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PUTTING THEORY TO PRACTICE:
APPLICATION OF CONSTRUCTIVIST LEARNING THEORIES
IN SOCIAL STUDIES EDUCATION

Tammy G. Embry

Honors Senior Research
University of Alabama in Huntsville
Spring 1997
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GOALS

My goals for this project were as follows:

1. To communicate my educational philosophy in a clear and effective way, demonstrating my beliefs and the impact of my beliefs upon classroom teaching.
2. To put theory into practice by developing and teaching a social studies unit that reflects my personal beliefs about teaching and learning.

PHILOSOPHY

My philosophy of education is rooted in the constructivist theories of learning. Constructivism, a theory about learning advanced by Jean Piaget and Lev Semyonovich Vgotsky, is a belief that humans do not learn from external sources, but instead learn from making internal sense of external experiences and stimuli. From my constructivist viewpoint flow many beliefs about children, learning, and teaching. These beliefs are based on theory and impact my role as a teacher, the environment of my classroom, and the curriculum of my classroom.

My philosophy is still under construction, evolving as I learn about and from children. However, the following beliefs are central to my own philosophy and are reflected in the way that I approach teaching. These key elements of my philosophy are drawn from constructivism.

I believe that learning is a social process. Although learning happens internally, it is facilitated by the guidance and support of peers and teachers. As Vgotsky suggests, each child has a zone of proximal development for each concept that he/she tries to understand. Within the zone lies the understanding that the child could reach on his/her own, but the full potential of child's understanding is reached by the facilitation of peers and teachers.

I believe that learning must be developmentally appropriate. If a concept is not within a child's zone of proximal development, then he will never grasp the concept no

matter how many hours the teacher chooses to teach it. At each age, a child's potential to understand grows. Piaget theorizes that the child's ability to understand new concepts is rooted in the amount of concrete experience the child is able to achieve with the concept. Most elementary school age children are not able to grasp abstract concepts. They need to be challenged with concepts that allow for repeated concrete explorations of the subject.

I believe that learning requires reflection on the part of the learner. If learning must happen internally, then the student must think about and wonder about the ways in which the external information she received fits together. Reflection allows the learner to put together the pieces into a whole that gives understanding.

I believe that learning is something that happens naturally and will occur whether or not students are taught. Children as well as adults have a natural curiosity about the world around them and the way that the world works. It is human nature to try to make order out of that world and, therefore, search for answers that will lead to understanding.

I believe that children construct their own knowledge by interacting with their environment and applying new information to their previous knowledge of the world. Knowledge is not something that can be given to students by a teacher or parents. Instead, each child must take knowledge from each learning experience and make meaning from it.

Children are not "blank slates" on which knowledge can be imprinted. They enter each classroom with prior knowledge that influences their learning.

I believe that children learn best when engaged by authentic learning experiences. When the quest for knowledge is presented in a real and relevant manner, the students' "need to know" increases and they are motivated to find the answers to their questions.

I believe that the process of learning is more important than the final product created through the learning experience. The emphasis in the classroom is to provide students with the skills needed to become independent learners. Therefore, the learning of skills such as reading, writing, research, and reflection must take precedence over the end product.

My beliefs about learning are reflected in my beliefs about how a classroom should look. I believe that the teacher should act as a guide, a facilitator, and a supporter. The role of the teacher is to build an environment in which students feel motivated, safe, and supported. The teacher must provide resources for student learning and plan learning opportunities. In order to be an effective facilitator of learning, the teacher must know each student's needs, abilities, and prior knowledge.

The curriculum in a constructivist classroom is one in which students are urged to guide investigations, explore continually, and reflect on learning. Therefore, I see the

curriculum as one which provides many opportunities for reading, writing, and hands-on explorations. Research, journals, experiments, literature, manipulatives, and technology all have a place in the student-centered classroom. The curriculum is also structured in a way that provides for social interaction among students, before, during, and after active explorations.

The constructivist classroom is one in which students are in control of their own learning. Although the teacher may plan for explorations of given subject matter, it is the students' responsibility to ask the questions, test hypothesis, and reflect on results. The teacher cannot make sense of any concept for a student. She can only guide the student to his own understanding. For if learning is a journey, then the teacher is only a guide with the group, placed there to point out items of interest and to encourage everyone to share in the adventure.

Unit: Tennessee River

Grade level: 2

Time frame: 6 weeks

Rationale: This unit is designed to emphasize both science and social studies concepts such as the importance of a river to both animal and human life, the dynamic nature of a river, and the place of a river in the water cycle. The unit is also intended to build the independent learning skills of the students by the teaching of reading, writing, and research skills.

The intended participants for this unit are a second grade class of mixed socioeconomic background in a school in the Tennessee Valley region. They will bring with them the following preconceptions: 1. a knowledge of local animal life, 2. awareness of the uses of water by humans, 3. a concept of a river.

OBJECTIVES

Knowledge Objectives

The student will...

- identify animals that live in the river.
- identify animals that live around the river.
- describe uses of the river by animals (habitat, food source, water source, etc.)
- describe uses of the river by humans (recreation, food source, water source, industry, transportation, etc.)
- describe characteristics of a river, such as mouth and source, banks and bed, current and erosion.
- explain the place of rivers in the water cycle.
- recognize and describe the uses of bridges and dams.
- discuss the river as a dynamic force that changes over time.

Process Objectives

The student will...

- read fiction and nonfiction tradebooks for enjoyment and for a purpose.
- develop writing skills through journals and reports.
- develop listening skills by listening to guest speakers, teachers, and peers.
- develop research skills by using the encyclopedia, magazines, and nonfiction books.
- make an oral presentation.
- develop creative thinking and problem solving skills.
- build map skills.
- develop observation skills.

