student and the author. The greater the gap between the student's LET and the author's LET, the lower the probability that the student will have a close approximation of the author's ideas. When this happens, the teacher has a major role in relating the author's LET to the student's LET. Since the discrepancy is so great, the student, without any outside help, will not be able to bridge this gap alone.

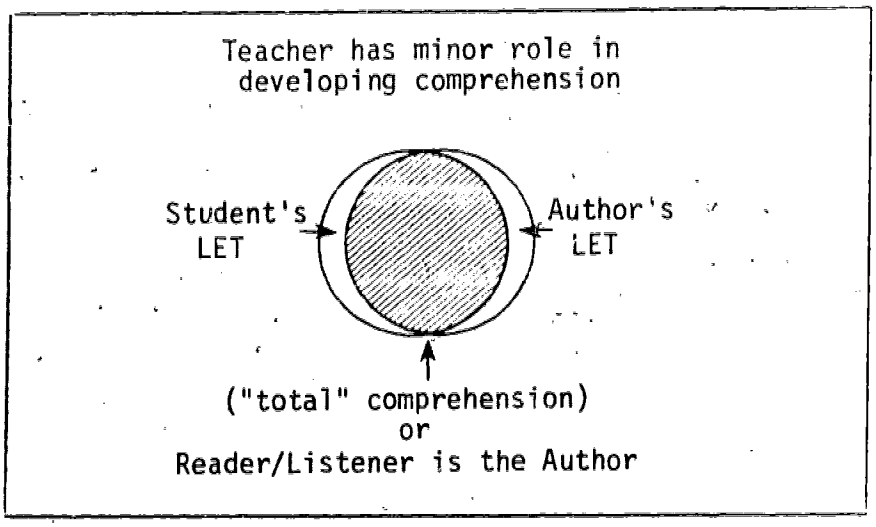
The student may reconstruct his/her own interpretation, but it may differ radically from the author's intent or purpose.



When students have some of the basic language experiences of the materials but only partially comprehend the author's intent, the teacher has an important role in developing the concepts and related vocabulary as well as guiding the thinking process. The degree to which the teacher can help the students "overlap" the author's LET will determine the degree of comprehension.



When students clearly approximate the written or spoken material independently, they are comprehending well.



Because of the "overlapping" concept of comprehension, the teacher is the key factor when students are not comprehending well. What the teacher of comprehension is essentially doing is to ensure that the student has an adequate level of Language, Experience, and Thinking to begin to comprehend the material read or heard and to guide the process of concept development.

Comprehension is not a skill; rather it is the product of the interaction of the student's LET with the author's LET. Because of this, comprehension cannot be developed through a focus on traditional comprehension skills but instead through:

1. Building the Language, Experience, and Thinking (LET) base for comprehension.
2. Using the LET to develop concepts and to serve as the basis for creative or emotional reactions.
3. Using and extending concepts and creativity.

Chapter 2

The Instructional Process of Comprehension

The instructional process of comprehension is a singular process which integrates three major instructional stages (Figure 1):

Stage I: Building the LET-base for Comprehension

Stage I instruction establishes the basis for comprehending. It focuses on teaching students the basic language, experience and thinking of the content area and word recognition skills with which to relate or match-up to the author's materials. If students can meet the learning goals set for Stage I, instruction can progress to Stage II.

Stage II: Using the LET for Concept Development

Stage II emphasizes the development of concepts/ideas. Elements of the LET base are now brought together to help students learn the new language and to restructure old experiences and concepts to create new experiences and concepts.

Stage III: Using and Extending Concepts and Creativity

At this inclusive stage, students are expected to have comprehended the concepts and are asked to use, apply, and evaluate these concepts. It is the process of making learning real, concrete, and functional. For example, when students have comprehended a concept in social studies, they are given opportunities to test out, use, and validate the worth of the learning in real situations.

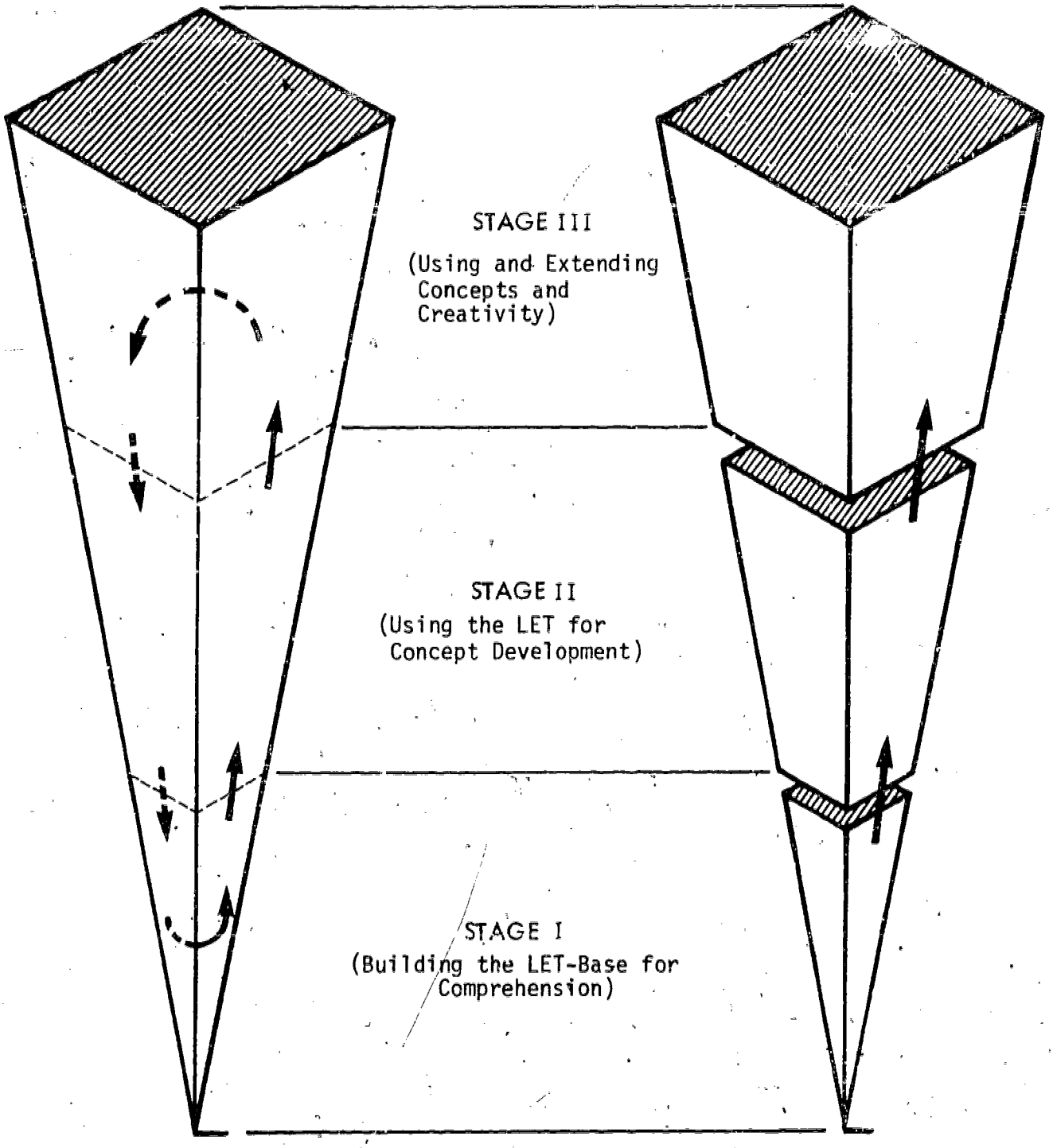
It cannot be overemphasized that these stages are not separate and independent; they are integrated and mutually dependent. Movement into and out of each stage depends upon the needs of the students -- individually, as groups, or as a total class (Figure 2).

Delineation of the three stages, however, helps:

1. To provide a rationale for the developmental (←—) and the intervention (--→) processes.
2. To show how all stages are interdependent.
3. To show the logical and natural progression of one stage to the next.
4. To provide a basis for assessment and determining realistic starting points in instruction.

Figure 1

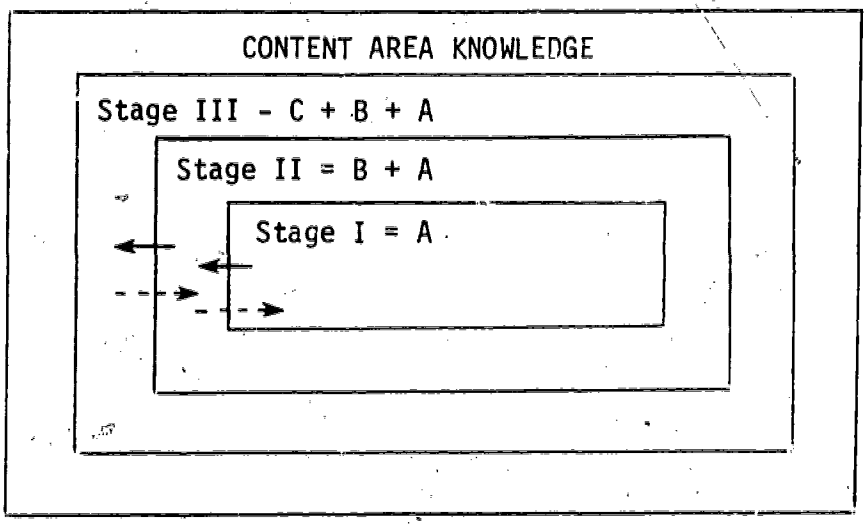
Stages in the Comprehension Process



Each stage has definite goals and functions. The later stages of instruction are dependent upon the preceding stage(s). As such, there is a cumulative effect.

When students are not functioning well at a particular stage, instruction reverts to the preceding stage. When students are doing well, instruction proceeds to higher and more cumulative stages.

The Relationship of the Stages and Procedures to the Content Area Knowledge

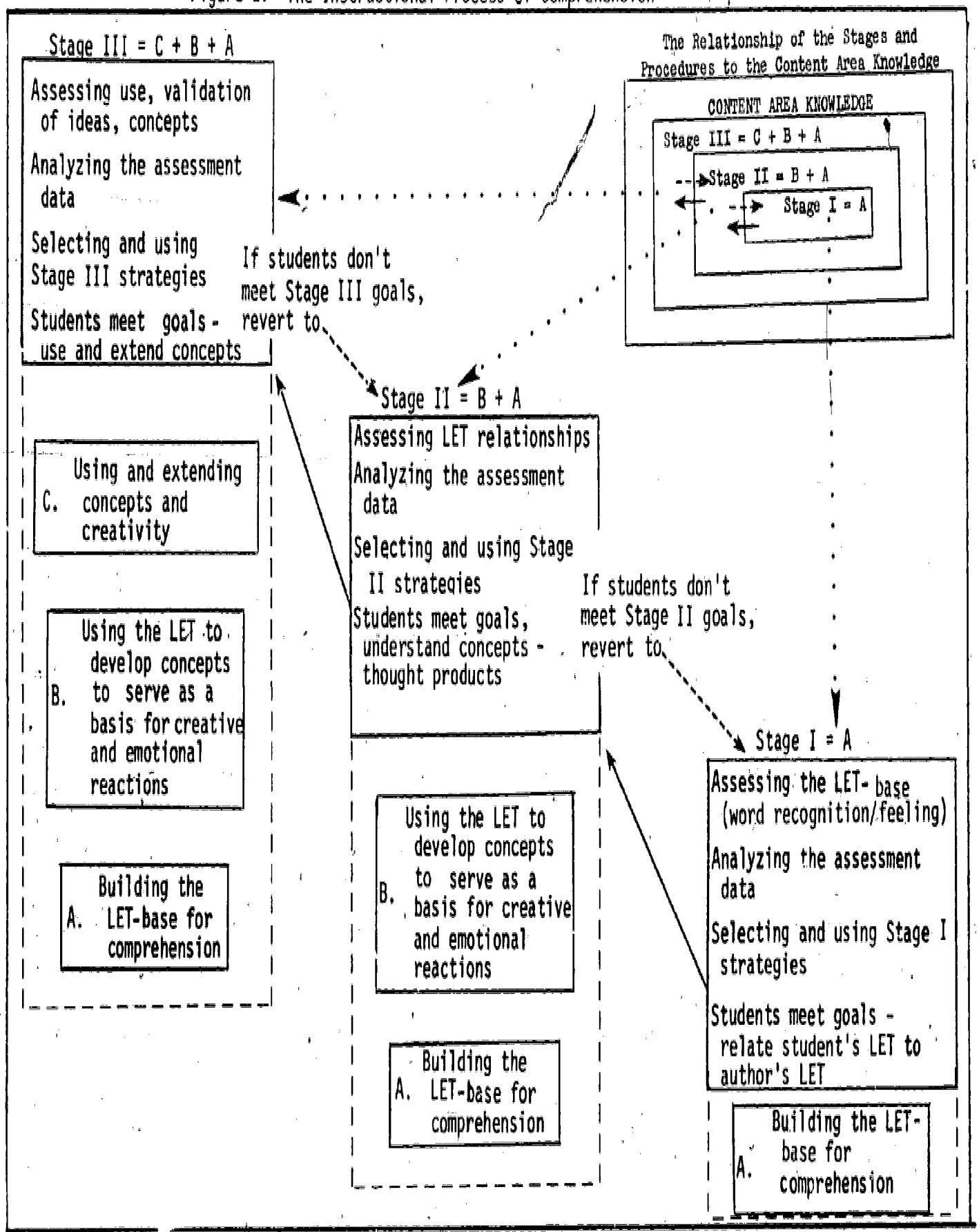


On the graphic representation above, the arrow with the broken lines (---►) indicates the process of backing up to the preceding stages. The arrow with the solid lines (◄—) shows the required movement toward Stage III.

For example, if a social studies teacher finds that the students don't understand the major concepts of the chapter or unit (Stage II), but have the basic LET requirements (Stage I), instruction should begin at Stage II. As the students learn the concepts, the teacher then proceeds (◄—) to Stage III, extending and using the concepts. On the other hand, if the teacher starts at Stage II and finds that the students lack the LET base, instruction reverts (---►) to Stage I. As the students learn, instruction moves (◄—) to Stage II, then to (◄—) Stage III.

The instructional process is composed of three major stages, each mutually dependent upon each other. Each stage contributes in a particular way to the comprehension process. The ultimate goal of this process is the use and application of concepts. To attain this goal, the learner needs are determined and through guided or independent inquiring, the student is helped to conceptualize, starting with his/her present level of knowledge and skill.

