DOCUMENT RESUME

ED 317 538 SP 032 176

TITLE	A Guide to Developing Learning Across the Curriculum.
INSTITUTION	Iowa State Dept. of Education, Des Moines.
PUB DATE	90
NOTE	111p.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Behavioral Objectives; *Curriculum Development; Elementary Secondary Education; *Instructional Effectiveness; *Learning Strategies; Memorization; Self Evaluation (Individuals); *Student Motivation; Time Management
IDENTIFIERS	*Iowa

ABSTRACT

The materials in this guide focus on a variety of approaches to acquiring learning skills and applying them to eight content areas. The guide begins with a definition, an overview of learning skills, and historical background on the process of acquiring and applying learning skills. Ten learning skill competencies are defined: (1) self-evaluation, (2) goal setting, (3) time management, (4) monitoring attitudes, (5) motivation, (6) locating information, (7) selecting information, (8) organizing information, (9) communicating information, and (10) memory training. These learning skills competencies were developed as broad general statements about the types of student behaviors anticipated as outcomes of instruction, regardless of age or grade level. Each learning skill definition is followed by a K-12 competency. The competency is followed by specific student skills which illustrate possibilities within each learning skill. Methods of self-assessment and evaluation of the 10 learning skills are explained. Sample assessment instruments are included in the appendices. The guide also includes a step-by-step process for analyzing and evaluating whether learning skills are incorporated into the curriculum. (JD)

A Guide to Developing Learning Across the Curriculum

A Guide to Developing Learning Across the Curriculum

Iowa Department of Education
January 1990

It is the policy of the Iowa Department of Education not to discriminate on the basis of race, religion, national origin, sex, age, or disability.

The Department provides civil rights technical assistance to public school districts, nonpubiic schools, area education agencies, and area schools to help them eliminate discrimination in their educational programs, activities, or employment. For assistance, contact the assistant chief, Bureau of School Administration and Accreditation, Iowa Department of Education.

State of Iowa
DEPARTMENT OF EDUCATION
Grimes State Office Building
Des Moines, Iowa 50319

STATE BOARD OF EDUCATION

Karen K. Goodenow, President, Spirit Lake
Dianne L.D. Paca, Vice President, Garner
Betty L. Dexter, Davenport
Thomas M. Glenn, Des Moines
Francis N. Kenkel, Defiance
Ron McGauvran, Clinton
Mary E. Robinson, Cedar Rapids
Ann W. Wickman, Atlantic
George P. Wilson III, Sioux City

ADMINISTRATION

William L. Lepley, Director and Executive Officer
David H. Bechtel, Special Assistant
Mavis Kelley, Special Assistant

Division of Instructional Services

Susan J. Donielson, Administrator
Erik Eriksen, Consultant, Instructional Improvement,
Bureau of Instruction and Curriculum
Jim Reese, Consultant, Learning Disabilities, Bureau of Special Education

Division of Community Colleges

Joann Horton, Administrator
Jayne Sullivan, Consultant, Marketing, Multi-Occupations and Entrepreneurship
Education, Bureau of Career and Vocational Education

Division of Professional and Administrative Support

Ted Stilwill, Administrator
Tom Andersen, Consultant, Sex Equity, Bureau of School Administration
and Accreditation

Communications Services

Lisa Bartusek, Information Specialist
Carl Rejba, Graphic Artist

Contents

Foreword

This guide is the result of a 1985 mandate from the Iowa General Assembly, calling for the Department of Education to develop "subject matter committees and committees that cross subject matter lines for coordination of curriculum at all education levels."

This mandate was a response to one of the major recommendations of the Legislature's Excellence in Education Task Force report of 1985, First in the Nation in Education (FINE). The Department of Education based its plan for implementing the legislation on recommendations from the report.

In 1986, the first response to the mandate was published in the form of six guides to curriculum development in the areas of arts, foreign language, language arts, mathematics, science, and social studies. This series focused on vertical articulation of curriculum in the subject matter.

This publication, along with others in this second phase of the effort, focuses on horizontal articulation across subject areas. It is designed to guide faculties and administrators in developing curriculum and improving instruction in learning skills. It is intended to help districts enhance and build upon their current local curriculum.

Acknowledgments

The Steering Committee for the Horizontal Articulation Curriculum Development Project addressed the task in a milieu that required an extraordinary commitment of time and talent by those who would undertake writing and reviewing assignments. We want to thank those persons for sharing their personal and professional resources so graciously and generously. We commend them for their efforts to help us understand and articulate student competencies in learning across the curriculum.

As primary authors of this learning guide, we gratefully acknowledge

Joane McKay
Consultant
JM²
Ames

Janey Montgomery
Consultant
JM²
Marshalltown

For a significant contribution to the concepts of information selection, access and organization, we acknowledge with gratitude

Gerald Hodges
Assistant Professor
University of Iowa
Iowa City

As members of the review panel who contributed to the refinement of the learning guide, we recognize with appreciation

Mike Gates
Consultant
Area Education Agency 3
Cylinder

Barbara Wickless
Mathematics Consultant
Iowa Department of Education
Des Moines

Betty Jo Buckingham
Educational Media Consultant
Iowa Department of Education
Des Moines

Roger Volker
Professor
Iowa State University
Ames

Richard Hanzelka
Language Arts Consultant
Area Education Agency 9
Bettendorf

Carol Alexander Phillips
Reading Consultant
Iowa Department of Education
Des Moines

Shirley Pantini
Social Studies Teacher
Linn-Mar High School
Marion

Warren Weber
Director of Curriculum
Council Bluffs Schools
Council Bluffs

Jim Behle
Superintendent
West Branch Schools
West Branch

Jan McMahill
Assistant Professor
Drake University
Des Moines

Lastly, in the absence of the secretarial skills provided generously by Carolyn Gast and Kathy Cullor, this guide would not be.

Preface

On of the best things we can do to help motivate students for school learning is to teach them how to self-motivate, and then to require this in school tasks. Once a student knows how to manage and control his own learning and begins to apply that knowledge to assigned tasks, there is no more powerful or reliable motivator.

Corno, 1987

Introduction

The materials in this guide focus on a variety of approaches to acquiring learning skills and applying them to eight content areas.

The guide begins with a definition, an overview of learning skills, and historical background on the process of acquiring and applying learning skills. Learning skills objectives which can be implemented in the K-12 educational program are then included. The rationale for the objectives and the classroom activities designed to develop learning skills can be found in the work of Atwood (1974), Bragstad and Stumpf (1982), Last (1986), and Papert (1980). The annotated bibliography includes related learning skills resources suitable for K-12 teachers.

To narrow the focus of these materials, 10 learning skills competencies were developed as broad general statements about the types of student behaviors anticipated as outcomes of instruction, regardless of age or grade level. The 10 learning skills are defined, and each definition is followed by a K-12 student competency. The competency is followed by specific student skills which illustrate possibilities within each learning skill. Methods of self-assessment and evaluation of the 10 learning skills are explained. Sample assessment instruments are included in the appendices.

The guide also includes a step-by-step process for analyzing and evaluating whether learning skills are incorporated into the curriculum.

Definition: Learning

Learning is the appropriate employment of specific skills and behaviors leading to the successful accomplishment of simple to complex academic tasks. These skills and behaviors may include but are not limited to locating information, selecting information, organizing information, setting goals, regulating the learning environment, attending, monitoring attitudes, understanding graphic aids, following simple and complex oral and written directions, self-evaluation, remembering information, using time wisely, developing reading flexibility, and using effective writing skills.

Glossary

This section defines the key concepts which are essential to understanding the 10 learning skills defined in this guide. This glossary is based on the works of Marzano and Arredondo, Devine, and Last (see Bibliography). Educators may refer to these definitive resources for a full explanation of the nature and meaning of the key concepts.

Advanced Organizers: Information given to students before a learning situation. Ausbel suggests that usually the study passage is preceded by a "more abstract introduction passage" (Holtzman, et al, p. 77). Other types of organizers might overview the assignment or focus on the purpose or the structure of the assignment.

Attention Control: The skill of monitoring and consciously controlling your level of attention (Marzano and Arredondo, p. 1).

Brainstorming: Generating many ideas in a short time. Students are encouraged to avoid criticism, to hitch-hike on the ideas of others, to suggest "far out" and unusual responses, and to push for quantity of ideas.

Bracketing: Consciously putting aside some thoughts that might be important but not relevant to the task at hand (Marzano and Arredondo, p. 2).

Deep Processing: The ability to generate mental pictures, sensations, emotions, and linguistic information about a thought (Marzano and Arredondo, p. 4).

Energy Control: Artificially raising or lowering energy levels at will (Marzano and Arredondo, p. 2).

Goal Setting: A process of setting a direction and then developing a plan to get there.

Information: The content of any medium.

Knowledge: Information acquired from a person's study of facts, truths, principles, or experiences.

Library: A collection of materials in various formats managed by a staff of professional library media specialists and technical and clerical support workers in a facility which serves as a laboratory for learning how to learn.

Media: Materials used to transmit information regardless of format, e.g., books, pamphlets, recordings, films, video cassettes, computer programs, telecommunications, etc. Also, plural for medium.

Memory Training: Instructional activities based on the assumption that there are specific skills to strengthen the brain's ability to remember, retain, and retrieve information.

Motivation: The force that guides a person's actions and is generated by a person's needs.

Nonprint Materials: All other formats than words on paper.

Pacing: The concept of estimating how long it will take the individual to complete an activity.

Power Thinking: Consciously controlling how you think so as to feed back to yourself positive self-statements (Marzano and Arredondo, p. 8).

Print Materials: In this sense, narrowed to words on paper, although it could include words transmitted electronically in a visual format.

Self-Evaluation: The ability to assess learning skills that one may or may not possess.

Semantic Mapping: A process also referred to as a word cache or webbing. As a visual form of brainstorming, a concept or cluster of concepts start in the center and subconcepts are generated outward, which generate additional subconcepts. Can be portrayed graphically for three to four levels.

Technology: Hardware, system, and/or network used to manipulate and transfer information electronically.

Historical Background

As we approach the 21st century, educators have renewed concern about students' learning styles, study skills, and thinking abilities. During the last 20 years, a major evolution has taken place in the educator's perception of how students learn. This guide synthesizes these varied ideas about learning.

The purpose of this section of the guide is to give the reader a brief review of the literature that has played a role in current thinking about how students process information.

In the last two decades, researchers have investigated effective schools and effective teachers more frequently than aspects or elements of learning. The research focus has been on the teacher rather than the learner. Perhaps this is due in part to the observation that "learning is a highly complex aspect of human mental functioning about which psychologists are by no means in agreement" (Zais, 1976).

However, common definitions of learning emerged in the 1960s with Saylor and Alexander (1966, p. 195) favoring the definition of Hilgard, et al., who define learning as a "relatively permanent change in response potentiality which occurs as a result of reinforced practice," and Gagne (1965, p. 5), who states that "learning is a change in human disposition or capability which can be retained, and which is not simply ascribable to the process of growth."

During the last 20 years, a major evolution has taken place in the educator's perception of how students learn. This guide synthesizes these varied ideas about learning.

Strict behaviorists would probably disagree with both definitions on the grounds that it is impossible to verify the presence of learning in the absence of a change in observable behavior (Zais, 1976). Two decades ago much of what we knew about learning came from the behavioral psychologists Skinner and Thorndike. The cognitive or developmental perspectives of Piaget and Ausbel focused on the learner as an active participant. More recently, the cognitive information approach to learning has embraced the concept that student learning memory is developed through processing information; and Glasser (1986) has explained how affective collaboration learning teams implement "control theory in the classroom." Regardless of learning theory orientation, this guide suggests that as educators approach learning in the information age of the 21st century, they must focus on "how" students learn about learning, either in school or out-of-school.

Gagne (1977) presented three time-tested learning principles: contiguity, repetition, and reinforcement. Contiguity means that the stimulus for learning must be presented contiguously in time with the directed response. Repetition means that the stimulus and its response need to be repeated or practiced. Reinforcement theory suggests that learning a new act is strengthened if followed by satisfying conditions or feelings.

These three principles refer to the controllable instructional events of learning. Recent theories have focused on the internal process of learning. Nine steps in the internal learning process have been identified and are presented in the first column of Figure 1. More extensive accounts of these relationships are found in books by Gagne (1977) and Gagne and Briggs (1974). In a complete act of learning there are nine events of instruction, and they appear in the second column of Figure 1.

Figure 1
The Learning Process

Internal Learning Process	External Instruction Event
1. Alertness	1. Gaining attention
2. Expectancy objective	2. Informing learners about lesson
3. Retrieval to working memory	3. Stimulating recall of prior learning
4. Selective perception	4. Presenting stimuli with distinctive features
5. Semantic encoding	5. Guiding learning
6. Retrieval and responding	6. Eliciting performance
7. Reinforcement	7. Providing informative feedback
8. Cueing retrieval	8. Assessing performance
9. Generalizing	9. Enhancing retention and learning transfer

This guide suggests that the link between the internal process of learning and the external instructional event is a number of learning-to-learn skills. A search for specific skills to facilitate learning generates a varied list from researchers around the world.

At the September 1959 Woods Hole Conference, some 35 scientists, scholars, and educators discussed how science education might be improved in primary and secondary schools. Summarized by Jerome Bruner in *Process of Education*, 1963, this observation focused on the acquisition of learning skills.

Virtually all the evidence of the last two decades on the nature of learning and transfer has indicated that, while the original theory of formal discipline was poorly stated in terms of the training of faculties, it is a fact that massive general transfer can be achieved by appropriate learning, even to the degree that learning properly under optimum conditions leads one to "learn how to learn" (p. 6).

This early reference to "learning how to learn" sets the stage for this guide, not for optimum learning conditions, but for all learning conditions.

In 1966, Hilgard and Bower summarized commonly accepted principles of learning, which included:

1. The learner should be active, rather than a passive listener or viewer.
2. Frequency of repetition is important in acquiring a skill.
3. Repetition should take place under conditions in which correct responses are rewarded (reinforcement).
4. Motivational conditions are important for learning.
5. Conflicts and frustrations in learning situations must be recognized and provision must be made for their resolution.
6. Learning problems should be presented in a way that their structure is clear to the learner.
7. The organization of content is an important factor in learning.
8. Learning with understanding is more permanent and more transferable than rote learning.
9. Goal setting by the learner is important as motivation for learning.
10. The learner's abilities are important, and provisions should be made for differential abilities.
11. The learner should be understood in terms of the influences that have shaped his/her development.
12. The anxiety level of the individual learner is a factor affecting learning.
13. The organization of motives within the individual is a factor that influences learning.
14. The group atmosphere of learning (competition versus cooperation, authoritarianism versus democracy, etc.) will affect satisfaction in learning as well as the products of learning.

The link between the internal process of learning and the external instructional event is a number of learning-to-learn skills.

Some 20 years later, these 14 observations are still being considered by educators as critical elements in the learning process. All may be mediated by the empowerment (or lack of it) provided by setting a structure in the classroom (Glasser, 1986).

In a report to the Council of Chief State School Officers in 1976, Ralph Tyler asked, "What have we learned about learning?" (reprinted in Hansen, 1976). He commented on the role of motivation, clarity of goals, confidence, rewards, feedback and encouragement, opportunities to practice, transfer, conditioning and other forms of learning, learning objectives, values, active learning, and structure.

German (1981) and Project CAPABLE developers combined learning skills with the subject matter approach and suggested that content area teachers must be as aware of

learning skills as they are of content. Their classroom goal should be to use basic learning skills to teach content, and at the same time, use content to enhance learning skills.

Devine (1981) in his first edition of *Teaching Study Skills*, defined study skills as "those competencies associated with acquiring, recording, organizing, synthesizing, remembering, and using information and ideas found in school" (p. 4). His case for study skills was based on three factors that influence school achievement:

1. The student's desire to learn.
2. The student's image of himself or herself as a successful learner.
3. The student's ability to manage certain key competencies necessary for school learning (p. 2).

Content area teachers must be as aware of learning skills as they are of content.

Ashman and George (1982) focused on becoming a student. Topics explored were motivation, planning, use of time, remembering, patterns, mnemonics, retention, writing, process of inquiry in writing, reading, pace of reading, note-taking, language, self-evaluation, and preparing for exams.

Bragstad and Stumpf's *A Guidebook for Teaching: Study Skills and Motivation* (1982) included strategies for developing motivation, concentration, time management, storing and retrieving, absorbing specialized meaning through technical vocabulary, summary and survey, marking, mapping, note-taking, test-taking, and application to content areas.

Thinking Skills: A Conceptual Framework (Marzano and Hutchins, 1985), details the theoretical and research base for the Mid-Continent Regional Educational Laboratory (MCREL) thinking skills program The program divides thinking skills into three areas: learning-to-learn skills, content thinking skills, and reasoning skills. The four learning-to-learn skills identified as general skills which apply to all tasks in school or out of school are attention control, deep processing, power thinking, and goal setting.

Robert Marzano describes "knowledge and control of self" which include commitment, attitudes, and attention, and "knowledge and control of task," which include "setting goals, planning, correcting for error, and evaluating." These skills are described in detail with suggestions for teaching the skills in the national Association for Supervision and Curriculum Development (ASCD) thinking skills program, TACTICS.

Devine's second edition in 1987 provides hundreds of proven activities and techniques appropriate for K-12 teachers. Devine identifies study skills as listening, reading, thinking, vocabulary, note-taking, homework, study guides, library and research, comprehension, reporting, remembering, relating and test taking, motivation, and self-concept. He also demonstrates how study skills programs can be applied to the content areas of mathematics, science, and literature.

Archer and Gleason (in print) developed *Skills for School Success*, which is a four-level, teacher-directed program designed to teach critical organization skills and study skills systematically to students in elementary and middle grades. In the program, students are taught appropriate school behaviors, organization skills, specific learning strategies, textbook reference skills, graphic skills, and use of classroom reference materials. This approach is a spiral curriculum; skills taught at one level are reviewed at each subsequent level with more difficult applications.

In another recent publication, *Cognitive Classroom Learning*, edited by Phye and Andre (1986), chapters focus on: 1) cognition, learning, and education, 2) hemispherisity, 3) attentional processes, 4) instruction, 5) memory, 6) practice, 7) problem solving, 8) metacognitive skills, 9) learning tactics and strategies, and 10) cognitive development. Phye and Andre suggest:

> The cognitive information-processing perspective has changed the nature of psychological and educational research and has, to our way of thinking, produced findings with tremendous potential for classroom application (p. ix).

The book is organized around the idea that learning occurs through the processing of information by structures in the student's learning/memory system. Five commonalities among various models are emphasized: attentional factors, short-term memory, long-term memory, performance factors, and metacognitive processes.

The basic elements of an information-processing model and the human brain are often compared to the programmable computer with a chain of processing events from input, to receipt by sensory buffers, to short- and long-term retrieval, and output or performance. In this approach teaching activities are examined in light of the information processing carried out by students.

Overview

Learning to learn is one of the paramount skills students need to acquire and build upon throughout their lives. *A Nation at Risk* and other reports on education such as *First Lessons* have stressed the critical responsibility of the nation's schools in teaching students to become lifelong, independent, self-assertive learners and evaluators of information. We live in an information age, and all citizens face the complex task of locating and evaluating information for personal use.

Today's students face an information explosion, particularly in electronic form, and the ability to handle information has been identified as an adult survival skill. Schools have a major responsibility to infuse these skills throughout the curriculum.

For the purpose of this overview, learning skills are divided into four major areas: getting ready for learning, developing learning-to-learn skills, using learning skills in content areas, and evaluating learning skills curriculum.

Today's students face an information explosion, particularly in electronic form, and the ability to handle information has been identified as an adult survival skill. Schools have a major responsibility to infuse these skills throughout the curriculum.

A premise of this guide is that students have difficulty learning because they lack specific skills needed to make learning possible. Devine (1987) contends that "mastering of study skills is contingent upon a student's image of himself or herself as a successful learner, and, of course, upon motivation to learn," (p. xix).

Two important findings from research in this area are: 1) learning to learn begins very early in a child's life, and the earlier we begin to teach learning skills the more successful the child can be in various learning situations; and 2) learning to learn does not end with formal secondary education. Today's students face an information age; therefore, high schools should build upon prior learning to prepare students to locate, evaluate, and use information, particularly information available electronically. There is no question from the research that a learning skills curriculum should be K-12.

This guide encourages effective approaches to the use of learning-to-learn skills in the classroom. The content is derived from research on learning skills as well as effective classroom practices. This publication is a guide to thinking about learning to learn as well as implementing learning-to-learn skills. Four questions were addressed in developing this guide: 1) What skills does a learner need to be able to learn? 2) How does a learner learn, acquire, retrieve, and retain information? 3) What learning skills are appropriate to content areas? and 4) How does the learner evaluate what he or she has learned?

Seymour Papert, in *Mindstorms: Children, Computers, and Powerful Ideas*, provides a powerful analogy for the classroom teacher when thinking about learning to learn. Papert says, "Learning to use computers can change the way children learn everything else," (p. 8). Learning to learn empowers children and changes the way each child sees himself or herself as a successful learner.

As early as 1972, Dale outlined the characteristics of the person who has learned how to learn. He suggested that the person has these characteristics:

1. A heightened sensitivity to things that matter.
2. A feeling of continuing and cumulative power and growth in understanding.
3. The delight that comes from discovery.
4. An effective system for finding, mentally filing, and retrieving ideas.
5. Flexibility in transferring ideas from one situation to another.
6. Ease in obtaining meaning from words and images.
7. A zest for more learning. (p. 56)

This guide views learning skills through four questions, generated from the student's point of view: 1) What skills do I need to learn? 2) How do I learn it?...acquire it?...retrieve it?...retain it? 3) How do I use learning skills in my subjects? and 4) How do I know what I have learned?

To answer the first question a number of skills which related to "getting ready for learning" were chosen. The skills include: self-evaluation, goal setting, time management, monitoring attitudes, and motivation. The topic of learning styles is included with self-evaluation; types of goals and self-directed learning are included with goal setting; planning and pacing skills are included in time management. Topics of attention control and power thinking are included in monitoring attitudes and four elements that affect motivation (student success, classroom environment, instructional strategies, and rewards/reinforcements) are included in the motivation skill.

The learning-to-learn skills of locating information, selecting information, organizing information, communicating information, and memory training relate to the second question. The use of print and nonprint materials are included in locating information. Selecting information includes critical analysis, interpretation of findings and drawing conclusions. The communicating information component includes the communication skills (reading, listening, writing, speaking, and using media) as tools students use to receive and communicating learning input. Note taking and study guides are included in organizing information; with deep processing, remembering, relating, and test-taking as parts of memory training.

Learning to learn empowers children and changes the way each child sees himself or herself as a successful learner.