Attitude Objectives

The student will...

- develop an appreciation for the beauty and usefulness of the river.
- build an enjoyment of reading.
- develop an appreciation of the wildlife in the river area.
- build an enjoyment of journal writing.
- develop pride in his/her ability to research, write and create.

ACTIVITIES

Initiating Activities:

1. Begin a class K-W-L about rivers. Talk about what we know and what we want to know about rivers.
2. Begin a river journal, which can function as a learning log and as a place for reflections.
3. Play a tape of river sounds as students view filmstrip pictures of rivers.
4. Decorate the room with pictures and maps of rivers.
5. Read aloud A River Ran Wild by Lynne Cherry.

Developing Activities:

1. Read fiction and nonfiction tradebooks that involve the river theme. Discuss the books in literature groups.
2. Watch videos about rivers.
3. Locate the rivers and lakes in Alabama on a state map.
4. Locate the Tennessee River on a map. Discuss information that can be discovered from the map such as where the river begins, where the river ends, states the river passes through, cities along the river, etc.
5. Bring in guest speakers that can discuss wildlife, pollution, water conservation, industrial uses of the river, fishing, and other related topics.
6. Take a field trip to the river, to a dam, to a wetland, or to an aquarium.
7. Record observations, reflections, and definitions into journals.
8. Research and write a report about an animal that lives in or around the river.
9. Create a river model in a water table to be used for demonstrations and individual and group explorations.
10. Make a mural of the river, showing plant and animal life in the river.
11. Have students make a model or write a story that demonstrates knowledge of the river.
12. Test different types of bridges to determine the strongest type of bridge. Talk about the varied uses of bridges.
13. Investigate the difference between freshwater and saltwater using books, pictures, and demonstrations.
14. Explore erosion by using the river model, comparing smooth and rough rocks, and experimenting with salt or sand cubes in jars.
15. Investigate dams through the use of books, pictures, and demonstrations of a dam in the river model.
16. Explore methods and purposes of river transportation using models, books, pictures, and guest speakers.

Concluding Activities:

1. Share research and projects with the class and/ or other classes through oral presentations.
2. Finish the K-W-L chart by asking students "What have we learned?".

TENNESSEE RIVER UNIT: FRAMEWORK

Topic: Introduction to Rivers

Time: 4-5 days

Literature: A River Ran Wild

Activities: Begin a K-W-L. Discuss "What do we know about rivers?" and "What do we want to know about rivers?".
Find and name local rivers on a map of the area.
Begin a river journal.

Topic: Physical Characteristics of Rivers

Time: 5 days

Literature: Follow the River from Brook to Ocean
Magic School Bus at the Waterworks

Activities: Find and trace the path of the Tennessee River on a map.
Have students make a model of a river in a water table using dirt, rocks, sand, clay, etc.
Take a field trip to the river.
Collect pictures of rivers. Compare different rivers. Compare with pictures of the ocean.
Compare the appearance of rivers and oceans on a map or globe.

Topic: Animals that live in and around the river

Time: 4-5 days (The research will take at least 10 days to complete.)

Literature: Fish is Fish
Animal Tracks
The Freshwater Animal Book

Activities: Generate class list of local animals.
Research and write about local animals that live in or around the river.
Have a local conservation officer or other guest speak to the class.
Make animal tracks.

Topic: People use the river

Time: 5-10 days

Literature: Where the River Begins

A River Dream

Three Days on a River in a Red Canoe

Boats

Bridges

Activities: Plan for a camping or canoeing trip.
Collect fishing stories from relatives or friends. Write and share the stories.
Collect and compare pictures of bridges. Talk about the different types of bridges (i.e. suspension, arch, beam) and the different uses for bridges.
Make posterboard bridges and test for strength.
Collect and compare pictures of boats.
Visit or invite a speaker from a local industry that uses the river in manufacturing.

Topic: The river changes

Time: 5-7 days

Literature: Come A Tide

Letting Swift River Go

A River Ran Wild

Activities: Collect pictures and newspaper articles about floods.
Compare old and new maps of the area.
Compare old and new photographs of the river area.
Place a dam in the river model to see its effect.
Try to flood the river model.
Research local water pollution. Make a list of ways students can help prevent water pollution.

RESOURCES

Core Books

Literature sets

Cherry, Lynne. A River Ran Wild. San Diego, CA: Harcourt Brace and Company, 1992.

Cole, Joanna. Magic School Bus at the Waterworks. Illustrated by Bruce Degen. New York: Scholastic, 1986.

Dorros, Arthur. Animal Tracks. New York: Scholastic, 1991.

Dorros, Arthur. Follow the Water from Brook to Ocean. New York: Harper Collins, 1991.

Lionni, Leo. Fish is Fish. New York: Scholastic, 1970.

Locker, Thomas. Where the River Begins. New York: Penguin Books, 1984.

Lyon, George Ella. Come a Tide. Illustrated by Stephen Gammell. New York: Orchard Books, 1990.

Pallotta, Jerry. The Freshwater Alphabet Book. Illustrated by David Biedrzycki. Watertown, MA: Charlesbridge, 1996.

Robbins, Ken. Boats. New York: Scholastic, 1990.

Robbins, Ken. Bridges. New York: Scholastic, 1991.

Say, Allan. A River Dream. Boston: Houghton Mifflin, 1988.

Williams, Vera. Three Days on a River in a Red Canoe. New York: Mulberry Books, 1981.