Figure 2: The Instructional Process of Comprehension



Key: ----→ as needed
←—— necessary

There are four major considerations related to the comprehension process (Figure 3). These considerations are important, for they reflect key aspects of the teaching/learning process. They assure that instruction:

1. Is goal (concept) oriented, giving the instruction purpose and direction.

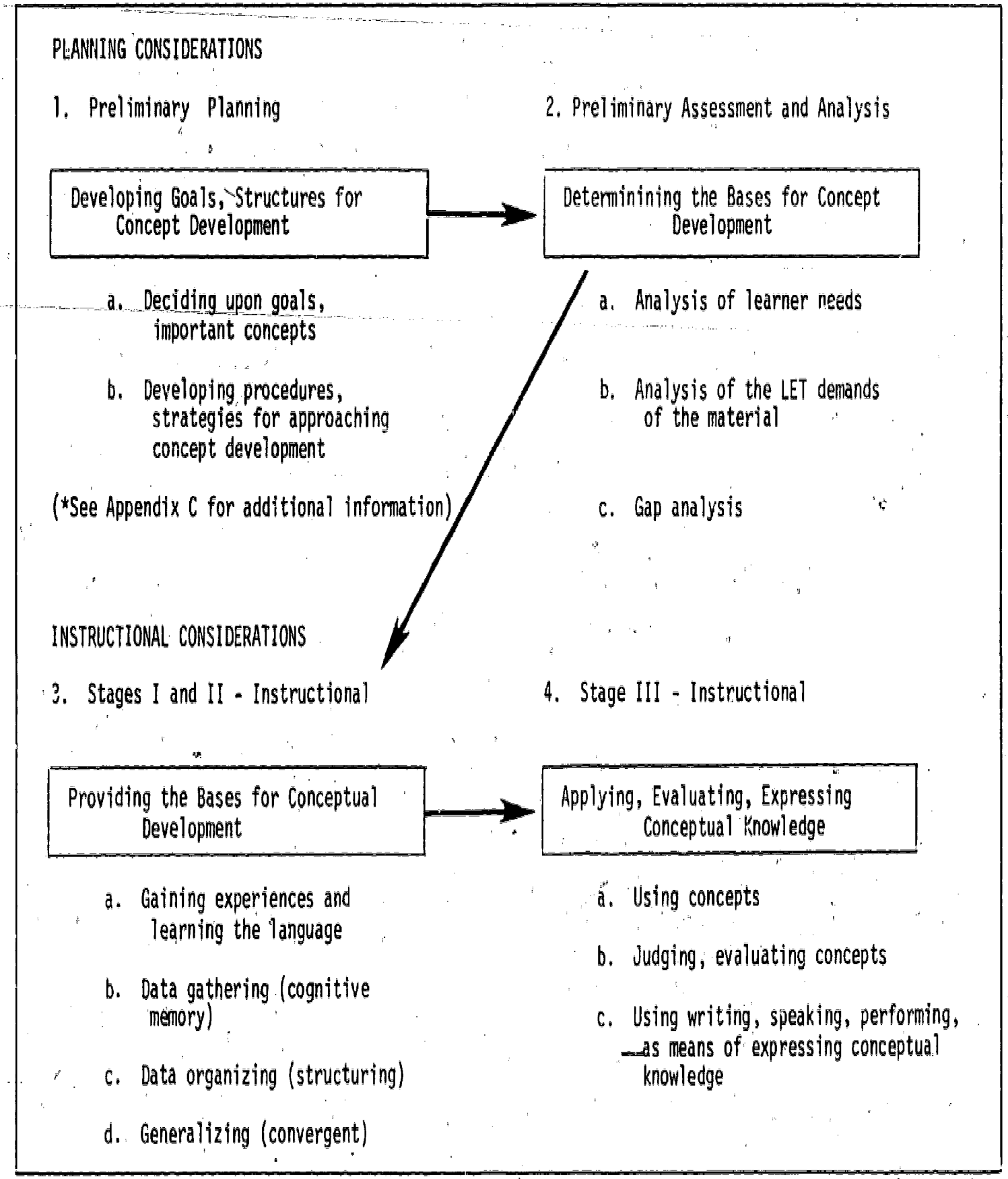
2. Starts at the student's present level of knowledge and skills and progresses to higher and higher levels.

3. Encourages students to use the skills of inquiry, research, analysis, and synthesis as they gather information and gain experience.

4. Provides opportunities to validate concepts to make them functional and usable in real life.

This instructional process for comprehension, it is hoped, will instill in students a genuine desire to learn and also will serve as a means for strengthening students' belief in themselves.

Figure 3: Four Major Considerations Related to the Comprehension Process



Chapter 3

Analyzing and Selecting Instructional Strategies

Assessing student needs is a continuous process which is conducted before and during instruction, as well as after instruction is completed. It can consist of observation of students' performance, or recalling students' previous performance in similar tasks or units.

Assessment helps the teacher to:

1. Get a general idea of whether instructional materials are too difficult or whether students possess the adequate knowledge and skills to participate in the lesson.
2. Develop a starting point for instruction.
3. Develop appropriate instructional goals.
4. Determine appropriate instructional strategies.

This chapter of the handbook delineates procedures for:

1. Assessing student needs in relation to student goals.
2. Matching student needs to the three stages of instruction.
3. Determining instructional goals and selecting instructional strategies.

(Refer to Figure 4 for schematic explanation.)

1. Assessing Student Needs in Relation to Student Goals

a. Determine assessment technique(s) to be used. (p. 75)

1) A questioning approach (Appendix A).

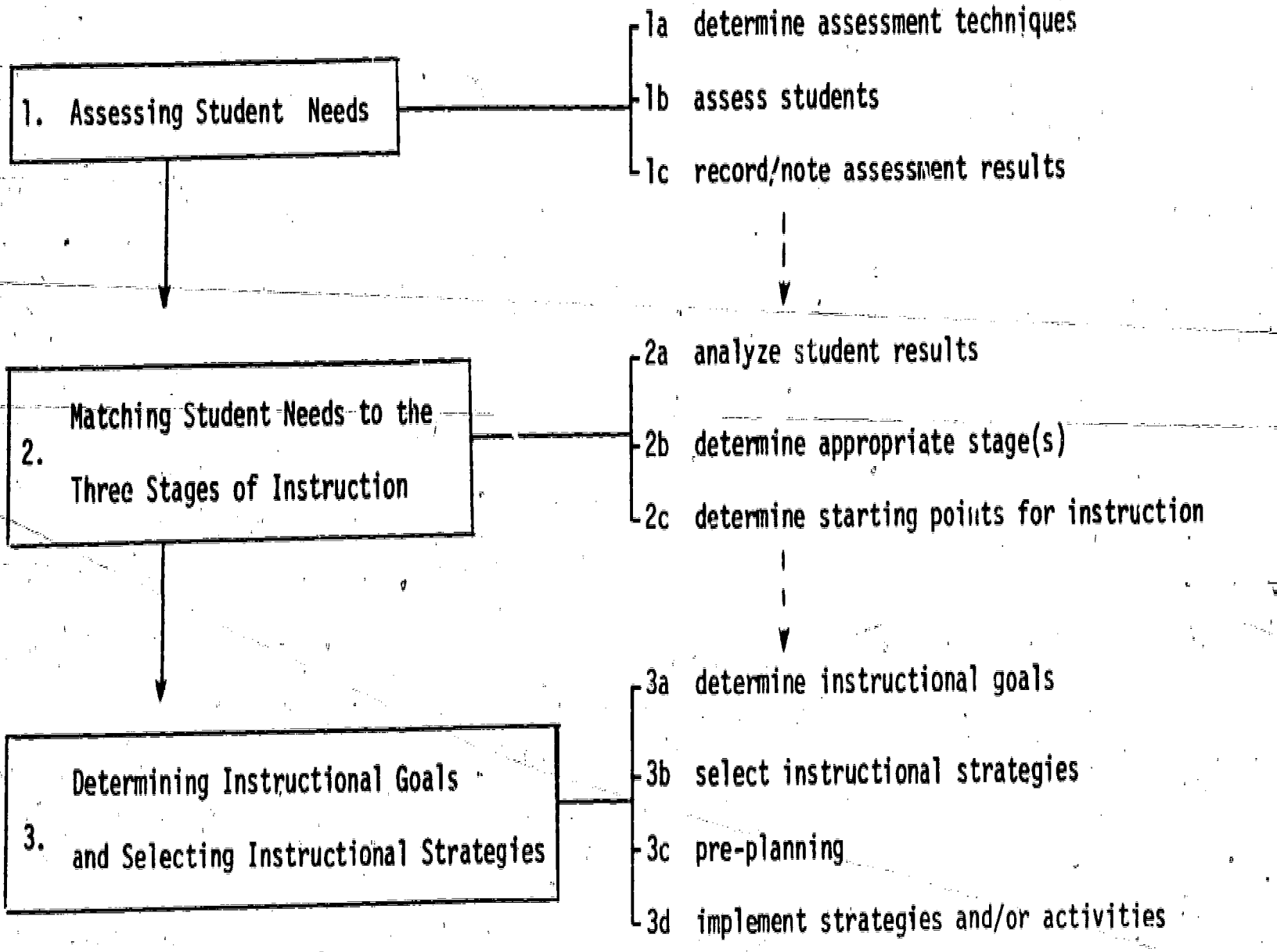
2) Observation using "Group/Individual Summary of Needs" form (page 13).

3) Recalling previous performance of students in similar tasks.

4) Instructional validation, which is simply the process of teaching the lesson in accordance with your plan. After the lesson, however, an analysis is conducted using the "Group/Individual Summary of Needs" to determine what needs were exhibited by the students as they engaged in the lesson.

5) Referring to the "Matrix for Analyzing and Selecting Instructional Strategies" to select student goals to be emphasized in instruction. (p. 15)

Figure 4: Analyzing and Selecting Instructional Strategies



GROUP/INDIVIDUAL SUMMARY OF NEEDS

☑ = No

Stage III = C + B + A

☐1. Do the students have some productive thinking tasks?

☐a) Do the students apply and use the newly learned concepts in novel or in different contexts?

☐b) Do the students evaluate and make judgments of the concepts per se, and of their utility or value?

☐2. Do the students apply and use the newly learned concepts in productive language arts tasks?

☐a) Writing/creating

☐b) Speaking

☐c) Performing

Stage II = B + A

E-T → L

☐1. Have the students consciously thought about, revised, discussed their experiences in light of the author's intended (E-T - L) concepts, so that common language can be established.

E-L → T

☐2. Have the students labeled their experiences with the language of the author (E-L - T) so that thinking can be pursued?

L-T → E

☐3. Have the students developed the appropriate languag so that thinking can occur at the abstract level (L-T - E) and students then can create vicarious experiences and abstract concepts?

Stage I = A

Language

☐1. Do the students know the terms required in the lesson?

☐2. Do they have usable synonyms if not the exact terms?

☐3. Do they understand the specialized meanings of the content terms?

Experience

☐1. Do the students have concrete or vicarious experiences which can be related to the experiences in the lesson?

☐2. Do the students need direct or simulated experiences or sensory inputs before they can understand the ideas in the lesson?

Thinking

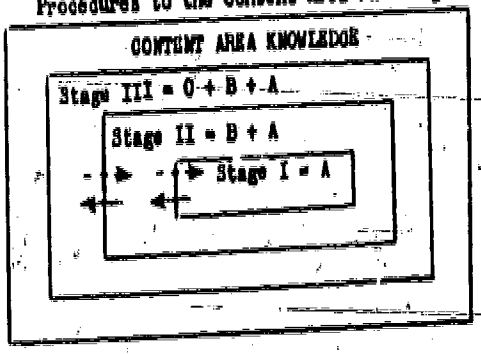
☐1. Do the students process the information completely through the five stages of thinking?

☐2. Is there a particular stage which presents problems, (cognitive memory, structuring, convergent, divergent, and evaluative)?

Word Recognition

☐1. Do the students use meaning based word recognition strategies to identify or predict unknown words? (Situational context, sentence context, structural analysis)

The Relationship of the Stages and Procedures to the Content Area Knowledge



b. Assess students.

c. Record/note assessment results.

2. Matching Student Needs to the Three Stages of Instruction

a. Analyze the assessment results by asking questions such as:

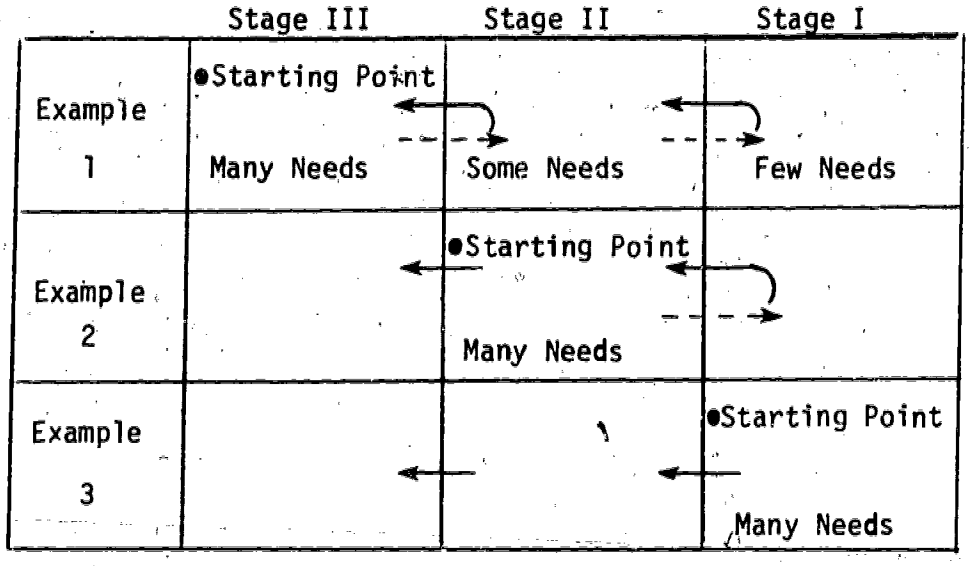
1. Is there a stage(s) where students may have many unmet needs? (Examine overall pattern.)

2. Is there a particular category where needs are clustered?

3. Should instruction revert to previous stage(s)?

b. Determine appropriate stages to start instruction.

Since Stages I and II are basic to Stage III, any needs in those categories should be attended to. However, the teacher should be able to decide, based upon the desired concept, what is relevant or irrelevant for this particular lesson and what to overlook. Examples of three basic patterns are given below.



3. Determining Instructional Goals and Strategies

a. Refer to the "Matrix for Analyzing and Selecting Instructional Strategies" on page 15.

b. Match the learner needs with the instructional goals and note the page numbers of the instructional strategies.

c. Select a strategy and/or activity from the list of options.

d. Refer to Appendix B for hints on how to make instruction more effective.

Matrix for Analyzing and Selecting Instructional Strategies

STAGE III: Using and Extending Concepts and Creativity

Assessment	Instructional Goals	Instructional Activities/ Strategies
1. Do students have some productive thinking tasks?		. See Stage III divergent/ evaluative extension for strategies described on pages 54-71
a. Do students apply and use the newly learned concepts in novel or different contexts?	Providing students situations which require the application or use of the concepts.	
b. Do students evaluate and make judgments of the concepts per se, and of their utility or value?	Providing students opportunities to make judgments, evaluate the application of concepts.	. See content area applications: page 88 (science), page 92 (literature), page 97 (social studies), page 102 (math)
2. Do students apply and use the newly learned concepts in productive language arts tasks?	Providing students various opportunities to synthesize and express their learning or feelings through	
a. Writing/creating	a. Writing/creating	
b. Speaking	b. Speaking	
c. Performing	c. Performing	

STAGE II: Developing Concepts, Creative and Emotional Reactions

Assessment	Instructional Goals	Instructional Activities/ Strategies
1. Have students consciously thought about, revised, discussed their experiences in light of the author's intended (E-T - L) concepts, so that common language can be established?	Cueing (LET) students to recall, revive their experiences and then analyze and discuss them to increase the value and potential for relating the language to the experiences.	. See activities on pages 36-49
		. See strategies on pages 54-71
		. See content area applications: page 88 (science), page 92 (literature), page 97 (social studies), page 102 (math)
2. Have students labeled their experiences with the language of the author (E-L - T) so that thinking can be pursued?	Cueing (LET) students to recall, revive their experiences and then relate the language to the experiences.	
3. Have students developed the appropriate language so that thinking can occur at the abstract level (L-T - E) and students can then create vicarious experiences and abstract concepts?	Cueing (LET) students to use their knowledge of the language to think abstractly to develop and approximate concepts and create vicarious experiences.	