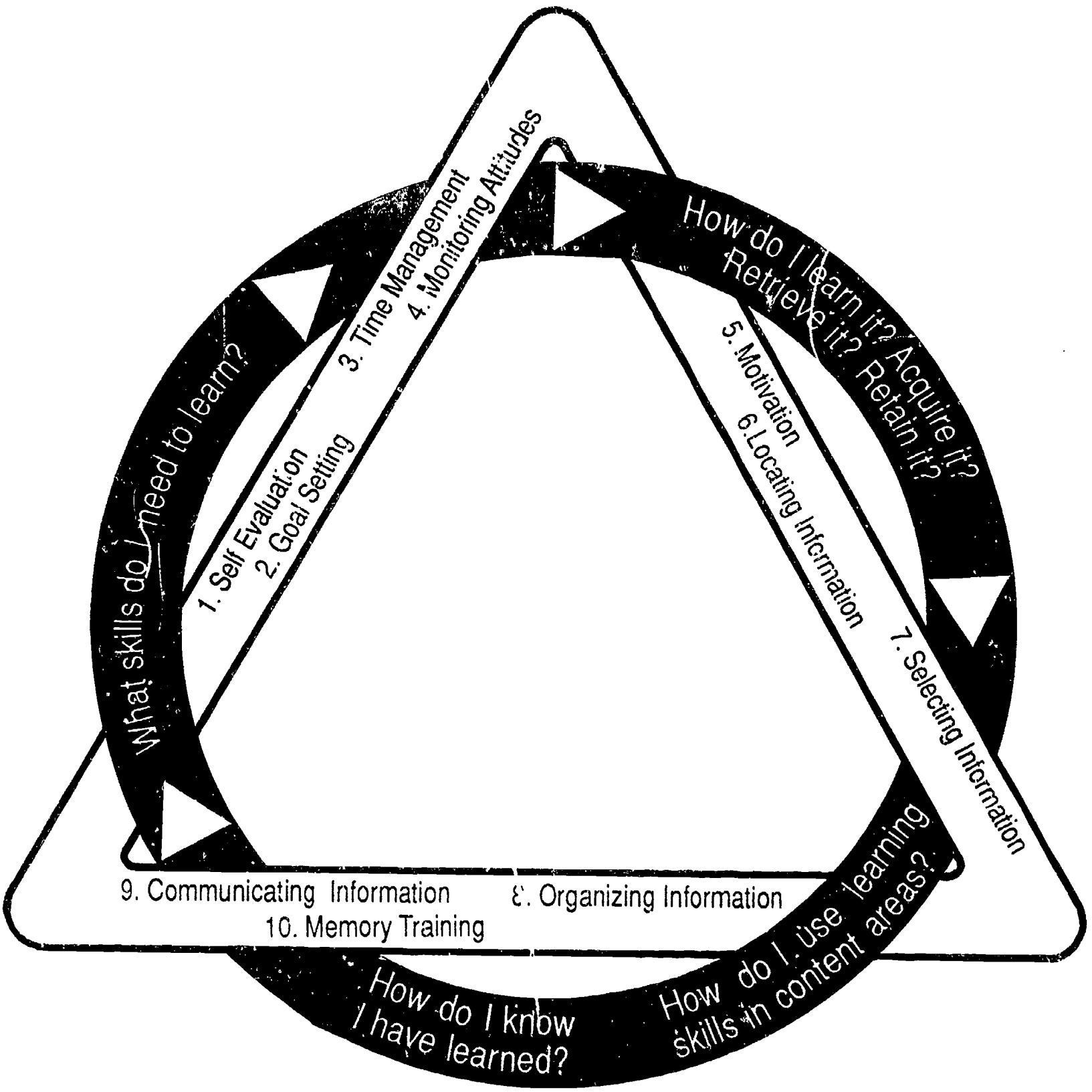
The third question can be answered by examining how the 10 previous learning skills can be implemented in the eight content areas of language arts, social studies, art, foreign language, science, mathematics, health/physical education, and vocational education.

The last question, "How do I know what I have learned," is crucial for learning. Through the use of standardized tests, evaluations, and program evaluation students and teachers can get meaningful feedback on the progress in learning. Instruments for observations, checklists, etc., have been included in the appendices, which can be used by teachers and students.

This guide outlines 10 specific learning skills integral to all learning both in school and out-of-school. The 10 skills are basic to lifelong learning. When implemented in schools, and practiced out-of-school during independent and self-initiated learning tasks, learning skills may lead the way in helping each of us benefit from the rewards of learning.

10 Learning Skills and Student Competencies

1. Self-Evaluation	The student will identify learning skills that he/she needs to acquire or improve by completing three or more self-evaluation instruments.
2. Goal Setting	The student will demonstrate the ability to develop and execute short-term and long-range goals through self-directed independent projects within and outside the classroom.
3. Time Management	The student will demonstrate time management skills involving planning and pacing in a classroom instructional activity or independent study.
4. Monitoring Attitudes	The student will take responsibility for his/her learning by practicing attention control and power thinking techniques.
5. Motivation	The student will identify what motivates him/her and practice strategies to heighten extrinsic and intrinsic motivation.
6. Locating Information	The student will be able to identify and use print and non-print sources to locate information about a topic, issue, or concept.
7. Selecting Information	The student will demonstrate the skills of critical analysis of references, interpreting individual findings, and drawing conclusions relative to a topic, issue, or concept of his/her choice.
8. Organizing Information	The student will demonstrate his/her ability to take notes from reading or a lecture as a basis for retaining information to be used in an assignment on a topic, issue, or concept of the student's choice.
9. Communicating Information	The students will demonstrate reading, writing, speaking, listening, and media skills which will enhance their information-processing abilities.
10. Memory Training	The student will develop and refine memory training skills through the techniques of deep processing, remembering, relating, and test taking.



A Model for Learning to Learn

10 Learning Skills

Concepts, Competencies, and Subskills

"Learning is like eating or sleeping. A person must do it himself or herself; it can't be delegated."
—Edgar Dale, 1972

Building a Learning Environment
Phi Delta Kappa, Inc.
Bloomington, Indiana

1. Self-Evaluation

Self-evaluation refers to the ability to assess learning skills that a student may or may not possess. It also helps a student identify preferred learning styles. This assessment can be completed by the student with the teacher's guidance. A variety of measurement tools such as checklists, self-reports, anecdotal records, and observations can provide valuable assessment information.

The purpose of self-evaluation is to answer the question, "What skills do I need to learn?" A variety of instruments from sources identified in the bibliography have been included in Appendix A to illustrate various approaches to self-assessment. Specific self-assessments are found in the work of Bragstad and Stumpf relating to concentration, motivation, learning atmosphere, time management, and other learning skills to be covered in this guide. Information about learning styles can be found in the work of Dunn and Dunn, Gregoric, Torrance, and McCarthy.

Ashman and George (1982) suggest two criteria for self-evaluation: 1) reflections on previous learning experiences and 2) motivation for learning to learn. They conclude, "Being a student is all about learning how to learn," (p.20). The reflective technique is to ask students to think back over their experiences of learning through study. Ask them to indicate three or four episodes where they were really satisfied about the learning process or product. By identifying specific skills and feelings associated with the learning, students will be encouraged to create a list of strengths and weaknesses.

The benefits to be derived from assessing learning styles include:

1. discovering personal preferences for acquisition of information and skill development;
2. identifying how to capitalize on the strong learning preferences and improve upon the deficits;
3. developing a balanced approach to learning.

Information about self-assessment and learning styles is most important to students when they can identify and adjust skills needed to be successful in a given situation. This is another dimension of learning where students can take control of their learning and feel confident about their abilities.

Student Competency: The student will identify learning skills that he/she needs to acquire or improve by completing three or more self-evaluation instruments.

Subskills:

1. Remember previous successes with learning.
2. Recall previous frustration with studying and learning.
3. Prioritize learning skills to be acquired/improved.
4. Create a list of strengths and weaknesses related to learning process.
5. Identify what motivates own learning.
6. Complete three self-assessments of learning skills.
7. Analyze results of self-assessments.
8. Draw conclusions from data collected.
9. Devise a plan for improving and developing personal and class learning skills.
10. Implement the learning skills improvement plan.

2. Goal Setting

Setting and achieving goals are important predictors of success. (Claypool, et al., 1983, Hilgedick, 1983). Goal setting is usually defined as a process of setting a direction and then developing a plan to get there. Some of the necessary ingredients are desire, imagination, concentration, and discipline, (Claypool, et al., 1983). Marzano (1985) suggests that goal setting can help students "learn from their failures, increase the likelihood of task completion, and increase the probability of student success. Goal setting can be used in many ways: 1) at the beginning of a class period, 2) for a particular task or subject within school, 3) when there is something that the student has a strong desire to accomplish or attain, or 4) whenever the student wants to systematically attack an issue." Typically, educators encourage the development of short-term or long-range goals.

Activities in the classroom or learning environment should provide opportunities for setting and attaining goals. Thatcher (1973) suggests that self-directed learning is a cluster of methods which are the means to achieving goals set by students and teacher either individually or jointly. Thus, independent projects both within the classroom and outside the school should be encouraged. The time management skills of planning and pacing are of utmost relevance as students set out to attain their goals. Thus, goal attainment reinforces the need for goal-setting skills.

Student Competency: The student will demonstrate the ability to develop and execute short-term and long-range goals through self-directed independent projects within and outside the classroom.

Subskills:

1. Describe the characteristics of effective goals.
2. Describe situations in his or her life when the goal-setting process can be used.
3. Use the goal-setting process in the classroom and outside of school.
4. State a goal in writing.
5. Identify a time frame to reach this goal.
6. Imagine himself or herself accomplishing the goal.
7. Write an action plan to accomplish the goal.
8. Identify, periodically, the next steps to take to accomplish the goal.
9. Estimate the time needed to complete each step of the plan.
10. Evaluate the relationship between the goal and the action plan. Will completing the action plan lead to attaining the goal?

Arnold Bennett defined Time as the inexplicable raw material of everything. With it, all is possible. Without it, nothing.

3. Time Management

Time management allows students to determine how well they are using time. When students are aware of the fleeting nature of time, they begin to evaluate their use of time. Three topics of particular interest to students in this area are: 1) scheduling time, 2) evaluating use of time, and 3) exploring changes in time management (Bragstad, 1982).

In planning time management strategies, students are encouraged to brainstorm, practice sequencing activities, and simulate activities requiring time estimation. When brainstorming, students are reminded of four rules for success: 1) no criticism, 2) "hitchhike" or "piggyback" on good ideas, 3) the wilder the ideas the better they are, and 4) lots and lots of ideas are needed.

Pacing is the concept of estimating how long it will take to complete an activity. When projects take longer than estimated, students become aware of their own pace of learning and working. To help learners estimate time blocks needed for particular projects, the teacher might introduce them to the A, B, C method of prioritizing. This method forces the student to make choices about the use of time, i.e., A - Very important (must do today); B - This is quite important but I could wait a little while (tomorrow or one week); C - I could postpone this.

Perhaps the most important thing for students to understand concerning time management is that time is now, not yesterday, not tomorrow, but now! How a student chooses to use his/her time may indeed empower the student. Time is the dynamic and priceless power that only the individual can master.

Student Competency: The student will demonstrate time management skills involving planning and pacing in a classroom activity or independent study.

Subskills:

1. Brainstorm things to be done.
2. Prioritize the list with A-B-C method.
3. Use time management skills in planning for a specific activity.
4. Design a time schedule for a school day or activity outside of school
5. Review the time schedule if necessary.
6. Share time management tips with other students.

4. Monitoring Attitudes

Attitudes affect learning. Researchers have identified four elements which affect learning and retention rates: 1) level of distraction, 2) attitude toward the value of instruction, 3) attitudes toward work, and 4) attitudes about your ability to succeed (Marzano and Arredondo, 1985).

In many classrooms, the level of distraction varies from student to student. Many times a day, teachers ask students to "pay attention." This usually means "be quiet and look at the teacher." A learning skill referred to as attention control is a useful tool to help students begin to assume responsibility for their own attention.

Attention control is "the skill of monitoring and consciously controlling your level of attention" (Marzano and Arredondo, 1985, p.1). In some learning situations a great deal of attention is required. In other situations, it is not. The individual in control of his/her attention knows when he/she should attend more and when he/she can attend less and is able to adjust depending on the situation. Marzano suggests that attention control be used as a way of punctuating important information, as a way of getting students to pay attention to a task they do not like, and/or when the goal is to have students practice self-discipline.

Attention control is the key to doing well on any task. It is a process that can be learned by all students. It can improve the quality of their engagement during class instruction. Two subskills —energy control and bracketing—are parts of attention control. Energy control involves "artificially raising or lowering energy at will." Relaxation exercises to overcome test anxiety would be an example of energy control. Bracketing refers to "consciously putting aside some thoughts that might be important but not relevant to the task at hand." Energy raising, relaxation, and bracketing can be introduced in the primary grades. When students are comfortable with the concepts, the attention control process can be introduced and used on a regular basis.

The goal of attention control is to increase the quality of "time on task" which hopefully will cause retention and remembering. Bragstad suggests, "If concentration is purposeful, directed thinking, what does this suggest for assignments? To concentrate effectively, students value knowing why they are to do an assignment, what to do, and how to do it. Not only does this result in better concentration, but also in students making the best use of their study time" (p. 30).

A learning skill called attention control is a useful tool to help students begin to assume responsibility for their own attention.

A student's belief in his/her ability to succeed is a powerful force working within classrooms. The learning strategy, power thinking, helps students realize the benefits of taking responsibility for their learning.

Power thinking is "consciously controlling how you think so as to feed yourself positive self-statements" (Marzano and Arredondo, 1985). A process for power thinking involves:

1. identify an attitude or belief you want to integrate into your life;
2. develop an affirmation (positive statement) for the attitude;
3. practice, each day, saying the affirmation and visualizing the results.

Marzano suggests that power thinking can be used as a way of preparing for the day or some difficult task, as a way of evaluating how the day went, or as a way of obtaining some desired characteristics or skill. It is important to practice power thinking daily. Restating the affirmation is as important as visualizing it. If a student believes he or she can accomplish a task, he or she has a good chance of doing so.

On the other hand, self-doubt is equally powerful. Students who have learned to be helpless will tend to withdraw from performance situations when given a choice—they will simply refuse to try to study and learn. Many school dropouts exhibit this syndrome, particularly lower-class minority students, whose perceptions actually have some basis in social realities.

Student Competency: The student will take responsibility for learning by practicing attention control and power thinking techniques.

Subskills:

Attention Control

1. Discuss importance of attention control.
2. Describe situations when attention control is needed.
3. Take steps to improve concentration by identifying thoughts that should be bracketed.
4. Practice bracketing during instruction.
5. Demonstrate the key components of the attention control process.
6. Assess own concentration.
7. Exhibit control over attention in instructional activities.
8. Evaluate own use of attention control process.

Power thinking

1. Define affirmations, power thinking, visualization.
2. Describe impact of power thinking.
3. Discuss whether attitudes and thoughts affect your behavior.
4. Practice the process of power thinking.
5. Keep a log or journal about experiences with power thinking.
6. Share power thinking experiences with others.

5. Motivation

Motivation is generated by a person's needs and is the force that guides the person's actions. Research has identified some interrelated factors that influence student motivation: student success, classroom environment, instructional strategies, rewards, and empowerment. Traditionally, researchers distinguish between intrinsic and extrinsic motivation. All forms of extrinsic motivation involve some reward, incentive, or goal extrinsic to the task itself and have always been found in schools (Devine, 1987). Intrinsic motivation comes from within the student, i.e., satisfaction, pleasure, and power from the task performed. Quality of products, pride in the outcomes, and knowledge of results promote intrinsic value.

These skills may be promoted as early as kindergarten. Teachers may analyze assignments to ascertain the specific skills involved and make sure the students possess those skills. A student's self-concept is affected by teacher behavior, expectations, and communication patterns. Thus, positive teacher attitudes and behaviors enhance the classroom environment. Finally, teachers must be aware of the need to restructure the teaching environment.

Student Competency: Students will identify what motivates them and practice strategies to heighten their own extrinsic and intrinsic motivation.

Subskills:

1. Discuss importance of motivation.
2. Analyze what motivates the individual student.
3. Identify rewards or incentives that are used to motivate students.

4. Develop techniques for evaluating the relationship between the quality of a product and the motivation to produce the product.
5. Know the difference between extrinsic and intrinsic motivation.
6. Practice self-motivation as a learning skill.

6. Locating Information

The information age has made us aware that students need skills in using print and nonprint information. A key to a successful learning skills program is systematic, organized instruction in the use of a library. Devine (1987) says that such instruction has three overlapping concerns: 1) introducing the library to all students (not just the "college bound"); 2) teaching library skills needed to learn, both in school and after graduation; and 3) providing guided opportunities for personal search and discovery.

Beyond this traditional methodology of locating information, the information explosion has placed upon the classroom teacher the need to assist students in using nonprint materials in locating information. Incorporation of new technologies such as CD-ROM and interactive video are all part of the responsibility of those assisting learners in learning how to learn. Terms such as database guides, DIALOG, interlibrary loan, full-test retrieval, microfiche/film, readers and printers, on-line search, and information networks would be the working vocabulary of a student familiar with the latest technology in locating information.

A key to a successful learning skills program is systematic, organized instruction in the use of a library.

Locating information, print or nonprint, implies the need to follow a four-step approach, i.e., decide what information is needed, select the most appropriate sources (such as the library, an experiment, or an expert) gather the information and record accurately.

Another approach recommended in locating information is: 1) determine what information is needed; 2) identify possible sources of information; 3) collect the information, e.g., interview resource persons, locate necessary printed materials, conduct on-line search; 4) take notes on information collected.

In any case, one of the paramount goals of a learning-to-learn curriculum is to provide students an opportunity to discover the intellectual and emotional pleasure of knowing how to locate information.

Student Competency: Students will be able to identify and use print and nonprint information sources in researching a topic, concept, or issue of their choice.

Subskills:

1. Distinguish between fiction and nonfiction, print and nonprint.
2. Identify encyclopedia, dictionaries, pictionaries, and other reference tools.
3. Locate specialized reference sources, such as biographical and geographical dictionaries, special sports or science encyclopedias, Children's Magazine Guide, atlases, thesauri, almanacs, quotation dictionaries, etc.
4. Use sources such as microfiche/film, readers and printers, photocopy machines, bibliographies, database guides and aids, newspaper indexes, etc.
5. Use local resources such as telephone directories, newspapers, etc., to develop a community-based project.
6. Identify services and materials provided by information networks and electronic databases.
7. Use an electronic database.

8. Define cost considerations regarding on-line vs. manual searching of databases.
9. Outline steps for obtaining information from community sources: certified birth certificate, passport, marriage license, automobile title, drivers license, tax forms, etc.

For the student of the future, it may not be enough to analyze and discriminate the "good" from the "bad" reference.

7. Selecting Information

Databases are proliferating world wide. It is estimated that in the United States over $100 billion is spent each year accessing databases, according to Dunn and Morgan (1987, p. 17). These authors suggest that:

> To have access to information or know how to access information, is not of great value by itself. It is what is done with the information that is educationally and intellectually crucial (p.105).

Whether using print or nonprint information, the student must be able to critically analyze the located materials. Students need to evaluate information by its relevance, completeness, accuracy, and reliability.

Dale (1972) cautioned that students must learn to see subtle differences in books and magazines. A person who is learning to learn becomes conscious of the need to be a discriminating learner.

The student uses analysis and evaluation in selecting information. Atwood (1974) suggests that analysis consists of understanding why and how to pull data apart and knowing how to interpret individual findings. Specific skills that a student may need in analyzing findings would be to: 1) distinguish between main idea and supportive detail; 2) distinguish between fact, fiction, and opinion; 3) recognize cause and effect relationships, and 4) recognize trends and patterns.

In addition to being able to critically analyze references, the learner must know how to interpret individual findings. These skills may include: making comparisons and analogies, drawing conclusions, making inferences, weighing possibilities, and making predictions.

In evaluating data, the learner will need to understand how to assess data from a variety of viewpoints and to assess a variety of interpretations of the same data. The information explosion forces today's student to think in terms of verifying data as well as comparing data in a variety of methods.

When using these skills, the learner becomes aware that decisions based on information are only as valid as the information itself. For the student of the future, it may not be enough to analyze and discriminate the "good" from the "bad" reference; indeed, he or she may need to become a discrete discriminator determining the "best" from the "better."

Student Competency: The student will demonstrate the skills of critical analysis of references, interpretation of individual findings, and drawing conclusions relative to a topic, issue, or concept of his or her selection.

Subskills:

1. Distinguish between fact and opinion in newspaper and magazine editorials, written or taped speeches, television programs, and television advertisements.
2. Recognize supportive detail and make inferences.
3. Recognize trends and patterns on a given topic over time.

4. Cite examples of cause and effect in relationships.
5. Recognize forms and effects of bias, both favorable and unfavorable.
6. Make inferences based on individual findings.

8. Organizing Information

Study skills in listening, reading, vocabulary, and thinking may be significantly improved if students learn how to effectively take notes, complete class and homework assignments, and use study guides, (Devine, 1987, p. 165). Organizing information is a high priority for the learner who is learning how to learn. It should also be noted that note-taking styles are as varied as handwriting, but successful students usually "do something" as they gather information.

Note taking is a valued learning tool because it necessitates discriminating listening, helps in learning the essence of lecture, reveals the purpose and underlying structure of a lecture, enhances memory and provides a readily available written record of important information (Bragstad and Stumpf, 1982, p. 108). Clearly, note taking—from both lectures and reading assignments—is an important learning skill.

Most researchers agree that summarizing, outlining, underlining, and other kinds of note taking are important to effective study. These are specific skills that must be guided by teacher input as early as elementary grades. A modeling process showing elementary students the main ideas of a story helps the student see that writers or speakers use an outline. Only after the student becomes aware of the process should they be asked to outline as a means of improving their study skills.

Once students understand why data is organized, then they may begin to select techniques for organizing their information. Some of the skills necessary in organizing information include: identifying main ideas and details, using classification patterns and techniques, using topics and themes, using sequential patterns and techniques, and recognizing organization techniques that communicate data and ideas.

In addition to providing learners with a format for learning how to organize information, classroom teachers may also give students assistance in reading for meaning by structuring study guides for specific assignments. Skillful teachers structure learning by focusing on key aspects of a lesson through the use of study guides. These guides give the learner yet another opportunity to practice note-taking skills. Devine (1987) contends that "an effective guide is, in all sense of the word, a highly personal teaching tool."

Perhaps what is most important for the learner is the understanding that information can be grouped according to a particular purpose. It is this skill in classifying, finding patterns, and creating sequences that makes note taking one of the keys to maximum learning.

Organizing information is a high priority for the learner who is learning how to learn.

Student Competency: The student will demonstrate his/her ability to take notes from reading or a lecture as a basis for retaining material to be used in a topic, issue, or concept of the student's choice.

Subskills:

1. State the basic skeletal form of an outline.
2. Recognize outline form and practice using it in oral and written presentations.
3. Use precise-writing or summarizing as a form of note taking.
4. Illustrate effective summary writing by using a variety of sources.

5. Create own system of note taking for responding to reading or lecture.
6. Demonstrate accurate note-taking skills.
7. Use study guides as a means of structuring individual reading.

9. Communicating Information

Learning to learn is a process that requires four basic input skills — reading, writing, speaking, and listening. With the advent of technology a fifth skill has been added—using media, but media is only a refined tool of the four basic skills. When applied to the 21st century, using media becomes vital to a student's ready accessing and massaging of information. However, this information input depends upon the student's familiarity and skill in reading, writing, speaking, and listening. This guide presents the most current research on trends and strategies in the five areas mentioned.