Teacher read

Bang, Molly. Chattanooga Sludge. San Diego, CA: Harcourt Brace and Co., 1996.

Bate, Norman. Who Build the Dam? New York: Charles Scribner's Sons, 1958.

Byars, Betsy. Trouble River. Illus by Rocco Negri. New York: Viking Press, 1969.

Yolen, Jane. Letting Swift River Go. Illustrated by Barbara Cooney. Boston: Little, Brown and Co., 1992.

Student Resources

Alabama Conservation.

Armstrong, Barbara. Bridges Across the Gap. Illustrated by Stephen Shadwell and Jeff Fowler. Bothell, WA: The Wright Group, 1995.

Bealer, Alex W. Only the Names Remain: The Cherokees and the Trail of Tears. Illustrated by William Bock. Boston: Little, Brown, and Co., 1972.

Baker, Susan. First Look at Rivers. Milwaukee: Gareth Stevens Children's Books, 1991.

Bleeker, Sonia. The Cherokees: Indians of the Mountains. Illustrated by Althea Karr. New York: William Morrow and Co., 1952.

Carlisle, Norman and Madelyn. Bridges. Chicago: Children's Press, 1983.

Carter, Polly. The Bridge Book. Illustrated by Roy Doty. New York: Simon and Schuster, 1992.

Cullen, Derek. Exploring Rivers. Needham, MA: Schoolhouse Press, 1988.

Dabovich, Lydia. Follow the River. New York: Dutton, 1980.

Emil, Jane. All About Rivers. Illustrated by Joseph Veno. Mahwah, NJ: Troll Associates, 1984.

Fowler, Allan. All Along the River. Chicago: Children's Press, 1994.

Gaff, Jackie. Buildings, Bridges, and Tunnels. Illustrated by Michael Fisher. New York: Random House, 1991.

Hawkes, Nigel. Structures: The Way Things Are Built. New York: Macmillan Publishing Co., 1993.

Knapp, Brain. River. Danbury, CT: Grolier Educational Corporation, 1993.

Michl, Reinhard. A Day on the River. Woodbury, NY; Barron's, 1985.

Peters, Lias. Water's Way. Illustrated by Ted Rand. New York: Macmillan/McGraw, 1991.

Ranger Rick

Steele, Phillip. River Through the Ages. Illustrated by
Robert Ingpen. New York: Troll Associates, 1994.

Walker, Colin. Rain, Rivers and Rain Again. Illustrated by
Ireen Gough. Bothell, WA: Wright Group, 1990.

Teacher Resources

Books

- Aquatic Project Wild: Aquatic Education Activity Guide. (1987).
- Cheese, Walter I. (1990). TVA's Public Planning.
- Davidson, Donald. (1948). The Tennessee, The Old River: Frontier to Secession
- Davidson, Donald. (1948). The Tennessee, The New River: Civil War to TVA.
- Droze, Wilman Henry. (1965). High Dams and Slack Water: TVA Rebuilds a River
- Mooney, James. (1900). Myths of the Cherokees.
- Lilienthal, David. (1944). TVA: Democracy on the March.
- Project Wild: Elementary Activity Guide. (1983).
- Owen, Marguerite. (1973). The Tennessee Valley Authority.
- Ranger Rick's Nature Scope. (1990).
- Winn, Joshua Nicholas. (1978). Muscle Shoals Canal...Life with the Canalers.

Filmstrips

- Earth and Its Wonders: The Story of Rivers. Encyclopedia Britannica Education Corporation. 1978.
- The TVA: Conservation in the Tennessee Valley. Society for Visual Education, Inc. 1972.

Videos

- Come A Tide. Reading Rainbow series. Great Plains National Instructional Television Library. 1992.
- Three Days on A River in a Red Canoe. Reading Rainbow series. Great Plains National Instructional Television Library. 1991.

Tennessee River

Contact Groups

The Nature Conservancy of Tennessee
P.O. Box 3017
174 Second Avenue N., Suite 401
Nashville, TN 37219

Save Our Lakes, Inc.
1810 Roseberry Drive
Scottsboro, AL 35768

Sierra Club
Tennessee Chapter
118 Old Shackle Island Rd.
Hendersonville, TN 37075

Tennessee Conservation League
11 Music Circle, Suite 5
Nashville, TN 37203

The River Valley Association
Tennessee-Cumberland Waterways Council
City Hall Tower
P.O. Box 1745
Decatur, AL 35601

Water Project/ 90's
2947 W. Gallaher Ferry
Knoxville, TN 37932

Communications/Public Relations
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902

Tennessee River

Field Trips/Guest Speakers

Tennessee Aquarium

One Broad Street

P.O. Box 11048

Chattanooga, TN 37401-2048

(423) 265-0695 <http://www.tennis.org>

Group Reservations 1-800-262-0695

Watchable Wildlife Nature Trails of Redstone Arsenal (Path to Nature)

Carolene Wu

MICOM Environmental Office

955-6969

Commander

U.S. Army MICOM

Attn: AMSMI-RA-EMP (Ms. Carolene Wu)

Redstone Arsenal, AL 35898

Fish and Wildlife Office- Decatur - 353-2634

Steve Bryant and Dudley White--Wildlife Biologist

Keith Floyd and Doug Dare--Fishery Biologist

Madison County Conservation Officers

Larry Allison 890-0277

Larry Brewer 379-4653

Radio Operator for all North Alabama Conservation Officers 353-2634

Wheeler Wildlife Refuge 353-7243

A RIVER OF LEARNING: STUDYING THE TENNESSEE RIVER

Implementing constructivist based teaching means actively involving students in subject matter. When considering social studies, the implications are clear. To enhance student learning, the teaching of social studies must go beyond the social studies textbook. Students must be engaged and involved with the subject matter, becoming active participants in the social studies classroom.