STAGE I: Building the LET Base

Assessment	Instructional Goals	Instructional Activities/ Strategies
Language 1. Do students know the terms required in the lesson? 2. Do they have usable synonyms if not the exact terms? 3. Do they understand the specialized meaning of the content terms?	**Language** Teaching students the words or terms which appear in the lesson and text (oral and/or visual). Developing usable synonyms. Developing understanding of specialized content usages and meanings.	• See activities on pages 24-34 • See content area applications: page 88 (science), page 92 (literature), page 97 (social studies), page 102 (math)
Experience 1. Do students have concrete or vicarious experiences which can be related to the experiences in the lesson? 2. Do students need direct or simulated experiences or sensory inputs before they can understand the ideas in the lesson?	**Experience** Determining, clarifying and relating relevant student's experiences to the experiences required by the text. Providing students with the actual or simulated experiences relevant to the lesson content.	
Thinking 1. Do students process information completely through the five stages of thinking? 2. Is there a particular stage which presents problems (cognitive memory, structuring; convergent, divergent, and evaluative)?	**Thinking** Cueing thinking of students so that the same data base is carried through the five stages of thinking. Providing students instruction which meaningfully engages them in the given thinking process.	
Word Recognition 1. Do students use meaning-based word recognition strategies to identify or predict unknown words (situational context, sentence context, structural analysis)?	**Word Recognition** Providing students instruction in the meaning-based word recognition strategies.	

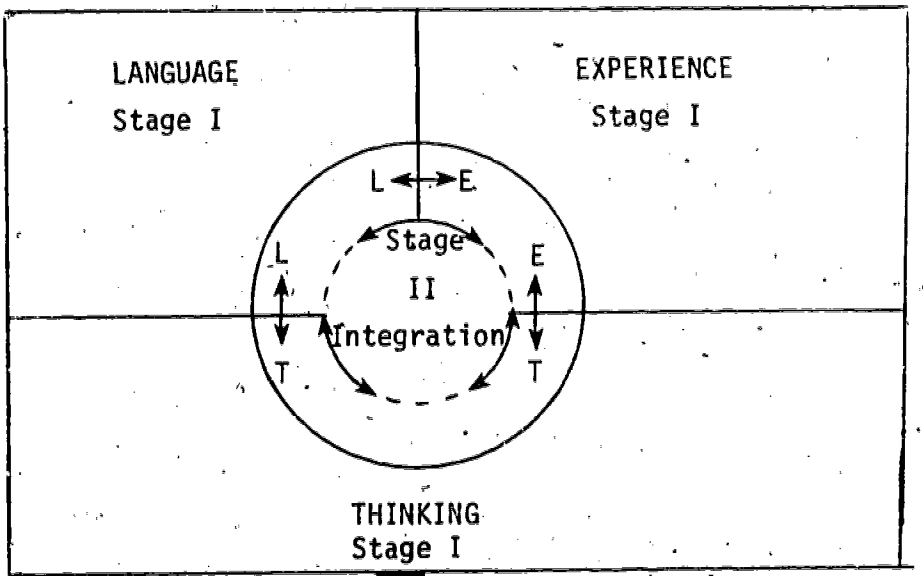
Chapter 4

General Instructional Strategies for Stages I, II, and III

The following section contains instructional strategies and activities for each of the three stages. They are essentially content free so teachers can use the strategies or activities in any content area.

Although the strategies and activities are listed in stages, in practice, all three stages are integrated and mutally dependent upon each other.

Stages I and II are both represented by the same model but each stage focuses upon a different aspect or process. Stage I instructional approaches concentrate on the LET as separate entities primarily to provide the student with the basics to begin comprehending. Stage II instructional approaches link the LET into integrated groups or wholes to facilitate concept development.



The strategies in this section are arranged in logical relation to the stages of the thinking process (see page 30). Hopefully, this will clarify the relationship between teaching strategies and thinking goals. Thinking is the underpinning for all learning and serves to keep us mindful that instruction which is comprehension oriented should be meaningful and purposeful. It is important to remember that the process of teaching concepts is itself as logical as the development of concepts themselves. Because of

this, planning considerations in facilitating comprehension are important for teachers who are seriously concerned with students' comprehension. (See Appendix B)

When viewed from an overall perspective, the importance of the commitment to thinking becomes clearer. Thinking generates a structure for instruction. This structure then serves as a framework for student assessment and the development of instructional goals. These goals then help the teacher make decisions about the efficacy of instructional strategies. (See Figure 5)

When instruction has purpose and unity, and personifies a strong belief in the student, a sense of harmony results which is rewarding to both the teacher and the student.

Figure 5: THE THREE MAJOR STAGES OF THE INSTRUCTIONAL PROCESS OF COMPREHENSION

	Stage III Using and Extending Concepts/ Creativity	Stage II Using the LET for Conceptual Development	Stage I Matching the Adequacy of Language, Experience and Thinking
Instructional Categories for Comprehension	Student applies concept in creative and productive manner	Concept, Goal Octopus is shy Concept, Goal	AUTHOR'S LET L Octopus E Oregon deep sea Octopus T Author's Main Idea = Comprehends: Octopus is shy. L Squid E Shallow reef living Squid T Student's Main Idea = Comprehends: Squid tasted good. MOLOKAI STUDENT'S LET
Learner Needs	Does the student apply the idea in a novel or similar setting? Does the student evaluate the application critically?	Has the student labeled his/her experience? Has the student thought about his/her experience and conceptualized? Has the student developed the language so that thinking can occur at the abstract level? Does the student relate his/her LET to the author's LET, approximating the idea?	Is the Language, Experience and Thinking of the student adequate to relate to the author's Language, Experience and Thinking?
Teacher's Role	Help student use and extend concept/creativity	Help the student to learn the language and concepts of the material by cueing the student to think, using his/her present language, experience and knowledge.	Help develop the language experience or thinking skills of the student or Relate the author's language, experience and thinking process to the students'.

(F) = Feeling

Varying Instructional Procedures to Meet Learner Needs

Stage III

Because Stage III learners understand the content area concepts, instruction can begin to concentrate on the application, use and evaluation of these concepts.

Learners are asked to apply and evaluate the new ideas they've acquired for the purpose of making learning real, concrete, and functional. For example, when students have comprehended a concept in social studies, they are given opportunities to use it in other situations and also to validate the worth of the idea.

Even further, students are asked to engage in such productive language arts tasks as writing, speaking, or performing as means of demonstrating their application and evaluation of the learnings. These extensions serve to assimilate, to "fix," the learnings into the students' LET-base and thus expand this base for future learning.

Stage II

Stage II learners have problems in developing content area concepts and ideas and in attaching the appropriate vocabulary labels to them. Therefore, Stage III instruction which focuses on the application and evaluation of concepts may be premature for these learners. Instead, the teacher needs to systematically help students restructure old experiences and concepts (i.e., their present LET-base) to create the new experiences and concepts of the content area. As a result of this instruction, students also learn the new language of the content and are then ready to move to Stage III.

Stage I

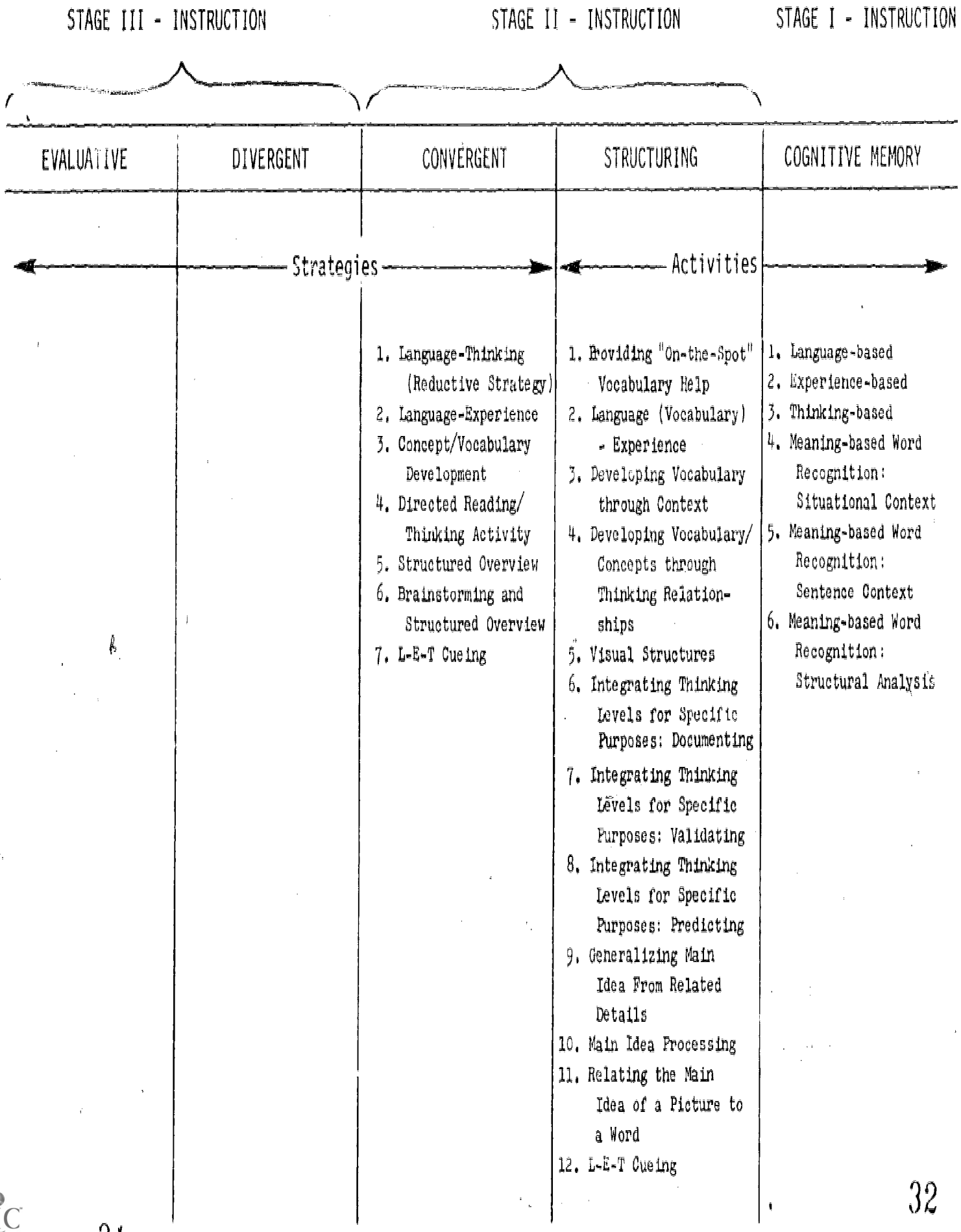
Stage 1 learners have an LET-base which differs greatly from that required by the content area lesson or text. Because of this, their ability to comprehend the concepts of the content area and to acquire its "language" independently is limited. Instruction for these learners should center on helping them:

1. select and focus on elements from their existing LET-base which may be used to comprehend the lesson or text,
2. build their present LET-base so that it more closely approximates that of the lesson or text.

In helping students establish a foundation (of language, experience, thinking and word recognition skills) which relates to that required by the

lesson, the teacher has brought students to the point at which they can begin successfully tackling the relational thinking demands of Stage II comprehension.

Relationship of the Comprehension Stages, Thinking Model and the Instructional Strategies



STAGE I: INSTRUCTIONAL ACTIVITIES

GENERAL PURPOSE: These activities are designed to concentrate specifically on the language, or experience, or thinking, or word recognition needs for the purpose of building a foundation for comprehension.

ACTIVITIES FOR STAGE I INCLUDE:

1. Language-based, page 24
2. Experience-based, page 26
3. Thinking-based, page 28
4. Meaning-based Word Recognition - Situational Context, page 31
5. Meaning-based Word Recognition - Sentence Context, page 33
6. Meaning-based Word Recognition - Structural Analysis, page 34

INSTRUCTIONAL ACTIVITY: Language-based

1. What is it?

   Language-based activities are those which a) assess the students' understanding of the language used in a specific text or passage, and b) develop the vocabulary and concepts required to understand the material. It is a way of relating the students' language and experience to the language of the text, labeling experiences and expanding concept development.

2. What are the benefits?

   The student who can label direct or vicarious experiences, thoughts and ideas and relate them to the specific terminology used in the content areas of mathematics, science, social studies and literature is learning the "language of that content area" thus providing the base for understanding and application of concepts.

3. What are the limitations?

   There is a danger that isolating vocabulary can lead to dictionary definitions rather than labels for thoughts, ideas, experiences and concept development.

4. What are some of the student characteristics which indicate that this technique is appropriate?

   This technique seems to be appropriate for all learners at all levels.

5. Instructional Procedures

   If the student does not seem to understand the printed material, the language may be abstract, or she/he may not be familiar with the specialized vocabulary or may be interpreting figurative language in a literal fashion. The teacher can help the student link up terms used in the lesson/passage/text with vocabulary and concepts she/he already has.

   Use a questioning technique to:

   a. Determine whether the student knows the terms required in the lesson.

      What are the important terms or key words? Or teacher selects these ahead of time and asks: Do you know what . . . means?

   b. Determine whether the student has synonyms or other words for the term.

      Can you give me another word(s) that means the same thing here?

INSTRUCTIONAL ACTIVITY : Language-based (continued)

c. Determine whether the student understands the specialized meanings of the content terms.

Have you ever heard this term before?
How was it used?
What does it mean to you?
Is that how it is being used here?
Does the rest of the sentence/paragraph give you a clue to how it is being used here?
What do you think it means now?

INSTRUCTIONAL ACTIVITY: Experience-based

1. What is it?

   Experience-based activities are those which seek to identify the experiences of the learner. These experiences are then related to ideas or concepts to be learned. In this way learning progresses from known to unknown. This approach capitalizes on the direct experiences of students and the language-base they bring to school to develop and refine language and thinking skills in such a way that all learning for the student will be integrated, comprehensible, and functional.

2. What are the benefits?

   This approach includes all aspects of language development (receptive and productive) and concept development. It can be used successfully with beginning readers, culturally different students, in conjunction with any other approach, and in any content area. The approach insures success and confidence in learning rather than bewilderment and frustration.

3. What are the limitations?

   Teachers need to understand, accept, and be committed to the theoretical basis for this approach. They need to be willing to accept the student's existing language and experiences as a point of departure for subsequent learning. They must also be able to relate abstract concepts to the direct or vicarious experiences of the student.

4. What are some of the student characteristics which indicate the technique is appropriate?

   This technique seems to be appropriate for all learners at all levels, particularly those who do not seem to have the experiences necessary to comprehend an idea or concept.

5. Instructional Procedures

   If the student does not seem to have the experience-base for the lesson, use a questioning technique to:

   a. Try to find an experience she/he can base a vicarious experience upon.

      1) Have you ever seen one like this before?
      2) At home, what do you do at a time like this?
      3) When have you done something like this before?
      4) What do you think is happening in this picture?

INSTRUCTIONAL ACTIVITY: Experience-based (continued)

b. Then try to draw similarities between the student's own experiences and the one to be learned so she/he can see the relationship between the two.

c. Then relate the language (vocabulary, labels) to the experience so that the vocabulary becomes meaningful and can serve as a basis for furhter comprehension.

d. Go back to the original sentence, concept, or materials and have the students reread, rethink, and discuss the meanings.

INSTRUCTIONAL ACTIVITY: Thinking-based

1. What is it?

   A thinking-based activity focuses on the important stages of thinking and guides students to process information so ideas and concepts become more usable and relevant. A thinking-based strategy concentrates on the major thinking stages:

   a. Recalling details.
   b. Seeing relationships or structures.
   c. Identifying ideas and concepts.
   d. Using and applying ideas and concepts.
   e. Evaluating ideas and concepts.

2. What are the benefits?

   This activity helps students to use information more functionally and to read and listen with better comprehension.

3. What are the limitations?

   This activity requires much interactive time with students and requires that teachers have skills in questioning strategies.