Reading. Use of reading skills in content area classrooms generally involves three skills: vocabulary, comprehension, and reading-related study skills.

Vocabulary instruction covers skills dealing with pronouncing and giving meaning to words in content area textbooks such as: word attack skills, sight word skills, and word meaning (Carnine, 1980). Many subject area courses, such as biology, introduce many new concepts and hundreds of new vocabulary words, which can be roadblocks to comprehension. Nelson-Herber (1986) argues that new vocabulary words should be presented in concept clusters and related to prior knowledge to facilitate organization in meaning.

Literal, inferential, and critical comprehension skills can aid the student in understanding, applying, and evaluating the information presented in content area instruction. Strategies for promoting comprehension can be found in the work of Carnine (1980), Devine (1987), German (1980), and Bragstad and Stumpf (1982).

Devine (1987) divided reading-related study skills into prereading, reading, and post-reading which includes the following strategies to facilitate learning and remembering through reading-related study skills:

A. Prereading activities
   1. Give students an overview.
   2. Explain new and difficult concepts in advance.
   3. Teach unfamiliar words in advance.
   4. Set up a purpose and plan for reading.
   5. Use SQ3R methods. [Survey, Question, Read, Recite, Review]
   6. Try various assignment overviews, including structural organizers, purpose setters, and semantic mapping.

B. During reading activities
   1. Completing teacher prepared outlines.
   2. Jotting down new information.
   3. Asking questions of the text.
   4. Noting personal responses.
   5. Preparing a lesson plan.

C. After reading activities
   1. Testing self.
   2. Learning different kinds of questions.
   3. Determining main points.
   4. Rewriting for others.
   5. Teaching peers. (pp. 47-59).

For the current television generation, researchers suggest that reading skills may well hold the key to successful study habits, memory, and retention for many students.

Reading-related skills involve the rate, accuracy of reading, prereading, and review. Content area teachers can benefit from additional inservice and staff development in the area of reading to better facilitate the skills of receiving information through reading.

Writing. Written communication skills are essential to learning, whether in academic life or in the world of employment. Writing is a means of discovering knowledge and of learning what we know. Writing never occurs in a vacuum: we write for a reason and with an audience in mind(*A Guide to Curriculum Planning in English Language Arts*, 1986, pp. 122-123).

Current thinking in teaching writing views writing as a process. The steps include: prewriting, drafting, revising, drafting, editing, and sharing. Writing as a process promotes creating, discovering, and shaping experience. Students also learn content in other curricular areas, acquire lifelong communication skills, and experience the pleasure of self-expression.

Speaking. Speaking is language in action. The discipline of speech traditionally has encompassed eight areas of study: 1) voice and diction, 2) rhetorical and communication theory, 3) interpersonal communication, 4) organizational/group communication, 5) public speaking, 6) mass media, 7) oral interpretation, and 8) argumentation and debate. The Speech Communication Association (SCA) has adopted five communicating functions for speech: 1) expressing feelings, 2) ritualizing, 3) imagining, 4) informing, and 5) controlling, i.e., persuasive discourse.

In addition to these basic precepts, the student of speaking skills learns audience analysis, i.e., intrapersonal, interpersonal, group/organizations, public, and mass. Finally, the learner studying speaking skills will examine the medium chosen by the speaker as the most effective in conveying the subject matter from sender to receiver.

Listening. Listening is the selective process of attending to, hearing, understanding, and remembering aural symbols. Therefore, because listening is one of the four basic strands of communication, it should be recognized and taught directly in the classroom with speaking, reading, and writing. Listening is a process that includes perceiving and discriminating, attending, assigning meaning, evaluating, responding, and remembering. All of these skills can be taught as a means of enhancing a learner's learning-to-learn skills.

Media. Receiving information through media (print and nonprint) has become more common in the last 40 years as advances in technology have made classroom applications affordable. The use of visuals, audiotape, film, videos, computers, and interactive videodisk systems are options for instructional use.

The selection of media appropriate to the instructional event has been reviewed by Reiser and Gagne (1981) who suggest that media selection will depend on the instructional setting, learner characteristics of reading ability and age, and the category of the learning outcomes. Reiser and Gagne include a rationale for media choices. For developing intellectual skills, they recommend media capable of providing feedback such as computers or interactive videodisk systems. For verbal information, television presentations programmed in a linear fashion are appropriate. Motor skills should be developed with real objects, equipment, or a realistic simulator. They conclude that attitudes are best developed through media that is capable of displaying the actions of human beings, i.e., motion pictures, video, etc.

Media can be a powerful tool in any step of the instructional sequence of events. Bragstad and Stumpf (1982) suggest that media should be integrated into area classrooms to 1) broaden communication skills, 2) reinforce language skills, 3) promote cultural understanding, 4) help students respond to adult reality, 5) prepare students for emerging media, and 6) prepare students for employment.

As technology changes, new tools become available and the tools are simplified for younger learners. This condition makes scope and sequencing difficult, but some general principles for use of communication technology have been developed for the State of Wisconsin curriculum guides (1986).

Media can be a powerful tool in any step of the instructional sequence of events.

Student Competency: The student will demonstrate reading, writing, speaking, listening, and media skills which will enhance their information-processing abilities.

Subskills:

Reading

1. Develop vocabulary skills in the content areas.
2. Use comprehension skills in the content areas.
3. Practice reading-related study skills in content area classrooms.
4. Use pre-reading activities to enhance comprehension of assignments.
5. Facilitate after-reading activities to develop recall of assignments or learning activities.

Writing

1. Use writing activities as a means of discovering knowledge and learning what the student knows.
2. Use writing as a process, including opportunities for pre-writing, drafting, revising, editing, and sharing.

Speaking

1. Demonstrate effective oral communication skills in conversation, discussion, and social interactions in the classroom.
2. Develop skills in public speaking, discussion, and debate to clarify issues and present information.
3. Interpret literature through the use of prose, poetry, and plays.

Listening

1. Develop listening skills in receiving information.
2. Interpret messages received in a variety of ways.
3. Practice listening skills through corrective feedback during classroom activities.

Media

1. Demonstrate use of audiotape, film, computers, etc., in classroom activities.
2. Use media to enhance communication processes.
3. Use media to facilitate individual and group instruction.

Table 1

Examples of Oral, Written, and Visual Communication Used In and Out of School

A. Oral Communication (Speaking, Listening)

1. Conversation
2. Discussion
3. Greeting/social interaction
4. Introduction
5. Interview
6. Debate
7. Dramatization
8. Public speaking
9. Reading prose, poetry, plays
10. Mass media
11. Directions
12. Reports
13. Announcements, messages, explanations
14. Personal stories, jokes
15.
16.

B. Written Communication (Writing, Reading)

1. Journals/personal learning logs
2. Personal narratives
3. Letters
4. Reports
5. Fiction—prose, poetry, plays
6. Nonfiction– autobiography, biography, editorial, essay, history
7. Directions
8. Announcements, messages, explanations
9. Minutes
10. Forms—creating, filling in, interpreting
11. Signs, labels, diagrams, graphs, tables
12. Notes
13. Outlines - to organize or to remember
14.
15.

C. Visual Communication (Expressing visually/nonverbally, Viewing)

1. Facial expression
2. Gesture
3. Pantomime
4. Eye contact
5. Clothing
6. Color
7. Movement
8. Sign language
9. Visual arts
10. Electronic media
11. Signs, diagrams, graphs, tables, trademarks
12. Artifacts
13.
14.

From *A Guide to Curriculum Development in Language Arts*, Iowa Department of Education, 1986.

10. Memory Training

"I can't remember!" "My mind went blank." "You know, what's her name!" These frustrations are shared by young and old alike. Memory is an elusive quality, but a precious gift. The human brain's ability to remember and to retrieve information upon demand still evades many researchers.

Memory training is based on the assumption that there are specific skills to strengthen the brain's ability to remember, retain, and retrieve information. Marzano and Arredondo (1985) report on the importance of first learning through deep processing. This learning skill refers to "consciously generating mental images, sensations, emotions, and linguistic information about a thought," (p. 4). Deep processing can be used to highlight information learned, as a memory technique or as a way of stimulating thinking.

Memory is an elusive quality, but a precious gift.

For example, if a student were to deep process information about the terrain surrounding Mexico City during a social studies unit, he or she might first form a strong mental image of a large metropolitan city with a distinctive skyline. Suggest that they smell the pollution from the "autobuses" and feel what it would be like to escape to the country for a picnic. What would the countryside look like? Dry, desolate, barren desert land or rolling mountains, abundant with pine and cedar trees? Would the student conjure up the image of driving west out of Mexico City on a four-lane interstate into the foothills, much like leaving Denver, Colorado? After imagining the picnic scene in the mountain park, have students explain how the terrain to the west of Mexico City could be described. This combination of information, feelings, and imagery promotes depth of processing and stimulates retention rates.

Remembering and relating skills can be enhanced through mnemonics. Mnemonic devices have been used since classical times to help people remember. The main use of mnemonic devices is to organize sequences or lists of information that are difficult to recall into more concrete patterns that can be recalled by association. Ashman and George (1982) suggest this can be achieved through the use of imagery, rhyme, rhythms, or visual recall.

One of the successful mnemonics that elementary children experience is "Thirty days hath September . . . ." This is one example of rhyming and rhythm to promote memory. First letters and sentences can also be used in two-way association such as remembering Every Good Boy Does Fine for the pitch value of the lines on the treble clef in music teaching.

The place method used by Cicero and the ancient Greek and Roman orators to remember each stage of long speeches involves thinking of a place the student knows very well. The orator has a sequence of ideas or information to remember, and he or she associates each of them with that place. In recalling the material students visually scan the place, e.g., road or room, and then remember the parts that were assigned to each area.

A third area of memory training involves strategies for test taking. Devine (1987) recommends talking about tests and testing, having students make their own tests, cultivating test sophistication, showing students how to take particular tests such as essay or objective, and setting up systematic review systems. Since test taking is an integral part of school life, feelings of success or failure can be directly linked with testing. Success in many study skills rests on memory. Research findings suggest "that retrieval is easier when students use mnemonic devices, drill and overlearn, take advantage of mental imagery, and especially when they organize and relate new learnings to what they already know" (Devine, 1987, p. 310).

Another common ingredient for memory and motivation is interest. Materials must be made interesting. "If topics are not intrinsically interesting in their own right," Devine

suggests that "someone must make them interesting by using examples, anecdotes, and other illustrative material that relates the 'academic' content to the lives and concerns of students." To this end, role-playing, small group discussions, debates, and individual projects can involve students and promote choices and faster interest development.

Student Competency: The student will develop and refine memory training skills through the techniques of deep processing, remembering, relating, and test-taking.

Subskills:

Deep processing

1. Generate images about information.
2. Generate verbal information.
3. Generate physical sensations.
4. Generate feelings.

Remembering

1. Realize memory can be improved.
2. Analyze effects of attitude on memory.
3. Practice memory skills such as organizing ideas, self-recitation, spacing reviews, and employing mnemonics.

Relating

1. Think of ways to personalize the material.
2. Practice techniques of "chunking" material.

Test taking

1. Anticipate test questions at various levels of cognition.
2. Record feelings and changes in attitude toward test taking.
3. List the steps in preparing for an exam.
4. Compare techniques for preparing for an essay vs. objective test.
5. Analyze test errors to determine pattern.
6. Practice relaxation exercises before test.
7. Practice power thinking before test taking.

Strategies for Infusion in Eight Content Areas

Elementary Activities

Self-Evaluation

There is no question from the literature that a learning skills curriculum should be K-12.

Arts. Identify preferences for a variety of art forms by appraising individual interests, skills, and abilities in the areas of visual and performing arts. Distinguish between visual forms such as drawing, painting, and photography. Distinguish between performance areas such as skills needed to play a variety of instruments or expressing self through dance or drama. Encourage students to discuss why everyone should explore a variety of art forms during elementary school.

Foreign Language. In small groups have students discuss why foreign languages are taught in elementary schools. Discuss why individual students are studying a foreign language. Discuss what motivates students to learn a language. Identify knowledge, attitudes, and skills needed to learn a foreign language. Identify benefits of learning a foreign language. Have students keep a small spiral notebook to record vocabulary words and phrases learned each day.

Language Arts. Have students focus on previous successes with learning one of the language arts skills (reading, writing, speaking, or listening). What feelings or attitudes are associated with these successes? Encourage students to identify the subject matter or the skills they possess which they attribute to their success. Other factors such as motivation and interest can also be discussed. Help students discover how previous successes can affect future learning experiences in language arts and other subject areas.

Mathematics. As students complete daily work and receive feedback on their seatwork and homework, encourage them to develop a system of recordkeeping. Have students identify strengths and weaknesses of math skills from the data. Help students determine patterns and emerging relationships between math skills. Encourage students to set goals, monitor progress, and practice self-evaluation strategies to improve their skills in mathematics.

Physical Education. Encourage students to participate in programs such as the Presidential Fitness Program where a variety of physical skills can be performed and compared to time and age norms. Investigate how personal biological factors, such as height, weight, and gender, can influence performance. Evaluate personal fitness strengths and weaknesses and set personal fitness goals with specific plans for monitoring and self-improvement.

Science. Develop a list of process skills needed in the science classroom and lab which are appropriate for both small-group and individual investigations. Have students rate their own performance of each skill with a 1 to a 5 point scale (1 for low rating of their competence and 5 for high). Use these self-evaluations to identify areas where students may need further instruction or monitoring during lab investigations. Develop learning centers which focus on skill development to facilitate individual instruction for skills in science.

Social Studies. Encourage students to begin a "Life-Long Notebook" of ideas and information. Dividers for the notebooks or categories of information to keep include:

Books I hope to read
Quotes and sayings to guide my life
Question for which I hope to find answers
Dreams that inspire my life
Goals I hope to accomplish
People I would like to meet
Places I would like to visit
Experiences which shaped my life
Topics I want to explore
People who are important to me
Poems and special writings

Encourage students to review their notebooks periodically to determine changes in attitudes and interests as they grow older (Betts, 1985).

Vocational Education/Career Education. In small groups, have students discuss how interests, abilities, and career aspirations affect career decisions. How do people decide their future careers? On a number line from 1 to 10, have students identify occupations that they are really interested in at the 10. Occupations that are definitely "out of the picture" can be listed at the 1 and those occupations that they are unsure of can be listed under the 5. Examine the three groups and have students write a paragraph about what the occupations have in common at the three points on the number line. Identify what personal factors affect career decisions.

Goal Setting

Arts. Ask students to illustrate a story. Plan how many illustrations would be needed for the story. Choose a deadline for having the work completed. Help students develop a goal or time line for completion of the project.

Foreign Language. Help students see how goals can be met by deciding as a class to learn five new vocabulary words in a week; then, add the goal of learning "new phrases." Remind students how you must set and modify your goal to increase your vocabulary.

Language Arts. Have the class set a goal of how many books they will read this week, month, or year. The class might also keep track of the number of minutes students use for leisure reading.

Mathematics. Have students use math concepts in planning a calendar of assignments and special events. For example, give the students a month's calendar and have them fill in due dates for particular assignments. Use math skills to determine the amount of time needed to complete particular projects.

Physical Education. Each student will set a goal to learn a new physical skill, make up an action plan of exercise or instruction, write a time line, monitor results and report the progress according to the established goal.

Science. Have each student become an inventor. Each student will learn how to think as an inventor if assigned the task of "making a better mousetrap." What goal-setting strategies would each inventor use? Are there times that they would have short-range goals? When would it be most appropriate to use long-range goals?

Social Studies. In an election year, analyze how candidates set goals and what action plans they develop. What can go wrong? Have the students plan a mock election. Let them become the candidates and plan their strategies. Help them understand the need to set goals in order to complete their task.

Vocational Education. Begin a career booklet which follows the student through the elementary years. It may become a source for later years. Have the student describe personal goals about careers. Answer the question, "What would you like to be when you grow up?" Talk about setting a goal. Describe how you plan to reach that goal.

Time Management

Arts. Have a group of students plan an art project. Let them decide on the length of time it will take to complete it. Have them locate entries on a calendar in planning the time for completing the project.

Foreign Language. Give students a list of 10 words to learn. Have them determine how long it will take them to learn. Place the estimated times on a chart. Let students see the reality of the time it took them to master the words.

Language Arts. Have students locate due dates on assignment calendars. Give them an assignment to read a story. Ask them to estimate the time needed to complete the reading. Have them place the time on a calendar or a daily time schedule. (See Archer, Skills for School Success, pp. 14-28.)

Mathematics. Help the students understand estimation by giving them paper coins to play "parking meter." Let them buy time on the meter according to the amount of time they think it will take them to complete a task.

Physical Education. Let the students choose a game to play during a given class period. Have them decide how long they think it will take to play the game. Have one student be the timekeeper. At the end of the game determine how much time the game takes. Discuss how people use their time for leisure or work.

Science. Have students plan a field trip to the local science museum. Locate the planned date for the trip on a calendar. Have them locate due dates and write subject abbreviations on their personal calendars for items that need to be done before the field trip can be taken. Have them plan their work so the trip can be taken. Help them plan their work so the trip is completed on schedule.

Social Studies. In a unit on discovering the new world, have students pretend they are on a ship coming to the new land. Have them guess how long it will take. Ask them their reasons for the guesses. Let them share the information with a partner and make a time line for the days, weeks, or months it would take to make the voyage.

Vocational Education. Discuss with studeats how people in various jobs need to plan their day.

Monitoring Attitudes

Arts. Have students select a color they would use in painting a picture or decorating a room. Does the color influence their attitude toward the painting of the room? Ask several students to pick different colors and share their choices and attitudes. Identify how the responses are similar and different. Discuss with students the role of environment on attitudes.

Foreign Language. Have students identify ways that young children begin to learn language. What language development skills do young children from different cultures and different languages have in common? How does the pattern of language development change for the second-language learner? Are attitudes and behaviors different if the second-language learner is a child or adult? Have students interview bilingual children and adults to compare language development in the first and second languages.

Language Arts. For a few minutes after recess, ask students to tell you what they are thinking about. As they start back to their schoolwork, what thoughts are helpful and productive? What thoughts are distracting? Brainstorm a list of "helpful" and "distracting" thoughts. Define and explain bracketing as the "setting aside of distracting thoughts" when students want to focus or concentrate on a specific task. Try a relaxation or a bracketing activity before transition into a language arts activity, such as reading a new story or starting a new novel. Discuss with students the benefits of bracketing as a study skill.

Mathematics. Discuss with students why special attention to detail is needed in mathematics. How important is the use of the decimal in the following examples: 1.1, .11, .111, or 111.1. Why must students be focused and place attention on mathematical accuracy? Encourage students to bring examples to class that illustrate "attention to detail" or importance of mathematical accuracy.

Physical Education. As students try to master a new physical skill, suggest that they practice visualization of that skill. Watch movies, and after careful instruction, have students imagine achieving the physical skill. Ask students to visualize performing the skill several times a day. After carefully practicing the new skill with teacher or coach, continue visualization activities to enhance performance.

Science. Have students keep a log or journal about their attitudes toward science class, assignments, and homework. Have each student compare his or her log with three other students. What conclusions would they draw?

Social Studies. Have each student identify attitudes and thoughts that affect the behavior of members of his or her family. How does the student know if family members are happy? Sad? What attitudes affect how well students get along with others? How do they feel about their behavior? Discuss with students the relationship between attitudes and behaviors in a number of social settings. How can these attitudes and behaviors affect learning in school?

Vocational Education. Have students interview several workers and discuss the "level of attention" that is required in various occupations. For example, how much attention to detail? What about stress? Anxiety? Is careful attention control required for benefit of others (quality control) or protection of self (high-rise construction or pilot)? How do workers cope with various levels of attention and resulting effects required by their occupations?

MOTIVATION

Language Arts/Foreign Language
Social Studies/Science/Mathematics

**Utilize an integrated curriculum approach which uses a motivational technique, e.g. "cooking in the classroom." The motivation for the learner is the need to be able to do something concrete based on abstract ideas. For example, in language arts the person's need may be to read a recipe or to know the ethnic background connected with stir fry foods. Foreign language, social studies, science, and mathematics all play a part as you work through a lesson in an elementary classroom. Physical education becomes a part of the program too as you discuss how certain foods affect the health of the individual. Learning that some people make careers of food preparation and hotel and restaurant management is the career education part of the lesson. Whether in an individual classroom or in shared resource areas, motivation is the key word as learners share their intrinsic and extrinsic needs. Discussion of what motivates us to cook food could be the beginning of such an activity. Motivation as a teaching strategy is only limited by the teacher and the students' assessment of what motivates the class.

Mathematics. Display motivational posters in the classroom about the need for mathematics. Have a contest in the classroom with students creating their own posters about the need to know mathematics. This activity lets students internalize their need for mathematics.

Physical Education. Have students choose a high school or middle school student they admire. Arrange with the secondary physical education instructor an exchange either in person, on videotape, or in writing with the older student in a buddy system. Have the students discuss what makes them want to be physically fit. How do they train? Why do they like track? Or, is basketball their best sport? Why? What motivates them?

Vocational Education. Have a career calendar in the room or a career day once a month. Invite people who relate well to the age level represented in your class to come into the classroom and talk about what they do in their vocation or for an avocation. Let them discuss what motivates them. Make certain the children understand the concept of motivation and why it helps people make choices.

Locating Information

Arts. Encourage students to use nontraditional references in locating information about art history, famous paintings, or painters by visiting a museum and listening to audio tapes about the exhibit. Interview the director or artist-in-residence at the museum or art center by telephone if visits are not feasible. Collect professional art magazines. Collect pictures of famous paintings, painters. Choose a favorite contemporary painter and search for personal information. Where is he or she living? Age? Studio? Telephone? Call for a personal interview. In class, role play artist and interviewer and share your results with others.

Foreign Language. Have students use a dictionary in the foreign language to search for a list of descriptive words, action words, and names of things. Collect pictures to illustrate the words selected. Create a card game with pictures from magazines and the nouns, verbs, and adjectives found in the dictionary. Design a game like Concentration, Uno, or variations of Rummy.

Language Arts. Word searches can help students learn that all data isn't housed in traditional reference material. Start with a word, for example, "fox." Explain that students may express their perception of "fox" only when they have supportive evidence to prove their concept is a valid one. A variety of responses are possible: Redd Fox, Sac-Fox, foxy, fox hunt, Foxfire, Audi Fox, etc. Create a bulletin board about the many uses and meanings of the word (Atwood, p. 39). For variety, feature a "word of the week" or "word for the month" in your classroom.

Mathematics. Conduct a word search with a mathematical number or concept. For example, uses of the word "three" include: three bears, three wishes, three kings, three's a crowd, three strikes, triple play, sides of triangle, etc. Encourage students to keep track of the sources they used in their search for information. Encourage work in pairs or small groups (Atwood, p. 39). Ask students to bring to the classroom examples of fractions from the real world. A student might bring a measuring cup, musical notes, pizza, a ruler, etc. When students share how fractions are used in their lives, then interest and motivation through relevance are enhanced.

