DOCUMENT RESUME

ED 455 495 CS 014 434

AUTHOR	Bradley, J.; Bradley, K. Sue
TITLE	Facilitating the Research Process for Struggling Readers.
PUB DATE	2001-00-00
NOTE	13p.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Creative Thinking; *Critical Thinking; Elementary Education; Learning Activities; *Reading Difficulties; *Research Skills; Skill Development; *Student Research
IDENTIFIERS	Research Training

ABSTRACT

Too often students enter high school without being exposed to the research process and are often overwhelmed by the complex task of selecting and narrowing of a topic, developing research questions, writing the text, and appropriately documenting sources. This paper delineates specific learning activities that will simplify the process to make it manageable for developing readers and writers. The paper's literacy lessons emphasize both creative and critical thinking. It is divided into the following sections, one for each of the learning activities: Inquiry Chart; Computer Application; Notetaking: Pass the Notecard; and Cubing: An Expanding Technique To Stimulate Higher Order Thinking. (Contains 17 references.) (NKA)

Facilitating the Research Process for Struggling Readers

J. Bradley & K. Sue Bradley
Associate Professors
Texas A & M-Kingsville
700 University Blvd. # 196
Kingsville, TX 78363

(361) 593-2880 / (361) 593-2898
kfjab01@tamuk.edu
kfksb00@tamuk.edu

"Students learn how to write research reports through a series of mini-lessons and several experiences writing class collaborative reports." (Tompkins 1994, p. 196). However, too often, our students enter high school without being exposed to the process, and are overwhelmed by the complex task of selecting and narrowing of a topic, developing research questions, writing the text, and appropriately documenting sources. The purpose of this paper is to delineate specific learning activities that will simplify the process to make it manageable for developing readers and writers. Both creative and critical thinking are emphasized in the following stimulating literacy lessons.

I. Inquiry chart

II. Computer Application

III. Notetaking: Pass the Notecard

IV. Cubing: An Expanding Technique to Stimulate Higher Order Thinking

I. Inquiry Chart

The Inquiry Chart (Hoffman, 1992) provides a systematic procedure for guiding and enhancing critical thinking. Students gather information from a variety of text sources and organize it on a chart for summarization, comparison, and evaluation. Because multiple text sources (including trade books; both fiction and non-fiction) are used, the inquiry chart can also become a means for involving any struggling reader in the research process, including the mainstreamed special education student. Elementary children often equate research with looking up a topic in an encyclopedia and copying the text, word for word. This problem of plagiarism can be alleviated through the use of the inquiry chart process. This process parallels the KWL (Ogle, 1986) Strategy, which asks students to identify what they already know about a topic, what they want to know and what they learned following the reading.

Procedure:

A. Planning

1. Topic Identification

A topic is identified based on curriculum requirements, the content text, and/or student interests. The topic can be anything, such as a famous explorer, the American Presidents, or rocks and fossils. It is especially useful to research a controversial issue, such as "Should marijuana be legalized?"

2. Question Formation

The teacher identifies 2-4 questions that might drive the inquiry process. These questions are often taken from concepts in the subheadings of a social studies or science book. These guiding questions are recorded in the top row of the inquiry chart.

(1) How is a mammal different from other animals? (2) In what ways are mammals alike? (3) In what ways are mammals different from each other? (4) How are mammals grouped?

3. Materials Collection

The final part of the planning stage is the collection of topic-related materials with varying readability levels. The content textbook is generally included, along with encyclopedias, CD-ROM, and trade books. This is when special attention should be given to the reading level in the materials selected.

B. I-Chart Completion

1. Prior Knowledge

The teacher probes student prior knowledge of the subject, which might respond to the guiding questions. This information is recorded in the column labeled, "What We Know," regardless of the accuracy of the idea.

2. Interesting Facts

In the column labeled, "Interesting Facts," the teacher should record other ideas generated by the students, which are unrelated to the guiding questions.

3. New Questions

In the column labeled, "New Questions", the teacher should record any questions students want to have answered.

4. Purpose for Reading

Students then read to find answers to both the guided questions and the new questions using a resource with an appropriate readability level. These responses are recorded on the inquiry chart.

5. Summarize

Students generate summary statements for the guiding questions as well as the new questions. These summary statements are recorded on each row of the inquiry chart.

6. Compare

Students compare the information gained from the reading with the information in the columns labeled, "What we know," making corrections where necessary from the guiding questions. The summary statements provide the basic structure for paragraph expansion and become the basis for written reports.

7. Research Report

As students continue the research process, new questions can accumulate on the I-Chart. These unanswered questions become the basis for further research. Students read to find answers to new questions and report their findings back to the group.

Inquiry Chart

Questions	What we already know	Harcourt Science 4th Grade textbook Lesson 2P, B-12/B-17	What's Under The Log	In the Pond (wordless book)	Rainforest Secrets	Big Friend, Little Friend	Children's Illustrated Encyclopedia	World Book Encyclopedia	King-Fisher	Interesting facts/New Questions
What are the elements of an ecosystem?	Brainstorm with students concerning what they already know about the topic prior to reading or beginning the inquiry process.	air, soil, climate plants, animals, insects Population- a group of same species living together Community-all populations in the same area	ground beetle daddy long legs millipede	birds, frogs, fish, insects, lily pads, flowers, snakes, cattails, turtles	monkey, bird, flowers, trees, people, anteater, tigers, 30,000,000 plants & animals	animals & plants symbiosis	plants animals living parts of nature	community of living & symbiotic non-living physical environment	Living & non-living things in an area	What is symbiosis?
What are examples of ecosystems? What lives there?		Backyard School walkway Forest-plants & animals Stream-trout	Under a log/ The log	Pond	Rain-forest has different layers, forest floor, understory, canopy, jungle	ocean floor, flower, ocean water, grasses, Pygmy falcon	Earth giant ecosystem	Forest Changes occur daily, seasonally	Humans earth itself biggest ecosystem	Omnivore Herbivore carnivore
In what ways are living things in a community important to one another?		They depend on each other to survive. Animals carry seeds and add nutrients to the soil. They provide shelter.	The log decays and returns nutrients to the soil. New plants & trees grow. They eat each other to survive	food, shelter	Because plants provide nutrients & shelter, where forests are cleared, animals die.	Help each other survive i.e. giant sea anemone/ damsel fish shelter	Plants capture sunlight's energy. Food web Earth is powered by energy from the sun.	Interdependence Food chain Cycling materials	Food web Interdependence Linked together	All things need energy.