4. What are some student characteristics which indicate the technique to be appropriate?

   The student:

   a. Does not recall details
   b. Does not see relationships or structures.
   c. Does not understand the main ideas.
   d. Does not apply or use the ideas learned.
   e. Does not evaluate ideas effectively.

5. Instructional Procedures

   Sometimes the problem with thinking is that the language or the labels required to help students think are abstract. At other times, students do not have the experiences, real or vicarious, from which to infer meanings. To help students think, student-teacher interaction is important. The teacher can help the student clarify ideas, develop new ones and see new relationships and alternatives. One of the more important ways to help students think is to use questioning strategies.

   a. By questioning, determine what level of thinking students need help in (Figure 6).

INSTRUCTIONAL ACTIVITY: Thinking-based (continued)

b. Questioning can start in any thinking stage. But as students have difficulty responding correctly to questions from that level, the teacher should revert to questions from the previous level of thinking. This process continues until the student can successfully respond. If student cannot respond to the earliest level (Cognitive Memory), then perhaps Language and Experience questions need to be asked. (See Language-based and Experience-based activities in this section.) As the students respond correctly, the teacher then moves up the levels of thinking. For example, if a teacher asks a question on the divergent level (1) and the students cannot respond correctly, then the teacher reverts to the previous stage (Convergent, 2). "What was the main idea?" The student responds incorrectly. Then the teacher reverts continuously until the student can respond adequately. Then the teacher moves back up the levels (5).

Teacher	CM	S	C	D	E	Student
1. How would the outcome be different if we used this idea?				–		1. "I don't know"
2. What was the main idea?			–			2. "That men are better than women"
3. Why do you think that?		–				3. "Because he said "..."
4. But didn't the man say . . .?	+					4. "Oh, that's right"
5. Now with that in mind, what did he mean?			+			5. That men and women have different strengths and weaknesses.

Science -- refer to Science Curriculum Guide, K-6, Process Skills, pages B-3 - B-19.

Math -- refer to Math Program Guide, K-6, Teacher Questioning, page 23.

Figure 6: CUEING QUESTIONS BY THINKING STAGE

Stage of Thinking →	Cognitive Memory	Structuring	Convergent	Divergent	Evaluation
Purpose →	Perceiving / Recalling / Retrieving (details / data)	Relating, structuring the data or details	Generalizing, getting the main idea/ concept, converging	Imagining, using, applying, predicting, hypothesizing	Judging, valuing
	1. Who...? 2. What are the facts? What are the most important details? What are the facts regarding...? What is the...? What do you mean by...? What is your interpretation of what happened? What happened? 3. When? 4. Where?	1. Categories: Which group does that belong to...? How would you classify...? What type would you...? 2. Comparisons: How are they alike...? same...? similar...? identical...? Contrast: How is it different... in opposition to..., unlike? 3. Cause and Effect: What will happen if...? why...? What will happen as a result of this?	1. What are the chief points? Given that information, what is the main idea, point? 2. What is the single most important idea? 3. State the idea in one sentence? 4. Explain...	1. What might happen if...? 2. If you use that idea, what would it mean to our...? 3. Apply that idea to our situation. 4. What would result if...? 5. If you were given these facts, what would you do to...? 6. How would the operation be different if we used this idea...? 7. What could be advantages, benefits, if we applied this idea, process? 8. What do you think the story, paragraph will be about?	1. How do you feel about that idea? 2. What is your opinion...? 3. What is the best...? 4. Are you satisfied with that answer, plan? 5. Can this statement be made? Why? 6. Out of all the information, which can be used to prove your point? 7. How would you judge? 8. What is your opinion or conclusion about the product, plan, idea? 9. Why did you think it worked... didn't work...? 10. What is fact? What is opinion?

INSTRUCTIONAL ACTIVITY: Meaning-based Word Recognition
Situational Context

1. What is it?

   The use of the situational context is the process of using the main idea of a group of sentences or a paragraph to have a student identify or predict what an unknown word is.

2. What are the benefits?

   This process encourages the student to read for ideas. It stresses meaning and therefore emphasizes thinking, especially generalizing main ideas. It helps the student to read through a paragraph rather than to stop at every word or syllable she/he does not know.

   It fits well into the style of the student who would rather read for ideas and meanings and who would get bored with repetitive tasks and skill activities.

3. What are the limitations?

   The student needs to understand most of the language of the paragraph and has to comprehend an idea in order to provide good predictions. The teacher needs to accommodate the student's LET background to effectively use this technique. It is not a complete word recognition approach in and of itself.

4. What are some student characteristics which indicate that this technique is appropriate?

   The learner:

   a. Knows specific skills but does not apply them in context or when reading a line.

   b. Can decode satisfactorily but does not get meaning from paragraphs or groups of sentences.

   c. Has difficulty decoding but seems to be able to get the ideas of the paragraph.

5. Instructional Procedures

   a. In any reading situation, have the student skip the word and read the rest of the paragraph looking for cues to help identify the unrecognized word.

INSTRUCTIONAL ACTIVITY: Meaning-based Word Recognition - Situational Context (continued)

b. Then have him/her guess at what the word(s) might be based upon an interpretation of the paragraph.

c. Also, ask th student what could substitute for the word or what might fit in the same slot.

43

INSTRUCTIONAL ACTIVITY: Meaning-based Word Recognition - Sentence Context

1. What is meaning-based word recognition-sentence context?

   Sentence context is a process in which the student uses the meaning of the sentence to identify or predict an unknown word.

2. What are the benefits?

   This process encourages the student to read for meaning and ideas rather than reading word by word.

3. What are the limitations?

   The student needs to understand most of the language of the sentence.

   In order to use the sentence context process, the student must possess a sufficient vocabulary and appropriate skills in using speech to communicate ideas.

4. What are some learner characteristics which indicate that this technique is appropriate?

   The learner:

   a. Knows specific skills but does not apply them in context or when reading a line.

   b. Can decode satisfactorily but does not get meaning from the sentence.

   c. Has difficulty decoding but seems to be able to get the meaning of the sentence.

5. Instructional Procedures

   a. Have the student skip the word and read the rest of the sentence looking for cues to help identify the unrecognized word.

   b. Then have him/her guess what the words(s) might be based upon the meaning of the sentence.

   c. If his/her answer is semantically correct, give him/her the correct word and use a synonym strategy. " Another word which means the same is _____."

INSTRUCTIONAL ACTIVITY: Meaning-based Word Recognition - Structural Analysis

1. What is it?

   Meaningful structural analysis emphasizes roots, prefixes, and suffixes. Those elements carry or affect meaning, as opposed to those syllables which do not, e.g., syllables as sound groups ("su" as in supreme rather than "pre" which carries a meaning).

2. What are the benefits?

   a. The student sees word attack as a meaningful process.

   b. The student can identify meaningful parts of words which provide clues in determining their meanings (vocabulary).

   c. Structural analysis serves as a transition between synthetic (letter by letter analysis) and word analysis which speeds perception.

   d. It helps the students analyze longer multi-syllabic words which may not be phonetically consistent.

3. What are the limitations?

   Structural analysis is not a complete word recognition process. It serves as a transition between whole words and letter by letter analysis. Teaching only structural analysis results in students with poor sight vocabularies.

4. Instructional Procedures

   Have the student look for meaningful parts in the unknown word (root words, prefixes, suffixes).

STAGE II: INSTRUCTIONAL ACTIVITIES

GENERAL PURPOSE: These activities are designed to establish specific language, experience and thinking linkages, and to be used as an integral part of the Stage II concept development strategies.

ACTIVITIES FOR STAGE II INCLUDE:

1. Providing "On-the-Spot" Vocabulary Help, page 36
2. Language (Vocabulary) - Experience (L - E), page 37
3. Developing Vocabulary through Context, page 38
4. Developing Vocabulary/Concepts through Thinking Relationships, page 39
5. Visual Structures, page 40
6. Integrating Thinking Levels for Specific Purposes: Documenting, page 42
7. Integrating Thinking Levels for Specific Purposes: Validating, page 43
8. Integrating Thinking Levels for Specific Purposes: Predicting, page 44
9. Generalizing Main Idea from Related Details, page 46
10. Main Idea Processing, page 47
11. Relating the Main Idea of a Picture to a Word, page 48
12. L - E - T Cueing, page 49

STAGE II ACTIVITY: Providing "On-the-Spot" Vocabulary Help

PURPOSE:

To help students to: (a) create an awareness and interest in words and a desire to expand their listening, speaking, and reading vocabularies, (b) develop preciseness in their expression and thinking, and (c) become increasingly proficient at the process of "labeling" experiences and expanding their conceptual backbround.

A written form is familiar and may even have an oral equivalent, but the reader has no meaning for it. Within narrow limits she/he may even use it to answer test questions correctly without understanding what she/he is reading. The sentence structure and sound symbol relationships of the word are no problem, but the meaning still eludes the reader.

DESCRIPTION: (including EXAMPLE/APPLICATION)

If the teacher needs to provide the meaning, she/he does this in a variety of ways:

a. By example - give the word an an example:

Chop - when someone cuts something into pieces such as a cook chops vegetables or a camper chops wood for a fire.

b. By description - describe the word being defined:

An apple is sometimes red, green and yellow; is crunchy, sweet and smooth-skinned.

c. By antonym - define a word by using an opposite idea or word:

Obese - One boy was skinny while the other was obese.

Frank's bag of popcorn was overflowing, while Ethel's bag was empty.

d. By synonym - give other words of similar meaning:

Big - large, gigantic, huge

Laugh - giggle, chuckle, cackle, crow

Answer - reply, response, comeback

17

STAGE II ACTIVITY: Language (Vocabulary) - Experience (L - E)

PURPOSE:

To help students to: (a) create an awareness and interest in words and a desire to expand their listening, speaking, and reading vocabularies, (b) develop preciseness in their expression and thinking, and (c) become increasingly proficient at the process of "labeling" experiences and expand their conceptual background.

DESCRIPTION:

Use a cloze or meaning (context)-based strategy:

Within a sentence or passage, have student guess at a word that would "make sense," based on sentence structure, vocabulary or sound/symbol cues.

When the student is unable to retrieve the word from memory, provide the word, linking it to whatever related LET was exposed during contextual guessing. In this case, the problem may be one of word recognition more than vocabulary/language.

EXAMPLE/APPLICATION:

The student encounters the sentence:

"Some people like new things, while others prefer old things. The first kind of person may think of an oil lamp as an old piece of junk. He might find the oil lamp handy during a storm when the electric power fails. But he would rather depend on a good flashlight. The second kind of person prizes the oil lamp as an antique."

Student is unable to understand the words prefer and antique.

1) "Some people like new things, while others _____ old things." Read to the end of the line. What word makes sense in this sentence? What is another word for like?

2) Read the sentence: "The second kind of person prizes the oil lamp as an antique." From the description in the paragraph, what do you think an antique is?

STAGE II ACTIVITY: Developing Vocabulary through Context

PURPOSE:

To help students to: (a) create an awareness and interest in words and a desire to expand their listening, speaking, and reading vocabularies, (b) develop preciseness in their expression and thinking, and (c) become increasingly proficient at the process of "labeling" experiences and expanding their conceptual background.

A written form is familiar and . . . (has) an oral equivalent, but the reader "has" a different meaning for it. (multiple meanings)

DESCRIPTION: (including EXAMPLE/APPLICATION)

1) Use a cloze technique. Student uses context to guess at other possible meanings for word, e.g.:

"The bit of the machinist's drill was broken."

"Thieves robbed the bar down the street last night."

2) Teacher confirms student's guesses or supplies meaning, drawing a comparison/contrast relationship to the student's prior meaning(s) for the word: "In this context _____ means."

Teacher may extend lesson to other meanings of word: "_____ also has other meanings, depending on context, e.g., ..."

BIT

The role was only a ___ part in which the actor ___ into a stale doughnut, tossed the sandwich and two ___ onto the counter, and walked off a ___ unhappy.

BAR

1. A candy ___
2. A ___ of soap
3. ___ the door
4. Let down the ___
5. To ___ one's progress
6. She played one ___ of the song
7. The lawyer approached the ___
8. He passed his ___ exams
9. A sand ___.

STAGE II ACTIVITY: Developing Vocabulary/Concepts through Thinking Relationships

PURPOSE:

To help students to: (a) create an awareness and interest in words and a desire to expand their listening, speaking, and reading vocabularies, (b) develop preciseness in their expression and thinking, and (c) become increasingly proficient at the process of "labeling" experiences and so expanding their conceptual background.

DESCRIPTION: (including EXAMPLE/APPLICATION)

Relating words and thinking structures. When teaching vocabulary, organize the words in thinking relationships such as:

By enumerating qualities:

number - there are one or two
texture - hairy
color - brown, red, gray
solidity - muscular, bone,
size - one to four feet
shape - manlike, with tail
sound - chatter, scream
(others - amount, flavor, moisture, smell)

By thinking relationships

a. Generalization or classification -

A monkey is a mammal, a primate.

b. Comparison/contrast -

Both monkeys and men have opposable thumbs.

c. Cause/effect

A monkey hears a loud noise and is frightened and runs.

A monkey is hungry; it takes fruit.

e. Part/whole

A monkey is part of the animal kingdom.

A leg is part of the monkey.

f. Coordination - subordination

A monkey, a kangaroo, and a camel are all animals.

A marmoset is one of many types of monkeys.

STAGE I ACTIVITY: Visual Structures

PURPOSE:

To help students visualize the thinking structures (T) within a reading passage by arranging key words, phrases, or sentences (L) in a diagram which reflects the structure. The diagram helps students integrate language and thinking.

DESCRIPTION:

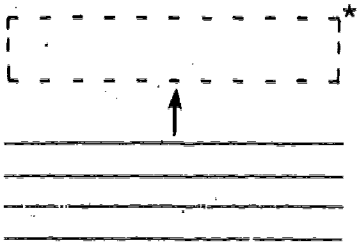
The teacher analyzes the major structures embedded in the reading material (see thinking model in section 1) and graphically displays the words, phrases and/or sentences and their thinking relationship.

EXAMPLE/APPLICATION:

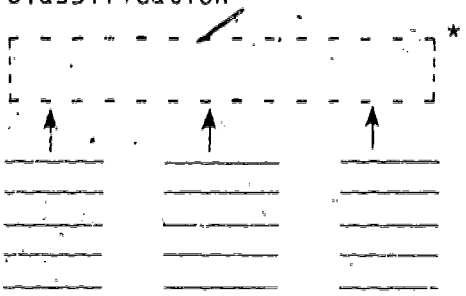
The following are "skeletal" models which the teacher may use in helping students to see visual structures.