Physical Education. While fitness skills are being tested, have students locate information about previous record holders. Develop a bulletin board or permanent display for the school with names, events, times, years. Compare the school records to other schools in the district, county, or state. Locate similar records with different age groups. What makes a record? How have records for specific events changed over time?

Science. View a wildlife program on television and have each group of students gather different kinds of data, such as vital statistics on the animal subject; the habits and habitat of the animal; the interrelationship of the animal with its environment; or the problems the animal may face in the future. Discuss how the topic influences the source of information (Atwood, p. 42).

Social Studies. Collections and displays can help students recognize and understand a variety of investigatory techniques. Collect newspapers, magazines, mail surveys, questionnaires, photos, and travel brochures. Collect book jackets, library catalog cards, maps, posters, and buttons to represent multi-media research. Label each technique used by students to collect and display (Atwood, p. 38).

Vocational Education. Have students interview a parent or close friend of the family and establish a career "time line" which maps the sequence of activities/jobs held by the worker from part-time work as a teenager, training, volunteer work, raising a family, promotions, transfers to the current job. Talk about alternatives at major decision points in the time line. Compare time lines and determine patterns in related career fields.

Selecting Information

Arts. Have students learn how to select information by helping them devise observation checklists, interest inventories, informal conversations and interviews, or discussions of current news, movies, and television programs about the arts. Help them understand how bias can enter the selection process.

Foreign Language. Ask students to give a critical review of a food from a particular country. Ask them why they do or do not like the food. Help them understand how one's emotions are tied to the likes and dislikes one has. Does a foreign language have words for describing "yucky" food? Are there methods used to select just the right word when traveling in a foreign country?

Language Arts. Have students view videotapes of selected advertisements about breakfast cereals. Help them understand the importance of making judgments when selecting a cereal. Show students how the advertisers use glittering slogans or "super-powered" cartoon characters to influence their thinking. Help students understand that information influences them as they select the brand they want.

Mathematics. Set up a laboratory atmosphere with several objects that appear to weigh the same. Have the students estimate which object weighs the most. What are the critical thinking skills that a student must use to make the correct judgment? What does this reveal about the need to select the correct information when making judgments?

Physical Education. Have students assist in selecting films or videos that would be appropriate for their class. Give them a list of five selections. Have them choose three. Ask them what critical thinking skills they have to use in making the selection. Why is choice difficult? Is choice a part of everyday life? Is being physically fit a choice that we make?

Science. Give the students a statement that is supposed to be factual in the world of science. For example, "If you eat red meat you will have a heart attack." Show them how this is an example of arousing an emotional response. Have students research the statement. Ask them to write a factual slogan and one that is full of emotionally charged words. Are scientists charged with "giving the facts?"

Social Studies. Let students take over the room with posters, flyers, campaign buttons, and materials from both political parties. Have students react to the amount of material available. How does the proliferation of material influence the way people think about candidates or parties? How does a voter select the best candidate? What are the critical thinking skills a good citizen needs?

Vocational Education. Have students complete an interest inventory or attitude survey or discuss the choices that people make when deciding on a career. How do you select information that helps you choose a career?

Organizing Information

Arts. Help students recognize main ideas and sequence by using scrambled cartoons or photo series. Cut the cartoons or photos into separate parts and mount them on poster board. Scramble these parts and place them in an envelope for the student. Put the uncut duplicates of the entire cartoon or photo series in an answer key folder (Atwood, p. 45). Help students learn how ideas are organized through different art forms.

Foreign Language. Make flash cards with vocabulary words in the foreign language. Arrange the words in a variety of ways. Sort by parts of speech, color, size, and shape. With a list of the names of the numbers in the foreign language, sequence from highest to lowest. With a list of food items, arrange from most favorite to least favorite. Include pictures of objects or concepts with vocabulary words to enhance comprehension.

Language Arts. When teaching the art of outlining, use folk tales and favorite children's stories. The structure of these stories makes the main idea and the supportive details easy to recognize. Since the students are usually familiar with the plot, the sequence of events can easily be remembered and included in the outline.

Mathematics. Discuss ways that mathematics has been used to organize numbers and facilitate measurement of needed objects and concepts. For example, investigate the history, make illustrations, and create bulletin boards on measurement systems such as: calendars, rulers, clocks, thermometers, and the metric system. What cultural factors affect how measurement tools are organized into systems?

Physical Education. In small groups of five or six, the students will design a new game without rules. Discuss how rules or lack of rules affect the organization of the game. Limit the group to one rule. How would the game change if the group could have five rules? 10 rules? Discuss how rules organize the game for participants and observers. What are the advantages and disadvantages of having rules? For participants? For observers?

Science. Over 2,000 different minerals are known. How are these minerals identified and organized? What common elements make up almost all of the minerals found on Earth? When investigating physical properties such as color, luster, streak, hardness, and specific gravity, talk about how organizational systems are used by scientists. What are the advantages/disadvantages of these systems? How were they developed? Help students to discover the usefulness of organizational systems within science.

Social Studies. Give students practice in classifying and identifying sources. Design a card game using famous personalities in the news or famous Americans. Make three cards for each person:

1. A name card with picture
2. A card giving three topics in which the person might be considered an expert
3. A card giving one source of data about the person.

For example, Hank Aaron is a famous American. He could be considered an expert in hitting, an expert on National League pitching, and an expert in fielding. A source of information could be the 1974 Almanac (Atwood, pp. 44-45).

Vocational Education. Have students collect pictures from magazines of a variety of people from various occupations. Organize occupations into categories. Select and arrange by several different themes, such as type of work, place of work, time that they are working, etc. What conclusions can students draw from various patterns that evolve? Decorate a bulletin board with the information students have collected. Discuss how the bulletin board should be organized for effective display.

Communicating Information

Arts. Students will examine children's or young adult books or movies to identify the author's or scriptwriter's focus. Become aware of the dialogue in the book or movie. Discuss how speech influences how we feel about a character.

Foreign Language. Help students create a video of a commercial about visiting a country that speaks another language. Have them give the commercial in two languages.

Language Arts. Read a scenario in which a conflict has arisen, stopping short of reading the resolution by the characters. Have students discuss possible solutions and brainstorm alternative solutions. Discuss and list common situations in which conflicts arise at home, school, etc., and give alternative solutions. Have students imagine being in the place of one or both members of a conflict. Imagine the feelings and words of both parties. Students can portray these feelings nonverbally through facial expressions, gestures, posture, and eye contact *(A Guide to Curriculum Development in Language Arts*, p. 33).

Mathematics. Have students use their oral communication skills in a cooperative learning setting. In small groups, one student takes on the role of teacher and two or three classmates become the learners for the math lesson. At the end of the lesson, have the students discuss what good communication skills were used by each member of the group.

Physical Education. Have children take turns explaining the rules of a game, teaching classmates a new game, leading a chant, or in some way actively communicating the fun of physical education to their classmates.

Science. Have students involved in an invention convention within the classroom. Each child becomes an inventor who attends this convention and explains the latest invention from the scientist's laboratory. K-6 students are especially adept at this activity.

Social Studies. Discuss debating and debating techniques. Divide students into teams of two, brainstorm debate topics. Develop a pro and con side of the question. Let students express their feelings on both sides. Have the class members act as an audience making a judgment about which side was more influential in the debate.

Vocational Education. Brainstorm as a class the jobs in which a person needs to have good communication skills. Have students decide in which jobs it is essential to be a good communicator. One option is to use the example of a customer who goes to get a new hairstyle and tells the cosmetologist he or she "wants a lot of curls" or "wants my hair cut one inch." What happens if there is a lack of understanding between the customer and the cosmetologist? Focus on the need for oral communication skills.

Memory Training

Arts. First letters and sentences are also used for two-way association devices where concepts are turned into letters or sentences. For example, Every Good Boy Does Fine, EGBDF, are the name of the notes in the treble clef which are on the line and FACE, i.e., F and A and C and E are the names of the treble clef notes that are placed on the spaces between the lines. Another example from "The Sound of Music" reminds us of the method of learning the musical sequence. "Do, a deer, a female deer; ra, a drop of golden sun; me, a name I call myself; fa," etc.

Foreign Language. Teach students easy-to-learn foreign language songs that involve repetition of words and phrases such as "Frere a Jacque" and "La Cucaracha." Discuss with students the ability to learn the vocabulary and sing the song without necessarily knowing the meaning. Differentiate between the concept of vocabulary and comprehension and how they work separately and together.

Language Arts. Include rhyming and rhythm to promote auditory memory through preread-ing skills such as names of letters as in the alphabet song, i.e., A B C D E F G...sung to the tune of "Twinkle Twinkle Little Star." Another way to use the alphabet for older students and for memory training is to plan a trip. "I'm going on a trip, and I'll take an apple." The next person repeats the phrase and adds an item starting with the letter "B", then "C" and continues for 25 repetitions.

Mathematics. Use numbers in chants and songs to help young students remember sequence.

One, two, buckle my shoe;
Three, four, shut the door;
Five, six, pick up sticks;
Seven, eight, lay them straight;
Nine, ten, a big fat hen.

Use of flash cards with visual pictures of a set such as five can be used to promote understanding of numerical concepts.

Physical Education. Divide the class into pairs. Use music and movement exercises to warm up. Tell students to listen to the music and move about expressing their feelings; when the music stops, strike a pose. Look for their partner and remember the pose. When the music starts, move again and when it stops, each student has to strike the same pose as the partner did previously. Have partners compare whether the pose was similar or different. Sometimes it is fun to start or end this activity with one or two student teams demonstrating for the class. Have the class members observe and judge whether the pair remembered and re-created the exact pose. Encourage students to think of small specific differences that they could create to increase the difficulty of this activity and increase awareness of detail. To extend the activity, try to copy the routine to the music by starting with a few seconds and then lengthening the time sequence.

Science. Play a memory game to help students understand how they store and retrieve data. First, place a number of objects on a tray. Give the students a chance to memorize the objects, then remove the tray. Each player must name all the objects he or she can recall. To expand the potential of this game, collect objects that are similar in shape, construction, or use. The students must then draw on more than casual memory powers in order to remember the total collection. During this game, students devise a system for storage and retrieval. Relate this game to either principles of scientific observation or discuss how the human brain remembers and retrieves information (Atwood, p. 76).

Social Studies. A variety of memory training devices can be used to help older elementary children learn the names of the 50 states. Organization of geographic regions, two-way associations, the place method, or even musical arrangements where students sing the names of the states, much like the alphabet song, have been successful. Other concepts can be remembered through popular rhymes for elementary students such as, "Thirty days hath September, April, June and November, all the rest have 31...."

Vocational Education. Ask students what they remember about "people who work" from nursery rhymes or fairy tales. What kinds of occupations existed in those days? What did the Bremen-Town Musicians do? What are the qualifications for being a wicked witch? Write a resume for the handsome prince. If Snow White and Cinderella interviewed for a job as a nanny, which one would get the job? Why?

SECONDARY

SELF-EVALUATION

Arts. Help students develop criteria which can be used to judge art projects or arts performances. After criteria are established and defined, set standards by assigning levels of proficiency. For example, a 1-10 scale (low to high) or labels such as "strongly agree" or "strongly disagree" could be used. After the students discuss the purpose of the evaluation, suggested criteria, and standards, have each student critique a personal piece of art or a performance.

Foreign Language. Have students develop a pictorial dictionary that serves as a working glossary of foreign language vocabulary they have mastered. Collect then collate pictures from a variety of sources to illustrate common vocabulary in the foreign language. Divide sections of the notebook to reflect themes or uses of vocabulary. Encourage students to play "Pictionary" to illustrate a common concept and allow participants to respond in the foreign language to build vocabulary skills. On a frequent and regular basis record the number of entries in the pictorial dictionary.

Language Arts. Using the program and student evaluation materials from the Wisconsin language arts curriculum guide (reprinted in Appendix A of this guide), have students evaluate their performance in one or more language arts skills. Using the same format, the teacher can assess the secondary program. Collect results from students and compare to teacher program evaluation to determine consensus and effectiveness of language arts skills being taught in the classroom.

Mathematics. After taking a standardized achievement test in mathematics, have students analyze and evaluate their performance compared to state or national norms. Discuss how achievement tests can be interpreted or misinterpreted. What are possible uses of the results from achievement tests? Discuss attitudes that students and parents have toward results of standardized tests such as PSAT, SAT, and ACT and the impact of the results on college planning.

Physical Education. After assessing personal fitness levels, have students use information about diet, height, weight, gender, and daily exercise for various computer nutritional programs to determine daily menus for either weight reduction or weight gain. Discuss how personal factors affect the weight program. Monitor progress toward the self-improvement goal.

Science. Using the same criteria that science fair judges will use at a district, state, or regional competition, have students evaluate their own projects two or three times during the preparation of the exhibit. Keep the teacher and student evaluations in the student file to document changes. Compare to the judges' comments after the competition.

Social Studies. Create a list of study skills needed for successful completion of a social science unit. Review elements of chapter preview and review, note taking, and preparing for tests. Have students self-evaluate whether or not they possess and practice the study skills regularly. Encourage students to discuss the possible outcomes of a variety of study skills. Do study skills relate to test performance? How?

Encourage students to discover the relationship between study skills and later performance in social studies.

Vocational Education. Using a computer data base, have students explore and assess personal interests, abilities, likes, and dislikes by creating a personal profile which matches their preferences with occupational profiles. The software programs QUEST, SEARCH, and SKILLS available through the Career Information System of Iowa (CISI) can provide valuable computer assessment of interest and skills for secondary students.

Goal Setting

Arts. Give students the opportunity to plan an art show for the community. This would allow students to have a personal goal, e.g., a display of their art work, a performance of an original composition, a chance to sell their jewelry design. At the same time the students would have the opportunity to use long-term goals in a group planning process.

Foreign Language. Have each student set a goal for self-improvement in the language. They should determine what is necessary to be more fluent in the language, write the steps, determine the time needed to accomplish the goal, and set a target date.

Language Arts. Discuss goal-setting strategies as the student undertakes a research project. Write down the overall objective, state the steps that will be taken in completing the project. Establish a definite goal with a time line.

Mathematics. Work with the people in the computer lab to have students understand the application of mathematics to our world. Let students work in teams to explore the "mathematical concepts" in a computer simulation. Have students set a personal goal about understanding the importance of math in their world. Have students keep diaries about math concepts at work. Have the students articulate a math concept they wonder about, e.g., "Why learn algebra?" Have students discuss whether setting a goal solves the problem, or creates a new need for goal setting.

Physical Education. Society places great emphasis on physical fitness. Have students study someone they admire. What are the goals of that person in terms of physical fitness? Can the students adapt those goals in their life? What kinds of goals will they set for themselves? This is a unique opportunity to see goal setting as students discuss weight reduction, fitness goals, and human growth and development. What are the steps in goal setting in this area?

Science. Have the student set a personal goal for science class. Maybe it will be to enter the science fair competition this year. Perhaps the personal goal will be not to miss class on lab days. Whatever the goal the student chooses, there will be a first step—the student must write the goal on paper. As the year progresses and goals are attained, other goals may be added.

Social Studies. Ask students to set the goal of participating in a history day competition. Goals could be for an individual or group. Let the students determine the project they want to undertake. Establish a time line. Determine the steps involved. Set a target date. List activities or steps needed to meet the goal.

Vocational Education. Students have opportunities to establish goals and see the work completed in a tangible manner in most vocational activities. For example, whether working together to build a house, planning a strategy for a peer counseling workshop, or becoming an expert in diesel mechanic trouble shooting for the national VICA competition, the student will set a goal, plan a project, and follow it to completion. Goal setting will be the first step for the student in completing the project.

Time Management

Arts. Students will prepare for a performance. They will determine how many times they will need to practice before they are ready for a contest performance. Set up a schedule, allot times. Keep a log of time used to perfect performance. Discuss what happens if they fail to use the time.

Foreign Language. Students will plan a vacation to a foreign country. Plan activities they would want to do. Determine the amount of time necessary for the trip. What time-balancing will be necessary to accomplish all that they want to do and see? Have as a major focus utilizing time.

Language Arts. Students will use task analysis in conjunction with a major project. Have them place tasks on a calendar with a specific date for completion, allotting specific time for completing parts of the whole project.

Mathematics. Students will keep track of how they use their time for two days. Graph time spent on school activities. Figure percentages based on record of time on activities.

Science. Have students become aware of task analysis and time management skills in planning for an experiment.

Social Studies. Become aware of the global aspects of time by studying a time line for a historical period. Develop a personal time line for the years of your life indicating important historical dates.

Vocational Education. Students will monitor use of time on different activities for awareness of how spending time gives people opportunities for both leisure activities and work. Use the following research statement about how people use their time.

Leisure Time on Decline

Americans have 37 percent less leisure time now than they had 15 years ago. A new survey indicates the average adult now has only 16.5 hours of leisure per week compared to the 26.2 hours a week reported in 1973.

The figures are from a recent Louis Harris survey on "Americans and the Arts," commissioned by Phillip Morris Companies Inc. It is the fifth in a series of surveys begun in 1973.

The average workload has actually declined slightly since 1984. The major reason for the loss in leisure time was attributed to the responsibility of raising children with both spouses now in the work force. Women have five hours less leisure time than men, 14 hours per week as opposed to 19 hours. (*Tri County Times*, 6-23-1988, pp. 7.)

Monitoring Attitudes

Arts. Before a recital or public performance, have students identify the feelings they are experiencing. To maximize the performance have students focus on their strengths in the performance area. Use visualization to imagine or "walk through" playing a solo or performing a dramatic piece without error. Build students' confidence through concentration or focus on the performance task.

Foreign Language. Have students investigate attitudes that people hold toward the learning of a second language. Are these attitudes different depending on the language that the person acquires, e.g., Russian, German, French, Spanish, Laotian, Chinese, Japanese? How have cultural values toward language learning changed in the United States since the middle of the 1950s when many immigrants came to America? What influence did beliefs about language have on behaviors of the family and community where immigrants settled? Discuss the strengths, challenges, and needs of diverse language groups in this country.

Language Arts. Inform students that a journal topic will be posted each day. Students are responsible for five minutes of "free writing" at the start of each period. Keep the writing in a journal/notebook and review and share ideas from the writings each week. Encourage students to assume responsibility for writing. Attention control activities can direct work habits and routines in the classroom which can maximize the use of time and increase student responsibility.

Mathematics. Discuss with students how math anxiety affects performance. Discuss whether math anxiety affects males and females differently. Have students identify areas of mathematics they find difficult. Identify affirmations or statements that students can say to reaffirm their ability to learn mathematics. Have students restate affirmations daily and practice power thinking to decrease math anxiety and maximize performance.

Physical Education. Discuss how professional athletes develop skills for "blocking out" the audience in various sporting events. Identify occasions when the audience seemed to enhance the athletic performance and when the audience seemed to distract the athlete. What powers of concentration or attention control do athletes develop? Have students identify transfer value and discuss application to areas other than athletics.

Science. Energy control involves relaxation and energy-building skills. Have students investigate changes in the human body as a result of changes in energy. What happens when hormones like adrenaline are released, and how can these be effective in times of crisis? How does nutrition relate to energy control? What foods should be taken for quick energy? What foods will sustain stamina over time? What effect do caffeine and drugs have on the energy level of the human body?

Social Studies. Students will identify how attitudes and thoughts have affected behavior of people throughout history. Identify attitudes of men and women who colonized America or who left the east coast to go west to the "frontier." How do the attitudes and behaviors of the people who discover "new frontiers" differ from those who don't choose to discover?

Vocational Education. Discuss how the concepts of energy control, attention control, and attitude relate to various vocational fields. What demands are placed on graphic artists, airplane mechanics, medical technicians, construction workers on a skyscraper, or marketing executives? How are they similar or different? Compare the demands on various workers. How do students' attitudes about energy control and attention relate to the employment options they are considering? What would they conclude about their values toward these concepts?

MOTIVATION

Arts. Students will study the work of a selected artist (musician, sculptor, painter, dancer). The students will determine what it is that motivated the artist to choose the medium in which he or she works. What motivates an artist? Is it the same thing that motivates others?

Foreign Languages. Students will explore motivation as a key to learning a language. What are the things that might motivate an individual to learn a foreign language? Is there a greater motivation for students from other countries to learn a foreign language? Is there a reason that Americans are traditionally monolingual? What are the motivating factors in the study of languages?

Language Arts. Students will choose an author and research what motivated the writer to write. Students will understand the concept of motivation and discuss intrinsic as well as extrinsic motivation. At the end of the project, students will determine what motivated their author to write the novel, play, or short story. In turn, students will discuss what motivates them to read or write.

Mathematics. Create a classroom for the day in which there are no numbers. For example, no one will know the time because the clock will have no numbers. There will be no way to determine what page we are discussing because there are no numbers. We will not know how many people are in class because we will have no ordering method. After a few minutes (notice no designated amount of time) the teacher will discuss with the class the need for numbers. What motivated an earlier society to deal with this need? Was it an intrinsic motivation or was it extrinsic? What motivates our dependence on numbers today?

Physical Education. Students will choose 10 Olympic champions. Determine what motivated them individually. What were the influences? What does it mean to be a motivated athlete? Or, are there others who need to be motivated in the same way as Olympic athletes? What is the motivation for a high school track competitor? What motivates a student manager? What motivates our society to endorse a "wellness" concept? Is there a need for serenity in this competitive world? Are physically fit individuals the most capable of achieving serenity? What motivates them?

Science. Have students look at current events to see how science is changing our world. Let them study the current events of biotechnology for a week in a daily newspaper. What motivates scientists to believe that the world needs heart transplants, a cure for cancer, AIDS research? Are these intrinsic or extrinsic motivations? Which is more important in the world of science?

Social Studies. Have students participate in a simulation in which they establish the government of a country they create. Let the students observe what motivates their classmates in a decision-making setting. Are there any parallels in the actual decisions made by world leaders? What motivates government leaders? Why is it important for citizens to know the motivation of their leaders? Which is more important, the intrinsic or extrinsic motivation?

Vocational Education. Students will choose a career that they think would be of interest. They will practice self-motivation as a learning skill so that they begin to learn about what people do who are successful in the career they have selected. They will job shadow a person in the career they have selected. Interview them about their self-concept and personal expectations as they begin to make career choices. What motivated them in the beginning? What motivates them now?

Locating Information

Arts. Search through the National Gallery of Art, using a Macintosh computer, Hypercard software, and video disk. Locate paintings by various methods: painter, title, topics, and elements. For example, have the computer search for paintings with water, woods, and a dog. Discuss uses of this technology for other fields.

Foreign Language. Locate newspapers from other countries. Compare the coverage of a national or international event in foreign and domestic newspapers. How are they similar and different? Discuss how newspapers locate information for their readers. How is the "news" affected by the availability of information?

Language Arts. Assign students to write an "I search" paper. Students prepare for writing a term paper on a selected topic by using a variety of sources. Instead of writing the term paper with a usual "subject" focus, ask students to explain the process used to locate information. What topics did they look up in the card catalog, computer, etc.? What worked? What didn't? Share techniques of locating information in small groups. If time allows, students can give short speeches to share the "content" of their searches.

Mathematics. Locate information about specific math skills such as adding, subtracting, multiplying, and dividing fractions and decimals by using the index in math textbooks. What other parts of the text are helpful in finding information quickly as students finish homework or study for exams?

