…professional development videos and distance learning opportunities for middle school personnel
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Preface

The purpose of this handbook, *Literacy & Learning: Reading in Content Areas*, is to serve as a supplement to the video series of the same name. Both are components of a 5-year STAR SCHOOLS grant from USOE awarded to SERC (Southern Educational Resources Consortium). SERC, in turn, issued sub-grants to several public television networks. The sub-grant awarded to LPB is on "content area reading." LPB is working with Southeastern Louisiana University in the development of program content for all four elements of the staff development series: videos, teleconferences, web sites, handbooks.

To succeed in our rapidly changing technological world today, students are expected to have higher levels of reading, comprehending, and critical thinking skills. It is anticipated that this project will offer instructional tools that will benefit middle school subject-matter teachers as they plan classroom activities to facilitate lively learning in their subject and thus insure greater understanding of the subject-matter.

The focus of the STAR SCHOOLS sub-grant is to develop instructional resource materials that will help classroom teachers integrate literacy instruction into content teaching in grades 5 through 8. The intent of the project is that literacy instruction will become an integral part of teaching and learning. There are several definitions for literacy which can be applicable in teaching elementary and middle school students. Our approach supports the idea that each of the elements of literacy—reading, writing, listening, and communicating—contributes to teaching and learning content material across the curriculum.

A handbook accompanies each set of two video lessons in the series. It can be used as a reference or supplement to the information contained in the video lessons, the teleconferences, or the web site. Also, the handbook can be used alone to help teachers apply literacy instruction in their lesson planning throughout the year.
How to Use This Book

This handbook can be used alone to help teachers apply literacy instruction in their lesson planning throughout the year or as a reference to the information contained in the companion video lessons, the teleconference, or the website that make up the project. Examples offer real classroom topics and lesson planning tips. Modifications to the application of the strategies are suggested for different content areas as well as for different grade levels.

Chapter One contains introductory information about the Literacy & Learning series. The integration of literacy instruction into instructional planning for content teaching and the use of technology in the classroom are discussed as well.

Chapters Two and Three follow the same format, beginning with an Anticipation Guide. This pre-reading literacy strategy is designed to activate the reader’s prior knowledge. Several statements that relate to the concepts that will be discussed are reacted to by the teacher before reading the text. These brief statements go beyond the literal level of reasoning and require interpretive thinking to form an opinion about whether to agree or disagree. This activity provides a purpose for reading and offers an opportunity for misconceptions about a topic to be brought to light (Head & Readence, 1992).

The Introduction section reviews the current literature in order to share the thoughts of educators and researchers in the field with regard to literacy instruction in particular content areas.

Several Literacy Strategies are then introduced and explained in detail.

The Lesson Planning section includes the sample lesson from the corresponding video. Another lesson in a different classroom situation may also be included that illustrates the flexibility of the literacy strategies being discussed.

In Other Applications, the teacher will find suggestions for using the strategies in other content areas as well as with students who have various levels of literacy competencies and content knowledge. Additionally, there will be examples of how to modify lesson planning to apply to students in different grade levels.

The Reaction Guide at the end of each chapter gives the reader an opportunity to examine the responses to the Anticipation Guide statements. This post-reading literacy strategy allows the teacher to combine the new information from the text with existing knowledge to alter or defend beliefs about the topics.
Chapter One

Literacy & Learning

Rationale

For our students, learning content material is a process that involves the teacher, the student, and various forms of text in a blended relationship. The learning process involves each of these factors, and a successful outcome will be students who are becoming better critical thinkers. More and more, teachers are recognizing the need for students to become independent learners outside their classrooms as they face the demands of a technological world. Instructional planning that meets a student’s need for developing and building literacy competencies will help ensure that individual lesson objectives are being met, as well as overall goals that include lifelong learning competencies.

Integrating Content Area Literacy

In this chapter, we will discuss literacy strategies that can enhance learning in science and mathematics classrooms. Math and science are more than just equations, experiments, and formulas. As with all other academic subjects, literacy skills are the basis of understanding. Doing math and doing science often entails reading math and reading science.

Textbooks are heavily relied upon by many classroom teachers. Students from diverse backgrounds who have varied levels of prior knowledge and different life experiences are asked to read and understand text that is often designed for a generic audience, (Lester & Cheek, 1998). Helping students understand the content material is a common goal of classroom teachers, and integrating literacy instruction enhances learning from text.

Mathematics Education

Mathematics education is moving toward preparing students to meet the demands of a changing workforce in an information-driven society. The focus is to help students become lifelong learners who can face continual change with confidence as independent thinkers and problem-solvers.
Science Education

We live in a world where more and more benefits must be squeezed from ever-diminishing mineral and biological resources; where our nation's success in a global economy increasingly depends on advances in science and technology. Geology, chemistry, biology, and physics use numerical systems to measure, quantify, and model natural phenomena.

Technology in the Classroom

Computers greatly enhance content teaching and learning.

In the Mathematics classroom:

The computer is an excellent vehicle for mathematics teachers to use to communicate with their students. Math autobiographies can be written at the computer using various word processing programs. This activity gives students an opportunity to share their feelings and frustrations about math in general or on specific topics. Also, reflective notes on what was learned during particular lessons can be shared with others as well as the teacher.