The study of the Tennessee River was chosen because it was a study in which students could be active learners. The river is a vital part of the area in which the second grade students live. By choosing subject matter close at hand, the teachers could find and utilize local resources and provide real access to the unit's topic, the river.

The river unit also lent itself to natural integration across the curriculum, including science and social studies content. The river was studied as a part of human life, animal life, and as a part of the earth. The many uses of the river cannot be categorized as either scientific or social, but rather must be considered as both.

The Tennessee River unit was designed with four major components: research, writing, reading, and active experiences. The parts of the unit were intended to provide

a developmentally appropriate setting in which to allow students to chart their own learning. In the initial planning stage the unit was designed with a number of knowledge objectives; however, its primary objective was to provide the students with the skills needed to become active learners.

Research is one way that students can learn science and social studies content. Through research, a student learns about his/her own topic well, developing an understanding of the topic to a point where the information can be conveyed to others through written and oral reports. The skills involved in research are skills that independent learners must have, such as reading, skimming, using indexes and tables of content, note-taking, and writing. Research allows students to work independently and to construct their own personal understandings about their research topics. Therefore, research fits well into a constructivist classroom.

Before beginning independent research, students were involved in the research process as a group. The teacher modeled the steps involved in research and guided the students as they all researched and then wrote about one topic. Formal research skills were incorporated into the Tennessee River study by requiring pairs of students to research and write about an animal that lives in or around the Tennessee River. Once topics were chosen, students were guided in using nonfiction books, encyclopedias, and magazines to locate information about their topics. Teacher

guidance was given through mini-lessons and through conferences with individuals and groups of students. QUAD (Question, Answer, and Details) sheets were provided to the students to serve as a further guide for research.

Writing can serve many purposes in the classroom. It can be used to reflect on learning and understanding, to convey information to others, or to tell a story.

Student writing also serves as an assessment tool for the teacher to evaluate student understanding. Because of its many purposes, writing plays a very important role in the constructivist classroom. Writing is a tool through which students find their own understanding of knowledge and reflect on their learning.

Writing was incorporated into the Tennessee River unit in several forms. First, students prepared written reports on their research topic. With teacher guidance, students turned the notes taken on their QUAD sheets into sentences and combined the sentences into paragraphs. The final reports and oral presentations were indicators of what the students knew about writing and about the river animal that was the topic of their research.

Second, students kept "river journals." Students recorded the new information and experiences that they were receiving from the study. Students used river journals to respond to lessons and activities in the classroom. The journals also went along on field trips, providing a place for students to write and draw about what they were

experiencing. River journals allowed the students to reflect on learning and allowed the teachers to assess student understanding.

Third, students made written responses to books shared in literature groups. This encouraged the students not only to read but also to reflect on what they had read. As each student completed a "Book Talk" booklet about his book, he recorded new words encountered in the reading, thoughts and wonderings about the book, his favorite part of the book, and things that he had learned from the book. The booklets that accompanied the reading provided a guide for students to follow when reading and discussing literature. The booklets also served as a way for the teachers to evaluate the student's reading comprehension and discussion participation.

Tradebooks, another description for children's literature, provided the integration of reading into the social studies and science unit. However, tradebooks also provided a framework on which the unit evolved. by using books that involved one concept or idea about the river each week, the literature provided a weekly focus for class discussion about the river. The literature became a primary avenue in which children gained more information about rivers and their uses.

The primary purpose of literature discussions was to talk about the books' content, but students, already interested in the river theme, often brought out the social studies or science concepts found in the books. For example,

when reading Where the River Begins, a story where two boys and their grandfather walk to find the beginning of a river, students were interested to find out that the river began at a pond. This led to a discussion about where the Tennessee River begins. A look at a map allowed the students to see that many streams flow together to form the Tennessee, unlike the single stream flowing from a pond that was in the book. During the reading of Three Days on A River in a Red Canoe, students became engaged by the many animals in the book. Many of the same animals were later contributed by students as the class brainstormed for possible research topics. Children's literature provided a way to engage students both in reading and in the social studies and science content.

Active experiences were the final component of the Tennessee River unit. Experiences such as field trips, guest speakers, and hands-on projects and experiments were the key to engaging students in the study of the river. Active experiences served to bring the focus of the study to the students in a more physical way, involving students through people, places, and things that they could see, hear, and touch.

The planning of field trips was aided by the fact that the topic of the study was nearby. Ideas for field trips to complement the Tennessee River unit are limitless. For example, the students could visit a dam, a local recreation area on the river, the waterworks of the city, a local industry along the river, or a wildlife preserve. During

this study, the students visited a wetlands along the river, the river itself at a recreation area, and the Tennessee Aquarium in Chattanooga, Tennessee.

During the trip to the wetlands, students observed plant and animal life in the area. With their journals along for recording observations, the students saw a beaver lodge, trees chewed down by beavers, ducks houses, and many birds and insects. While visiting the river later the same day, students made observations of the river's width, color, and temperature. They tested the river's current by throwing in floating objects and watching their progress down the river. They saw the results of erosion by looking at the banks of the river. They grew excited to see some of the boats that travel on the river.

During their visit to the Tennessee Aquarium, students saw many of the animals that they had previously researched. They also saw examples of animals that live in other rivers and oceans throughout the world. A classroom lesson at the aquarium taught students and teachers alike about the way pollution affects river creatures.