Physical Education. Locate information on topics of health, fitness, diet, and exercise from various community sources. Contact health-care professionals at a hospital or local medical clinic to collect information, brochures, and trade journals. Interview people from health clubs or fitness organizations, or select popular magazines as a source of information. Monitor a TV program for additional information. Compare information collected from a variety of sources. What are the similarities and differences? What impact does audience have on how information is presented?

Science. Make arrangements for students to collect data and explore real-life situations. Plan and organize opportunities for students to serve as part-time aides in a kindergarten or nursery school, work in the cafeteria, or supervise a playground. Opportunities could also be found in the community. Collect information about the people, environment, or some specific aspect of behavior that they are monitoring. Set up a short period of observation and recording. Share the results in class. What are some strengths and weaknesses of collecting information through observation?

Social Studies. Locate information on U.S. presidents by using database software and an Apple computer. Arrange all records chronologically based on the year the president went into office. Find all records that contain the phrase "Cal" when they are seeking to identify presidents or vice presidents from California. Select all records in which the president's party is "Dem" and the president's prior job was "General." Databases encourage new ways to retrieve information as well as generating hypotheses about what, where, and how to locate specific information (Hannah, 1987).

Vocational Education. Have students interview a person working in a vocational field (related to home economics, office education, distributive education, marketing, health, agriculture, or industrial education). Arrange for the student to job shadow the person for a day. Encourage students to take photos during their visit. After returning to class, ask students to write a job description for this worker, based on their "typical" day experience. Illustrate the job description with photos. Locate information in the local newspapers about employment trends for this type of worker in the want ads. Create a bulletin board of the "best" opportunities in the labor market for all the occupations selected.

Selecting Information

Arts. Have students research a person in the arts. Learn as much about the person as possible. Use print and nonprint resources. What does the knowledge of the person's life reveal about the art that is representative of the artist? How does the life of an artist influence the art? How does knowing the biography of an artist influence a patron of the arts?

Foreign Language. Have students view a film subtitled in English. Discuss how nonverbal communication influences their ideas and attitudes about the content of the film. Does understanding a language help them to become more or less critical in making judgments about a country?

Language Arts. Students will develop a working definition of propaganda. Discuss and describe propaganda techniques, such as name calling, glittering generalities, transfer, testimonials, plain folks, bandwagon, and card stacking. Students will read an account of the same meeting or event from two newspapers, one article taken from a newspaper or tabloid known for sensationalism. Compare the two accounts, identifying slanted words, such as "fiery" speech and "crooked" politician which tend to evoke emotional responses. Discuss questions such as: What emotion-packed words are used? To what emotion is the appeal being made? What inference is made? What propaganda techniques are used? How effective was the writer?

Mathematics. Have students complete a tax form, preferably a facsimile of the federal income tax form. Let students see how selecting information to report to the government requires a thorough knowledge of mathematics. For example, if they don't understand the basic skills of addition and subtraction, can they do their income tax? Are there reasons for understanding percentages in completing a tax form? How do they know what information to report? Are mathematicians constantly determining which information is significant?

Physical Education. Have students keep track of their food intake for a week. Ask them to determine what influenced their choices. Give them a checklist as a means of determining their choices and how they were influenced. What processes are used in selecting information about proper diet or wellness?

Science. Students will bring in newspapers to read in class. Read several news stories. In small groups determine the amount of space devoted to scientific topics in the popular press. What influence does this have on the way the population views science? Where does the average citizen gain the latest information on scientific breakthroughs? Assign the class to particular information sources on selected science topics. For example, AIDS could be the topic. Some students would read editorials, some scientific journals, some popular magazines, some propaganda letters, etc. Let students determine the influence of the media on science.

Social Studies. Watch videotapes of political speeches by candidates or supporters; discuss the persuasive techniques used. Students will choose candidates to support (or role-play actual candidates); write and deliver speeches aimed to persuade "voters" to support that particular candidate. Hold a mock election in which ballots are cast for the most persuasive political speeches. When the activity is completed have students analyze why selecting information was the essence of this activity.

Vocational Education. Introduce students to the *Dictionary of Occupational Titles* as a reference for information on career choices.

Organizing Information

Arts. Have students identify types of music such as classical, jazz, bluegrass, rock, country-western, etc. How are these musical compositions organized? What similarities and differences exist in terms of organizational form of music composition?

Foreign Language. Students will plan a trip to a foreign country. Organize all the information into a scrapbook with pictures, maps, events. Outline and illustrate with notations in the foreign language. Have students compare notebooks and identify differences in organizational format.

Language Arts. Students will design and create a computer data base of favorite books and authors on a variety of topics. Discuss possible methods of organization through creation of the file, the record, and the field. Discuss ways to retrieve the data and how it will be organized. Involve other classes in the input process. Give your software to the media center for other students to use when selecting books for reports.

Mathematics. Have students use statistical tables, diagrams, maps, time lines, and graphs to discover how information is organized. Identify mathematical skills needed during interpretation of data. How can information be presented in different ways? Which methods are most effective?

Physical Education. Students will organize the statistics from any athletic event or physical fitness test into a data base on the computer. Find the best time in the 400 meter from the top 10 schools in the state. Which individual in the district has the fastest time in the 100 meter? Once data bases have been organized and students know how to use them, encourage students to regularly record personal fitness goals on the computer and monitor their progress toward the goals.

Science. Students will use the table of contents in the biology text to answer questions concerning the organization of a textbook. Develop a series of questions about where to locate information about the digestive, respiratory, circulatory, and other systems. Discuss not only where to find certain topics, but how the information in the text is organized. Discuss other organizational skills which involve use of glossaries and indexes. (Archer and Gleason).

Social Studies. Encourage students to investigate how and why data is organized. Collect and display samples of various ways to organize information. Use card catalogs, computer searches, bibliographies, directories, encyclopedias, almanacs, or telephone books. Have small groups organize and display information in a variety of ways.

Vocational Education. Students will investigate how various workers organize information needed for their job. Examine areas such as medical records, automotive parts, filing systems, accounting procedures, and manufacturing. What are essential ingredients in a management system? How is data retrieved? Find examples where computers are used and of the kind of information that is collected and organized. Help students discover the importance of organizational systems in a career field.

COMMUNICATING INFORMATION

Arts. Have students select a theme for a reader's theater presentation. Have students write the script and present scenes from one script to the other class members.

Foreign Language. Invite an international visitor to the class. Ask the visitor to speak in his or her native language. Have students analyze the verbal and nonverbal cues that help them understand what the visitor is saying.

Language Arts. Students will analyze three specific ritualistic communication acts, namely apologizing, complimenting, and criticizing. Working in pairs, students will briefly create a situation in which an apology, a compliment, and a criticism would be appropriate communicative acts and exchange roles in presenting them and listening to them (Last, p. 111).

Mathematics. Have students give one- or two-minute reports based on news about mathematics that appears in the daily newspaper.

Physical Education. Have students view a video or film about leisure activities. Notice the need for good communication skills on the part of the leader(s). How does communication influence the success of a leisure business or an intramural organization?

Science. Arrange a debate between Copernicus and his followers versus the closest rival on the theory of the universe. Have the audience pretend that they do not know the answer, but will be persuaded by the presentations of these famous scientists. If possible, have members of the faculty act as a jury about who wins the debate.

Social Studies. Have students select a famous character from a time period they are studying. Each student will dress in the costume of the period and tell of a day in the character's life. Or, perhaps have three or four students take on character roles from the time period and have the other class members be present at a press conference featuring these guests. The teacher could take on the role of a famous character and allow the students to have a press conference with the character.

Vocational Education. Students will study career choices that are dependent upon good communication skills. Each student will analyze his or her own speaking ability to help determine if he or she would be happy in a vocation that required periodic public speaking.

Memory Training

Arts. To promote visual memory, show the class a line drawing for several seconds and have them look at the piece for overall effect and details. Ask them to draw the piece from memory and compare to the original work. Discuss the differences, similarities, and the difficulty level. Start out this series of activities with easy reproductions and move to more difficult drawings.

Foreign Language. Use word association and mental imagery to remember vocabulary words. If sombrero is a hat in Spanish, what kind of a hat? Ask the students to visualize the concept of the word and then check their understanding by having them explain or draw a picture of the concept. Role playing can be a good technique to illustrate differences between hombre and muchacho, (man and boy) between senora and senorita (Mrs. and Miss). Gestures can differentiate between aqui (here) and alli (there) to promote quick retention. These methods facilitate both comprehension and vocabulary in the foreign language.

Language Arts. Use two way-associations to remember authors and titles of books, short stories, or poems. Try out the place method when memorizing poetry. (See Social Studies, below, for example.) Use mental imagery to visualize setting for stories. Discuss television programs in terms of characters, plot, and setting after a variety of periods, such as one hour after viewing, one day after viewing, one week after viewing, one month after viewing. What difference can the students discover in their use of memory and its effectiveness over time? Introduce and discuss concepts of short-term and long-term memory.

Mathematics. Numeric "pegword" systems substitute words or objects for places. Teach the students to memorize a list of objects each associated with a digit (usually from 1 to 20). Instead of relating the new things to be remembered with place, as in social studies, he or she relates them to the objects and numbers on the list. This is a combination of math and language skills, since the combination of a number and concept is used. Examples of the hook or peg method include: 1-bun, 2-shoe, 3-tree, 4-door, 5-hive, 6-sticks, 7-heaven, 8-gate, 9-vine, 10-hen. Ask the student to try to associate a mental image of the concept or thing to be remembered with each word. 1) How is .... like a bun? Can you set it in a picture? 2) How is .... like a shoe? Picture the concept with a shoe.

Physical Education. Discuss with students methods of memorizing the choreography for a modern dance or classical ballet performance. How does this type of memory differ from other memory exercises? How is it similar? Are the demands of physical involvement in memory more intense or easier for the performer?

Science. With the popularity of games like Trivial Pursuit, it can be useful to develop a "Scientific Trivial Pursuit" with scientific laws, definitions, inventors, discoveries, dates, principles, etc. Gaming approaches to promote memory, such as in Trivial Pursuit, offer motivational ways to retrieve information from prior learning. Discuss with students how the human brain functions like a computer with retrieval and memory skills.

Social Studies. Teach students to use the "place method" which was used by Cicero and the ancient Greek and Roman orators to remember each stage of long speeches. When memorizing lists of items in social studies such as the name of the 13 colonies, ask the student to think of a place they know very well. Have the student associate each of the things to remember with a particular spot in the place, i.e., the maple tree is Massachusetts, the rock is Rhode Island, the cat is Connecticut, etc. Rehearse more states and places by gradually building on the sequence, until all are mastered.

Vocational Education. How does memory affect performance on the job? Does a surgeon, a pilot, or a teacher need a better memory? When would a worker rely on memory and when could memory not be sufficient? Encourage students to discuss the role of memory in a variety of scientific, humanistic, and governmental careers. Relate the requirements of these occupations to the students' ideas and values about the importance and use of memory.

Analyzing and Evaluating the Curriculum

It is no accident that the concepts presented in this section are closely correlated with another book in this series, *A Guide to Developing Higher Ordering Thinking Across the Curriculum*; it is important that the articulation of the horizontal curriculum areas be correlated.

If schools are to analyze and evaluate whether their curriculum adequately addresses the goal of teaching learning skills across the curriculum, they need a conception of the components of learning skills and of appropriate instructional strategies.

In addition, they need:

—a model of what an effective, coordinated schoolwide plan for infusing learning-to-learn should include.

—a suggested procedure for developing such a plan.

—suggested procedures, including sample instruments, for assessing the current curriculum by comparing it to the model plan.

Schools need to plan to teach and reinforce each skill in conjunction with the student's need to use the skill.

Essentials of a Model Schoolwide Plan for Infusing Learning Skills

Research findings underscore the obvious, i.e., skills are best mastered when needed. Teaching these skills in isolation does not guarantee learning; schools need to plan to teach and reinforce each skill in conjunction with the student's need to use the skill.

Although different authorities advocate different approaches, most would agree on certain essentials, including:

Agreement among the staff about definitions of learning skills and about what methods should be used for correlating learning skills with content area skills. Reaching consensus requires study and discussion, especially with teachers from different disciplines, but is important in providing consistency and reinforcement in teaching. Many schools have used time lines as a management tool for correlating learning skills with the content area skills. Time lines are a graphic representation of all units being taught in the school by all teachers during a designated period, most typically a grading period or a semester.

Use of common learning terminology across disciplines and grade levels. This follows from the preceding essential. If the same or similar skills are called by the same name in many contexts, students will find it easier to remember them and to grasp their essential qualities even when superficial differences exist in the way skills are used in different contexts. Also, teachers will find it easier to collaborate and communicate if they use the same language.

Focus on a limited number of skills taught thoroughly rather than many taught haphazardly. As with learning any skills, students need considerable practice, review, and

reinforcement to achieve mastery. An example of this approach would be to teach students methods of locating information on maps and globes in conjunction with a social studies assignment in which the students need the information immediately. Teaching the use of magazine indexes should occur when students have information needs, perhaps for a science project, for which periodical literature is the most appropriate source. Many learning skills need to be taught and practiced in close time periods, e.g., over three successive days rather than once a week over three weeks.

Agreement about when various skills are to be taught and reinforced. This agreement will also require much discussion among teachers, but it is the only way to ensure that all the agreed-on skills and types of thinking are taught and developed sufficiently, yet without duplication, throughout the students' school careers.

Emphasis on affective as well as cognitive aspects of learning. How students and teachers feel about themselves as learners has a great impact on how well they learn. The general strategies of the holistic approach (open, encouraging classroom climate; thoughtful questioning style, etc.) are important in helping students develop confidence in themselves as learners.

Process for Developing a Schoolwide Plan

Each school has the responsibility for ensuring that students have the opportunity to master learning skills.

Each school has the responsibility for ensuring that students have the opportunity to master learning skills. One method used successfully by many schools is:

1. A leadership team determines the local learning skills curriculum.
2. Responsibility for skills is assigned to certain professional school personnel at certain grade levels or in certain content areas.
3. Responsibility for a major portion of the information skills is assigned to the library media specialist.
4. Teachers and the library media specialist are given time to plan together for appropriate correlation of skills with the content area.
5. Teaching of designated skills is done by the most appropriate person at the selected grade level.
6. Methods for evaluating mastery of the skills are determined in advance and the responsibility for evaluation is assigned.
7. Appropriate schedules are developed for integrating learning skills lessons with content area units.

The grid, "Incorporating Learning in Curricular Areas," in Appendix A can be used for developing such a plan and for analyzing present curriculum. It serves as an easy way to consolidate decisions about how various learning skills and processes should be taught or for gathering information about where they now exist.

Evaluating the Curriculum for Learning Skills

Assessment and evaluation are the beginning and the end of the same process. The purpose of the assessment is to gather diagnostic information to help determine the needed direction of the learning skills or learning plan. Evaluation answers the question, "Did we learn what we set out to learn?"

Evaluation of learning skills involves four categories: standardized tests; teacher observations, checklists, etc.; student or peer evaluations, either individually or in small groups; and program evaluation.

Some standardized tests, such as the Iowa Test of Basic Skills and Iowa Test of Education Development, have subscales for vocabulary, comprehension, reading, and study

skills. These norm-referenced tests can provide information about how the student compares to other students of similar age or grade level in Iowa and across the nation. If patterns emerge for a group of students in a grade, school, or district, then appropriate learning skills can be developed or selected. Since the ITBS and ITED tests are given each year by many districts, they become useful instruments for summative evaluation.

Another evaluation method is analysis by classroom observations, talking to teachers and students, and examining teacher assignments. Checklists are available in current journals. For example, a checklist developed by Douglas Rogers and printed in the Journal of Reading (January 1984) focuses on study/reading skills. Other assessment procedures related to reading have been described in Carnine's "Teaching Basic Reading Skills in Secondary Schools" (1980, Educational Resources Information Center [ERIC] document). Diagnostic and prescriptive techniques that will enable teachers to enhance secondary school students' learning through reading are: information reading inventories, readability formulas for content area textbooks, oral reading, rate and accuracy, comprehension, and study skills.

Another practical source of information, "Reading Inventory for Secondary Social Studies Teachers," is included in Appendix C. This reprint from the January 1989 edition of *Social Education* enables teachers to compare their score on the self-assessment to other prospective and experienced teachers in a sample population where the instrument was standardized. Awareness for issues inherent in content area reading can be achieved by completing this inventory.

The classroom teacher must be committed to the need for the infusion of the 10 learning skills identified in this guide.

Finally, program evaluation is an important part of the evaluation process. Both formative and summative evaluations need to be used to determine the effectiveness of the learning skills instruction.

Formative evaluations gather information "along the way" as teachers begin to develop and implement learning skills instructional programs. Formative evaluation refers to one-on-one feedback from students or other teachers about testing, instruction activities, etc; small-group reaction to instruction; and field testing with a larger group of students (Dick and Carey, 1985). Comments on each phase of the instruction, ability to meet time limits, and reactions of students and teachers provide valuable formative evaluation information for the school or district personnel.

Summative evaluation analyzes the effectiveness of the program at the end of instructional periods. The process of successful evaluation includes identification of objectives, evaluation activities, and drawing inferences from the data collected. Better decision making is the result.

Conclusion

Learning to learn is a critical aspect of the daily life of each learner. At times that learner is the student, often it is the classroom teacher, and without question it includes support personnel. Before a correlation with content area skills can be outlined in any school, the classroom teacher must be committed to the need for the infusion of the 10 learning skills identified in this guide. The learning skills strategies are generic at the elementary and secondary levels so that the classroom teacher and the learning team may add, develop, and create strategies of their own.

Learning to learn, as Ralph Tyler suggested, is the most powerful of all knowledge. William Glasser (1986) suggests that "there is no punishment that can make any students learn if they don't want to" (p.13). In the belief that all students can learn, this guide is provided for revision, input, clarification, and comment as we begin to "learn" together.

Bibliography

Included in this bibliography are citations indexed in the Educational Resources Information Center (ERIC) database. The materials cited with ED (educational document) and EJ (educational journal) numbers are from the ERIC Clearinghouse on Reading and Communication Skills. The ED numbers are available on microfiche; the EJ numbers are available through photocopy. To obtain these ED and EJ materials at no cost, use the INFORMS (Iowa Network For Obtaining Resource Materials for Schools) retrieval request form on page 109.

Key Resources

Bragstad, B. J., and S.M. Stumpf. ***A Guidebook for Teaching: Study Skills and Motivation.*** **Boston: Allyn and Bacon, 1987.** This publication offers new approaches for fusing the teaching of the learning process with the teaching of content. Topics include motivation, concentration, time management, remembering, vocabulary, streamlining study, mapping, note taking, taking tests, and application to content areas. The appendices include camera-ready forms for student/teacher use.

Devine, Thomas G. ***Teaching Study Skills, A Guide for Teachers.*** **2nd ed. Boston: Allyn and Bacon, 1987.** New teaching strategies, theory, and research findings in learning and memory have been integrated into this edition. The book describes specific ways teachers may help their students master skills needed to succeed in school. It is based upon the belief that "thinking can be improved, human intellect sharpened, and academic ability increased." Hundreds of proven activities and techniques for sharpening comprehension, thinking, test taking, and other key skills that improve learning in every subject are included.

German, Paul. ***Project CAPABLE: Model Unit.*** **Madawaska, ME: Madawaska School District, 1981. (ED 252533).** Project CAPABLE (Classroom Action Program: Aim: Basic Learning Effectiveness) is a classroom approach which integrates the basic learning skills with content in secondary classrooms. The goal of the project is to use basic learning skills to enhance the learning of content and at the same time use the content to teach basic learning skills. This manual illustrates how the Classroom Action Program exercises might be used to develop a work unit that integrates basic learning skills and content. Other documents available through ERIC include: *Implementation Manual* (ED 252532); *English* (ED 256771); *Physical Education* (ED 252542); *Social Studies* (ED 252541); *Science* (ED 252540); *Physical Science* (ED 252539); *Mathematics* (ED 252538); *Foreign Language* (ED 252537); and *Business Education* (ED 252536).

Glasser, William. ***Control Theory in the Classroom.*** **New York: Harper and Row, 1986.**

Guide to Curriculum Planning in English Language Arts. **Madison: Wisconsin Department of Education, 1986. (ED 268554).** This guide presents a conceptual framework for a K-12 language arts program, including the major components of language, literature, and communication skills. The emphasis throughout the guide is on language as a means of communication and as a learning tool. Other guides from the Wisconsin Department of Education include: *Science, Social Studies, Music, Physical Education, Foreign Language,* and *Mathematics.*

Marzano, Robert J., and D. Arredondo. ***Thinking Skills Teachers Manual.*** **Aurora, CO: Mid-continent Regional Educational Laboratory, 1985.** The learning-to-learn skills that are developed in part one of this guide include: attention control, deep processing, power thinking, goal setting and the activity framework. Suggestions for teaching these skills are presented in unit outline form including introduction, key points, definitions, student objective, instructional sequence, and reinforcement activities.

Phye, Gary D., and Thomas Andre. *Cognitive Classroom Learning*. New York: Academic Press, 1986. This book covers the topics of processes in education, designing instruction, and working memory. These include the encoding process, practice and skilled classroom performance, problem solving and education, metacognitive skills, learning tactics and strategies, and cognitive development.

Sternberg, Robert J. *Human Abilities: An Information Processing Approach*. New York: W. H. Freeman, 1985. Sternberg presents a model of learning based on information processing with reference to general intellectual ability, verbal ability, reading ability, second language learners, individual differences in learning and memory, mathematical ability, mental imagery, deductive and inductive reasoning, and problem solving.

Additional Resources

Allen, Shellah. "Study Skills: A Joint Teacher-Student Responsibility." *Australian Journal of Reading*, Vol. 9, No. 2, pp. 78-83, June, 1986. This article offers a method for teachers in the content areas to teach study skills. It deals with strategies for allocating study time, reading, note taking, and learning for tests.

Allenbrand, B., L. Peters, and K. Sanders, eds. *Course Goals in Computer Education, K-12*. Portland, OR: Tri-County Goal Development Project, 1979. (ED 194074). This book contains goals for use in planning and evaluating elementary and secondary school curricula in computer education. Computer education includes such topics as computer literacy and computer programming. It is the purpose of this volume to help decide what should be learned, not how. Accompanying volumes in this series include: *Art, Biological and Physical Science, Business Education, Health Education, Home Economics, Industrial Education, Language Arts, Mathematics, Music, Physical Education, Second Language*, and two volumes for *Social Studies*.

Archer, Anita, and Mary Gleason. *Skills for School Success*. North Billerica, MA: Curriculum Associates, In publication. This is a four-level, teacher-directed program designed to teach critical organization skills and study skills systematically to students in elementary and middle grades. Using a spatial approach, skills are introduced at one level and reviewed at each subsequent level with more difficult applications.

Armes, Rose Ann, and Karen Sullenger. "Learning Science Through Writing." *Science and Children*, Vol. 23, No. 7, pp. 15-19, April 1986. (EJ 338029). The authors describe an instructional approach which focuses on writing skills as a means of promoting science learning. They give examples of science writing and research activities for grades two and six.