Computer projects for the mathematics class may also include journal entries which can be composed and stored for ongoing writing assignments and math poetry composition which could be an exciting way for students to express their ideas about math education. Other activities that can be accomplished with technology may include personal goal setting, research projects, and chat rooms.

In the Science classroom:

Computers are great for constructing concept maps. There is software and shareware available that facilitate concept map assignments. Some examples are C-Map, Inspiration, Power Point, and any drawing-type programs. An advantage with using computers is the ability to easily revise the maps. The revision process is an important aspect of concept maps. As meaning is negotiated, placement of the concepts and linking words is much easier with computers. One can click and move words and figures around as the design is created. Also, the work can be stored and retrieved for further work.
“We’ve just added computers in my math classroom, and there’s a wonderful program that allows for journal writing.”

—Mary Henderson
5th grade mathematics teacher
Chapter 2

Literacy & Mathematics

Introduction

All teachers want their students to learn the material. Particularly in the mathematics classroom, the student’s ability to read the text is a fundamental component of learning. Literacy competencies such as reading, writing, listening, and communicating—along with vocabulary knowledge—are important links to understanding and applying math concepts in and out of the classroom.

Do we consider literacy instruction in our daily lesson planning? In this chapter, we will be looking at the integration of three literacy strategies into upper elementary math instruction. Reference is made to the Literacy & Learning Series video lesson, Math, Grade 5.

Anticipation Guide

<table>
<thead>
<tr>
<th>Statement</th>
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<td>3. Literacy strategies are OK for word problems but have little application for other kinds of computation and problem solving.</td>
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The **Think Aloud** is a literacy strategy designed to help students monitor comprehension and direct their thinking as they work through the problem solving process. This literacy strategy can be implemented effectively in many content areas. In the illustration on the video lesson (*Literacy & Learning, Math Grade 5*), it was used to demonstrate the thinking that goes into solving a math problem. Through teacher modeling, students are “talked through” the thinking processes. The teacher should keep in mind that the comments must exemplify metacognitive awareness so that each step in the process is modeled for the students. Questions are to be encouraged after the problem is solved.

The teacher shown on the video comments “...every time I take the time to use the **Think Aloud** strategy, it allows me to share with my students exactly what I’m thinking as I’m solving many, many types of problems. Sometimes my students don’t understand one step in the solution of a problem and while I’m working it out, they pick up on the exact part that they missed.”

Students can practice the **Think Aloud** as well, either individually or with partners. Peer instruction enhances learning as students share their own thoughts. On the video, you can watch a student think through an estimation problem using whole numbers. As the technique becomes routine, confidence and the ability to use the **Think Aloud** strategy independently will grow.
Lesson Plan for a 5th Grade Mathematics Class

**Think Aloud**

**Topic:** Solving word problems using two steps

**Objectives:** The student will… *(to be completed by the classroom teacher)*

**Set Induction:** Say to students, “I’m thinking about something, and I want you to tell me what I’m thinking about. Who can do this? (Pause.) No one can tell me? Well, what would it take for you to be able to tell what I am thinking? You’d like me to write it? …to tell you? OK then, I will tell you what I am thinking—listen closely.” The teacher then thinks aloud through the solution of one of the student’s word problems for the day.

**Activities:**
1. Students turn to the assigned problems for the day.
2. Teacher thinks aloud through 2 or 3 examples, pointing out to the students how the **Think Aloud** reveals how to attack and solve the problem.
3. Students solve each sample problem after the teacher does the **Think Alouds**.
4. Next the children try Thinking Aloud with a partner on several problems. The teacher circulates and listens to the interaction, offering suggestions and modeling for those who are having difficulty.
5. Finally, students work on the assigned problems using **Think Aloud** “silently” as they work.

**Closure:** Ask the students to share what **Think Aloud** has done for them and to generate other content areas where they might use it.

**Evaluation suggestions:**
- observation of the paired **Think Alouds**
- observation of students as they work on the assigned problems (looking for “silent **Think Aloud**” behaviors)
- students’ success on solving the assigned problems
- students’ journal entries for that day and subsequent days
- students’ future attitude toward word problems
- results on test and quizzes which include word problems.

**Resources and Materials:** assigned and sample word problems, student paper/pencils

**Other Applications**

The **Think Aloud** can be useful any time that students have to read or think through content material that is difficult for them. Science passages that contain many new concepts present such a challenge, so teachers can model **Think Aloud** and urge students to use it silently as they read through and study assigned reading passages. The strategy is useful as well in other content areas when difficult text is encountered.

Instructions for carrying out complex processes present another opportunity to use **Think Aloud**. Students can see how **Think Aloud** helps them to visualize what they must do and to then translate that visualization into concrete action.

Finally, teachers can model **Think Aloud** when students are being taught to make critical judgments about what they read, such as in social studies current events materials where techniques such as propaganda are being presented and analyzed. In short, **Think Aloud** can be useful in many situations, for it always reminds students that reading for meaning requires thinking.
Literacy Strategies

**SQRQCQ**

The *SQRQCQ* literacy strategy was specially designed to assist students in learning mathematics. The steps include the following:

- **SURVEY**: First, the students survey the problem rather quickly to get a general idea or understanding of it.
- **QUESTION**: Then they come up with questions — what they believe the problem is asking for.
- **REREAD**: The third step is to reread the problem to identify facts, relevant information, and details they will need to solve it.
- **QUESTION**: Now another question is formulated that focuses on what mathematical operation(s) to apply.
- **COMPUTE**: The students actually compute the answer — solving the problem.
- **QUESTION**: The question to be asked at this point involves the accuracy of the answer. Is it correct? Does the answer make sense?