Like field trips, the list of possible guest speakers for this unit is also long and varied. In the classroom, students heard from a fisheries biologist and a conservation officer. The fisheries biologist brought along samples and slides of Tennessee River fish and spoke to the class about his job of improving fishing for the public. The conservation officer entertained the students with tales

of his job taking care of animals and policing hunters and fishermen.

Hands-on explorations were also planned for the classroom. Students used dirt, rocks, and clay to make a model of a river in a water table. The model was later used to demonstrate erosion, dams, and floods. Students tested bridges made from posterboard to discover which was stronger, a beam bridge or an arch bridge. Students pressed rubber animal paws into sand to make animal tracks such as could be found along a river bank and then made plaster molds of these tracks. As a final project, students were asked to "make something creative" that would reflect their learning during the study. Student responded with bridges, dioramas, maps, and even a beaver dam.

Through research, writing, reading, and active experiences, the second grade students became a class of experts on the Tennessee River. By using activities and lessons that invited the students to become engaged with the learning process, the teachers fostered creativity, problem-solving, responsibility, organization, social skills, and an appreciation of science and social studies. The knowledge that students gained about the river was the result of their own search to make meaning of the materials and the information that they discovered during the study. The skills that the students gained will enable them to become even more efficient in their future quest for knowledge.

LESSON PLANS

The following are sample lesson plans from the Tennessee River unit. Various types of lessons were used in the unit, depending on the needs of the student. The lessons here are examples of a mini-lesson, a hands-on lesson, a literature discussion group plan, and mini-lecture.

Unit: Tennessee River
Lesson: Bridges

Objective: Students will identify purposes for bridges
(cross river, cross road, bridges for people,
cars, trains, etc.)
Students will classify bridges as suspension,
beam or arch bridges.
Given a beam and an arch bridge, students will
identify the strongest bridge construction.

Materials: blank paper
pencils
books and pictures about bridges
stiff paper-3 sheets per group
heavy books for building bridges (encyclopedias
work well)
pattern blocks for testing bridges

Lesson:

Engage: Give students a blank piece of paper. Ask
them to draw a picture of a bridge and tell the
use of that bridge.
Have several students share their pictures with
the whole group.

Explore: Talk to students about three types of bridge
construction: beam, arch and suspension.
Show pictures of each type.

Introduce bridge experiment.

We are going to make two types of
bridges, beam and arch, and decide
which is the strongest.

Demonstrate how to stack books and how to
place the paper to make a beam bridge and an
arch bridge.

After you have made your bridge test it
by placing one pattern block on each
bridge. Check your bridge to see if it
is swaying. If not, continue adding the
same amount of pattern blocks to each
bridge until one of the bridges begins
to show stress. Then record the bridge
that began to collapse and the number of
pattern blocks that the bridge held.
You can continue to add blocks to the
other bridge to see how weight it will
hold. Then record that amount also.

Explain: Ask groups to report their findings. Ask them why the arch bridge was stronger.

Talk about uses for beam and arch bridges.

Even though the arch bridge is stronger, an arch bridge is not always needed or built. Why?

Ask: What are some things engineers and architects have to think about before they design and build a bridge? (width of span, what the bridge will be used for, depth of water underneath, weight of bridge traffic, whether boats need to be able to go under the bridge)

Extend: Let interested students build their own bridge out of materials such as toothpicks or popsicle sticks.

Read a book to the class about bridges.

Keep track of how many and what kind of bridges the class sees while on a field trip.

Resources:

Building Bridges and Tunnels by Jackie Gaff

Bridges by Ken Robbins

Bridges Across the Gap by Barbara Armstrong

The Bridge Book by Polly Carter

Bridges Go From Here to There by Forrest Wilson

Unit: Tennessee River

Lesson: Where the River Begins by Thomas Locker
Literature discussion group

New Words:

flowed	beginning	familiar
grazing	foothills	guide
boulders	narrow	campsite
wading	flickering	drifting
soothed	stiff	grassy
knoll	gaze	meandered
lazily	disappear	journey
trickled	upland	pitched
awakened	recognized	weariness

Day 1: Introduce the book. Read the title and look at the cover illustrations.

Open the book. Look at copyright and dedication.
Look at the title page illustration.

As a group, complete a story map with the students' predictions about the story. After looking at the cover and title page illustrations, ask students to predict the setting, characters, problem, action, and outcome of the story.

Decide together about a reading plan for the week (27 pages).

Remind students to complete the front of their booklets when they return to their desks. They should come to group tomorrow with thoughts and wonderings, and new words they want to talk about.

Day 2: Discuss the part of the story read yesterday.
Share thoughts and wonderings.

Take time to look closely at the book illustrations. What does Thomas Locker tell us about the river through his illustrations? What kind of mood does he set with his pictures?

Go over any new words they need to discuss.

Review reading plan for today.

Day 3: Discuss the part of the story read yesterday. Share thoughts and wonderings. Go over new words.

Give each student a blank story map. Ask them to complete the story map when they finish the book.

Day 4: Discuss the part of the story read yesterday. Share thoughts and wonderings.

List and discuss new words.

Compare story maps that students completed after reading to their predictive story map done before reading.

Unit: Tennessee River

Lesson: Formulating research questions (mini-lesson)

Objective: Students will write informative and answerable questions about their research topic.

Materials: transparency of research sheet from whole class research
transparency of an empty research sheet

1. With transparency of research sheet from the whole class research done previously, review the questions that the class choose to research about the topic. Talk about how some of the questions were easy to research, while other questions were very hard to answer.