Ashman, Sandra, and Alan George. *Study and Learn*. London: Heineman, 1982 This self-help guide for students includes these strategies for learning in educational systems: time management, remembering, writing, reading, note taking, locating information, and testing.

Atwood, Beth S. *Building Independent Learning Skills*. Palo Alto, CA: Education Today Company, Inc., 1974. This book provides classroom-tested ideas and project approaches to help students become successful independent learners. Self-directed study—the essence of individualized instruction—doesn't just happen. The author offers over 100 ideas and activities developed and tested by teachers. Chapter topics include independent learning, communication, investigation and organization, analysis and evaluation, transformation, and resources.

Avann, Pat. *Teaching Information Skills in the Primary School*. London: Edward Arnold, 1985. Techniques for teaching information skills to primary students to enable them to become independent, flexible learners are presented. Classroom organization, role of computers, books and librarians, as well as school policies are explored.

Berliner, David, and Ursula Casanova. "Are You Teaching Students the Right Skills for Retention?" *Instructor*, Vol. 96, No. 6, pp. 18-19, February 1987. (EJ 348308). This article reports on how elementary school teachers teach strategies to help pupils learn and remember. Tips for using the research findings in the classroom are offered.

Berliner, David C., and B. V. Rosenshine, eds. *Talks To Teachers*. New York: Random House. This research-based volume focuses on teacher effectiveness.

Best, Deborah L., and Peter A. Ornstein. "Children's Generation and Communication of Mnemonic Organizational Strategies." *Developmental Psychology*, Vol. 22, No. 6, pp. 845-853, November 1986. (EJ 347792). Using a series of alternating sort/recall trials, this study explored whether elementary school children's experience with categorically related items would facilitate their subsequent organization and recall of low-associated items.

Betts, George T. *The Lifelong Now Book*. Greeley, CO: Autonomous Learning Publications and Specialists (ALPS), 1985.

Bishop, Wendy, and Kevin Davis. *The Reading/Writing Relationship: A Selected Bibliography*. 1986. (ED 272848). Intended as an introduction to the literature on the reading/writing relationship, this annotated bibliography covers the areas of theory, research, and pedagogy. The citations include journal articles, conference proceedings, conference papers, books, dissertations, and monographs.

Boud, David, ed. *Developing Student Autonomy in Learning*. New York: Nichols Publishing Co., 1981. Boud offers a collection of issues, case studies, and reflections on the process of developing autonomy in students. Approaches toward student responsibility, reducing teacher control, independent study, contract learning, and one-to-one learning are reviewed. Practical suggestions through the case study approach enlighten the reader.

Bruner, Jerome S. *The Process of Education*. Cambridge: Harvard University Press, 1963. This is a review of the 1959 Woods Hole conference where 35 scientists, scholars, and educators discussed how education in science might be improved in primary and secondary schools. It is a classic orientation to learning which focuses on the demands of structure, readiness for learning, intuitive and analytic thinking, and motives for learning.

Burton, Grace M. "Writing as a Way of Knowing in a Mathematics Education Class." *Arithmetic Teacher*, Vol. 33, No. 4, pp. 40-45, December 1985. (EJ 330436). Burton discusses writing strategies that can be used in mathematics classes, including free writing, writing in journals, in-class writing, and term papers. A checklist for evaluating student writing is included and a rating scale for central idea, organization, development, style, and technical control is given.

Career Information System of Iowa (CISI). Des Moines: Department of Education, 1986-87. CISI is a series of career development activities on a computer database. Students can explore personal interests and career goals, understand requirements of specific occupations, and research programs of study and school profiles. Print form and computer disks for microcomputers are available. Documents include *STEPS* (Structured Educational Program Search) *Handbook*, *PROCESS* (Process of Reviewing Options through Career Exploration and Self Study) *Handbook*, *Skills Handbook* (sorts 35 skills and personal interests), *Skills Inventory Worksheet*, *Leader's Guide*, *Occupational Briefs*, *School Profiles*, and *Programs of Study*. Materials can be ordered from: Iowa Curriculum Assistance Center (ICAS), Iowa State University, College of Education, N008 Lagomarcino Hall, Ames, Iowa 50010.

Carnine, Linda. "Teaching Basic Reading Skills in Secondary Schools." *Oregon School Study Council Bulletin*, Vol. 23, No. 9, May 1980. (ED 265630). This document presents diagnostic and prescriptive techniques that will enable teachers to enhance secondary school students' learning through reading in content areas. Three terms used in the document are defined in Section I: "vocabulary skills" include word attack skills, sight word skills, and word meanings; "comprehension skills" are literal, inferential, and critical in nature; and "study skills" focus on using appropriate study strategies, reading speeds, and information location and selection skills. Section II reviews diagnostic procedures that allow teachers to match appropriate materials with

students' entry vocabulary and comprehension. The Cloze procedure and the use of informal reading inventories are covered. Section III presents material on vocabulary instruction. Section IV covers aspects of comprehension instruction. Study skills instruction is the topic of the fifth and final section.

Carr, Eileen and Donna Ogle. "K-W-L Plus: A Strategy for Comprehension and Summarization." *Journal of Reading*, Vol. 30, No. 7, pp. 626-631, April 1987. (EJ 350560). Mapping and summarization are added to the K-W-L (know, want to know, learned) strategy to produce a reading-thinking strategy, equally helpful to remedial and nonremedial high school students, for content area textbooks.

Changar, J., C.B. Shortridge, and H. D. Willis. *Oral and Written Communication, Strategies and Resources for Students and Teachers*. St. Louis: CEMREL, 1982. This publication presents a carefully sequenced set of activities to provide opportunities for students in grades 4-12 to improve their skills by engaging in a creative process using speech and writing, learning to articulate their ideas in non-threatening environments, and moving from simple to more complex stages in the process of composing pieces of writing.

Clark, Ruth C. "Goals Setting: A Cognitive Model of Productivity Improvement." *Performance and Instruction*, Vol. 24, No. 1, pp. 26-28, February 1985. Clark discusses five ways to make goal setting effective: set difficult and specific goals, monitor results, reward performance, participate in goal setting, and challenge individual self-confidence and goal dissatisfaction. A model showing internal and environmental factors related to performance and a list of management strategies for enhancing performance are included.

Claypool, Jeffrey C., and Joseph P. Cangemi. "Ingredients of Setting and Achieving Goals." *Psychology: A Quarterly Journal of Human Behavior*, Vol. 20, No. 3-4, pp. 44-46, 1983. These authors suggest that goal setting and goal achievement are important predictors of success. Some of the necessary ingredients are desire, imagination, concentration, and discipline. Goals must be identified, categorized into short-range and long-range goals, and backed by contingency plans.

Dick, Walter, and Lou Carey. *The Systematic Design of Instruction*. Glenview, IL: Scott, Foresman and Company, 1985. This is a test for the systems approach to design of instruction utilizing the 10 steps: 1) identify an instructional goal; 2) conduct instructional analysis of a goal; 3) conduct instructional analysis of subordinate skills; 4) identify entry behaviors and characteristics; 5) write performance objectives; 6) develop criteria-referenced tests; 7) develop instructional strategy; 8) develop instructional materials; 9) design and conduct formative evaluation; and 10) complete summative evaluation.

Dillner, Martha H., and Joanne P. Olson. *Personalizing Reading Instruction in Middle/Junior and Senior High Schools: Utilizing a Competency-Based Instructional System*. New York: Macmillan, 1982. Study skills related to reading are following directions; scheduling time; adjusting rate to purpose; using a study technique; using aids within books; using maps, graphs, and tables; using locational aids in the library; using reference materials; using materials appropriate to purpose; organizing information; recalling information; and evaluating information.

Dittmer, Allan. "Guidelines for Writing Assignments in the Content Areas." *English Journal*, Vol. 75, No. 4, pp. 59-63, April 1986. (EJ 332829). This article presents ideas on writing instruction for teachers of mathematics, physics, accounting, biology, and social studies. It contains guidelines for designing writing assignments in various content areas.

Dunn, Rita, and Kenneth Dunn. *Teaching Students Through Their Individual Learning Styles: A Practical Approach*. Reston, VA: Reston Publishing, 1978. This is a practical guide to understanding learning styles in the context of current educational systems. Based on their own model, the authors make practical suggestions to implement a learning styles program.

Dunn, S., and V. Morgan. *The Impact of the Computer on Education: A Course for Teachers*. London: Prentice Hall, 1987.

Educational Media Competency Goals and Performance Indicators, K-12. North Carolina State Department of Public Instruction, 1986. Grade-by-grade identification of goals and objectives in the areas of location, selection, organization, presentation, and appreciation of media, as well as computer literacy skills.

Elementary Reading Content Objectives, K-6. Peoria, IL: Peoria Public Schools, n.d. This book incorporates study skills and information skills in a sequenced curriculum which builds in the concepts of introduction, development, mastery, and review of skills.

Farr, Roger. *Reading: Trends and Challenges.* 2nd ed. What Research Says to the Teacher Series. Washington: National Education Association, 1986. (ED 207006). Farr analyzes recent research findings in areas such as comprehension and the role of the teacher in developing reading flexibility. An extensive bibliography is included.

Fraenkel, Jack R. *Helping Students Think and Value: Strategies for Teaching the Social Studies.* Englewood Cliffs, NJ: Prentice-Hall, 1973. Chapter Four, "The selection and organization of learning activities," provides important background information on learning and learning theories, what is a learning activity guidelines to the development of significant learning activities, building sequences and skills. Presented through the backdrop of social studies, this work is a good introduction to learning skills.

Fuchs, Lucy. *Teaching Reading in the Secondary Schools. Fastback 251.* Bloomington, IN: Phi Delta Kappa Educational Foundation, 1987. Intended for use by secondary school teachers in all subject areas, this booklet provides practical information, classroom activities and strategies for the instructor who wants to incorporate reading instruction into a particular content area. The booklet offers specific chapters on (1) vocabulary development; (2) reading in the content areas; (3) incorporating reading into lesson planning; (4) using questions to develop critical reading; (5) reading and study skills, outlining, note-taking, and study methods; (6) guiding teenage reading choices; and (7) other reading activities, including reading newspapers (especially the sports pages), junk mail, and television-related material.

Gagne, Robert M. *The Conditions of Learning.* 3rd ed. New York: Holt, Rinehart and Winston, 1977. The earlier editions of this work were published in 1965 and 1970.

Gagne, Robert M. "Planning and Authoring Computer-Assisted Instruction Lessons." *Educational Technology,* pp. 17-26, September 1981. This article presents a system for planning and authoring lessons in computer-assisted instruction (CAI) based on Gagne's theory of learning. Gagne identified nine steps corresponding to external instructional events. Learning skills should support the learning process.

Gagne, Robert M., and Leslie J. Briggs. *Principles of Instructional Design.* New York: Holt, Rinehart and Winston, 1974. This is a text for design of instructional materials. Primary learning outcomes involve verbal information, cognitive processes, motor skills, attitudes and intellectual skills. This is a systematic process for design that has been widely replicated by others.

Gambrell, Linda B., and others. "Using Mental Imagery and Summarization to Achieve Independence in Comprehension." *Journal of Reading,* Vol. 30, No. 7, pp. 638-642, April 1987. (EJ 350562). The article recommends teaching both mental imagery and summarizing to students who do not spontaneously use them.

Goldin, Augusta. *How to Release the Learning Power in Children.* West Nyack, NY: Parker Publishing Company, 1970. This book describes teaching methods that ensure effective learning and gives practical ideas in the context of social studies, science, mathematics and reading. Building student responsibility, integration of communication skills, and use of multi-media for increased learning are discussed.

Graham, Kenneth G., and H. Alan Robinson. *Study Skills Handbook: A Guide for All Teachers.* Newark, DE.: International Reading Association, 1984. (ED 245198). Topics, including advance organizers, concept guides, location and use of information, are addressed.

Hannah, Larry. "Teaching Data Base Search Strategies." *The Computing Teacher*, pp. 16-23, June 1987. (EJ 357138). Database searching as a method for developing thinking skills is described using student team activities and worksheets. The activity is suitable for grades 5-12.

Hansen, Kenneth H., ed. *Learning: An Overview and Update.* A Report of the Chief State School Officers 1976 Summer Institute, San Diego. Washington, DC: U.S. Office of Education, 1977. (ED 137211). This is a collection of papers, reports, and comments from 13 educators including Ralph Tyler, John Goodlad, S. P. Marland, Jr., Arthur Camobs, Herbert J. Klausmeier, and Harold Hodgkinson. The collection focuses on what recent research, experimentation, and experience have taught us about learning.

Hart, Silvia S., and others. "Memory in the Elementary School Classroom: How Teachers Encourage Strategy Use." Paper presented at biennial meeting of Society for Research in Child Development, Toronto, Ontario, Canada, April 25-28, 1985. (ED 260820). Research findings with elementary students are reported. A descriptive classification of the 12 strategy suggestions used by teachers in the study is included.

Hennings, Dorothy G. *Teaching Communication and Reading Skills in the Content Areas.* Bloomington, IN: Phi Delta Kappa, 1982. (ED 229737). Intended for elementary school teachers who want to incorporate language skill-building activities into their subject area instruction, this book provides practical teaching strategies based on research about how children learn to read and communicate. The three major sections deal with (1) teaching comprehension and study skills across the curriculum, (2) vocabulary development in the content areas, and (3) writing instruction across the curriculum, specifically in science and social studies. Each section offers instructional models synthesized from research and a number of specific instructional strategies.

Hilgard, Ernest R., and Gordon H. Bower. *Theories of Learning.* 3rd ed. New York, NY: Appleton Century Croft, 1966.

Hilgedick, Lorraine. "Teaching Time Management Concepts in an Office Procedures Course." *Journal of Business Education,* Vol. 58, No. 4, pp. 144-146, January 1983. (EJ 273878). Hilgedick discusses how to help students set long- and short-term goals and lists techniques for managing time in order to accomplish these goals.

Hodges, Gerald. *Library and Study Skills Curriculum Planning Guide: Some First Steps.* Prepared from a draft document and printed with permission. Des Moines: Iowa Department of Education, June 1989. According to the author, "schools have a major task to infuse the critical area of library, media, information, and study skills throughout the curriculum in all appropriate content areas and in all grade levels."

Hughey, R. M., and H.T. Fillmer. "Reading Inventory for Secondary School Social Studies Teachers." *Social Education,* Vol. 44, No. 1, pp. 14-20, January 1980. This is a standardized instrument for secondary teachers to use to compare their knowledge of the uses of reading in the content areas.

Idol, Lorna. "Group Story Mapping: A Comprehension Strategy for Both Skilled and Unskilled Readers." *Journal of Learning Disabilities,* Vol. 20, No. 4, pp. 196-205, April 1987. (EJ 352467). A story mapping strategy was used to improve reading comprehension in heterogeneous groups of third/fourth graders, including five learning disabled and low achieving students. Group averages maintained above 80 percent when students were no longer required to use the strategy.

Irving, Ann. *Starting to Teach Study Skills.* London: Edward Arnold, Ltd., 1982. A practical volume that has relevance for teachers of all subjects who want to help their pupils "learn how to learn," this book gives examples from chemistry, geography, and English. The books in this series are planned to cover well-defined topics relevant to schools in widely differing situations: subject teaching, curriculum development, areas of responsibility within schools, and the relationship of the school to the community.

Justice, Elaine M. "The Best Way to Remember Is...The Development of Strategic Awareness During Elementary School." Paper presented at annual meeting of Southeastern Psychological Association, New Orleans, LA, March 1984. (ED 251213). Justice reports on research findings with elementary students and discusses rehearsal and categorization skills.

Lange, Jo-Ann T. "Using S²RAT to Improve Reading Skills in the Content Areas." *Reading Teacher*, Vol. 36, No. 4, pp. 402-404, January 1983. (EJ 272429). Lange suggests that incorporating content area words into the weekly spelling routine by means of the S²RAT technique will challenge high ability students while encouraging those of low ability.

Leal, Linda, and others. "Training Children to Use a Self-Monitoring Study Strategy in Preparation for Recall: Maintenance and Generalization Effects." *Child Development*, Vol. 56, No. 3, pp. 643-653, June 1985. (EJ 324253). Research involving elementary students using self-monitoring strategy and both free and serial recall is presented.

Marzano, Robert. J., and Robert Hutchins. *Thinking Skills: A Conceptual Framework.* Aurora, CO.: Mid-continent Regional Educational Library, 1985. (ED 266436). This report details the theoretical and research base for the McRel Thinking Skills Program which emphasizes learning-to-learn skills, content thinking skills, and reasoning skills.

Marzano, Robert J., and Robert Hutchins. *Information Management Skills: Middle School Handbook.* Mason City, IA: Mason City Community Schools, 1986. Carefully sequenced and recently revised curriculum for grades 6, 7, and 8 and sample activities are provided.

McAndrew, Donald A. "Underlining and Notetaking: Some Suggestions from Research." *Journal of Reading*, Vol. 27, No. 2, pp. 103-108, November 1983. (EJ 291283). McAndrew surveys some of the research concerning underlining and note taking and draws from it some suggestions for using the two study techniques in the classroom.

Moely, Barbara, and others. *The Teacher's Role in Facilitating Memory and Study Strategy Development in the Elementary School Classroom. Final Report 1985.* (ED 263996). This report of a three-phase investigation of memory and metacognitive development includes many examples of ways teachers can facilitate children's memory.

Mountain, Lee. "Word Puzzles for Vocabulary Development." *Reading Horizons*, Vol. 26, No. 1, pp. 16-24, Fall 1985. (EJ 325197). This article describes several kinds of word puzzles, including anagrams, content-area puzzles, graphic puzzles, palindrome puzzles, and rhyming riddles.

Nahrgang, Cynthia L., and Bruce T. Petersen. "Using Writing to Learn Mathematics." *Mathematics Teacher*, Vol. 79, No. 6, pp. 461-465, September 1986. (EJ 343000). Writing has a place in mathematics classes. It can be used to enhance learning by helping students organize their thoughts. How a journal can be used and analyzed is discussed.

Nelson-Herber, Joan. "Expanding and Refining Vocabulary in Content Areas." *Journal of Reading*, Vol. 29, No. 7, pp. 626-633, April 1986. (EJ 331215). Nelson-Herber argues that new vocabulary words should be presented in concept clusters and related to prior knowledge to facilitate organization in memory. She presents a sample lesson for science vocabulary.

Noether, Kathy. "The Interdependence of Social Studies and Writing in the Elementary Schools." *Social Studies Review*, Vol. 26, No. 2, pp. 4-9, Winter 1937. (EJ 348242). This article provides an overview of how oral language and writing activities may be integrated into a typical kindergarten through sixth grade social studies curriculum.

Papert, Seymour. *Mindstorms: Children, Computers, and Powerful Ideas.* New York: Basic Books, 1980. Encouraged by early professional experiences with Jean Piaget, Papert returned to M.I.T. to research learning environments. In this book, Papert reflects on the computer and related technology as tools for creating learning environments.

Peragallo, Anne M. "Incorporating Reading Skills into Art Lessons." *Art Education*, Vol. 34, No. 4, pp. 31-35, July 1981. (EJ 246600). Using a ceramics unit, the author illustrates ways of incorporating the following reading skills into an art lesson: following directions; pronunciation, spelling, and vocabulary development; interpreting illustrations; using reference books and materials; notetaking; and skimming.

Phillips, LuOulda. "12 Routes to Independent Learning." *Instructor*, Vol. 91, No. 3, pp. 44-46, 50, October 1981. (EJ 250726). This article outlines 12 learning models designed to help elementary children develop the skills for independent study.

Prentice, Diana. "Individualizing Speech Communication Education: Goal Setting and Student Contracts." Paper presented at annual meeting of Speech Communication Association, Louisville, KY, November 1982. (ED 222958). Goal setting and contract grading are two instructional strategies that can provide individualized instruction within more traditional speech classroom settings. Goal setting is a procedure whereby students set learning objectives for themselves, from a single assignment to an entire course, written in behavioral terms with methods for determining goal achievement indicated and unavoidable. A contract should include four parts: behavioral objectives, media resource alternatives, activity alternatives, and reporting alternatives. Contracts and goal setting can be used in a wide range of speech courses and situations: public speaking, debate or individual events, interpersonal communications, group discussion, and mass media.

Study Skills: Study Your Way to Success, Kindergarten-6th. Oklahoma City: Oklahoma State Department of Education, 1982. This booklet provides a multi-curriculum collection of ideas and activities designed to improve the study skills of students in kindergarten through sixth grade. This collection of ideas and activities may be used to supplement learning activities in any classroom. Many of the pages may be duplicated for parent or student use. A scope and sequence of study skills according to expected grade-level accomplishment are listed. Student activity pages are provided in the areas of study habits, taking notes, reports and projects, and test taking. An extensive bibliography of resources is included.

The Basic Study Skills Guide for Grades K-6. Upper Marlboro, MD: Prince George's County Public Schools, 1980. (ED 204777). This guide has been designed for use in teaching study skills to elementary school students, kindergarten through grade six. It contains lessons developed and refined over a three-year period in the skills areas of listening, scheduling and task analysis, memory, notetaking, and using a textbook. Each skill area is developed in the context of a kindergarten through grade 12 developmental sequence and is the basis for developing lessons in the subject areas of English, language arts, social studies, science, and mathematics. Special features of the guide include a study skills calendar denoting a suggested order of skills presentations.

Reed, Linda, ed. *Basic Skills Uses and Choices: Approaches to Basic Skills Instruction.* St. Louis: CEMREL, 1982. (ED 218649). This two-volume set identifies major issues surrounding integrating basic skills of communication, writing, speaking, listening, reading, and mathematics into content area classrooms. The collection is recommended to teachers who need a helpful tool in reviewing current basic skills instruction or planning for improvements in instruction.

Reinking, David. "Integrating Graphic Aids into Content Area Instruction: The Graphic Information Lesson." *Journal of Reading*, Vol. 30, No. 2, pp. 246-251, November 1986. (EJ 342486). Reinking considers the use of graphic aids with regard to readers' ability to integrate graphic with written information and points out students' need for instructional activities that develop skills such as inference through information coordination of the graphic aid, text, and prior knowledge. The three stages of the graphic information lesson are presented.

Reiser, Robert A., and Robert M. Gagne. "Characteristics of Media Selection Models." *Review of Educational Research*, Vol. 52, No. 4, pp. 499-512, Winter 1982. (EJ 275526). This is a methodical review of models and systems for selecting media appropriate for instruction and the role of media during instruction. Gagne's nine steps to learning theory are reviewed.

Renner, John W., and others. *Research, Teaching, and Learning with the Piaget Model.* Norman, OK: University of Oklahoma Press, 1976. This is a review of Piagetion theory, based on research conducted at University of Oklahoma from 1968-1973 on conservation reasoning.

Implications to secondary students and a view of Piaget's ideas on intellectual development are unique to this volume.

Rogers, Douglas B. "Assessing Study Skills," *Journal of Reading*, Vol. 27, No. 4, pp. 346-354, January 1984. (EJ 293083). This article includes an outline of skills and elaborates on processes for assessing study through reading comprehension, retention, and locating information skills. An instrument for study-reading skills is provided.