STAGE I ACTIVITY: Visual Structures (continued)

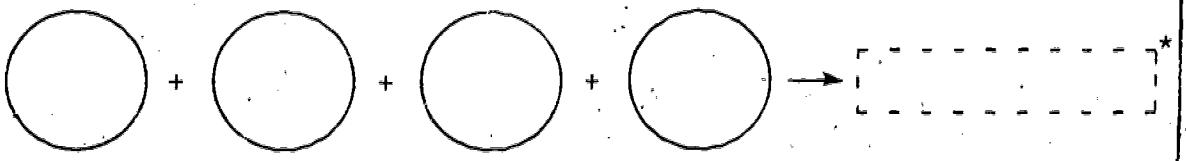
1. Simple Listing



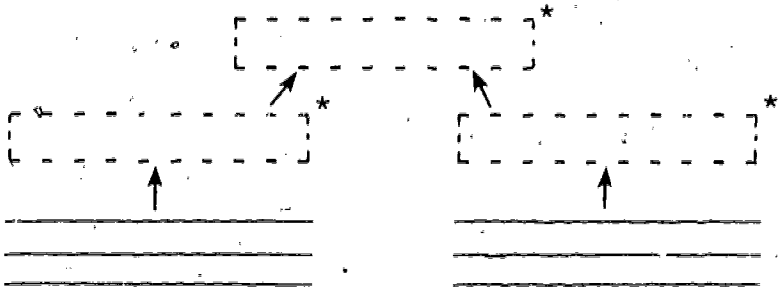
2. Classification



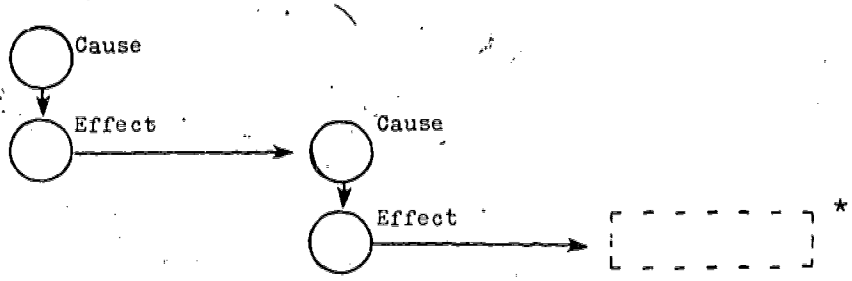
3. Time Sequence/Process Sequence



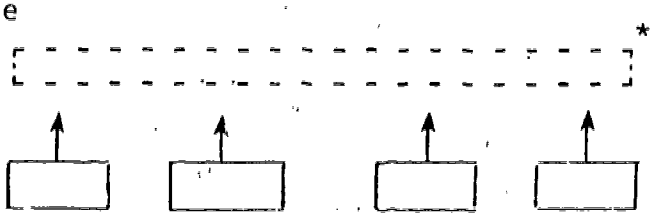
4. Comparison/Contrast



5. Cause/Effect



6. Part/Whole



*Generalization/concept

STAGE II ACTIVITY: Integrating Thinking Level for Specific Purposes: Documenting (See Figure 7)

PURPOSE:

To have students verify, prove, collect, document or report a particular idea or point of view.

DESCRIPTION:

As generalizations or predictions are generated, the students are cued to find information, events, ideas which support and verify those ideas or predictions.

EXAMPLE/APPLICATION:

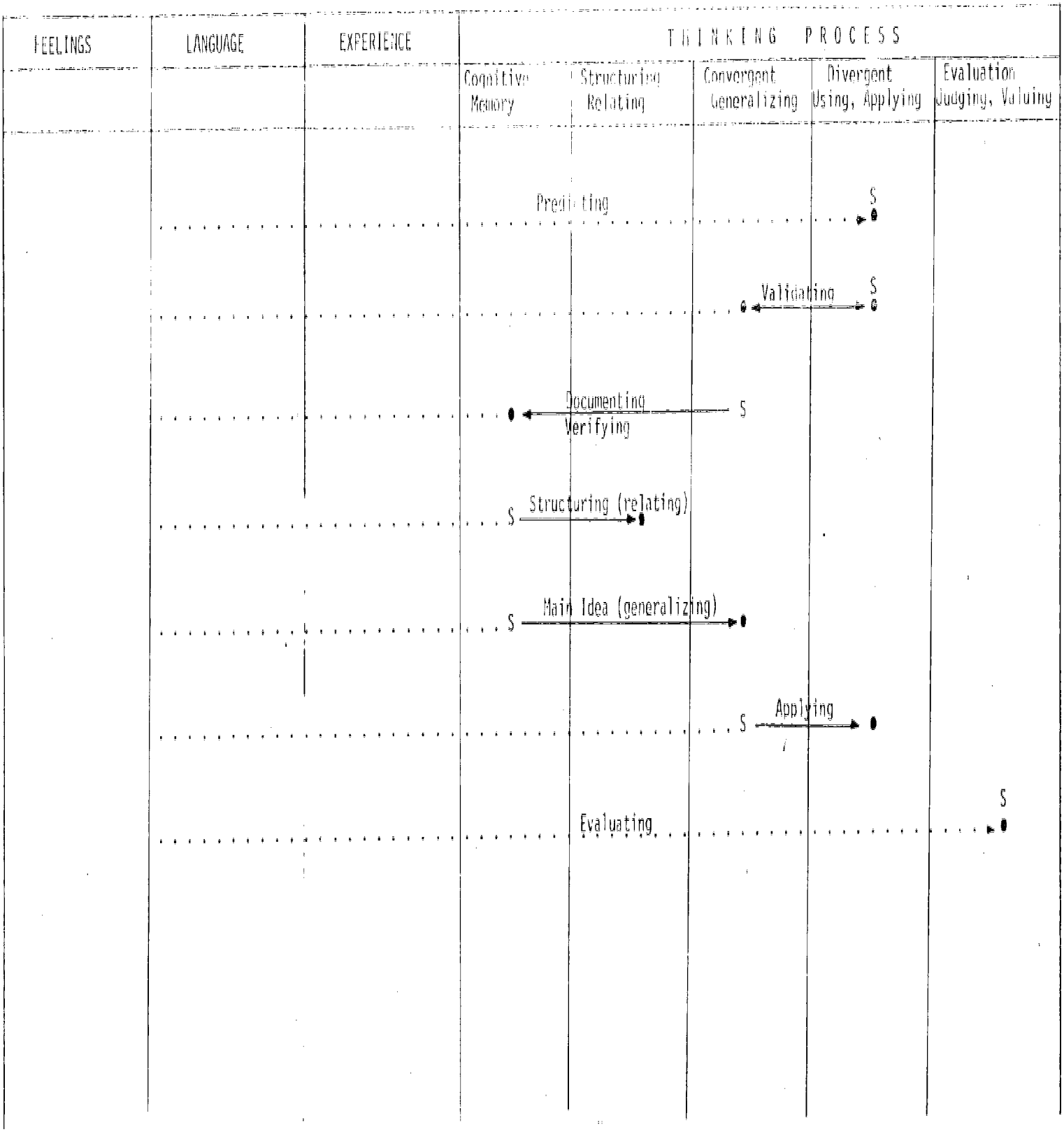
What evidence did you find to back up your idea?

What line (sentence, paragraph) in the chapter provides that information?

What proof is there that...?

S - Starting Point
● - End Point
. . . . - Assumed

Figure 7: THE BASES OF SOME MAJOR THINKING SKILLS
(General)



STAGE II ACTIVITY: Integrating Thinking Levels for Specific Purposes: Validating (See Figure 7)

PURPOSE:

To give students a purpose for reading and listening since they have to "prove," "verify," or "match" a given idea with another.

DESCRIPTION:

Validating is done by having students predict or select ideas or concepts prior to involvement in the reading/listening act. The students are then directed to check out, or determine by reading/listening, whether the original idea or concepts are correct, partially correct, or incorrect.

EXAMPLE/APPLICATION:

Students are asked to predict what they think a story is about. After their ideas are noted or recorded, the students are directed to read or listen as a means of checking or proving the prediction.

STAGE II ACTIVITY: Integrating Thinking Levels for Specific Purposes: Predicting (See Figure 7)

PURPOSE:

To involve students in the process of reading or listening by "obligating" them to guess, thereby bringing their language and experience background into play. This forces them to attach meanings at their level of interpretation.

DESCRIPTION:

Predicting is done essentially by asking the students questions which foster divergent processing (Questioning Strategy page 77). Utilize pictures, key words, titles, sub-headings, etc.

EXAMPLE/APPLICATION:

What do you think this chapter is about?

What do you think will happen if...?

Look at the pictures. Now, what to you think this chapter will be about?

STAGE II ACTIVITY: Generalizing Main Idea from Related Details (See Figure 7)

PURPOSE:

To help students consciously discriminate the irrelevant details, relate the relevant details, and based upon the similarities, generalize a main idea.

DESCRIPTION:

In this activity, students are given a cluster of words to analyze for similarities (idea, function, or physical similarities) and to determine the detail that is irrelevant, if any. The main idea is generalized from the related details.

The activity can also be used in paragraph situations by displaying key words from a paragraph and asking students to generalize the main idea.

EXAMPLE/APPLICATION:

Directions: Each of the following groups of items [illegible]ome idea, function, or physical similarity. On the line provided, write some specific characteristic that each item in the group has in common.

1. sun
   human being
   radio
   stove
   television set
   volcano

2. clouds
   hat
   paint
   carpet
   butter

3. tennis
   pingpong
   matches
   boxing
   baseball
   telegraph
   typewriter
   machine gun

STAGE II ACTIVITY: Main Idea Processing (See Figure 7)

PURPOSE:

To help students process information to determine a main idea through the use of pictures.

DESCRIPTION:

Have students discuss the details in a picture. Cue them to see the relationship (categorizing, compare/contrast, cause/effect, sequence) between the details and arrive at a generalization.

EXAMPLE/APPLICATION:

1. Picture - categorizing

   What do you see in this picture?
   How are they alike? Different?
   Can you arrange or group them in some way?
   What can you say about the groups?

2. Magazine or newspaper advertisements

   Have you used this product?
   What is it used for?
   What is this advertisement saying?

3. Doodles

   Show students a doodle such as this figure "  ." Have students use their experiences to label the figure. Does this remind you of something you've seen? What do you think it is? What else could it be?

STAGE II: ACTIVITY: Relating the Main Idea of a Picture to a Word (See Figure 7)

PURPOSE:

To help students (a) process the information to determine the main idea, (b) develop preciseness in their expression and thinking, and (c) label the idea.

DESCRIPTION:

In this activity, the students relate their language, experiences, and thinking to a picture. From the discussion, the teacher cues the students to structure the details and generalize about the content of the picture. After generalizing, the students then reduce the generalization to a single word.

EXAMPLE/APPLICATION:

Show students a picture.

What is happening in this picture?
Describe the setting.
How do the characters feel? Why?
Can you state the idea of the picture in one sentence?
Can you state it in one word?

INSTRUCTIONAL ACTIVITY: L - E - T Cueing

1. What is it?

   Cue sheet to aid teachers in diagnosing stumbling blocks to comprehension. Sample questions for identifying language, experience, thinking and word recognition problems are given.

2. What are the benefits?

   The teacher, through questioning, is able to pinpoint students' comprehension and word recognition difficulties and thus make accommodations for them.

3. What are the limitations?

   The teacher needs to be skillful at cueing and to have established good rapport with students. Class management might be a problem because the procedure is oral and may take a good block of time and close student attention.

4. What are some learner characteristics which indicate the technique to be effective?

   The learner is experiencing comprehension problems with the passage.

5. Instructional Procedures

   A. Follow a questioning strategy 1) to identify comprehension strengths and weaknesses of students and 2) to help them comprehend the passage. See model below:

THE RED BADGE OF COURAGE

By Stephen Crane, Airmont, Classics Series, 1964

The column (of troops) that had butted stoutly at the obstacles in the roadway was barely out of the youth's sight before he saw dark waves of men come sweeping out of the woods and down through the fields. He knew at once that the steel fibers had been washed from their hearts. They were bursting from their coats and their equipment as from entanglements. They charged down upon him like terrified buffaloes.

Behind them blue smoke curled and clouded above the treetops, and through the thickets he could sometimes see a distant pink glare. The voices of the cannon were clamoring in interminable chorus.

The youth was horror-stricken. He stared in agony and amazement. He forgot that he was engaged in combating the universe. He threw aside his mental pamphlets on

INSTRUCTIONAL ACTIVITY: L - E - T Cueing (continued)

the philosophy of the retreated and rules for the guidance of the damned.

The fight was lost. The dragons were coming with invincible strides. The army, helpless in the matted thickets, and blinded by the overhanging night, was going to be swallowed. War, the red animal, war, the blood-swollen god, would have bloated fill.

QUESTIONS YOU MIGHT ASK TO AID COMPREHENSION

LANGUAGE	EXPERIENCE	THINKING	WORD RECOGNITION
1. Which sentence don't you understand in the selection?	Have you ever been in a specific location?	How does one detail relate to another?	Can you sound the words out?
2. Do you know what that word means?	Have you ever seen a particular object?	What happened before/after an event? (sequence)	Can you recognize many words quickly?
3. Do you know another meaning for the word?	Have you had similar experiences as the characters in the story?	Why does something happen? (cause and effect)	Can you syllabicate?
4. Which word would make the most sense in place of the "hard" word?	What do you know about _____?	How are they different? How are they the same? (Comparison/ contrast)	Can you blend the sounds together?
5. Can you use the meaning clues in the sentence or passage to guess (predict) what the "hard" word might be?		What is the main idea? (What is the important point of selectio.	Can you use the meaning in a sentence or passage to get the "hard" word?

INSTRUCTIONAL ACTIVITY: L - E - T Cueing (continued)

B. Possible use of the strategy follows:

1) Examples of problems students may reveal through questioning:

a. Student couldn't see how "steel fibers" could be washed from their hearts.

b. Student couldn't understand "dark waves of men come sweeping out of the woods."

c. The student didn't know the implied meaning of "clouded."

d. The student thought the "column of troops" meant the enemy.

e. The student couldn't determine who "they" were.

f. Student thought the enemy was dragons.

g. Student said inter-min'able for interminable.

h. Student said invisible for invincible.

i. Student thought someone heard the cannon talking.

j. Student thought "mental pamphlet" meant the person was "mental."

k. Student couldn't get the meaning of thickets by reading the sentences.

l. Student couldn't to get the main idea of the selection.

2) Possibilities for handling selected problems:

a. For problem of not getting meaning of thickets.

Student needs help in using context. Possible cueing procedure: Where is the action taking place? (In the woods--getting at situational context.) Read the sentence again. What is the boy doing? (Looking up at the artillery smoke above the treetops.) What else? (Looking at the pink glare of the cannons firing.) He's looking through something. What do you suppose that something could be? (Bushes, plants, shrubs--sentence context.) Or back into graphophonics.

INSTRUCTIONAL ACTIVITY: L - E - T Cueing (continued)

a. For Problem "b"

Student needs to use his/her experience to understand figurative language: Possible cueing procedure: Have you ever studied waves moving toward the shore? Describe what they look like. (Fast, the water pours in, when the waves hit the shore the foam scatters in all directions. One wave follows right behind another.) How might soldiers fleeing from the enemy look? (Running fast, disorganized, scrambling, just wanting to get away, all rushing behind one another.) Do you see how the soldiers might look like waves?

b. For Problem "l"

Student needs to select details, relating them in some way so that they lead to or support a main idea. Possible cueing procedure: Have student examine details which support conclusion that the youth's untested, idealistic notions about the glory of war were destroyed by his experiencing the actual panic and horror of defeat. (Army retreating like "terrified buffaloes"; "cannons clamoring"; the smoke, "pink glare" of artillery fire; "the dragons (enemy) coming with invincible strides"; the "army about to be swallowed"; war--"the red animal," "the blood-swollen god.") Ask student how the details are related. (They all caused the youth to abandon his "mental pamphlets," his former naive ideas about courage in battle.) Have the student state the main idea of the selection.

c. For Problems "g" and "h"

"g": Tells teacher that the student knows how to use grapho-phonics in recognizing words. (The sounds and word parts in his version of the word, "interminable," are correct, although the accent is misplaced.)

"h": Tells teacher that student knows how to use context in word recognition because the substitution for "invincible" is syntactically and semantically acceptable (a dragon could have invisible strides). Therefore, the difficulties the student is having with "interminable" and "invincible" seem to be problems of language, (vocabulary) and not word recognition.

STAGE II: INSTRUCTIONAL STRATEGIES

GENERAL PURPOSE: These strategies integrate and link the language, experience, and thinking activities from Stage I into more holistic strategies for the purpose of concept development.