2. Put up a blank research sheet. Ask students what they would like to know about their research topics. Assist students in making questions that would address their interests.

3. After a few examples have been done, instruct students to pair off with their research partners and begin to formulate seven research questions for their topic.

4. Conference with each pair of students after they have finished writing their research questions. Check for similar questions. Point out questions that may be hard to answer but do not force students to change the questions. However, let the students know that they can change a question during the research process if they find that one question cannot be answered or is not applicable to their topic.

Unit: Tennessee River

Lesson: The source and the mouth (mini-lecture)

Objective: Students will define the "source" and the "mouth" of a river in words and on a river model.

Materials: Where the River Begins, Thomas Locker
map of the Tennessee River

1. Read Where the River Begins. (This should not be the first reading of the story.) Discuss where the journey started and where it ended.
2. Look at a map of the Tennessee River. Have students locate the beginning and the end of the river.
3. Write down the word "source". Ask if anyone can define the word. Discuss how source is the origin of something or where something came from. Give examples like "A cow is the source of milk." Then ask students to relate the word "source" to a river. What would be the source of a river?
4. Write down the word "mouth". After discussing the meaning of the word in contexts that the students already know, tell students that the mouth is the end of a river.
5. Look at maps of other rivers and the river model in the classroom to explore the meaning of the words "mouth" and "source".
6. Continue using the word "mouth" and "source", in context, whenever discussing rivers in the classroom. Encourage students to use the words and to record the words in their journals.

RESEARCH

Learning research skills was a main focus of the Tennessee River unit. The following are samples of student research of animals that live in or around the Tennessee River. The samples include the written report, a list of references used, the research (QUAD) sheet, and the assessment checklist.

Eagle

There are 59 Different Kinds of Eagles. They are different Sizes and colors. Their wings are 8ft. and weigh less than 2 pounds. They have more than 7000

feathers. Eagles eat fish rabbits birds snakes.

Eagles have one predator the man. We need to stop cutting down their habitats.

The bald eagle got its name from its white head.

It's special because its

orig Contry bird.

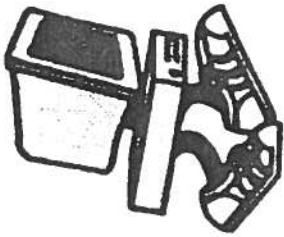
Their nest is made out of
big sticks. They use the same
nest every year.

References

- Shee about Eggle

Grotier Electronic Comp

Zoo book Eggle



Research Sheet

Name #5 Janna & Josh #1/5



Topic Eagle

Questions

Answers

Details: How? Why?

1. How many
different kinds

59 different
kinds.

They are different
sizes and
colors.

2.

how did the bald Eagle there
3. get its name
hard
us wife

its are
conrups bird

~~that is their
nest. Re? i~~

Its made
out of
sticks

They use
the same nest
every
year.

Questions	Answers	Details: How? Why?
-----------	---------	--------------------

5. ~~What~~ tap of ~~food~~ da' tray Ent? ^{is}

6. ~~What~~ are thear ^{Man. Stop}
~~Phatun~~ cutting down
 their habitats.

7. ~~How~~ big ^{8 ft. long}
~~the~~ ^{weigh less}
^{than 2 pounds}
^{more} ^{than 7000}

References:


Sheet door Case #5

Golden Electron Shy #3

Zoo book Eagle #6 and 4 and #7 #1

Joshua
Name Joshua Teana Date 11/4

Project: River Animal Research

Overall Grade: 22/27 2.4/3.0 

+ Excellent ✓ Satisfactory - Needs Work

		Comments:
'Everything I already know about my topic' sheet.	+	Good information.
Questions on Q.U.A.D. sheet.	✓	
Answers on Q.U.A.D. sheet	✓-	} You did not work very independently in finding your answers and details.
Details on Q.U.A.D. sheet	✓-	
References (at least 3 different ones)	+	
Paragraph Graph	NA	
Written report	+	
Picture for Presentation	+	Your picture of an eagle was great!
Presentation	✓	
Met research deadlines	+	

Hawk

Hawks are birds. Their wings are very long. The great hawks wings are 44 inches. The boy hawks wings are 20 inches. They have very good eye sight. If they look straight they can see left and right. This helps them see their prey better. They dive down to get their food. Hawks build their nest on cliffsides. Sometimes they build their nest on buildings and ground and tall poles. Hawks lay eggs to have babies..

References

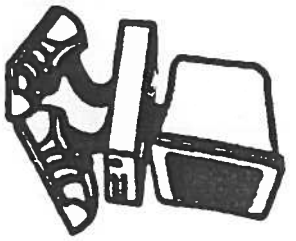
Nature's Children p. 34 Hawks

Shet Fame Mrs. Clark # 8 Hawks

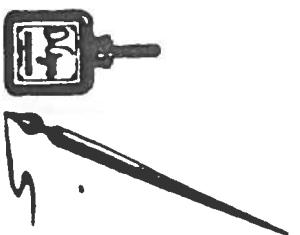
Nature's Children 38 Hawks # 6p.

34 Encycloped 109 5

Research Sheet



Name Ioda Laura



Topic Hawks

Questions

Answers

Details: How? Why?

1. How can the hawks see the food up in the sky?

very good

if I had look still then I can see left and right to

2. How do they get the food?

They dive swoop down to get it

3. How do they have babies?

eggs

4. How do

they move there? why?

Questions

Answers

Details: How? Why?