Russell, David H., and Elizabeth F. Russell. *Listening Aids Through the Grades: 232 Listening Activities*. New York: Teachers College, Columbia University, 1979. The Russells describe the listening sequence, provide a chapter on following simple directions and those contained within a communication, and suggest activities for helping learners identify sequence in specific directions and key steps.

Sanders, James R., and Subhash R. Sonnad. *Research on the Introduction, Use, and Impact of the "ThinkAbout" Instructional Television Series. Volume I. Technical Report.* Bloomington, IN: Agency for Instructional Television, 1982. This volume is the first of five constituting the final research project report on the introduction, use, and impact of ThinkAbout, a series of 60 15-minute instructional television programs for fifth and sixth graders designed to strengthen reasoning skills and to review and to reinforce language arts, mathematics, and study skills. Study procedures described include the research design, data collection instruments, project schedule, data management procedures, and research limitations.

Saylor, J. G., and William Alexander. *Curriculum Planning for Better Teaching and Learning*. 4th ed. New York: Holt, Rinehart, Winston, 1987. This is a guide for planning the curriculum for any educational program.

Schunk, Dale H., and John P. Gaa. "Goal-Setting Influence on Learning and Self-Evaluation." *Journal of Classroom Interaction*, Vol. 16, No. 2, pp. 38-44, Summer 1981. (EJ 251663). Goal setting is examined as an influence on student learning and self-evaluation. Goal setting results in increased motivation, on-task behavior, performance capabilities, and personal accomplishments.

Simpson, Michele L. "PORPE: A Writing Strategy for Studying and Learning in the Content Areas." *Journal of Reading*, Vol. 29, No. 5, pp. 407-414, February 1986. (EJ 329407). Simpson explains a five-step study strategy (PORPE) that can be used in any content area: Predicting potential essay questions to guide subsequent study; Organizing key ideas using own words; Rehearsing the key ideas; Practicing the recall of the key ideas in self-assigned writing tasks; and Evaluating the completeness, accuracy, and appropriateness of the written product.

Smith, Richard J. "A Study Guide for Extending Students' Reading of Social Studies Material." *Social Studies*, Vol. 78, No. 2, pp. 85-87, March-April 1987. (EJ 354912). Smith proposes that, in addition to demanding literal comprehension of reading materials, study guides should contain questions that require the type of critical reading that promotes interactive, constructive, and dynamic cognitive behaviors. He provides a sample of a general study guide that would promote these reading behaviors.

Staab, Claire F. "Classroom Practices for Facilitating Oral Language: Improving Semantic and Syntactic Cuing Systems." *Reading Improvement*, Vol. 19, No. 4, pp. 250-256, Winter 1982. (EJ 271060). The author presents five principles for restructuring classroom activities to obtain a maximum amount of oral language.

Study Skills Curriculum Guide. Council Bluffs, IA: Council Bluffs Community Schools, 1984. This curriculum, sequenced for the elementary grades, includes many activities for introducing and reinforcing skills.

Tamura, Eileen H., and James R. Harstad. "Freewriting in the Social Studies Classroom." *Social Education*, Vol. 51, No. 4, pp. 256-59, April-May 1987. (EJ 351560). Based on the idea that the best way to help students write better is to have them write more, this article describes an instructional process called journal freewriting. It shows how freewriting, or writing without planning and without stopping, may be used cooperatively by social studies and English departments to enhance efforts to improve students' writing.

Thatcher, David A. *Teaching, Loving, and Self-directed Learning.* Pacific Palisades, CA: Goodyear Publishing, 1973. If teaching is life, then loving, as presented in this book is "a way of looking at and responding to each person, at what makes him/her uniquely him/her." Self-directed learning is a cluster of methods which are the means to achieving goals set by student and teacher working singly or jointly.

Tei, Ebo, and Oran Stewart. "Effective Studying from Text: Applying Metacognitive Strategies." *Forum for Reading,* Vol. 16, No. 2, pp. 46-55, Summer 1985. (ED 262378). To be effective learners, students should know about the state or level of their learning and the success of the strategies they are using, so that when they misunderstand a concept they can do additional reading or consult outside sources. The important elements for any effective studying include (1) having specific purposes or goals for the study session; (2) recognizing the inherent structure for the reading material; (3) purposefully extracting information; and (4) assessing the knowledge gained. Two metacognitive strategies that can be taught easily to students are self-questioning and summarization.

Tyler, Ralph. *Basic Principles of Curriculum and Instruction.* Chicago: University of Chicago Press, 1949. This "classic" in curriculum study explains "a rationale for viewing, analyzing, and interpreting the curriculum and instructional program of an educational institution."

Ur, Penny. *Teaching Listening Comprehension.* London: Cambridge University Press, 1984. Ur describes exercises where the learner simply listens without making any overt response, where response is usually non-verbal, where the responses are more extensive and may involve reading, writing, and speaking, and where listening takes its place as only one skill in fairly demanding study tasks.

Walcott, Larry. "ThinkAbout". Des Moines: Iowa Public Broadcasting Network, 1979. ThinkAbout is a television series of 60 15-minute programs to help strengthen and develop the reasoning and study skills of fifth and sixth graders and to help improve the extent of their mathematics and communication skills.

Weiner, Wendy F. "When the Process of Writing Becomes a Tool for Learning." *English Journal,* Vol. 75, No. 7, pp. 73-75, November 1986. (EJ 342415). Weiner reviews how a sophomore class of gifted students selected a subject for their learning logs; tells how to write a learning log; offers ideas on evaluating learning logs; and presents student reflections on the use of learning logs.

Weinstein, Claire E. "Fostering Learning Autonomy through the Use of Learning Strategies." *Journal of Reading,* Vol. 30, No. 7, pp. 590-95, April 1987. (EJ 350554). Weinstein examines the concept of the cognitively active learner and discusses the following categories of learning strategies: rehearsal, elaboration, organization, comprehension monitoring, and affective.

Wright, Jone Perryman, and Nann L. Andreasen. "Practice in Using Location Skills in a Content Area." *Reading Teacher,* Vol. 34, No. 2, pp. 184-86, November 1980. (EJ 234066). A project that used task cards to give students meaningful and interesting practice in using location skills in the content area of science is described.

Zais, Robert S. *Curriculum Principles and Foundations.* New York: Harper and Row, 1976. This book attempts to give balanced attention to all important areas of curriculum study: (1) the dimensions of the curriculum enterprise; (2) the bases on which decisions regarding the substance of curricula are made; (3) the components of curriculum; (4) the ways in which curricula can be organized; and (5) the processes of curriculum development implementation.

Zembar, Mary J., and Mary J. Naus. "The Role of Practice in Memory Skill Development." Paper presented at biennial meeting of the Southwestern Society for Research in Human Development, San Antonio, TX, March 6-8, 1986. (ED 267 916). Research related to practice in mnemonic strategies, feedback cues, and categorization in facilitating memory performance is discussed.

Appendices

APPENDIX A

Incorporating Learning in Curricular Areas

1. Self-Evaluation

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Remember previous successes with learning.								
2. Recall previous frustration with studying.								
3. Prioritize learning skills to be acquired.								
4. Create a list of strengths and weaknesses related to the learning process.								
5. Identify what motivates own learning.								
6. Complete three self-assessments on learning skills.								
7. Analyze results of self-assessments.								
8. Draw conclusions from data collected.								
9. Devise a plan for improving and developing personal/class learning skills.								
10. Implement the learning skills improvement plan.								

Adapted from *A Guide to Developing Higher Order Thinking Across the Curriculum,* Iowa Department of Education, 1989.

2. Goal Setting

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Describe the characteristics of effective goals.								
2. Describe situations in life when the goal-setting process can be used.								
3. Use the goal-setting process in the classroom and outside of school.								
4. State a goal in writing.								
5. Identify a time frame to reach this goal.								
6. Imagine accomplishing the goal.								
7. Write an action plan to accomplish the goal.								
8. Identify, periodically, the next steps to take to accomplish the goal.								
9. Estimate the time needed to complete each step of the plan.								
10. Evaluate the relationship between the goal and the action plan. Will completing the action plan lead to attaining the goal?								

3. Time Management

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Brainstorm things to be done.								
2. Prioritize the list with A-B-C method.								
3. Use time management skills in planning for a specific activity.								
4. Design a time schedule for a school day or activity outside of school.								
5. Review the time schedule if necessary.								
6. Share time management tips with other students.								

4. Monitoring Attitudes

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Attention Control								
1. Discuss importance of attention control.								
2. Describe situations when attention control is needed.								
3. Take steps to improve concentration by identifying thoughts that should be bracketed.								
4. Practice bracketing during instruction.								
5. Demonstrate the key components of the attention control process.								
6. Assess own concentration.								
Power Thinking								
1. Define affirmations, power thinking, visualization.								
2. Describe impact of power thinking.								
3. Discuss whether attitudes and thoughts affect own behavior.								
4. Practice the process of power thinking.								
5. Keep a log or journal about experiences with power thinking.								
6. Share power thinking experiences with others.								

5. Motivation

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Discuss the importance of motivation.								
2. Analyze what motivates the individual student.								
3. Identify rewards or incentives that are used to motivate students.								
4. Develop techniques for evaluating the relationship between the quality of a product and the motivation to produce the product.								
5. Know the difference between extrinsic and intrinsic motivation.								
6. Practice self-motivation as a learning skill.								

6. Locating Information

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Distinguish between fiction and nonfiction, print and nonprint.								
2. Identify encyclopedias, dictionaries, pictionaries, and other reference tools.								
3. Locate specialized reference sources such as biographical and geographical dictionaries, special sports or science encyclopedias, Childrens Magazine Guide, atlases, thesauri, almanacs, quotation dictionaries, etc.								
4. Use sources such as microfiche/film readers and printers, photocopy machines, bibliographies, database guides and aids, newspaper indexes, etc.								
5. Use local resources such as telephone directories, newspapers, etc., to develop a community-based project.								
6. Identify services and materials provided by information networks and electronic databases.								
7. Use an electronic database.								
8. Define cost considerations regarding on-line vs. manual searching of databases.								
9. Outline steps for obtaining information from community sources: certified birth certificate, passport, marriage license, automobile title, drivers license, tax forms, etc.								

7. Selecting Information

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas wher specific process will be emphasized. Each skill/process should be emphasized consistently in a number c areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Distinguish between fact and opinion in newspaper and magazine editorials, written or taped speeches, television programs, and television advertisements.								
2. Recognize supportive detail and make inferences.								
3. Recognize trends and patterns on a given topic over time.								
4. Cite examples of cause and effect in relationships.								
5. Recognize forms and effects of bias, both favorable and unfavorable.								
6. Make inferences based on individual feelings.								

8. Organizing Information

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. State the basic skeletal form of an outline.								
2. Recognize outline form and practice using it in oral and written presentations.								
3. Use precise-writing or summarizing as a form of note taking.								
4. Illustrate effective summary writing by using a variety of sources.								
5. Create own system of note taking for responding to reading or lecture.								
6. Demonstrate accurate note-taking skills.								
7. Use study guides as a means of structuring individual reading.								

9. Communicating Information

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Reading								
1. Develop vocabulary skills in content area.								
2. Utilize comprehension skills in content area.								
3. Practice reading-related study skills in content area.								
4. Use pre-reading activities to enhance comprehension of assignments.								
5. Facilitate after-reading activities to develop recall of assignments.								
Writing								
1. Use writing activities as a means of discovering knowledge and learning what the student knows.								
2. Use writing as a process including opportunities for pre-writing, drafting, revising, editing, and sharing.								
Speaking								
1. Demonstrate effective oral communication skills in conversation, discussion, and social interactions in the classroom.								
2. Develop skills in public speaking, discussion, and debate to clarify issues and present information.								

Communicating Information, cont.	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
3. Interpret literature through use of prose, poetry, and plays.								
Listening								
1. Develop listening skills in receiving information.								
2. Interpret messages received in a variety of ways.								
3. Practice listening skills through corrective feedback during classroom activities.								
Media								
1. Demonstrate use of audiotape, film, computers, etc., in classroom activities.								
2. Use media to enhance communication process.								
3. Use media to facilitate individual and group instruction.								

10. Memory Training

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Deep Processing								
1. Generate images about information.								
2. Generate verbal information.								
3. Generate physical sensations.								
Remembering								
1. Realize memory can be improved.								
2. Analyze effects of attitudes on memory.								
3. Practice memory skills such as organizing ideas, self-recitation, spacing reviews, and employing mnemonics.								
Relating								
1. Think of ways to personalize the material.								
2. Practice techniques of "chunking" material.								
Test Taking								
1. Anticipate test questions at various levels of cognition.								
2. Record feelings and changes in attitude toward test taking.								
3. List the steps in preparing for an exam.								

Memory Training, cont.	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
4. Compare techniques for preparing for an essay vs. objective test.								
5. Analyze test errors to determine pattern.								
6. Practice relaxation exercises before test.								
7. Practice power thinking before test taking.								

APPENDIX B
Program and Student Evaluations

Program and Student Evaluation/Listening

The Program	Yes	No	At Times
Provides instruction in each of six basic competencies at all levels (perception and discrimination, attending, assigning meaning, evaluating, responding, and remembering).			
Is sequential within each area to stimulate growth and ensure instruction in all competencies.			
Emphasizes the five purposes a speaker may have in communicating: expressing feelings, ritualizing, imagining, informing, and controlling. (See the Speaking section for further explanation of these purposes.)			
Reveals the importance of nonverbal cues in assigning meaning in oral communication.			
Emphasizes the listening competencies throughout the programs of the school district.			
Measures the success of instruction by evaluating students' ability to meet its objectives.			
Provides opportunity for various kinds of active verbal response on the part of students both during and after listening (Pearson and Fielding, 1982).			
Provides a variety of listening experiences from a wide variety of sources to enable students to practice what they learn.			
Embraces direct instruction in listening strategies to make students conscious of good listening habits.			
The Student	**Yes**	**No**	**At Times**
Recognizes the speaker's purpose.			
Chooses and uses a listening strategy that best fits the purpose in a listening situation.			

Reprinted with permission from *Guide to Curriculum Planning in English and Language Arts*, Wisconsin Department of Public Instruction, 1986.

The Student, cont.	Yes	No	At Times
Listens quietly, attentively, and politely, resisting common barriers to effective listening.			
Recognizes the barriers to effective listening.			
"Listens" with the eyes, as well as the ears, noting and interpreting proxemic and kinesis cues.			
Uses strategies to improve long-term memory.			
Uses strategies to improve short-term memory.			
Evaluates oral messages for accuracy significance effectiveness propriety			
Makes judgments consistent with above evaluation.			
Adjusts listening strategies to fit the communication situation source occasion format			
Gives appropriate feedback to speaker, eliciting the best that speaker has to offer.			
Respects and tolerates, while not necessarily agreeing with, the ideas, beliefs, and opinions of others.			

Program and Student Evaluation/Speaking

The Program	Yes	No	At Times
Is experiential and sequential, providing for a mastery of increasingly sophisticated speaking experiences and concepts.			
Provides a wide range of speaking experiences in order to develop effective communication skills appropriate to --a range of situations (e.g., informal to formal, intrapersonal to mass communication). --a range of purposes (e.g., expressing feeling, ritualizing, imagining, informing, and controlling). --a range of audiences (e.g., classmates, teachers, peers, employers, family, community). --a range of communication forms (e.g., conversation, group discussion, interview, drama, debate, public speaking, oral interpretation). --a range of speaking styles (e.g., impromptu, extemporaneous, and speaking from manuscript) [Rubin and Mead, 1984].			
Adjusts to levels of ability, allowing students to adapt their individual experiences, insight, and research to their speaking experiences.			
Includes instruction in concepts to supplement speaking experiences and competencies.			
Makes effective use of supplementary materials, physical contexts, and technological equipment: e.g., video and audio tape recorders, filmstrips, overhead projectors, computers, and word processors.			
Measures success of instruction by teacher, peer, and self-evaluation and uses reliable speaking assessment instruments.			
Is taught by teachers who are good role models as speakers.			
Correlates and integrates speaking experiences with listening, reading, and writing experiences.			
Is sufficiently flexible to supplement the functional approach with other secondary approaches.			
Is based on current theory and research.			

The Program, cont.	Yes	No	At Times
Provides appropriate speaking opportunities for reticent students. Includes suggestions and recommendations for parents to facilitate a good speaking environment in the home. Meets the goals of the speaking program resulting in desired student outcomes.			
The Student	**Yes**	**No**	**At Times**
Demonstrates awareness of how his or her speaking is perceived in relation to the purposes of expressing feelings ritualizing imagining informing controlling Speaks articulately, fluently, and intelligently for the purposes of expressing feelings ritualizing imagining informing controlling Recognizes that listeners may have a variety of purposes for listening to messages.			

The Student, cont.	Yes	No	At Times
Understands that speaking effectiveness is determined primarily by what the audience derives from his or her speech.			
Demonstrates the ability to decenter and empathize, to put self in the position of listener, considering the listener's thoughts and feelings.			
Adapts speaking to characteristics associated with audience levels			
intrapersonal (speaker communicating with self)			
interpersonal (speaker communicating with one-two others)			
group/organizational (speaker communicating with several)			
public (speaker communicating with many, face-to-face)			
mass (speaker communicating with many, nonface-to-face)			
Demonstrates ability to use strategies and techniques associated with nonverbal factors.			
proxemics (space, distance, physical arrangements)			
kinesics (body language, facial expressions, gestures)			
paralanguage (voice inflection, intonation, pitch)			
Demonstrates ability to interact in a variety of roles when speaking with others.			
Incorporates contemporary mechanical and technological materials (audiovisual aids, computers, word processors) into speaking experiences, enhancing message.			
Uses "canons of rhetoric" to enhance significance of speaking:			
invention (selection of topics; use of appropriate proofs or appeals--logos, pathos, ethos--to support thesis)			
organization (introduction, body, conclusion, transitions)			
style (language appropriate to audience, situation) memory (ways of remembering, recalling what to say)			
delivery (physical presentation of speech--proper rate, volume, eye contact, etc.)			

The Student, cont.	Yes	No	At Times
Demonstrates appropriate grammatical usage in a variety of speaking contexts, purposes, and audiences.			
Understands and develops appropriate use of logos, pathos, and ethos (logical, emotional, and personal appeals),			
Understands and appreciates the role of speech in the development of our uniquely human condition.			
Demonstrates creative, logical, and critical thinking skills through speaking experiences.			
Understands that whenever we speak about any subject, we leave more unsaid than we actually say.			
Gives constructive criticism.			
Accepts constructive criticism.			
Internalizes constructive criticism to improve own speaking skills.			
Demonstrates use of comprehensive and strategic research techniques in the preparation of speaking experiences.			
Understands the necessity of citing sources.			
Demonstrates ability to cite sources and avoid plagiarism.			
Demonstrates self-restraint and sensitivity in regard to what, when, and how to speak.			

Program Evaluation/Writing

Moving from the traditional model to the process model

Assigning Writing	Yes/No	Teaching Writing	Yes/No
Prewriting			
Topic or question is announced.		Student regularly generates topic.	
Purpose for writing is vague.		Purpose is clearly articulated.	
Audience is not identified.		Audience is real or specified.	
Form of writing is unvaried.		Student writes in varied forms.	
Degree of structure unvaried.		Student shifts from open (makes decisions) to closed (form, etc., is specified) formats.	
Limited or no prewriting time.		Teacher allows ample time, provides for exploration and individual differences.	
Type and number of prewriting activities/strategies are limited.		Teacher involves students in different tyopes of activities, providing for different cognitive styles and interests.	
Teacher controls rather than directs and facilitates.		Teacher models exploration of topic and provides questioning techniques.	
Students seldom interact.		Students explore ideas with one another, either as group or paired.	
Drafting			
Students write only one draft.		Students write multiple drafts.	
Students do not understand the process of drafting.		Students understand that drafting is the development and shaping of their ideas, that it is time consuming, sometimes frustrating.	
Students are constrained by concern for mechanics, etc.			
Teacher seldom guides students.		Teacher writes with students, shares drafts.	
Time limits are placed on the student with little regard for the difficulty of the task and individual needs.		Teacher observes, follows, and solves problems with the student.	

Assigning Writing	Yes/No	Teaching Writing	Yes/No
Students do not interact. Students have not read nor discussed models of successful student writing nor seen the drafts leading to them.		Teacher models questioning. Teacher removes constraints of correctness, neatness, time, etc. Teacher views drafting as a process of discovery. Teacher conferences and allows students to do so. Teacher provides models.	
Revising Revision is not taught. Students confuse revision with editing. Teacher does not conference with students. Peers are not used as respondents. No distinction is made between content/ideas/organization and concerns related to mechanics, conventions of language. Student does not learn to read critically.		Teacher models revision strategies. Students understand revision has content and organization as its primary focus; matters of style as a secondary focus. Students understand that word level concerns are part of editing. Teacher helps student reorder lines of reasoning. Student reads critically for self and peers. Student response is commonplace. Criticism is constructive and nonthreatening. Teacher reinforces the idea that writing involves making choices.	
Editing Students equate writing with editing, often forming a dislike for writing in general.		Editing is for the final draft and student "publication."	

Assigning Writing	Yes/No	Teaching Writing	Yes/No
Editing skills are taught out of context. Students fail to understand why editing contributes to clear communications. Students expect the teacher to make editing changes. A shotgun approach is used: every editing error or area weakness is pointed out for correction.		Students understand that lack of editing undermines communication, interfering with the meaning they intend. Editing skills are taught on the basis of need. Teacher examines drafts for patterns of errors. Editing changes are made by the student and are limited to those things the student can change. Teachers limit skills instruction, thus correction, to only one or two areas at one time. Students keep an analysis chart. Students help one another with editing.	
Evaluating Students assume they write in order to receive a grade (writing has not been used as a means of learning). Each piece of writing is graded, consuming teacher time and limiting writing assignments. Formal evaluation is the only evaluation. Writing folders are not kept. Evaluation is not done with whole groups of students (e.g., sophomore class, 4th grade) to monitor overall progress. The written product is often boring to both teacher and student affecting both evaluation and attitude. Evaluation in writing may be based on skills work in texts or tests.		Grading is seen as a necessary part of the writing program, but it is not the program nor the reason for writing. Teachers, sometimes with student help, select assignments to be graded. For graded pieces, students are given criteria for evaluation. Students understand general criteria for successful writing, regardless of grades. Writing folders provide information on student growth over time. They may form the basis of both formal and informal evaluation. Teachers give ongoing, informal evaluation during the writing process.	

Assigning Writing	Yes/No	Teaching Writing	Yes/No
		Teachers use a variety of evaluation techiques. The school and district use writing samples as the basis of program evaluation. Evaluation in writing means the evaluation of whole pieces of written discourse. Writing standards are clearly articulated and shared with students and their parents.	