Summaries

Bradley, J & Bradley, K. Sue

4

6

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7

II. Computer Applications

Using the computer provides another motivating means of involving struggling readers in the process of research or inquiry. For example, the computer website, http://www.lonelyplanet.com/destination allows students the opportunity to gather information on their country of origin. Students are guided to:

1. with parent assistance, determine their country of family origin.
2. log on to the above internet address.
3. click on to the continent where their country of origin is located.
4. click on to their country of origin.
5. click on their state or province, or whatever.
6. click on the city of their birth.

From the information that is listed as hyperlinks, students can research a variety of concepts related to their country, for example, its history, culture, or environment. What is ideal about this, is that the selections are short, giving even the struggling reader an opportunity to succeed. Some form of graphic organizer should also be used with the struggling reader. The form of inquiry is conducive to cooperative learning, and is especially effective in promoting cultural awareness. For example, two students, with origins from different countries, can complete a chart which compares the similarities and differences of their two countries. In so doing, students begin to realize that even though people are unique; there are characteristics that are universal between cultures. (Parks and Swartz, 1994) offer the following suggestion as a graphic organizer to be used to compare and contrast ideas.

Compare-Contrast Graphic Organizer (Parks & Black, 1990)

Concept 1 _____ Concept 2 _____

How are they alike?

_____

_____

_____

How are they different?

With regard to:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

III. "Pass the Notecard"

This is preparatory activity designed to help students learn to take notes—a prerequisite to research reporting. In this activity, students are placed in groups of four. After reading a selection. Students are given a large notecard. Each student is to select a concept he/she thinks is important about the topic being studied, and write it on the top line of the card. This may be a single word, a phrase, or a sentence. The cards are then passed clockwise to the second student who is to write a sentence about the topic which relates directly to the concept on the card. The third and fourth student in the group do the same. Finally, the students put the information cards

together to create a mini-report on the topic. One person from each group serves as reporter and shares the report.

IV. Cubing: An Expansion Technique to Stimulate Higher Order Thinking (Cowan and Neild, 1990)

The purpose of the cubing technique is to move students beyond the simple description of something to get them interested in finding out more about a topic. The cubing strategy requires students to look at a subject from six different perspectives. Before doing any writing, students fold their own personal cube and label each side with the following headings:

Describe It
Compare It
Associate It
Analyze It
Apply It
Argue For Or Against It

Students are given three to five minutes to respond in composition to each of the six different headings. Each student responds to every side of the cube, using separate sheets of paper for each side. Everyone begins with "Describe It" and proceeds sequentially through the other sides. This system will facilitate the organization of a composition on the topic. This activity can culminate in individual reports, but collaborative reports seem to spark more student interest.

Following a devastating flood in their town, which leveled more than 100 homes and drowned eleven people, a group of fifth grade students participated in the cubing process using the concept of the flood. Following is a sample of their responses:

Describe It: It was like a wall of water coming toward us. The road wasn't a road anymore. As the water got deeper and deeper, cars stalled. Frightened people began to climb on to the roof of their cars.

Compare It (What is it similar to and different from?)
When the water first hit, it was like a wild ride at an entertainment park. Children laughed as their cars were thrown about. But the laugher stopped when even the children realized that there was no controlling the movement of the cars.

Associate It: (What does it make you think of?)
I remember hearing about a flood somewhere. Our church sent some money to help in the rebuilding of that town. I wonder if we will have help.

Analyze It: (Tell how it is made)
A tropical storm caused the flood in my town. There just wasn't anywhere for the water to go. I wonder if there are other natural disasters that cause flooding like this.

Apply It: (Tell what you can do with it, how it can be used.)
It seems like people should learn from flooding and not build their houses where there is danger of flooding. But, I heard some people talking about rebuilding.

Argue Or Against It: During and after the flood, everyone helped each other. They still are. Maybe it takes something bad to happen for people to understand that we are all just people.

After writing, students were placed in groups of four to share ideas with each other. In their groups, they also brainstormed ideas or questions to research on the topic of flooding. These are a few of their examples.

1. What other bad floods are recorded in history?
2. How do floods affect the individual or family?
3. How do floods affect the city?
4. What causes tropical storms and hurricanes?
5. Where is flooding most likely to occur.?
6. What other natural disasters cause flooding?

The questions they developed gave them a self-selected purpose for further study. This activity culminated with a group collaborative report on the effects of floods, not just the one in their hometown, but other disasters that have occurred, as well.

If struggling readers are not given opportunities to play with the research process when they are in elementary school, we are setting them up for failure in the secondary school.. These four strategies introduce students to the research process in ways that promote both critical and creative thinking. Teachers need to have fun with children.

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Signature: K. Sue Bradley

Printed Name/Position/Title: Karen Sue Bradley

Organization/Address: Texas A&M University-Kingsville, 700 University Blvd #196, Kingsville TX 78363

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FAX: 361 593 3255

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