5. How big are they? ^{wings?}

Tal wings are very long The girls 144 in

6. Were are there home? ^{in a different} And how big is there home? ground build

7. Who are there? Emma's

References:

Nature's children 1, 34 Hawks

Shelford M. Clark 18 Hawks

Nature's children 38 40 100 34
Encyclopedia 109 5

Name Ioda LauraDate 11/4

Project: River Animal Research

Overall Grade: 22.5 2.527

+ Excellent ✓ Satisfactory - Needs Work

		Comments:
'Everything I already know about my topic' sheet.	+	-
Questions on Q.U.A.D. sheet.	+	Remember to change your questions next time if you have trouble answering the ones you wrote.
Answers on Q.U.A.D. sheet	✓-	You did not answer three of your questions.
Details on Q.U.A.D. sheet	✓	Needed more details.
References (at least 3 different ones)	+	Used 3 references for report - found several more
Paragraph Graph	NA	
Written report	+	Nicely written!
Picture for Presentation	✓	
Presentation	✓	
Met research deadlines	+	

RIVER JOURNALS

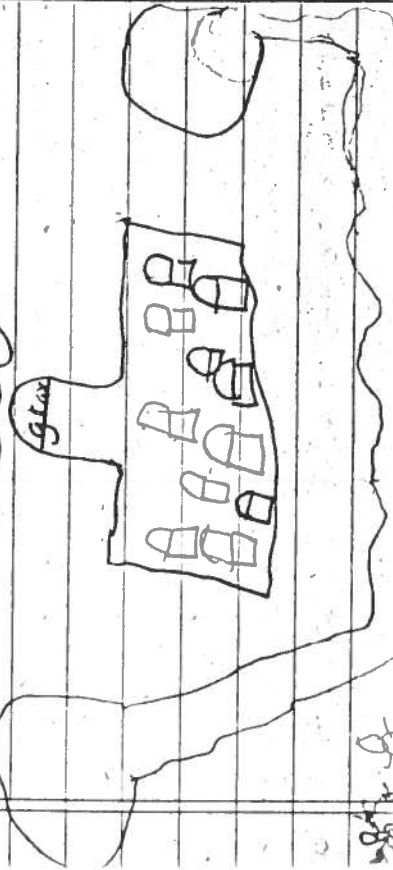
The following are journal entries made in students' river journals. The journals were kept during the river study as a place for students to write about information or concepts shared in class by the teacher or by their peers. It was also a place for students to write and draw about observations made on field trips or during class experiments. Finally, the journal was a place for students to record any of their thoughts or questions pertaining to our river study.

NOV 6 1996

If I Lived near
the river and
people wanted a dam

... I wud say no to
the people. I wud

n't wot to Live in a hose
iv Lived in all my life.



Oct 18 1996

Erosion means that

Weather is a

Rapen Falls. It's a

In a litted water

Fall and then when

It makes a hole

In the river and

It makes the

Weather Fall bigger.

NOV, 21 1996

What I Leread.

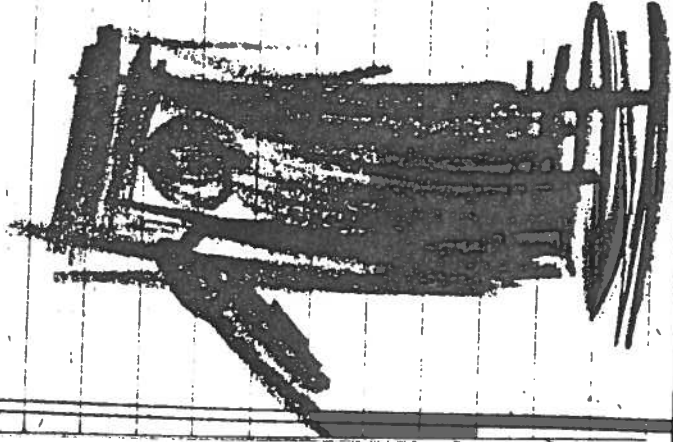
There are lots
of dams on
the Tennessee
river. The
Tennessee river
goes to the
Mississippi river
near the delta.
There are lots-

Oct, 21, 1996

Leaves covering
the sky

Lots of leaves
and branches.

woodpeckers live
here



October 22, 1996.

Dear River I
hope nobody
pulted you

You are clean
you are blue.

And I love you
River you are

Special

Oct. 25, 1996

We are at the
Swamp the times

10:39 a.m. Monday

on a Fieldtrip. I see
lots of plants under
the water. I see

minas and tad poles
and I wonder how

deep it is?

TENNESSEE RIVER UNIT- REFLECTION

The idea for creating a unit study of the Tennessee River came from a discussion in a social studies methods class about how children are often asked to learn about places and animals that are far out of their experience range. For example, studies of the rain forest are common in elementary schools but most students have never seen a rainforest nor will they ever have the chance to do so. Through a study of the Tennessee River, students can explore many of the same concepts that a rainforest unit might provide, such as animal habitats, conservation, human use vs. abuse of natural resources, and the dynamic forces that are nature. Yet with the Tennessee River study, these concepts are placed inside a student's own experience. Not only can the students visit the Tennessee River, but they can also relate to the uses of the Tennessee River because they themselves benefit by receiving water, food, and even electric power from the river. By placing the science and social studies concepts within the students' own frame of reference, instruction became more developmentally appropriate, providing more chances for accessing students' prior knowledge and for exploring in a concrete manner.