A transparency master is included in this chapter that you can use with your students to help them see the steps involved in using *SQRQCQ*.

In fact, *SQRQCQ* is almost like a “secret” for solving word problems, which have long been a nemesis for nearly every math student. When students encounter a word problem, they frequently think, “I have never been good at word problems, and this time will be no different.” In actuality, what most students need is a plan to attack a problem systematically and to make the best use of all the information that the problem offers. Below we will look at some actual examples in which *SQRQCQ* helps them to do just that:

Suppose that students are given the following problem:

*Chris had some glass bears. He was given 8 more for his birthday. Now he has 15. How many glass bears did he have before?*

Using *SQRQCQ*, students would:

- **SURVEY**: the problem and notice that Chris has 8 items and receives some more to make a total of 15 items.
- **The QUESTION**: the problem is asking would seem to be “How many items did he start out with?”
- **REREADING**: would cause students to think “8 plus some number equals 15.”
- **Students would QUESTION themselves:**

  When I know a sum and one of the two addends, how can I find the other addend? or If 8 + N = 15, how can I find N?

  The students would realize that they have to subtract the find the answer, since subtraction is the inverse operation of addition.

- **Next, they would COMPUTE** the solution to the equation as follows:

  \[ 8 + N = 15 \]
  \[ 8 - 8 + N = 15 - 8 \]
  \[ N = 7 \]

- **Finally, they would QUESTION themselves again:**

  Is it true that 7 + 8 = 15? or if Chris started with 7 glass bears and received 8 more, would he have 15? The answer is “Yes,” so the computed answer is correct.
Here is another example:

Each school T-shirt costs the same amount. Anita paid $15 for 3 T-shirts. What was the cost of each shirt?

The following steps show student thinking:

**SURVEY**  I notice that Anita has 3 shirts and paid $15 total for the 3 of them.

**QUESTION**  I'm looking for the cost of each of the 3 shirts Anita bought.

**REREAD**  Since the problem says that each shirt costs the same amount, I know that the cost I find will be the same for each one.

**QUESTION**  If I know that 3 shirts cost $15, then what operation do I use to find the cost of one shirt?, or 3 times the cost equals $15, so I must divide $15 by 3 to find the cost of one shirt (since division is the inverse of multiplication).

**COMPUTE**  

\[
3 \times N = 15 \\
(3 \times N) \text{ divided by } 3 = 15 \text{ divided by } 3 \\
N = 5
\]

**QUESTION**  If one shirt costs $5, would 3 shirts cost $15, or is it true that 3 time $5 is $15? Yes it is, so the answer must be correct.
Lesson Plan for a 5th Grade Mathematics Class

**SQRQCQ**

**Topic:** Solving word problems using two steps

**Objectives:** The student will... *(to be completed by the classroom teacher)*

**Set Induction:** Say to students, “Today I’m going to let you in on a little secret. When it comes to solving word problems, I have found a plan of attack that, if you practice it, is guaranteed to make solving word problems almost painless. Who wants to hear it?” The teacher then models *SQRQCQ* using one of the student’s word problems for the day.

**Activities:**
1. Students turn to the assigned problems for the day.
2. Teacher models *SQRQCQ* through 2 or 3 examples, pointing out to the students how the strategy provides a way to attack and solve the problem.
3. Next the students try *SQRQCQ* with a partner on several problems. The teacher circulates and listens to the interaction, offering suggestion and modeling for those who are having difficulty.
4. Finally, students work on the assigned problems using *SQRQCQ* as they work.

**Closure:** Ask the students to share what *SQRQCQ* has done for them and how confident they feel in using it.

**Evaluation suggestions:** observation of the paired *SQRQCQ*; observation of students as they work on the assigned problems (looking for “silent” *SQRQCQ* behaviors); students’ success on solving the assigned problems; students’ journal entries for that day and subsequent days; students’ future attitude toward word problems; results on test and quizzes which include word problems

**Resources and Materials:** *SQRQCQ* instructions transparency, assigned and example word problems, student paper/pencils

**Other Applications**
*SQRQCQ* is a strategy that is designed specifically for math problems. However, the more generic version of the strategy, known as *SQ3R*, is illustrated elsewhere in this Teacher Guide and on the accompanying video. We challenge you to find many, many ways that such metacognitive strategies can enhance your students’ thinking and learning!
SQRQCQ

★ Survey
quickly for a general idea or understanding of the problem

★ Question
What is the problem is asking for?

★ Reread
to identify facts, relevant information, and details

★ Question
What mathematical operation(s) do I apply?

★ Compute
solve the problem

★ Question
Is the answer correct? Does the answer make sense?
Literacy Strategies
The Quick Write

Math requires students to continually think at higher levels. As one skill is achieved, another is introduced. How can we as teachers help our students integrate new information with prior knowledge? How can we help our students reflect upon and evaluate their learning?

The Quick Write is a literacy strategy that is designed to give students the opportunity to reflect upon their learning. This writing assignment can be used at the beginning, middle, or end of a lesson and takes only about three to five minutes. Short, open-ended statements are usually given.