STRATEGIES FOR STAGE II INCLUDE:

1. Language-Thinking (Reductive Strategy), page 54
2. Language-Experience (L - E -→T), page 57
3. Concept/Vocabulary Development (E - T -→L), page 60
4. Directed Reading Thinking Activity, page 64
5. Structured Overview, page 68
6. Brainstorming and Structured Overview, page 71

INSTRUCTIONAL STRATEGY: Language-Thinking (Reductive Strategy)
(L - T -➔ E)

1. What is it?

   An approach to difficult textual materials in which the teacher guides students to focus on those parts of the text which are crucial to understanding the concept(s) of the lesson. Through such a procedure, the teacher helps students to be selective in their reading. The teacher directs them to attend to what's important to the purposes of the lesson and to ignore sections that are irrelevant.

2. What are the benefits?

   The strategy "reduces" the demand on students to process a myriad of unrelated facts and details. Instead, it has them concentrate on getting larger concepts and ideas under which the volume of facts and details may then be organized. Students get the major ideas, know how the discrete information is related, and ignore irrelevancies within the text.

3. What are the limitations?

   If the gap between the student's and author's LET is wide, the teacher must also systematically cue for language and experience needs. The reductive strategy's emphasis on thinking may have to "give way" to building certain language and experience pre-requisites first.

4. What are the student characteristics which indicate that the technique is appropriate?

   Students are unable to sift through textual materials by themselves and to distinguish relevant from irrelevant information. Moreover, they may be unable to relate disparate facts, details, and ideas from the text to formulate larger generalizations. The text itself may be unsuitable for students--too difficult, badly written. Or, the teacher's purpose for students are such that they need to read only certain portions of the reading selection.

5. Procedure

   A. Teacher determines the major generalizations(s) or concept goal(s) for the reading assignment.

   B. The teacher decides what portions of the text are relevant to the purposes of the lesson and/or help to develop the concept goals(s). The teacher thus eliminates irrelevancies.

   C. For those sections that are important, the teacher decides:

      1) The concept for each section

      2) How each "sectional" concept is developed (cause/effect, comparison/contrast, etc., thinking)

INSTRUCTIONAL STRATEGY: Language-Thinking (Reductive Strategy)
(continued)

3) How these "sectional" concepts together are related to form the major generalization(s) of the lesson.

D. The teacher guides students through the reading by helping them to:

1) Arrive at the concept for each section:

"What word or sentence in this paragraph tells you what the paragraph is about (main idea)?"

"How are the facts (details) in this paragraph related to give you this main idea?"

If students are unable to answer the main idea question, the teacher must back into developing the necessary experience (E) and/or thinking skills (T).

2) Relate the "sectional" ideas to form the major generalization(s)

"What are all of these ideas, together, saying (major generalization(s)?"

"How are these 'sectional' ideas related? Are they alike or different? Is one a cause of the other?"

If students are unable to answer the major generalization question, the teacher must back into developing the necessary experiences (E) and/or thinking skills (T).

E. Depending on student abilities and teacher purposes, the strategy may take either an interactive (oral discussion) or written form (study guide).

****

At this point, students should have a basic understanding of the major generalization or concept and be ready to use or apply it in a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

F. Have students apply the generalization by:

1) Giving examples of how the generalization operates in other situations.

2) Demonstrating their understanding of the generalization by

INSTRUCTIONAL STRATEGY: Language-Thinking (Reductive Strategy)

(continued)

producing a product, solving a problem or investigating further the same or related topic.

G. Have students evaluate the generalization by:

1) Judging the worth of it in relation to their own beliefs, attitudes and standards.

2) Demonstrating this response through some type of productive language arts task: writing/creating, speaking, performing.

INSTRUCTIONAL STRATEGY: Language Experience (L - E -→T)

1. What is it?

   A pre-reading technique based heavily on the students' language, experiences, and attitudes. It begins with word associations and moves to value judgments. The technique is useful in focusing the readers' attention to those aspects of their experience which relate to the reading.

2. What are the benefits?

   Because it begins with the students' experience and language and proceeds from there to make an initial link with the text, the technique is highly motivational. It is also more structured than a totally oral-based pre-reading discussion.

3. What are the limitations?

   Unlike other Stage II strategies, this strategy is not designed to take students through the experience of systematically converging on a main idea; it has students identify the idea.

4. What are some student characteristics which indicate the technique is appropriate?

   The strategy is appropriate for all students.

5. Instructional Procedures

   A. Teacher Preparation (See example, page 59)

      1) Identify the main idea of the reading material.

      2) Select two key words which reflect the idea.

      3) Compose five statements related to the idea with which students are to agree or disagree. One of these is to be the main idea of the reading.

   B. Pre-Reading Activity

      1) Students work in groups. They elect a recorder.

      2) Give them one of the key words as a stimulus. Ask them to generate a list of as many related words or phrases as they can. (Recorder writes down responses.)

      3) When time is up, ask each group to share the total number it generated.

      4) Do the same for the second key word.

INSTRUCTIONAL STRATEGY: Language Experience (continued)

5) Then have students match five words or phrases from the first list with five from the second to create thought sequences ("tax tyranny"; "political corruption").

6) Have groups share their best four to six pairings. (Write out on the chalkboard for a post-reading extension of the activity.)

7) Pass out reaction statements. Have students work individually at evaluating the statements. Then ask them to compare and discuss their conclusions with one another.

C. During Reading

1) Pass out reading material. Tell students to refer periodically to the five reaction statements as they read. They are to decide which one best "fits" the information given in the selection and expresses the main idea.

D. After Reading

1) Have students discuss and validate their choice of main idea in relation to the five pre-reading reaction statements. (See "During Reading")

2) Have students generate their own versions of the main idea.

3) Go over student pairings (See #6 above) to see how they match up with the reading. Determine whether any pairings could serve as the main idea of the selection (students had the meanings in them already).

****

At this point, students should have a basic understanding of the main idea or concept and be ready to use or apply it in a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

E. Application and Evaluation

1) Have students apply the main idea or concept by:

. Giving examples of how the concept operates in other situations.

. Demonstrating their understanding of the generalization by producing a product, solving a problem or investigating further the same or related topics.

2) Have students evaluate the generalization by:

INSTRUCTIONAL STRATEGY: Language Experience (continued)

- Judging the worth of it in relation to their own beliefs, attitudes and standards.
- Demonstrating this response through some type of productive language arts task: writing/creating, speaking or performing.

EXAMPLE: Language Experience (L - E→T)

Declaration of Independence

A. Main Idea: Government is a depository for, as well as a safeguard against, power.

B. Key Words: Government, Power

C. Reaction Statements:

1) Government of the people, by the people and for the people is dead.

2) In the context of conditions today, the individual is powerless in the face of government.

3) The workings of government only serve to exemplify the dictum: "Power corrupts, and absolute power corrupts absolutely."

4) Governmental change which is a result of rebellion, revolution, or violence is to be avoided at all costs.

5) Government is a depository for, as well as a safeguard against, power.

INSTRUCTIONAL STRATEGY: Concept/Vocabulary Development (E - T -→L)

1. What is it?

   The strategy provides a process of linking the learner's experiences to the development of new language and concepts through "talking and thinking" about his/her experiences.

2. What are the benefits?

   Provide students with limited vocabulary a means of linking their present experiences to new ideas or concepts. It builds a bridge between the learner's experiences and the concepts presented in the text or lesson.

3. What are the limitations?

   Emphasizes building vocabulary/concepts with thinking requirements limited to congnitive memory and convergent levels of thinking; no divergent or evaluative thinking demands are made on the learner.

4. What are some student characteristics which indicate that the technique is appropriate?

   The student:

   a. Does not express himself/herself precisely or clearly.

   b. Is unable to give more than one definition or meaning for a word (multiple meanings).

   c. Is unable to comprehend what he/she hears and reads because of a lack of a synonym bank.

   d. Does not know prefixes, suffixes, and root words to help understand unknown words.

   e. Has difficulty sharing or understanding ideas because he/she does not have enough words to label ideas or experiences.

   f. Has difficulty understanding and remembering the technical and/or concept laden vocabulary of a particular content area.

5. Instructional Procedures

   A. Pre-reading

      1. If necessary, motivate learners by:

         . Arousing their interest in the topic,

INSTRUCTIONAL STRATEGY: Concept/Vocabulary Development (E - T -►L)
(continued)

. Increasing their awareness of the topic,
. Helping them establish a purpose of studying the topic.

2. Determine the extent of the present knowledge of learners in relation to the language, experience and thinking demands of the topic.

. Have learners reveal what they know about the topic by asking such open-ended questions as, "What do you know about _____?"

. Through this discussion and interaction with learners, discover their language, experience and thinking base for understanding the topic.

3. If necessary, build "bridges of experience" for learners so that they can begin to develop the concepts/language required to understand the lesson.

a) Begin with non-reading experiences.

. tap on prior experience (direct, vicarious).
. provide vicarious experiences (records, pictures, films).
. provide analogous experiences (simulation, role-playing).
. provide direct experiences (experiments, field trips, demonstrations).

b) Develop concepts/language through "talking-thinking" about the non-reading experience provided (in relation to the students' present language, experience and thinking base):

. cue and/or question to encourage students to reveal any observations, reactions to the non-reading experience.

. guide students to draw relationships among their responses: sequence, categorize, compare and contrast, cause-effect, part-whole.

. have students make generalizations (conceptualize) based on the relationships drawn.

c) Remembering all the while to:

. speak "labels," for the concept(s) being developed, i.e., build the language of the content area by using concept-carrying vocabulary in their natural contexts in class discussions.

. link the "new" concepts, language of the lesson to the students' present language, experience and thinking base.

INSTRUCTIONAL STRATEGY: Concept/Vocabulary Development (E - T -→L)
(continued)

B. During Reading

1. Use selected reading as a summary of the concepts developed.

"Locate and/or read aloud the sentence, paragraph, section on page ___ which states what we've learned (through films, demonstrations, etc.)."

2. Use selected reading to extend knowledge of the concepts developed.

"In your reading, did you discover other things which we can add to what we already know?"

"Is there anything more you would like to know about _____?"

****

At this point, students have linked their previous experiences to an understanding of the new concept and should be ready to apply it to a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

C. After Reading

1. Have students apply the concept(s) by:

Giving examples of how the concept operates in other situations.

Demonstrating their understanding of the concept by producing a product, solving a problem or investigating further, the same or related topics.

2. Have students evaluate the concept(s) by:

Judging the worth of it in relation to their own beliefs, attitudes and standards.

Demonstrating this response through some type of productive language arts task: writing/creating, speaking or performing.

(See following page for variations of this strategy.)

INSTRUCTIONAL STRATEGY: Concept/Vocabulary Development (E - T -➔L)
Variations

The concept/vocabulary strategy described above proceeds from the experience of learners, leads them to think through this experience and formulate the desired concepts, and finally has them label their concepts (E - T -➔L).

Variation #1: Experience - Language (E - L -➔T)

At times, the concept word(s) being taught may be more accessible to students. They may have one or the other of the following:

a. an understanding of the concept, but a different word for it.
b. a partial, but not fully established understanding of the concept.

Because students have some "foothold" on the concept being developed, instruction may proceed more directly from the students' present experience and understandings to the new content vocabulary which describes this experience (E - L -➔T). The teacher can immediately provide students with the content area language which "labels" their present experience and understandings. She/he can then have students proceed to think with this new language (E - L -➔T). For example, in a lesson on the octopus, the teacher cues:

- "You know what squids are like."
- "The author talks about octopuses."
- "Squids are like octopuses in some ways, but different from them in others."
- "Look at the picture of the octopus. Can you point out the similarities and differences?"

Variation #2: Language - Thinking (L - T -➔E)

When the student already has the content area language of the lesson or text, instruction can immediately focus on using this language to develop the abstract ideas and vicarious experiences of the content area lesson or text. In the above lesson, since the students know what octopuses are, the lesson can proceed without reverting to the experiences of the students and the labeling of that experience.

INSTRUCTIONAL STRATEGY: Directed Reading Thinking Activity

1. What it it?

When a teacher directs the reading process she/he is giving students deliberate practice in the process mature readers undergo as they wrestle with the problem of creating meanings from printed material (i.e., comprehending). Toward this end, the teacher requires students to use their present LET to understand a reading selection and, in so doing, to further develop, extend, and broaden their "old" LET base. (Students practice solving the problem of using their "knowns" to make what is unknown to them comprehensible. This new knowledge, linked to the old, then becomes the basis from which they again reach out for and assimilate other knowledge.) The teacher's end goal is to help students to become mature readers--that is, self-directing, in their use of the process.

2. What are the benefits?

The procedure approaches the teaching of comprehension by giving students practice in the comprehending process, as opposed to testing their comprehension by asking main idea, detail, etc., questions at the end of a reading selection. This integrative procedure has students use and relate all of the foundation variables (LET) in arriving at the author's message(s). Similarly, the skills (word analysis, vocabulary, thinking) are taught only as they help students converge on the ideas of the selection. In its emphasis on starting with student knowns, and on group interaction and the sharing of individual LETs, the procedure is also highly student-centered. It is designed to maximally involve (motivate) the learner by dealing with verbal symbols in such a way that students make, through thinking, deliberate connections between their experiences and the printed material--making the abstract "real," meaningful.

3. What are the limitations?

The limitations of this procedure seem to reside primarily in the management considerations which accompany any attempt at directing the reading process. Although teachers are not limited to working with groups of eight to ten, such a number would give each student maximum opportunity to participate in the oral interaction which rests at the heart of this instructional strategy. Teachers may need to resort to small group management schemes and/or adjust the process to large group needs. In addition, greater demands are made on the physical, as well as intellectual, stamina of teachers as they guide the flux and flow (or onslaught) of the predicting-validating-repredicting process. Both teachers and students need to work at developing the kind of classroom climate which will encourage risk-taking on the part of students as they expose their "selves" (their LETs) in predicting and interacting. The procedure is also time consuming and teachers need to be of the mind that "a little does indeed go a long way." A few, well-chosen, basic concepts developed for and with students will pay off in providing a solid nucleus

INSTRUCTIONAL STRATEGY: Directed Reading Thinking Activity (continued)

of understandings with which students will be able to better and more rapidly integrate new knowledge. The alternative is to "cover the ground" at the risk of fragmented, "un-comprehended," and thus unretrievable "learning."

4. What are some student characteristics which indicate that the techniques are appropriate?

Appropriate for all learners with some modification for those students who have the foundations and skills, and who are adept at integrating the two. For these latter students, the pre-reading and reading aspects of the process may be too slow and tedious, allowing most of the time for post-reading discussion and application which for them have the potential of being far more exciting and stimulating. For those students experiencing difficulties in thinking (processing information) and picking up the language (vocabulary) and concepts of a subject, emphasis on all phases of the process, at one time or another, will be useful. Depending on s[illegible] needs, teacher purposes, and the nature of the reading selection, [illegible]eing within the process may be adjusted to focus-in on getting at ideas and/or on isolating, dealing with, and again integrating those skills which help to get at these ideas.

5. Instru[illegible]ional Procedures

A. Teacher Preparation

1) Find out what students know about the topic through a variety of ways.

. Questioning

-- "What do you know about _____?"
-- "What questions do you have about _____?"
-- "What are possible answers to these questions?"

. Surveying pictures, titles, topical headings, maps, diagrams, etc.

-- "What are you thinking?"
-- "What do you suppose the reading selection will be about?"
-- "What questions about the selection come to mind?"
-- "What might be possible answers to these questions?"

2) If necessary, provide non-reading experiences to develop requisite prior knowledge for understanding the selection.

. Records, radio, pictures, filmstrips, TV, films
. Simulations, demonstrations, field trips
. Exhibits, demonstrations, field trips

3) Help students to clarify their purpose(s) for reading.