Program Evaluation/Media

Curriculum and Resources	Yes	No	At Times
Students communicate with a variety of media.			
Nonprint media are accessible to students.			
Adequate computer resources are available for word processing and other related activities.			
Students have access to electronic data retrieval systems.			
Students learn the legal restrictions on electronic data.			
Teachers can use cameras, projectors, computers, microfiche readers, and other media effectively.			
The program integrates print and nonprint media.			
Students at all grade levels have adequate opportunity to use media.			
Students of all ability levels have access to media production.			
Instruction	**Yes**	**No**	**At Times**
Teachers teach the capabilities of all media.			
Students have opportunity to use all media.			
Assignments require students to compare media.			
Student Outcomes	**Yes**	**No**	**At Times**
Students will use a word processor to write and revise.			
Students will use electronic mail.			
Students will use electronic media to store and retrieve text.			
Students will access data from computer databases.			
Students will understand how to change a story to become a film, TV, or radio script.			
Students will have a consumer understanding of the techniques and capabilities of film and television.			
Students will be able to describe laws relevant to media use.			
Students will be capable of independently selecting the appropriate medium of expression for a project of their choice.			

Appendix C
Reading Inventory for Secondary School Social Studies Teachers: How Do You Rate?[1]

by Roberta M. Hughey and H. T. Fillmer

H. T. Fillmer is Professor of Reading and Language Arts in the College of Education, University of Florida. Roberta M. Hughey, who received her doctorate in curriculum and instruction from the University of Florida, is an education consultant.

Introduction

How much do you know about effectively matching your students' reading skills with the materials you give them in social studies classes?

The following instrument allows you to compare your understanding and knowledge of how to help secondary-level students to read social studies materials with the opinions of reading specialists and with the findings of reading researchers. The Kuder-Richardson Formula 20 was used to test the reliability of the instrument. The reliability coefficient of .80 indicates that scores on the instrument may be considered dependable for both individual and group assessment.*

A committee of authorities and practitioners in secondary reading instruction reviewed an initial pool of 87 items. The questions on the final instrument, along with the "best" answers, were selected by at least three-fourths of this group, with well over half the questions and answers approved unanimously. Committee members are nationally recognized authorities in secondary reading instruction, members of the staffs of reading programs in schools and school districts, and reading teachers currently in classrooms. Most members have extensive classroom teaching experience in a variety of subject areas: several have written textbook series; and all have impressive credentials as reading diagnosticians. Several teach graduate courses in content area reading, corrective reading, and secondary school reading instruction. Their judgment on the "best" answers was based on their own teaching experience and research, as well as on their knowledge of reading theory and their familiarity with "what works" in classrooms today.

Although you will probably feel that answers to some of the items are debatable, or that no one "right" answer exists, mark the option you think generally holds true most of the time. Your score will be the number of answers which agrees with the "experts." It will be to your advantage to answer every question.

*Roberta M. Hughey, Development and initial validation of an instrument to assess secondary school teacher knowledge of techniques for teaching reading of content area materials. Unpublished doctoral dissertation, Gainesville, Florida, The University of Florida, 1976.

---

[1] *Reprinted with permission of the National Council for the Social Studies.*

Directions: Items 1-6 refer to the paragraph below. You may find it helpful to skim the items before reading the paragraph.

Amendment 18. National Prohibition (1919)

Section 1. After one year from the ratification of this article, the manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from, the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited.

Section 2. The Congress and the several states shall have concurrent power to enforce this article by appropriate legislation.

Section 3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the legislatures of the several states, as provided in the Constitution, within seven years from the date of submission thereof to the states by the Congress.

1. Which underlined terms are general words in our language that have a special meaning in the social studies context?
   A. Jurisdiction, territory, concurrent
   B. Sale, intoxicating, legislatures
   C. Ratification, beverage, appropriate
   D. Prohibition, article, submission

2. Which underlined terms represent technical concepts or functions peculiar to the social studies field?
   A. Prohibition, beverage, concurrent
   B. Ratification, jurisdiction, legislatures
   C. Article, sale, appropriate
   D. Intoxicating, territory, submission

3. A teacher who wants to demonstrate how to read for specific purposes might use the above paragraph to show students how to read to:
   A. Relate the content to personal experience
   B. Memorize significant ideas or functions
   C. Understand or make generalizations
   D. Understand the main idea and significant details

4. Using a simple readability formula, a teacher has computed the reading difficulty of the paragraph to be about tenth or eleventh grade. The teacher most appropriately decides to:
   A. Assign the selection to an average 10th grade class for homework
   B. Assign the selection to an average 11th grade class for homework
   C. Estimate the readability at a higher level because of the nature of readability formulas and of the material
   D. Estimate the readability at a lower level because of the nature of readability formulas and of the material

Mark the letter of the student group below for whom the teacher decisions in Items 5 and 6 appear most appropriate.

A. Above-average 11th grade group, approximate reading achievement range 9th grade through college
B. Mixed 6th and 7th grade "low achievers"
C. Average 8th grade class in a small rural school
D. Average 10th grade class in a large city

5. Many of the students should be challenged by the vocabulary in this paragraph. The teacher decides that first guiding students to see the organization of the material should enable them to handle the reading on their own.

6. All but a few of these students will have problems reading this paragraph. The teacher decides to discuss the technical vocabulary with the class, then read the paragraph aloud.

Directions: Items 7-11 refer to the paragraphs below. You may find it helpful to skim the items before reading the selection.

The cities in our society today face a crisis. They are in danger of becoming unlivable. In them poverty, slums, unemployment, crime, pollution, and traffic congestion are all concentrated. Often the problems are related. A poor education, for example, can result in a person's being unable to get a good job. Lack of a job may push a [person] to crime. Because of these relationships, solving one problem can help in solving others.

One reason for the problems is simply that cities have attracted too many people too quickly. . . . The bringing together of so many people of so many different backgrounds has had both good and bad consequences. Such a mixture has brought about an awareness of individual differences as well as a respect for them. Our strength as a nation is due in part to this blending and union of many peoples working together in common effort.

Unfortunately, however, people of different backgrounds do not always feel comfortable living together. Many people want to live only among people who are similar to themselves. . . . As the cities' problems have grown, many white Americans have moved to the suburbs . . . [and] left behind in the city have been various minority groups. . . .

For Items 7 and 8, mark the letter of the appropriate option below.

A. Related, consequences, similar
B. Unlivable, unemployment, minority
C. Danger, concentrated, respect
D. Society, backgrounds, nation

7. Which underlined terms would be most appropriate for showing students how to find word meaning from clues in the surrounding text?

8. Which underlined terms would be appropriate for showing students how to find word meaning by identifying root words and affixes?

9. A teacher who wants to demonstrate how to read for specific purposes might use these paragraphs to show students how to read to:
   A. Identify examples of comparison and contrast
   B. Understand ideas in sequential order
   C. Relate causes to effects
   D. Anticipate ideas or predict outcomes

Mark the letter of the student group below for whom the teacher decisions in Items 10 and 11 appear most appropriate.

   A. Above-average 11th grade group, approximate reading achievement range 9th grade through college
   B. Mixed 6th and 7th grade "low achievers"
   C. Average 8th grade class in a small rural school
   D. Average 10th grade class in a large city

10. Some of the students will enjoy the challenge of reading the material on their own. For the great majority, the teacher decides to rewrite the material in simpler terms. The ideas are not beyond the students, but the vocabulary is too demanding.

11. Over half of these students should be comfortable with the vocabulary and concepts in this material. The teacher decides to concentrate attention on the needs of the lower 25-30% of the class.

For the classes described in Items 12-15, select the method likely to be most effective for helping students develop essential content-area vocabulary.

12. Average high school class:
   A. Play word games using common content area vocabulary
   B. Have better students compile a class dictionary of technical content area terms
   C. At regular intervals, assign for study 10 or 15 terms with a common root word
   D. Before major assignments, introduce and analyze key vocabulary with class

13. Low-achieving middle school or junior high class:
   A. Set aside class time for "free reading" in a variety of content area materials
   B. Relate key content area words in reading assignments to student experience
   C. Guide session in choosing dictionary definitions according to textual use of words
   D. Guide frequent discussions of multiple meanings of words met in reading

14. Average middle school or junior high class:
   A. Assign five to ten vocabulary words from the text glossary for study and testing at regular intervals
   B. Have "glossary races" and other vocabulary games using content area words
   C. Discuss common prefixes and assign for compiling content area word lists
   D. Guide sessions in determining word meaning from surrounding context

15. Honors 12th grade class:
    A. Help students build personal dictionaries of technical terms
    B. Assign group reports on origins of key content area terms
    C. Set aside regular time for work with *30 Days to a More Effective Vocabulary*, or similar material
    D. Distribute list of key vocabulary before each unit of study

In Items 16-18 select the activity which you feel is most likely to stimulate interest in reading among most "reluctant" but capable readers in an average secondary school classroom.

16. The most likely activity is:
    A. Friends' recommendations of good books
    B. Teachers' enthusiasm for reading
    C. Brief, imaginative, extra-credit book reports
    D. Monthly prizes for most books read

17. The most likely activity is:
    A. Bulletin board displays about class's favorite books
    B. Talks on "Why Read?" by members of student government
    C. Classroom library with wide range of topics and difficulty
    D. Class guided tour of the public library

18. The most likely activity is:
    A. Oral reading by teacher of reviews of new books for teenagers
    B. Extracurricular book club
    C. Frequent "reading for enjoyment" time in class
    D. Multimedia alternatives to books for many assignments

In Items 19 and 20, select the activity most likely to encourage reading about topics related to the content area.

19. For an average 12th grade class:
    A. Have some assignments read aloud in class, with each student reading in turn
    B. Have each student read a biography of a person who has made important contributions to the field
    C. Pair capable and poor readers for regular reading/tutoring sessions on assigned topics
    D. Have groups make weekly displays or transparencies of study-related news or headlines

20. For poor readers in middle school or junior high:
    A. Tape record discussions of student experiences related to study topics; type for later reading
    B. Stock classroom library with interesting "free reading" materials related to study topics
    C. Have groups prepare annotated bibliographies for upcoming topics of study
    D. Assign simple library research projects related to study topics

21. The most appropriate activity for *beginning* instruction in outlining reading material, for an *average junior high or middle school class*, is probably to:
    A. Demonstrate outlining on the board or overhead projector: guide students in filling in a simple outline using major chapter subheads
    B. Assign students to outline the main points of a chapter; give follow-up instruction to students unable to complete the assignment
    C. Demonstrate outlining on the board or overhead projector; assign students to outline a chapter for homework; give follow-up instruction as needed
    D. Pair best and poorest readers; assign teams a chapter to outline as an in-class exercise; have teams trade outlines for evaluation and suggestions

Items 22 and 23 list ways a teacher might assign research projects to account for differences in individual reading ability. For each item, mark the letter of the method you feel is most appropriate for a class with a wide range of reading ability and interests.

22. The most appropriate method is probably to:
    A. Allow each student or group to research topics of interest; guide students to sources of appropriate reading difficulty
    B. Avoid requiring reading research assignments of lower ability students; guide better readers in research skills as needed
    C. Allow each student to explore an aspect of interest; require best readers to consult at least 5 sources, average readers, 3, and poor readers, 1
    D. Assign lower ability students to reading skills kits or workshops while guiding capable students in research skills needed for assignment

23. The most appropriate method is probably to:
    A. Allow students to form groups according to interest; suggest that poor readers provide visual aids for their groups
    B. Group students to achieve a balance of reading levels and skills; allow students to select problem and to divide responsibility for research and reporting
    C. Allow individual students and groups to explore aspects of interest to them; provide all students with one basic reference to ensure reports are related
    D. Assign various aspects of problems to groups of students balanced in reading levels and skills; give extra credit to the group consulting the most information sources

In Items 24-26 mark the letter indicating the student's most probable reading skills weakness:

24. Student spends five minutes scanning the chapter on World War II to find the date of the bombing of Pearl Harbor. Probably needs help in:
    A. Using an index
    B. Setting purposes for reading
    C. Increasing reading speed (rate of comprehension)
    D. Using a table of contents

25. Student spends so much time looking words up in the dictionary that she seldom finishes her reading assignment. Probably needs help in:
    A. Increasing reading speed (rate of comprehension)
    B. Recognizing phonetically-spelled words
    C. Using a glossary
    D. Using context clues to word meaning

26. Student seems to read assignments accurately and thoroughly, but seldom remembers important concepts from the material. Probably needs help in:
    A. Improving review techniques
    B. Adapting reading rate to purpose
    C. Using context clues to word meaning
    D. Setting purposes for reading

Items 27 and 28 refer to the paragraph below:

The cross has the same length on all four of its arms, to signify that it gives life equally to all, high or low, east or west. It stands alone always, no words or markings on it, to show that the Red Cross workers have only one thought—to serve. They ask no questions, they care not whether the wound be ours or those of another people. Their duty is to give and to give quickly.

1) Name another organization that resembles the Red Cross.
2) Might Red Cross workers help people on both sides in a war?
3) Would a rich person probably get faster help from the Red Cross?
4) Why aren't there any words or markings on the red cross?

27. Which of the questions following the paragraph requires students to read at the lowest (simplest) level of understanding?

28. Which of the questions following the paragraph requires students to read at the highest (most difficult) level of understanding?

Mark the letter of the option following the reading passage and questions below which ranks the questions from lowest to highest (simplest to hardest) reading comprehension level required.

Courage is the quality men like most, and primitive males gauged their manhood by it, as do modern adolescents. Civilized people are dazzled by showy courage. An example is the racing car driver or the trapeze artist, or the bystander who runs through flames to save a stranger.

But there is a truer courage that is more gallant though almost invisible. It is found in those people who live in never-ending pain and yet do not hate others. It is found in adults who, giving up malice and suspicion, teach themselves to relax and trust. It is also found in the quiet acceptance of monotonous jobs that must be done . . . .

1) In view of opinions expressed here, who is the most courageous person you know of?
2) How do teenagers today gauge their manhood, according to this selection?
3) Does the author seem to feel it easier for us to believe in people or to distrust them?

29. The questions, ranked from lowest to highest?
    A. 1, 2, 3
    B. 2, 3, 1
    C. 3, 1, 2
    D. 2, 1, 3

Items 30-32 require matching study questions to students' reading ability. Below are brief descriptions of the reading comprehension levels of four students:

A. Student can understand literal facts, "what the author said"
B. Student can infer beyond stated facts to implications, interpret "what the author meant"
C. Student can analyze and critically evaluate material, assess its worth and validity
D. Student can apply understandings gained from reading to situations in other contexts

Below are a reading assignment and some study guide questions. Mark the letter of the student above for whom each question is most appropriate. (Letters may be used more than once.)

Inventors Keep Away from My Door

Ah, where's the patented device
That I can learn to master?
My icebox yields me melted ice,
My oven, but disaster.
From stranded cars it is my fate
To view the rural scenery;
For I'm the poor unfortunate
Undone by all machinery

Other people's watches do not send them late for
Amorous appointment or literary tea.
Other people's telephones bring the word they wait for.
But nothing ever works for me.

Study Guide Questions:

30. Explain why all readers might not find the poem funny.

31. What does the author feel the devices' attitude is toward her?

32. What devices does the author mention?

33. Possible procedures for selecting textbooks for a class include:
    1) Administer a standardized group reading test
    2) Apply a readability formula to each text
    3) Have each student read aloud from each text
    4) Assign sections of each text for silent reading
    5) Use written and oral questions to check understanding of each text

Select what you believe is generally the most efficient and accurate procedure or combination of procedures for choosing from several textbooks the best for a class.

A. 1, 2, 4, and 5
B. 2, 3, and 4
C. 3 only
D. 4 and 5

In Items 34 and 35, mark the letter of the type(s) of organization below you believe would prove most effective in a majority of cases.

1) Instruct groups with common reading skills needs
2) Instruct groups with similar reading achievement levels
3) Assign work to groups of mixed reading achievement levels
4) Assign work to groups of mixed reading skills needs
5) Assign students to work individually

34. Situation: General science class with wide range of ability and reading achievement; end-of-unit assignment on preparing balanced menus using basic textbook as a reference.
    A. 2 only
    B. 2 and 3
    C. 3 and 4
    D. 5 only

35. Situation. General mathematics class with low mathematics ability but range of reading achievement; beginning new unit on ratio and percent; several texts in use.
    A. 1 only
    B. 2 only
    C. 3 only
    D. 2 and 3

36. In your opinion, a teacher would most appropriately offer help in adjusting reading speed (rate of understanding) to the student who:
    A. Reads both cookbook recipes and mathematics problems with similar care
    B. Skims both Shakespeare and civics assignments to get an overview
    C. Scans to locate specific facts in both geography and biology text
    D. Speeds through light novels and Playboy at a similar rate

The methods listed in Items 37-39 have proven effective in helping many students develop appropriate reading speeds (rates of understanding). Mark the letter of the student below for whom you feel each method would probably be most helpful. (Letters may be used more than once.)

A. Capable but too conscientious student who "reads even the funny papers slowly"
B. "Low achiever" who reads assignments very slowly and understands few of the concepts
C. Student who reads everything within reach but can't synthesize information from different sources
D. Student who "doesn't care" reads rapidly with few errors, but retains little information from reading

37. Give short reading assignments and require reading for detail.

38. Give demonstrations and practice sessions in skimming assignments, when appropriate.

39. Adjust assigned material to the reading level of the student.

Items 40-44 refer to data from the following sources of information which are available to a teacher:

A. Group standardized intelligence test scores
B. Group standardized reading test scores
C. Results from teacher-made group test based on class textbooks
D. Observations of students' classroom performance

The items indicate some things the teacher wants to do that require first gathering data. Mark the item of the one source which probably offers the most useful and accurate data in each case. (Letters may be used more than once.)

40. To plan activities to broaden individual students' reading interests and to improve attitudes toward reading

41. To group students tentatively by general reading achievement level at the beginning of the school year

42. To adjust instruction to students' preferred learning styles

43. To identify students who need special help in using standard book parts, such as indexes and glossaries

44. To assess students' experiential and background information in the content areas

In Items 45-48, mark the letter which indicates the information source, or combination of sources, you feel a teacher should use to answer each question most efficiently and accurately.

1) Group standardized reading test scores
2) School records
3) Teacher-made tests based on content area material (inventory or diagnostic survey)
4) Results from cloze instrument
5) Personal interview with student

45. Why does this student take so long to answer the questions following an in-class reading assignment?
A. 1 only
B. 1 and 4
C. 5 only
D. 5 and 3

46. How does the reading achievement of this class compare to that of others like it?
    A. 1 only
    B. 1 and 2
    C. 3 and 4
    D. 4 only

47. How efficiently does this student use maps, graphs, and other graphic aids required in this course?
    A. 1 only
    B. 3 only
    C. 4 only
    D. 4 and 5

48. What is the highest level of difficulty at which this student can read and understand content area material on her own?
    A. 1 only
    B. 3 only
    C. 4 only
    D. 5 only

Table 1. Data for four students in a tenth grade class.

Group IQ Test	Group Standardized Reading Test: Percentile Rank Vocab*	Compr	Rate	Reading Inventory Instructional Reading Guide Level	Classroom Behaviors
65	35	25	30	6.0	Robert, 17, skips school and avoids reading. His writing and mathematics skills are on a par with his reading ability.
88	45	32	50	7.5	John, 17, has a wide range of interests and contributes original ideas in class discussion. Although he often successfully conceals his below-average reading ability, he has asked how to increase his reading speed.
80	35	[illegible]	85	8.5	Mildred, 15, from an impoverished home, is described in school records as "hostile toward teachers, textbooks, and tests." However, she shows real interest in the content area and seems bright and alert.
115	70	77	40	10.0	Sam, 15, excels at mathematics but often does not complete reading assignments in other subjects, describing them as "wordy and dull."

*Vocab = Vocabulary (Word Mean[illegible] Compr = Paragraph Comprehension;
[illegible]ate = Rate of Reading

Items 49-54 refer to the chart (above), Table 1. A teacher has the following data for four students in a tenth grade class.

49. Encouraging wide reading in order to increase general vocabulary would probably be least helpful for
    A. Robert
    B. John
    C. Mildred
    D. Sam

50. Which of the students do you think would probably benefit most from practice in determining word meaning from context clues?
    A. Robert
    B. John
    C. Mildred
    D. Sam

51. Which students probably learn new content area concepts more easily through direct experience and watching demonstrations than by reading about them?
    A. Robert and John only
    B. Robert and Mildred only
    C. Robert, John, and Mildred only
    D. All of them

52. Which student(s) would you assign to a learning center dealing with skimming for main ideas in paragraphs and outlining?
    A. Robert and John only
    B. Mildred only
    C. John, Mildred, and Sam only
    D. Sam only

53. Which student(s), in your opinion, should be referred to the remedial teacher for general help in reading?
    A. Robert only
    B. John only
    C. Mildred only
    D. Robert and John

54. Which student(s) should the content area teacher involve in the assessment process and in setting personal reading goals?
    A. John and Sam only
    B. Mildred and Sam only
    C. John, Mildred, and Sam only
    D. All of them

Answer Key

1.	D	15.	A	29.	B	43.	C
2.	B	16.	A	30.	C	44.	C
3.	D	17.	C	31.	B	45.	D
4.	C	18.	C	32.	A	46.	A
5.	A	19.	D	33.	A	47.	B
6.	D	20.	A	34.	C	48.	C
7.	A	21.	A	35.	B	49.	A
8.	B	22.	A	36.	B	50.	B
9.	C	23.	B	37.	D	51.	D
10.	C	24.	A	38.	A	52.	D
11.	D	25.	D	39.	B	53.	B
12.	D	26.	D	40.	D	54.	D
13.	B	27.	D	41.	B		
14.	D	28.	A	42.	D		

The chart below will help you compare your score with those of prospective and experienced social studies teachers in the sample population on which the instrument was standardized.

44 or more	Expert! Among the top 5% of teachers in all content areas.
36-43	Excellent. Higher than most experienced teachers in all content areas.
27-35	Very Good. Higher than most prospective social studies teachers and about average for experienced teachers in all content areas.
21-26	Okay, if you have not yet taught; otherwise, less than great compared to the sample population.
20 or less	Interesting. You may take comfort in the thought that a paper and pencil instrument does not necessarily reflect classroom teaching effectiveness.

Acknowledgments

"Cities" paragraph on page 18, is from Study Lessons in Civics, Our Society and the Government in The Follett Basic Learnings Program, by Grant T. Ball and Lee J. Rosch, © Copyright, 1969, by Follett Educational Corporation. Used with permission.

Stanzas preceding Item 31 are from Times Three by Phyllis McGinley, Copyright © 1960 by Phyllis McGinley. Reprinted by permission of Viking Penguin Inc.

SOCIAL EDUCATION, January 1980

INFORMS Retrieval Request Form

Please return this form to obtain follow-up materials.

Name: _____ Position: _____

Complete Mailing Address: _____

_____

_____

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If the user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement. This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of the copyright law.

For materials not available through INFORMS, try your public library.

To help maintain this free service, please use discretion when ordering.

ERIC Documents Microfiche copy of the document will be provided.

ED _____ ED _____ ED _____ ED _____

ED _____ ED _____ ED _____ ED _____

ED _____ ED _____ ED _____ ED _____

ERIC Journals Photocopy of the article will be provided.

EJ _____ EJ _____ EJ _____ EJ _____

EJ _____ EJ _____ EJ _____ EJ _____

EJ _____ EJ _____ EJ _____ EJ _____

EJ _____ EJ _____ EJ _____ EJ _____

Return to: INFORMS
Department of Education
Grimes State Office Building
Des Moines, Iowa 50319

Topic: Articulating Learning Across the Curriculum