For example, students are asked to write about what they learned, problems they encountered, what they liked (or did not like) about the lesson, and about how well they understood the concepts. In content teaching, the integration of reading and writing reinforces meaning construction as both activities use similar processing skills.

The Quick Write open-ended statements can be recorded in journals, on note cards, on the computer, or at the bottom of assignment sheets. Feel free to ask your students their opinions in this easy, non-threatening manner—they have much to share!
### Reaction Guide

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3. Literacy strategies are OK for word problems but have little application for other kinds of computation and problem solving.
Chapter 3

Literacy & Science

Anticipation Guide

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Introduction

Teachers face the challenge of planning instructional activities that will combine their own subject knowledge with information from textbooks and other forms of text to help students learn content material. While literacy competencies are considered by most teachers to be important as subject material is presented, many teachers fail to recognize the potential literacy can have on learning in their classrooms (Readence, Bean, & Baldwin, 1998).

This chapter is designed to contribute to instructional planning for science by providing suggestions that will direct teachers to think about the effectiveness of their teaching. Literacy instruction that includes pre-reading, during-reading, and post-reading activities is illustrated by using the SQ3R strategy and Concept mapping.

The role of literacy in teaching science is articulated through actual lesson plans that have been effective in enhancing student learning in the fifth grade science classroom.
Literacy Strategies

SQ3R

The SQ3R strategy (which stands for Survey, Question, Read, Recite, Review) was developed by Robinson (1961) to provide a structured approach for students to use when studying content material. This strategy has proven to be effective and versatile and can easily be integrated into many content areas and across grade levels. Students develop effective study habits by engaging in the pre-reading, during-reading, and post-reading steps of this strategy.

The SQ3R literacy strategy helps enhance comprehension and retention of information. It is metacognitive in nature in that it is a self-monitoring process.

Five Steps to the SQ3R Literacy Strategy

1. **Survey**
   
   By surveying the chapter titles, introductory paragraphs, bold face, italicized headings, and summary paragraphs, the reader gets an overview of the material. Surveying also gives enough information to generate individual purposes for reading the text.

2. **Question**
   
   Purpose questions are often provided at the beginning of the chapter. If not, the reader can turn section headings into questions. The main objective is to have questions for which answers are expected to be found in the passage.

3. **Read**
   
   The student is to read to answer the purpose questions formulated in Step 2, Question.

4. **Recite**
   
   Students should try to answer questions without referring to the text or notes. This step helps in transferring information from short-term to long-term memory.

5. **Review**
   
   Students review the material by rereading parts of the text or notes. Students verify answers given during Step 4, Recite. This helps retain information better and gives immediate feedback.

The SQ3R is a very versatile literacy strategy that involves the student in processing information before, during, and after reading:

1. Prior to reading — preview text and establish purpose.
2. While reading — monitor one’s own comprehension.
3. After reading — summarize and review content.

Many students don’t know how to study, and this strategy is a perfect way to help them. It works well in many content areas with a variety of types of text.

It is recommended that the teacher show the students how to go through the steps. In the fifth grade science lesson found later in this chapter, this strategy provides the framework needed to develop a concept map.
★ **Survey**
chapter titles, introductory paragraphs, bold face, italicized headings and summary paragraphs

★ **Question**
turn section headings into questions; have questions for which answers are expected to be found in the passage

★ **Read**
to answer purpose questions

★ **Recite**
try to answer questions without referring to the text or notes

★ **Review**
review the material by rereading parts of the text or notes to verify answers
Literacy Strategies
Concept Mapping

Graphic organizers have proven to be powerful learning tools in the science classroom. The use of graphic metacognitive techniques for improving learning has yielded successful results for both teachers and students (Trowbridge & Wandersee, 1998). One such graphic organizer for learning content material is the Concept map.

Concept mapping, among many other things, allows teachers and students to organize concepts and determine the relations between concepts. This enables a teacher or student to work with concepts and propositions as opposed to the rote memorization of facts.

Concept maps are both evocative and generative. That is they help evoke prior knowledge and help generate or construct new knowledge. Concept mapping is particularly useful in the science classroom. There are several steps in the construction of Concept maps.

1. Select several concepts from the content material (8-12 preferable).
2. Write each concept on a separate post-it or card.
3. Select an organizing concept or main idea concept to be placed at the top of the map.
4. Arrange the other concepts in a distinct hierarchy under the organizing concept.
5. Draw lines between related concepts adding linking words that explain relationships.
6. Review and Reflect. Once satisfied with the arrangement of the concepts on the map, construct a final map.


Concept maps require that students are aware of main ideas and supporting details, that they understand the relationships between them, and that they are able to use them appropriately. Knowledge of technical and general vocabulary is also necessary for map construction. The Concept map is a valuable learning tool, particularly for those students whose learning styles and study habits are best served by visual organization of the content material to be learned.
Assessment:

Analyzing student-constructed *Concept maps* allows a teacher to assess the student’s understanding of the lesson or reading associated with a particular topic. A rubric can be developed to score the concept map, and it may be used for formative evaluation. *Concept maps* make excellent documents to include in a student’s portfolio.
Lesson Plan for a 5th Grade Science Class

**SQ3R**

**Topic:** The behavior of light

**Objectives:** The student will... *(to be completed by the classroom teacher)*

**Set Induction:** Ask students, “What’s the first thing you look for when you get lost in a strange place?” (a map!) Briefly discuss the importance of maps