. "Let's read to find out which predictions are right, partly

INSTRUCTIONAL STRATEGY: Directed Reading Thinking Activity (continued)

right, or not discussed by the author."
- "Now that we've gotten some idea of what you know about the topic, let's see what the selection says about it."
- "Where does it agree with you/disagree with you?"
- "What more does it say about the topic?"

B. During Reading

1) At different intervals, stop the reading to have students compare their ideas with the ideas of the selection.

- "Were you right, wrong, partly right or did you raise a point which the reading selection doesn't even mention?"
- "How do you know? Locate evidence in selection which supports your conclusions."

2) Help students to refine, retain, or replace their former contributions based on the information gained up to each break in the reading.

- "What do you think now that we've read up to this point?"

3) As the need arises, help students to clarify vocabulary and/or ideas crucial to their understanding of the major generalization(s) of the selection.

- "The idea of the selection is similar to (or different from) an idea you already know..."
- "The word you don't understand is like the word _____, but different from the word _____."

C. After Reading

1) Help students to organize specific details from the selection in some relationship so that they converge on the major generalization for the total selection.

- "Looking back at the information we've gotten from the reading and also how this information is related, what are some major generalization(s) related to the topic?"

****

At this point, students should have a basic understanding of the main idea or concept and be ready to use or apply it in a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

INSTRUCTIONAL STRATEGY: Directed Reading Thinking Activity (continued)

2) Have students apply the major generalization(s).

- "If you were in a similar situation, what would you do?"
- "If this happened, what do you think would be the outcome?"
- "Using what you've learned, solve this problem."
- "Make something (model, mural, diorama, etc.) based on what you've learned."
- "Investigate the topic further."

3) Have students evaluate the reading selection and/or the generalization(s).

- "Do you feel the information and ideas of the selection are accurate? Explain."
- "Was the selection worthwhile? Explain."
- "Did you learn anything from the selection? Explain."

INSTRUCTIONAL STRATEGY: Structured Overview

1. What is it?

   A structured overview is a visual diagram of the relationships among the important, concept-carrying words (vocabulary) of a reading selection.

2. What are the benefits?

   The technique is a good way of getting students (and teachers) to hone-in on the essential, and only the essential, vocabulary of a reading passage. Moreover, the diagram of the relationships of the words to each other is a graphic representation of the thinking (structuring) pattern(s) of cause/effect, comparison/contrast, etc., embedded in the reading selection. The technique enhances memory because words are not presented in a listing as discrete elements, but "glued" together by an overriding main idea.

3. What are the limitations?

   Students need to have some familiarity with the words in the overview. Having to pre-teach the bulk of these words (which may tend to be conceptual in nature and thus be difficult) will detract from the other purposes of the overview which is to explore relationships among concepts.

4. What are some student characteristics which indicate the technique is appropriate?

   The strategy is appropriate for all students and especially for those who need help in acquiring the vocabulary of a content area and seeing relationships among the concepts of the content.

5. Instructional Procedures

   A. Teacher Preparation

      1) Identify the main idea, generalization or concept of the selection.

      2) Identify the thinking structure embedded in the reading materials (cause/effect, comparison/contrast, part/whole, etc.)

      3) Analyze the vocabulary of the reading material and list all the words (phrases) that you feel are important in understanding the main idea of the selection.

      4) Arrange the words (phrases) until you have a diagram which depicts the interrelationships of the words. The diagram should also reflect the thinking structure and support the main idea. (See Stage II Activities, page 41, for a visual diagram of thinking structures.)

INSTRUCTIONAL STRATEGY: Structured Overview (continued)

5) Add to the diagram any other words (phrases) which you believe are already understood by the students, but which are important in order to depict relationships among the words (phrases) and the structure of the reading as a whole.

6) Evaluate the overview. Does it show the major relationships of the words (phrases)? Does it support the main idea, concept or generalization of the selection? Can the overview be simplified and still effectively reflect the concepts and thinking structure which you feel the students need to understand?

B. Use the overview for:

1. Pre-reading

- Introduce students to the concept/main idea and thinking structure of the reading before they read. Clarify meanings, if necessary. Inform or ask students why the words (phrases) are arranged as they are. Encourage them to contribute as much information as possible.

OR

- Inform students that the overview represents the main idea of the reading. Then ask them to predict, from the information (words/phrases) given in the overview, what they think the main idea of the selection will be. Ask them to keep their prediction in mind as they read, determining how it agrees or disagrees with the actual reading.

2. During Reading

- During the course of the reading task ask students to validate the overview and/or relate new information to it as it seems appropriate.

3. After Reading

- Help students validate their understanding of the reading material after they have read it.

- Have students demonstrate their understanding of the reading materials by creating their own overview for the selection.

****

At this point, students should have a basic understanding of the main idea or concept and be ready to use or apply it in a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

INSTRUCTIONAL STRATEGY: Structured Overview (continued)

C. Application and Evaluation

1) Have students apply the main idea of concept by:

- Giving examples of how the concept operates in other situations.
- Demonstrating their understanding of the generalization by producing a product, solving a problem or investigating further the same or related topics.

2) Have students evaluate the generalization by:

- Judging the worth of it in relation to their own beliefs, attitudes and standards.
- Demonstrating this response through some type of productive language arts task: writing/creating, speaking or performing.

INSTRUCTIONAL STRATEGY: Brainstorming and Structured Overview

1. What is it?

   The technique results in a structured overview (refer to previous strategy) based on student responses gathered through a brainstorming session. The overview then acts as the students' prediction of what is to come in the reading. As students read, they compare their ideas with those of the author or text.

2. What are the benefits?

   It begins with student knowns, and because the strategy is based wholly on information generated by students, it provides a good way of assessing their LET for the topic.

3. What are the limitations?

   If done ideally, that is, orally with a class, then poor oral interaction skills might be a limitation, but the procedure is readily adaptable to a more written mode.

4. What are some student characteristics which indicate the technique is appropriate?

   Appropriate for all students, especially those who need practice in making relationships; that is, in structuring or organizing information.

5. Instructional Procedure

   A. Identify the key idea or major concept in the reading.

   B. Using the key idea or concept as a stimulus for brainstorming, ask students to list all the words or phrases which come to mind. (List on board.)

   C. Ask students (individually or in groups) to categorize their responses: "Which of these seem to be related?" "Which are similar in some way and seem to go together?"

   D. Have students label their categories. (Not all students will categorize or label their contributions in the same way--varying LETs.)

   E. Help students construct a structured overview, a diagram, which shows the relationships among the categories. They may use arrows or lines or arrange the categories in some sequence. (The diagrams may be different.)

INSTRUCTIONAL STRATEGY: Brainstorming and the Structured Overview (continued)

F. Ask students (orally or in writing) to explain the overview (its main idea).

G. Inform students that the overview represents their ideas and attitudes toward the key concept in the upcoming reading. And that, as they read, they are to compare their thoughts with those of the author.

H. Teacher may clarify misconceptions at this time or alert students to a particular dimension of the concept they have not considered.

****

At this point, students should have a basic understanding of the main idea or concept and be ready to use or apply it in a new or different situation. Stage II of the lesson has been completed and Stage III (application and evaluation) can begin. The following procedures illustrate the Stage III process.

****

I. Application and Evaluation

1) Have students apply the main idea or concept by:

- giving examples of how the concept operates in other situations.
- demonstrating their understanding of the generalization by producing a product, solving a problem or investigating further the same or related topics.

2) Have students evaluate the generalization by:

- judging the worth of it in relation to their own beliefs, attitudes and standards.
- demonstrating this response through some type of productive language arts task: writing/creating, speaking or performing.

APPENDICES

APPENDIX A: ASSESSMENT SAMPLES AND TECHNIQUES

APPENDIX B: PLANNING CONSIDERATIONS FOR FACILITATING COMPREHENSION IN THE CONTENT AREAS

APPENDIX C: APPLICATION OF TECHNIQUES TO SPECIFIC CONTENT AREAS

APPENDIX A

ASSESSMENT SAMPLES AND TECHNIQUES

1. Questions for Assessing Language, Experience, and Thinking - Stage I, page 77

2. Questions for Assessing Experience-Thinking -- Language (E - T -→L) Stage II, page 78

3. Questions for Assessing Language-Thinking -- Experience (L - T -→E) Stage II, page 79

4. Questions for Assessing Experience-Language -- Thinking (E - L -→T) Stage II, page 80

5. Assessment Procedures for Cloze, page 81

6. Questions for Assessment and/or Instruction in Literature, page 82

QUESTIONS FOR ASSESSING LANGUAGE, EXPERIENCE, AND THINKING - STAGE I

FEELINGS	LANGUAGE	EXPERIENCE	THINKING PROCESS				
			Cognitive Memory	Structuring Relating	Convergent Generalizing	Divergent Using, Applying	Evaluation Judging, Valuing
1. Have you ever felt like...? 2. How did you feel when...? 3. If you (were, could) ____, how do you think you would feel? 4. When you feel _____ (happy, sad) what is it like?	1. What do you think these words mean? 2. What comes to your mind when I say...? 3. Have you heard of the word(s)...? 4. What words can you think of when I say the word...?	1. Have you ever been in a situation where...? 2. What do you know about...? Have you ever seen...? experienced...? been...? done...? 4. Has something like this happened to you...? 5. When was the last time you ...? 6. Can you imagine...?	Details, Information 1. Who...? 2. What are the facts? 3. What are the most important details? What are the facts regarding? What is the...? What do you mean by...? What is your interpretation of what happened? 3. When? 4. Where?	Arranging Relationships 1. Categories: Which group does that belong to...? How would you classify...? What type would you...? 2. Comparisons: How are they alike? same...? similar...? identical...? Contrast: How is it different ... in opposition to..., unlike? 3. Cause and Effect: What will happen if...? Why...? What will happen as a result of this?	Getting the Main Idea/ Concept 1. What are the chief points? Given that information, what is the main idea, point? 2. What is the single most important idea? 3. State the idea in one sentence. 4. Explain...	1. What might happen if...? 2. If you use that idea, what would it mean to our...? 3. Apply that idea to our situation. 4. What would result if ...? 5. If you were given these facts, what would you do to...? 6. How would the operation be different if we used this idea ...? 7. What could be advantages, benefits, if we applied this idea, process? 8. What do you think the story, paragraph will be about?	1. How do you feel about that idea? 2. What is your opinion? 3. What is the best? 4. Are you satisfied with that answer, plan? 5. Can this statement be made? Why? 6. Out of all the information, what can be used to prove your point? 7. How would you judge? 8. What is your opinion or conclusion about the product, plan, idea? 9. Why did you think it worked...? didn't work ...? 10. What is fact? 11. What is opinion?

Questions for Assessing Experience-Thinking->Language (E-T->L) Stage II

EXPERIENCE ——— THINKING PROCESS ———> LANGUAGE

Have you ever been in a situation where...?

What do you know about...?

Have you ever seen one of these?

Has something happened to you like...?

When was the last time you...?

Have you ever been...?

Can you imagine...?

Can you organize the information about the experience into categories?

Based on the experiences:

1) What are the differences between...?

2) What are the similarities?

From your experience, how is ____ ____ like _____?

Is there any sequence to the information (on the experience)?

What other things (ideas, concepts) are related to the experience? Are those things part of a bigger idea, (concept)?

From what you know (about the experience), what can you assume about...?

Based on your knowledge, can you predict what may happen...?

Based on your experience, what can you determine about...?

What do you think the idea of the article, paragraph is? Knowing this, what do you think this word means?

Do you know what this/that word means?

What is the science, social studies, math, etc., word which describes this idea?

LANGUAGE	THINKING PROCESS	EXPERIENCE
What would you call an experience, idea like this? Do you have another word or phrase that describes it? What is the author's (content area) word or phrase for this experience, idea?	Knowing what _____ (content area word) means, what do you think the main idea of the paragraph/article is? What other things (idea, concepts) are related to _____ (content area word)? Is _____ (content area word) part of a bigger idea (larger generalization)? From what you know about _____ (content area word), can you predict what may happen?	How is the idea of _____ (content area word) related to the next chapter/activity unit, we'll be covering?

Questions for Assessing Experience-Language-→Thinking (E-L-→T) Stage II

EXPERIENCE ——— LANGUAGE ———→ THINKING PROCESS

Have you ever been in a situation where...?

What do you know about...?

Have you ever seen one of these?

Has something happened to you like...?

What was the last time you...?

Have you ever been...?

Can you imagine...?

What would you call an experience/idea like this? Do you have another word or phrase that describes it?

What is the author's (content area) word or phrase for this experience, idea?

Knowing what _____ (content area word) means, what do you think the main idea of the paragraph/article is?

What other things (ideas/concepts) are related to _____? (content area word)

Is _____ (content area word) part of a bigger idea (larger generalization)?

From what you know about _____ (content area word), can you predict what may happen?

ASSESSMENT PROCEDURES: Cloze

The cloze procedure can be used to assess the student's ability in comprehending the vocabulary of a text/passage, concepts and the relationship of ideas, and the appreciation of figurative language.

PROCEDURE A

1. Select a passage and delete selected vocabulary items.
2. Have students read the passage silently and fill in the blanks with words they feel are appropriate.
3. Have individual students read their passages and discuss the reasons why specific words were chosen.
4. Compare the student's words with those of the original passage.
5. Discuss differences and similiarities in words and meanings.

EXAMPLE - SCIENCE

Sometimes you need to know the _____ of objects that are _____ in shape. In this part of the unit, you will use two methods of _____ to find the volume of such objects.

Two things cannot occupy the same _____ at the same time. If a small object is dropped into a calibrated cylinder that has water in it, the water will be _____. The water that is _____ will rise in the tube. The change in water level is equal to the _____ of the object dropped into the tube. This is called the _____ _____ method of finding the _____ of an object.

PROCEDURE B

1. Select a passage and delete selected vocabulary items. Place these words, including a few distractors, at the bottom of the page.
2) Have students read the passage silently and fill in the blanks with the appropriate words selected from the list at the bottom of the page.*
3) Have individual students read their passages and discuss the reasons why specific words were chosen.
4) Compare the student's words with those of the orignal passage.

*For the above passage, select from the following list of words: displacement, displaced, cylinder, space, volumes, direct, volume, irregular, objective, time.

QUESTIONS FOR ASSESSMENT AND/OR INSTRUCTION IN LITERATURE

FEELINGS	LANGUAGE	EXPERIENCE	THINKING PROCESS				
			Cognitive Memory	Structuring Relating	Convergent Generalizing	Divergent Using, Applying	Evaluation Judging Valuing
1. What kinds of feelings do you get from the word(s)?	1. What happens when the word order is changed?	1. Does the character remind you of someone?	1. What does he or she do or say that is like someone you know?	1. What two things are being compared?	1. What meaning is conveyed by the allusion?	1. What does the word(s) make you think about?	1. Do the characters act like real people?
2. How do you feel?		2. What does he or she do or say that is like someone you know?	2. What did the character want?	2. Does the character remind you of someone you know?	2. How did you solve the problem?	2. How does the use of the analogy affect you?	2. Was it a good way to do it?
3. How does the use of analogy affect you?		3. Have you faced a similar problem?	3. In what kind of place does the story take place?	3. Is this story like another you have read or heard? Why?	3. What kind of persons were the main characters?	3. What does the story make you think of?	3. Do you like what the writer is writing about?
4. How does the story make you feel?		4. Can you think of a time when what happened in the story happened to you?	4. What happens in the story?	4. How are they different?	4. What did the character want?	4. If you were the character, would you have done the same thing?	4. Why do you like or not like the story?
5. What other things (objects, events, people) make you feel the same?		5. Does the place where the story occurs remind you of a place you know?	5. Did the character change in the story?	5. Are the main characters alike?	5. How did he or she go about getting what he or she wanted?	5. What would you have done?	
		6. How are the places alike?		6. How are they alike?	6. What happens in the story?	6. How would you solve the problem the character had?	
				7. How are they different?	7. Why is it that different people can look at the same thing and feel differently about it?	7. What else could have happened in the story?	
				8. Why is it that different people can look at the same thing and feel differently about it?		8. What do you think happened before the story took place?	
				Why are differences important?			
				How do you know?			
			Would you like to be like the character? Why? Why not?				