**Activities:**
1. Pass out the SQ3R Literacy Strategy information sheet and review the steps in large group.
2. Students will Survey the assigned section and write Questions in their notebooks along with the answers from the Reading.
3. In a large group discussion, the questions and answers generated will be shared and reviewed for accuracy (Recite step).
4. Instruct students to jot down major and minor concepts during the last Review step on post-it notes in single words or short phrases only.
5. Assign small groups for constructing the *Concept maps.*
6. In small groups, the students will negotiate which concepts will be used and where to place them in the hierarchy. A main idea or organizing concept is agreed upon and placed at the top of the map.
7. Together, the students manipulate the post-its into a rough draft of the concept map. Connecting lines and linking words are decided upon within the groups and added to the rough draft.
8. When the group is happy with the rough draft, a final draft is drawn on large colored paper with markers and taped to the classroom wall.
9. Groups are to prepare a presentation of their maps to the class. During the presentations, other students are to ask questions and make constructive comments on the maps.

**Closure:** Ask the students to share their ideas and opinions of the value of *concept mapping.*

**Evaluation Suggestions:** notebook check; group participation; completeness of maps; accuracy of information; presentation; formative evaluation

**Resources and Materials:** textbook, student notebooks/pens, laminated SQ3R information sheets, Post-it slips, large colored poster/butcher paper, markers

**Other Applications**

Teachers consider several factors as lessons are planned. The student’s prior knowledge about a topic, literacy abilities, and interest are a few considerations for instructional decision making to best meet learning needs. Time allocations and the student’s experiences are also considered as material is covered in content teaching. Literacy strategies can ensure that individual differences and experiences are recognized and taken advantage of in planning activities for learning in every content area.

Graphic organizers are visual representations of content material that come in many forms. They vary from boxed concepts simply connected with unlabeled lines to varied patterns of selected concepts with complex connecting lines to denote relationships between them. Here, we focus on one type of graphic organizer—the *Concept Map.*
With teacher guidance, concept maps can be constructed by students individually or students can work together in groups to develop a map. Also, the teacher can develop a concept map in part and have students complete it or use a teacher-constructed map as a teaching tool to guide learning.

The following list explains some additional advantages of integrating concept mapping into lesson planning in any content area and at any grade level:

**Concept Maps**

- ★ help the student organize complex content material into understandable, smaller chunks of information.
- ★ reduce volumes of information into important concepts or main ideas and supporting details.
- ★ are alternatives to note taking and text outlining.
- ★ minimize redundant information.
- ★ enhance content vocabulary learning.
- ★ facilitate discussion.
- ★ help students retain information.
- ★ clarify relationships.
- ★ help students identify text structure.
- ★ facilitate comprehension by exploring and expanding concepts.

Integrating literacy instruction into content teaching and learning can be exciting for the teacher as well as the students. There are opportunities in every content area for students to develop their own knowledge construction and higher level thinking skills. Literacy instruction can enhance learning!

### Reaction Guide

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Chapter 4

Literacy & Social Studies

Anticipation Guide

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<td>3. Literacy strategies are often integrated into content teaching across the curriculum.</td>
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Introduction

As teachers plan lessons for the social studies class, it is important to remember that students will be expected to understand many terms that are familiar to them in general conversation, but not in the context of social studies text. Vocabulary such as the race for the presidency, a labor strike, or the track of an explorer may easily be misinterpreted.

The expository text found in social studies reading materials is often written in a cause-and-effect or sequential format. This type of reading is more difficult to understand as several years may be discussed in a single sentence or very complex issues may be addressed in a short paragraph. Integrating vocabulary instruction along with the reading, writing, listening, and communicating components of literacy instruction can help students bridge what they already know with the new information they are expected to learn.

Literacy instruction is an exciting way to engage students in learning. In this chapter, we will be looking at the integration of two literacy strategies into upper elementary social studies lesson planning. Reference is made to the Literacy & Learning Series video lesson, Social Studies, Grade 5.
Literacy Strategies

Jigsaw

The Jigsaw strategy (Aronson, 1978) is designed for cooperative learning. The idea is analogous to a jigsaw puzzle in that “pieces” or topics of study are researched and learned by students within groups and then put together in the form of peer teaching between groups.

Students work in groups of three to six to become experts on a particular topic which is based on an overall theme or unit of study. The group members are charged with learning everything they can about their assigned topics. Each group member participates in the research efforts and becomes an “expert” on his or her particular topic. The students then leave their groups to join “expert groups” to teach about their assigned pieces of the puzzle. Then, the original group comes back together to teach each other what they have learned. Each student listens and takes notes, and at the end of the unit, is accountable for the information shared throughout the class.

Instructional technology can easily be incorporated into the jigsaw strategy. Research can be accomplished via the internet on-line encyclopedias. Presentations can be developed with various software packages and enhanced with video camera pictures, student voices, music, and moving illustrations from other sources in to the presentations.

Note: The teacher’s preparation and planning is key for the success of this project. It can be set up for a couple of days or a couple of weeks, depending on the nature of the topic, the students who will be conducting the research, and the extent of the research that is involved.

How to set it up:
1. Divide class into 4-6 member groups; each member becomes an expert on a different topic/concept assigned by teacher.
2. Members of the teams with the same topic meet together in an expert group with a variety of resource materials and texts available to explore their topic. Also, a single reading from the textbook or another source could be used to complete the assignment.
3. The students prepare how they will teach the information to others.
4. Everyone returns to their jigsaw teams to teach what they learned to the other members.
5. Team members listen and take notes as their classmate teaches them.
6. All students are given a quiz or exam on the overall topic which as been taught in sections within each jigsaw group.
Lesson Plan for a 5th Grade Social Studies Class

Jigsaw Strategy

**Topic:** The Civil War

**Objectives:** The student will… *(to be completed by the classroom teacher)*

**Set Induction:** The teacher asks the students, “How would you like to be the teacher for the next few weeks?”

**Activities**

1. The teacher explains that the class will be studying the Civil War for the next several weeks and that the students will take on the role of teacher for the information covered in this section of the textbook.

2. In large group, the class reviews the chapter(s) that will be covered, taking note of the bold headings which will later become major topics to be researched in the Jigsaw project.

3. **Jigsaw** groups are assigned, and topics are assigned to the groups.

4. Students go into research groups to complete the research.

5. Presentations are completed and practiced.

6. Students return to original Jigsaw groups to teach the topics that were re-searched—other group members take notes to be used for study.

**Closure:** Have students review the Jigsaw strategy process in a journal writing and then in large group.

**Evaluation suggestions:** Because this project will take several days/weeks to complete, it is important that the teacher monitor the process as each step develops. Observation of the activities can include anecdotal records as well as group notations to share with the students. All students are tested on the information covered in the unit.

**Resources and Materials:** Textbooks, young adult literature, reference information including technological sources, computer software programs for presentations, and others depending upon the nature of the directions for the project.

**Other Applications:** The Jigsaw strategy is appropriate in social studies classes as well as literature and science classes. Middle and secondary students are best suited to the process. The strategy works best for situations where concepts rather than rote memorization of facts are the goal of instruction.

The Jigsaw strategy helps students learn new material using a cooperative/team approach. It gives students an opportunity to share their learning, hear what their peers have to share on a topic, and teach and be taught by others. These are valuable socialization skills for students to experience inside and outside the classroom.
**Literacy Strategies**

**Cubing**

This strategy was originally intended to be a writing strategy to explore topics or subjects from a variety of dimensions. A concrete visual of a cube is used to consider these multiple dimensions.

It is best to introduce the activity with a familiar topic, going through each of the steps to model their application to that particular topic. Then, students can work individually or in groups to go through each side of the cube.

**The Six Sides of the Cube:**

1. **Describe it** (including color, shape, size (if applicable)—How would you describe the issue/topic?
2. **Compare it** (what it is similar to or different from)—“It’s sort of like”
3. **Associate it** (what it makes you think of)—How does the topic connect to other issues/subjects?
4. **Analyze it** (tell how it is made or what it is composed of)—How would you break the problem/issue into smaller parts?
5. **Apply it** (tell how it can be used)—How does it help you understand other topics/issues?
6. **Argue for/against it** (take a stand and support it)—I am for this because/This works because/I agree because

**Cubing** encourages students to look at information in different ways and to use different ways of thinking—critical thinking! The information that comes from the different considerations of the material can be used to complete descriptive writing assignments that can begin with short paragraphs and evolve into longer essays or research papers.

<table>
<thead>
<tr>
<th>Reaction Guide</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students who are good in social studies generally have high literacy competencies.</td>
<td></td>
<td></td>
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<tr>
<td>2. Writing in the social studies classroom is a craft that can be taught and refined.</td>
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<tr>
<td>3. Literacy strategies are often integrated into content teaching across the curriculum.</td>
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</table>
Note: To see this lesson in action, refer to the Literacy & Learning, Social Studies Grade 5 video lesson.

Lesson Plan for a 5th Grade Social Studies Class

Cubing Strategy

Topic: The Civil War

Objectives: The student will (to be completed by the classroom teacher)

Set Induction: The teacher tells the students that they are going to be interviewing famous people from the Civil War days.

Activities:
1. The teacher explains that several of the students will be taking on the persona of famous people from the Civil War. Other students will be playing the part of an interviewer who will interview these Civil War personalities and others will become directors, set designers, etc. The information will come from the students' research projects. Students are placed in small groups and assignments are made.

2. The students are to create the set (backdrop) of the interview, write the scripts and cue cards, practice the interview, and then video the final project to be shown to the entire class.

Closure: Students present their videos to the class.

Evaluation suggestions: The final product can be assessed as well as the process for completing the assignment. Feedback from the students in the form of discussions and writing assignments with pre-assigned prompts will also help the teacher gain insight into the success of the activity.

Other Applications: The cubing strategy can be applied as an individual writing activity or, as in this example, a group activity. Students also may be given only one side of the cube to

\[ \text{Describe It} \quad \text{Argue For/Against It} \]
\[ \text{Compare It} \quad \text{Apply It} \]
\[ \text{Associate It} \quad \text{Analyze It} \]
Instructions:
Enlarge Cube pattern as desired.
Cut out.
Fold along dotted lines.
CUBING

★★★★★★★★★★★

Designed by G.E. Tompkins, 1990

Description: Cubing is a literacy strategy which uses a concrete visual of a cube with its six sides to serve as a starting point for consideration of the multiple dimensions of topics within subject areas.

Application: To introduce cubing, start with a familiar topic and model the process. Then, assign more complex topics once students have a grasp of how the process works. The students examine the topic using the prompts from the six sides of the cube.