APPENDIX B

PLANNING CONSIDERATIONS FOR FACILITATING COMPREHENSION IN THE CONTENT AREA

Careful planning by the teacher is crucial to any attempt at facilitating student comprehension in the content area. The teacher needs to answer the following questions to give him/her a solid foundation from which to cue appropriately, and thus, guide student thinking:

Determine Concept/ Goal(s)	1. What major idea(s) am I trying to teach?
Analyze LET Demands of the Lesson/ Text	2. How does the text/lesson handle these ideas? . What experiences are assumed? . What vocabulary (language) is necessary? . What are the relevant facts, details, sub-concepts? . How are these facts, etc., related (cause/effect, comparison/contrast, part/whole) to lead to lesson's conceptual goal(s)?
Determine Students' LET ("knowns")	3. What do my students already bring to the learning task? . What are the LET strengths of my students?
Identify the LET gaps between students and lesson/text	4. Where are the gaps between the text or lesson and my students? . What are the LET needs of my students?
Select appropriate instructional strategies	5. How do I narrow this gap so that students are able to understand the major ideas and concepts without being overwhelmed?
Develop application activity	6. How do I know whether students are able to apply the ideas to life?
Develop evaluation activity	7. How do I know whether students value what they've learned?

APPENDIX C

APPLICATION OF TECHNIQUES TO SEPCIFIC CONTENT AREAS

SCIENCE, page 88 (FOR STAGE III STRATEGIES refer to Science Curriculum Guide, 9-12, Instructional models, pages E-3 to E-35.)

LITERATURE, page 92

SOCIAL STUDIES, page 96

MATH, page 100 (FOR STAGE III STRATEGIES refer to Mathematics Program Guide, K-6, pages 16-23.)

SCIENCE APPLICATION

Sometimes you need to know the volumes of objects that are irregular in shape. In this part of the unit, you will use two methods of displacement to find the volume of such objects.

Two things cannot occupy the same space at the same time. If a small object is dropped into a calibrated cylinder that has water in it, the water will be displaced. The water that is displaced will rise in the tube. The change in water level is equal to the volume of the object dropped into the tube. This is called the direct displacement method of finding the volume of an object.

STAGE III

Application

- Would you use this method to measure a crown of gold?
- What are other objects which would have to be measured using this direct displacement method?

Evaluation

- Do you think this is a useful and practical way to determine volume for irregular objects?

Productive Language Arts Tasks

- Think of an object which would have to be measured using the direct displacement method. Write a report explaining how you would measure the volume, then illustrate your report.

(If the students cannot apply, evaluate, and use the concepts, instruction should revert to Stage II strategies.)

STAGE II

Experience-Thinking --➤ Language (E-T -➤L)

. Show class a calibrated cylinder containing water. Put an irregular object in it.

. What caused the water in your container to rise?

. How much did the water rise?

. Can two things occupy the same space at the same time?
. What kind of information does this give you about the object?
. What word would describe this process?

Experience-Language --➤ Thinking (E-L-➤T)

. Have you ever filled a container with water and then put an object into it? What happened?

. When this happens, we say that the water is displaced. Do you know another word for displaced?

. (Show class a calibrated cylinder.) Why are there lines on this cylinder? What do you think these lines are used for? These lines measure the caliber or diameter of the cylinder so it is called a calibrated cylinder.

Language-Thinking --➤ Experience (L-T -➤E)

. When water is displaced, what determines the change in the water level?

. What can be determined by the direct displacement method?

. Why is this method necessary to measure the volume of irregular objects?

. What are other situations in which displacement can be used?

. When might you not be able to use this method of direct displacement?

(If the students are successful at this stage, instruction should proceed to Stage III strategies. However, if the students have difficulty developing the content area concepts due to limited or different language, experiences, or thinking, then instruction should revert to Stage I strategies.)

STAGE I

Experience

. What happens to the water level in a bathtub when you sit in it?

. Have you ever filled a pail with water and then poured sand into it? What happened?

. When you do the dishes, what happens to the level of the water when you put the dishes into the dishpan?

. Can you think of other similar situations?

. Have you seen a calibrated cylinder like this before?

. What is it used for?

. Show class a calibrated cylinder with water in it. Put an object in the cylinder.

Language

. Do you know what "irregular" means? What is an irregular object?

. What is volume? Do you know another word for volume?

. What does it mean to be displaced?

. What is a calibrated cylinder?

. What does "calibrated" mean? What's another word for it?

Thinking

. What do you think will happen to the water in the container?

. What happened to the water level when an object was dropped into it?

. What determines how much the water will rise?

. How can you find the volume of the irregular object?

. What are some things you could measure using this method?

. Do you consider the displacement method useful and practical?

Word Recognition

Student is reading paragraph and does not know the word "displacement."

Situational Context

. What is the idea of this paragraph? Knowing that, what do you think this word says?

Sentence Context

. Let's read to the end of the line. Now, what do you think the word says? Does it make sense?

Structural Analysis or Syllables

. Do you see any parts in the word?

. Look at the beginning of the word. Is there a prefix? ("dis") What is the root word? ("place") Is there a suffix? ("ment")

(If the students are successful at this stage, instruction should proceed to Stage II strategies.)

LITERATURE APPLICATION

SOUNDER
By William H. Armstrong, Harper & Row, 1972
(Synopsis* of pages 46-52)

The dog Sounder has been shot. The boy has been searching for Sounder under the house, believing he may have crawled under it to die, but Sounder is not there. The boy's mother suggests that perhaps Sounder only received a flesh wound and may have gone into the jack-oak woods to "draw out the poison with oak-leaf acid" and heal himself. The boy asks how long it might take and the mother responds that it might be seven days. The boy decides to go into the woods the next day to look for Sounder despite the cold, whistling wind that "blew through his clothes and chilled his body inside and made him shiver." The boy does not find Sounder and returns after dark with his clothes torn. His mother tells him that he "... must not go into the woods again. Sounder might come home again. But you must learn to lose, child. The Lord teaches the old to lose. The young don't know how to learn it. Some people is born to keep. Some is born to lose. We was born to lose, I reckon. But Sounder might come back."

*A synopsis is being used here in order not to violate publisher's copyright; however, teachers are requested to refer to pages 51-52 of the text when using the applications suggested on the following pages (93-95)

STAGE III

Application

- If you were the boy how would you feel?
- Describe other times or situations when "quiet" can be "long and sad."

  The boy doesn't say much in this passage. The mother seems to be able to read his thoughts and feelings. Create dialogue for him; have him express how he feels to his mother.

- What if the mother were not very understanding; what might she say to the boy then?

Evaluation

- Are there times in real people's lives when the same feelings or emotions exist? What might they be?
- Do people you know act like the boy or the mother in this passage?

Productive Language Arts Tasks

- Small group discussion/writing
- As a group, list words which come to mind that relate to the feelings or emotions the author is sharing with us.
- Think about other times or other things that might make people feel this way. Discuss them and write about a time when you or someone you know might have felt the same way. Share your writing with the group.
- If these students cannot apply, evaluate, and use the concepts, instruction should revert to Stage II strategies.

STAGE II

Experience-Thinking -➤ Language (E-T-➤L)

- Have you ever missed someone very much or lost something that was very important to you? How did you feel? Was it easy to talk about it at the time? How did other members of your family behave toward you?
- Compare how you felt with how the boy was feeling?

- What are the words we use to describe this feeling (a feeling of "loss")?

Experience-Language -→Thinking (E-L -→T)

- Think back to a time when you lost someone or something that you cared for a lot.
- Describe how you felt (a feeling of "loss").
- Compare this feeling of "loss" with the way the boy was feeling.

Language-Thinking -→Experience (L-T -→E)

- Describe how the boy was feeling (a feeling of "loss").
- What does the mother mean when she says "But you must learn to lose child?"
- As you read Heidi, compare the "loss" the boy felt with Heidi's "loss" (leaving her grandfather).

(If the students are successful at this stage, instruction should proceed to Stage III strategies. However, if the students have difficulty developing the content area concepts due to limited or different language, experiences, or thinking, then instruction should revert to Stage I strategies.)

STAGE I

Experience

- Have you ever heard the wind whistling around your house? What does it sound like? How does it make you feel?
- Have you ever missed someone or lost something you cared for a lot?

Thinking

- Would real people feel the way the boy did?
- Would you have behaved the way the boy did?
- What is the author saying about a young person's willingness to accept the loss of something they cared a great deal for?
- Why did the boy go out to look for Sounder when the weather was so cold?
- Describe what the boy did to find Sounder.

Language

- What does the expression "I reckon" mean.
- Can you think of another expression that would fit here?

Word Recognition

Student doesn't know the word whistlin'

Situational Context

- Read down a few more sentences. What else is said about the wind (blowing, noisy) from that can you guess what this word might be?

Sentence Context

- Read to the end of the sentence. What word might make sense?

Structural Analysis

- Is there a smaller word you recognize or a part of the word you can read?
- If the students are successful at this stage, instruction should proceed to Stage II strategies.

SOCIAL STUDIES APPLICATION

The World of Water

The island of Manhattan is part of New York City. It's an island of solid rock. On the island are the skyscrapers. Around Manhattan are the other parts of the city--Queens, Brooklyn, Bronx, and Staten Island. All these parts make up the city of New York.

New York is on the edge of the Atlantic Ocean. Ships sail from New York across the Atlantic to parts around the world. In the harbor of New York are many places for ships to dock. Along the Hudson River and the East River, ships can dock. Ships can dock at the piers of Brooklyn. New York is a world of water.

Stage III

Application

How is Hawaii affected by being surrounded by water?

Evaluation

Is being surrounded by water important to Hawaii?

Productive Language Arts Tasks

A. Prepare a collage or drawing showing why you think Honolulu can be called a "world of water." Explain your drawing to your classmates, telling them why Honolulu is a good harbor.

B. If possible, visit Honolulu (Nawiliwili, Kahului, Hilo, or Kawaihae) harbor. Take photographs of the area around the harbor. Share the photographs with your classmates, and tell why each area you photographed is an important part of the harbor.

C. On your visit to the harbor, find out what type of businesses are located nearby. Interview one or two business owners to find out why they built their businesses close to the harbor. Share your findings with your classmates.

Stage II

Experience-Thinking -> Language (E-T->L)

From what you know about Honolulu and what you have read about New York, describe how they are alike. (They both have harbors where ships come in to pick up and deliver goods.)

What do we call the place where ships dock to deliver and pick up goods?

Experience-Language -> Thinking (E-L->T)

Present students with a variety of pictures of Honolulu Harbor showing passenger ships, container ships, sailboats, tugs, fishing boats and others.

Asks students to describe what is happening in the harbor.

In each picture, have students tell whether or not the harbor is important to the purposes of the ships, boats, etc.

Ask students to describe how important they think the harbor is to the city?

Would Honolulu have grown so big without the harbor?

What characteristics of harbors make them good for the growth of cities?

Language-Thinking -> Experience (L-T->E)

Using a map of the United States, have pairs of students identify a city on a harbor. Using resource materials, or personal knowledge, describe the harbor in the city.

Stage I

Experience

A. The location of cities is influenced by the geography of the region.

Stage I - Experience - Cont'd.

Asks students to list the large cities and towns in Hawaii (Honolulu, Kailua, Kahuku, Kahului, Lahaina, Hilo, Waimea).

Which cities are built on the water?

Thinking

A. Cities were built on the water's edge because ships came in to bring goods and materials.

Why do you think these cities were built near the ocean? (Divergent)

What businesses do you think are built around the harbor? (Trucking, merchants) (Divergent)

Today, how else do we get our goods from the mainland? (Ships, planes) (Cognitive Memory)

Language

Do you know where these places are located: New York, Manhattan, Atlantic Ocean? Have students locate these places on a map of the United States and determine their relationship to Hawaii.

Read paragraph two of the selection and look at the picture at the bottom of the page. Can you tell why they say "New York is a world of water?"

Do you know what an island is? (Hawaii is an island surrounded by water.) What is our island made of? (Volcanic rock) Could you say we live on an "island of solid rock?" That's what New York City is built on.

Word Recognition

Situational Context

What is a port? List many meanings on the board: port is a red wine; porthole is the window of a ship; the left side of the ship is the port side; a place where ships dock is a port. Read the second paragraph and determine which of these meanings is the correct one.

Stage I - Word Recognition - Cont'd.

Sentence Context

What are piers? Where do boats tie up? What do you call the port or pole that you tie a boat or ship to when you land? Read the next to the last sentence in the selection. What do you think pier means?

Structural Analysis

What is the sky? What is a scraper? Put the two words together. (Something that scrapes the sky.) Do we have skyscrapers in Hawaii? Where? Have you ever been in one?

MATH APPLICATION

Moki's brother, David, weighs 140 pounds. His sister Lei weighs 98 pounds. Moki weighs 24 pounds less than his brother and 18 pounds more than his sister. What is the average weight of Moki, Lei, and David?

STAGE III

Understanding the problem:

. Have students orally discuss the problem, discussing:

1. meaning of terms
2. relationships
3. understanding of the question

. Underline or write down only the necessary data which helps to solve the problem.

. Decide what the key operation or computation requires.

Devise

. Organize the data into a mathematical sentence.

. Determine major steps.

Outline process

Carry out

. Work the computation in designated plan.

STAGE II

Experience-Thinking -> Language (E-T->L)

. Have some of the students lie down on a piece of paper and trace their height. Cut out the silhouettes. Measure the height of each. Have the students arrange the silhouettes from tallest to shortest. Have students identify the "middle" silhouette and relate the concept of "averaging" to the experience. What is important is that the experience (E) is used to facilitate the understanding of the concept of "averaging."

Experience-Language -> Thinking (E-L->T)

. Take the same experience (silhouette) and use the term "average" to describe the process.

Language-Thinking -> Experience (L-T->E)

. Use the term "average" and have the student demonstrate situations where "averaging" has or could serve a purpose. (Gas mileage,...)

STAGE I

Language

- Does anyone know what the word "average" means?
- Does anyone know another word which means "average?"
- Can anyone give an example of what "average" means?
- In the last sentence, what is the word after "the" and before "weight?"
- 'What is the _____ weight of Moki, Lei, and David?"
- Can anyone retell the problem in his/her own words?
- Have students create oral problems from which they can choose one to write.

Experience

- Have any of us worked this type of problem before?
- Have you ever been in a situation where an average weight had to be used?

Thinking

Read through:

Cognitive Memory	1. determine goal "Is this the problem to be solved?" "What is the problem to be solved?"
Cognitive if concept processed previously	2. retrieve/recall "average" questions or concept "Do you remember what average means?"
Cognitive memory structured previously	3. recall elements and steps in determining average "What are the steps in finding an "average?" "What are the first, second, steps, etc.?"
Validating	4. Contrastive analysis: determine what elements are missing Remembering the steps, what need to be done? What is missing? Which is necessary to solve the problem

Structuring	5. determine, organize, discriminate what cognitive memory facts are given and usable.
Recall (concept)	6. determine how to solve for the missing element (sub-problem) "How do we solve for or find out what the missing information is?"
Divergent (applying concept)	7. solve for the missing element
Divergent (applying concept)	8. go back to 3 and apply the process with all elements "Now what do we have to go back to in order to...?"