★ Describe it
If applicable, include color, shape, size.
How would you describe the issue/topic?

★ Compare it
What it is similar to or different from.
“It’s sort of like ___________________________.”

★ Associate it
What it makes you think of.
How does the topic connect to other issues/subjects?

★ Analyze it
Tell how it is made or what it is composed of.
How would you break the problem/issue into smaller parts?

★ Apply it
Tell how it can be used.
How does it help you understand other topics/issues?

★ Argue for/against it
Take a stand and support it.
I am for this because ____________________________.
This works because ____________________________.
I agree because ____________________________.
examine or students can “roll” the cube to receive their assignments.

Chapter 5

Literacy Across the Curriculum

Introduction
As teachers, we want to prepare our students to be responsible and successful citizens. Part of that success lies in a person’s ability to negotiate through a lot of information. Teachers need tools to help them guide students to learn from many different types of text.

Sometimes, we tend to do the same thing over and over in our lesson planning, particularly if it works well once. Getting students involved in an active way lets them begin to take control of their learning and helps them become independent learners. The strategy which will be explained in this chapter is the K-W-L, and is one that can help students make connections between the prior knowledge they possess and the new information to be learned in content areas.

The K-W-L literacy strategy is versatile in its application. It can be implemented in one class period for a short passage or can be planned to cover several days, depending on the amount of information the teacher wants to introduce and cover. Certainly
a subtopic in a chapter, the whole chapter, or even a unit of study could be included. The reading assignment could be a short textbook passage or several sources to be researched.

**Literacy Strategy**

**K-W-L**

We know that successful learners link prior knowledge to new information, then reorganize it to create their own meaning and learning. *KWL* helps students do this—it provides a framework that students can use to construct meaning from new material. It is a literacy strategy that teachers can easily modify to meet students’ learning needs at any level and in any content area.

The letters stand for the knowledge construction process that takes place:

- **K** — *What I KNOW*  
  begins with students’ prior knowledge—brainstorm and record

- **W** — *What I WANT to learn/know*  
  students articulate their own questions

- **L** — *What I LEARNED*  
  students record what they have learned

The *KWL* involves students acting individually or as a group. In either case, students actively participate in their learning construction as they make connections between what they know and will come to know. The teacher serves as a guide and facilitator in the process.

Often, the *KWL* strategy is set up in the form of a chart:

- **K** — *What I KNOW*  
  Categories: generated from a brainstormed list.

- **W** — *What I WANT to Know*  

- **L** — *What I LEARNED*

*What I KNOW*: all answers are recorded; ideas bounce off each other’s questions begin to emerge.

*Categories*: information from prior knowledge is used to anticipate how the author will present and organize the information. The categories section can be used to group words/concepts into topics for clarification or organization, or it can initiate discussion of a different type of knowledge of expository text construction that we see in different content areas. We want to teach students to recognize text organization. For example:

  - **descriptive organization**: where categories of information on a topic are organized and noted one by one

  - **compare-contrast**: where issues/systems are compared if ____________, then ______________.

  - **cause and effect**: if ____________, then ______________.

  - **sequence and organization**: Teachers should model thinking if students are unfamiliar with how to anticipate the text organization. For example, “how do you think the information will be presented?”

*What are some topics that you
think we will see?” and so on.

**What I WANT to learn:** This step empowers students to direct their own learning within the framework of the topic provide by the teacher. Students who know a lot have knowledge to ask deeper questions and often go beyond the teacher’s expectations.

_The first two steps can easily be accomplished in a whole group setting. It is important for students to hear and learn others’ ideas to be reminded of their own prior knowledge and think of questions._

**What I LEARNED:** After reading or researching, the student makes notes under the what I learned column. The questions that were generated in step 2 are answered and other new and interesting information is noted as well as more questions that may have surfaced. Again, it is important for the teacher to model the process initially to make sure students are capable of accurate note-taking. Information can be reviewed in whole group discussions. Often, there is a good opportunity for additional resources and research to take place as questions are presented that are not answered in the provided resources.

The **KWL** strategy lets teachers demonstrate to students that their interests are important, even if a particular author did not address their questions. Student questions guide

<table>
<thead>
<tr>
<th>Reaction Guide</th>
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<tbody>
<tr>
<td><strong>1.</strong> Literacy strategies are really needed only in language intensive subjects like English, reading, and language arts.</td>
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<tr>
<td><strong>2.</strong> Learners can rarely recall what they already know about a topic.</td>
</tr>
<tr>
<td><strong>3.</strong> Literacy strategies that foster independent learning are best used with high school students.</td>
</tr>
</tbody>
</table>
the learning, placing the students in control of their learning.

Note: To see this lesson in action, refer to the Literacy & Learning, Across the Curriculum, Grade 5 video lesson.

Lesson Plan for a 5th Grade Class

**K-W-L Strategy**

**Topic:** Wetlands in Our State

**Objectives:** The student will

**Set Induction:** Say to students, “What do you think our state would be like if we suddenly had no wetlands? What are our wetlands like now?” (or appropriate questions regarding the wetlands in particular states) The teacher records the students’ prior knowledge of wetlands on the “K” section of the **K-W-L** chart. (Some prompting by the teacher may be needed to assure students that really do have some knowledge about wetlands already.)

**Activities:**

1. Based on apparent gaps in knowledge about wetlands, the teacher encourages students to share what else they would like to know about wetlands. Their responses are recorded on the “W” section of the chart.

2. Students then engage in learning activities designed to increase their knowledge of wetlands. Learning resources and tools may include books, videos, computer software or CD-ROM, trade books, encyclopedias, or the Internet.

3. As the students work independently, in pairs, or in small groups, they jot down what they’re learning about wetlands on their own individual **K-W-L** charts.

4. As a culminating activity, students share what they have learned about the wetlands in large group. The teacher records these results on the large class **K-W-L** chart.

**Resources and Materials:**
Learning resources and tools may include books, videos, computer software or CD-ROM, trade books, encyclopedias, or the Internet.
K • W • L

K What I **K**NOW

W What I **W**ANT to learn

L What I **L**EARNED

★★★★★★★★★★★
K • W • L

★ Begins with students’ knowledge and ideas
★ Provides reasons for learning
★ Adds new information to knowledge base
★ Involves students in learning
★ Empowers students to create their own knowledge
References


Credentials

**Lucille McDowell, M.Ed., Project Coordinator**

Lucille McDowell, a former teacher and State Reading Supervisor, has over 40 years experience in the fields of reading and literacy. While at the Louisiana Department of Education she was Director of the Right to Read Program and SPUR (Special Plan for Upgrading Reading), now a nationally recognized and emulated reading program. She also directed a statewide Family Reading Promotion, “Read to Me,” and has worked with a variety of family and adult literacy efforts for years. Ms. McDowell gained national recognition through a Five-State Leadership Project for the Advancement of Literacy (federally funded: Title V, Interstate 505), which led to the promotion of state level planning for reading nationwide. She has played leading roles in the past with both the Louisiana Reading Association and the National Reading Association. Ms. McDowell has spent the last 10 years as a Program Manager at Louisiana Public Broadcasting where she developed and scripted ACCESS, a 16-part television series for Adult Learners, as well as developing the critically acclaimed *Kate Chopin: A Re-Awakening*, shown nationwide on PBS.

**Julie H. Lester, Ph.D., Team Leader**

Dr. Julie Lester is an Assistant Professor of Teacher Education at Southeastern Louisiana University where she teaches content area literacy, educational psychology, and graduate courses in reading. Dr. Lester has also taught family and consumer sciences at the secondary level, seventh grade science, and developmental education courses at the university level. Her master’s degree is in Vocational Education, and her Ph.D. is in Curriculum and Instruction with an emphasis in literacy. She serves on several university committees, is an active member of many professional organizations, and often makes presentations at national and regional conferences. Her professional publications deal with literacy and instruction in middle and high schools.

**Martha Head, Ph.D.**

Dr. Martha Head, a former science and mathematics teacher at the middle school and high school level, has over 28 years’ experience in the fields of middle school teaching and learning and in literacy education. She holds both masters and doctorates in Reading Education from Louisiana State University. She has served on the editorial review boards of Reading Research Quarterly, Journal of Reading Behavior, Yearbook of the National Reading Conference, and Reading Research and Instruction. Additionally, she has presented at state, national, and international conferences on topics related to content area literacy. Dr. Head has been Head of the Department of Teacher Education at Southeastern Louisiana University since 1988 and administers a department of 65 full- and part-time faculty. She has directed or co-directed 12 funded projects valued in excess of $330,000. Most recently she has been asked to write the foreword for a resource book for persons developing grants and other publications in education.

**Cynthia B. Elliott, Ph.D.**

Dr. Cynthia Elliott, Assistant Professor at Southeastern Louisiana University, serves as Director of the Early Literacy Initiative Project, a professional development opportunity for classroom teachers. Her knowledge of pedagogy, literacy content, and assessment distinguishes her as a consultant/contributor at local, state and national levels. She has served as a columnist for the Louisiana Reading Association’s journal, been a board member for the Reading Recovery Council of North America, and presenter at numerous state, regional and international conferences. She served as project director for “Implementing a Balanced Literacy,” an informative literacy video for the Louisiana Reading Association. The Southwest Educational Development Laboratory (SEDL) has recognized Dr. Elliott’s work in literacy and staff development, and she participates in the federally funded Reading Coherence Initiative.

**John E. Trowbridge, Ph.D.**

Dr. John Trowbridge is an Assistant Professor of Teacher Education at Southeastern Louisiana University. His content specialty area is science. Dr. Trowbridge has taught junior high, high school, and college level science. He works with preservice elementary education majors in developing and teaching thematic units. He holds a B.S. and M.S. in Marine Biology and his Ph.D. is in Science Education. He is active in science education organizations nationally and locally and holds offices in many of these organizations. He is a member of the Louisiana Environmental Education Commission. He has published numerous articles about the learning and teaching of science concepts, including the use of graphic organizers to understand science text.

**Dolores Pesek Simoneaux, Ph.D**

Dr. Dolores Pesek Simoneaux is an Associate Professor in the Teacher Education Department at Southeastern Louisiana University. She is project director and instructor for Project Prime, an in-service program for elementary teachers of mathematics. She has over 20 years of experience teaching mathematics and has conducted many workshops for K-12 mathematics teachers. She has designed curriculum and school improvement programs in mathematics and science through the Louisiana Systemic Initiative Program (LaSiIP). She conducts workshops, has presented nationally and internationally and has several journal articles and publications.