My original goals for this study were the following:

1. Explore the concept of a river. A river has freshwater, a current, a bed and banks, a mouth and source, and causes erosion.;
2. Study the animals that live in and around the

river and the importance of the river to these animals.; 3. Study the uses and abuses of the river by humans. Humans use the river as a water source, a food source, for recreation, for transportation, and for industrial use.; 4. Study the structures that are common on rivers, such as bridges and dams.; 5. Explore changes that have occurred on and around the river over time. People have always used the river in many of the same ways, but the tools, boats, and settlements they created have changed. The river itself has changed through natural occurrences and through human engineering. I feel that my students and I successfully meet many of the goals of the study, but my ability to completely meet all of these goals was hampered by lack of time, lack of resources, and student developmental level.

As I think about what I will do differently the next time I teach this unit, several ideas come to mind. First, I wish to spend more time and gather more resources about the ways in which people use the river. Industries are a major user of the river; they are also major contributors to river pollution. Therefore, I would like my students to take a closer look at how industries impact the river. Second, I would plan to spend more time on river structures (i.e. bridges and dams). I was unprepared for the engagement my students had with bridges and dams. We spent only three days discussing and working with bridges and dams, yet they were the overwhelming choice of students for their final unit project. Bridges and dams provide a good framework for

introducing students to some simple elements of structures. Lastly, I would like to devote more time to developing writing within the unit, allowing students more time to journal write and encouraging creative writing also.

Overall I was pleased with what my students were able to accomplish within this study. I was also pleased with what I was able to accomplish. My cooperating teacher and I were able to gather many resources that will be used again for a Tennessee River study. We compiled river related literature that allowed for integration between reading and the science\social studies unit. We contacted resources that allowed us to bring in guest speakers and take the class on two field trips. We gathered resources for student research and we devised a way for a river model to be made and used in the classroom. I believe that we made a good beginning in developing and teaching this Tennessee River unit.

Unit: Tennessee River

Grade Level: 5

Time Frame: 4 weeks

Rationale: The Tennessee River unit for fifth grade students is designed to fit into the American history curriculum in the fifth grade social studies. The unit emphasizes knowledge objectives involving the historical changes of the Tennessee River and the Tennessee Valley region through which the river flows. The primary purpose of the unit is to provide students with the skills needed to research history using resources such as local experts, newspapers, and primary documents. The unit will be placed into the fifth grade social studies curriculum at the beginning of the year, providing students with a historical overview of their local region and with research skills that will be utilized throughout the year.

OBJECTIVES

Knowledge Objectives

The student will...

- compare and contrast uses of the river by humans from pre-colonial times to the present day.
- describe the impacts humans have made on the physical appearance of the river and the surrounding environment.
- identify different modes of transportation used on the river.
- discuss the role of the river in human settlement of the area.

Skill Objectives

The student will...

- research historical data through the use of encyclopedias, magazines, newspapers, nonfiction books, local experts, and primary documents.
- read and interpret primary documents.
- write nonfiction and fictional works.
- read nonfiction and fiction tradebooks for enjoyment and for a purpose.
- build map skills.
- develop creative thinking and problem solving skills.
- build cooperative skills.

Attitude Objectives

The student will...

- develop and appreciation for the beauty and usefulness of the river.
- build an enjoyment of reading.
- develop pride in his/her ability to research, write, and create.
- value the river and its place in the development of the local area.
- value history.

RIVER RESEARCH

Possible topics for river research are listed below. Students may choose one of the following or design their own research project. Final presentations will be both written and oral.

1. Many types of boats traveled the Tennessee River. Draw or build a model of a boat used on the river sometime in the past or present.
2. Research the Native American peoples who once inhabited the Tennessee River region. Display your knowledge in a report, a story, a drawing, or a diorama.
3. The creation of the Tennessee Valley Authority brought many changes to the Tennessee River and the Tennessee Valley region. Research the reason for the creation of TVA and discuss its initial goals.
4. Dams are a prominent feature on the Tennessee River. Research one or more of the dams on the river. How were they built? How do they work?
5. The Muscle Shoals canal was constructed in an effort to ease navigation of the Tennessee River. Research this project to discover why it was needed and how successfully it solved the navigation problem.
6. De Soto and his explorers once traveled the Tennessee Valley. Read an account of these explorations. Then write a journal as if you were along on the trip.
7. Many types of wildlife depend on the Tennessee River as a habitat. Make a wildlife gallery of river animals.
8. Farming has long been important to the Tennessee Valley. Interview a local farmer to discover how this industry works.
9. The Tennessee River was rated in a recent study as the fourth dirtiest river in the nation. Explore possible causes of the river pollution and discuss ways the pollution could be stopped.
10. Several Civil War battles were fought along the Tennessee River. Research and write about one of the battles

as if you were a soldier or an observer at the battlesite.

11. A nineteenth century traveler through the Tennessee Valley, Anne Royall, wrote many letters describing her visit to the area. Read her letters and then write some of your own, pretending you are a visitor to the Tennessee River region at some point in the past.

12. The river is vital to several local industries. Pick one local industry to research. How is the river used in their manufacturing process?

13. In the nineteenth century, it was not easy to bring a steamboat up the Tennessee. You are a passenger on such a steamboat journey. Keep a journal as you make the trip.

14. The watershed area for the Tennessee River includes the town in which you live. Map the streams, creeks, and drainage systems of our town and show their route to the Tennessee. Can you identify any potential points of pollution?

RESEARCH

My personal research involved two topics. I searched for any information about the application of constructivist learning theories in social studies. I also searched for articles that dealt with the study of rivers. This was not an exhaustive study of available literature; however, there seems to be very little information about the application of constructivism in the social studies classroom. I was able to find several helpful articles involving river studies. These I have summarized here.

STUDYING THE RIVER: ARTICLE SUMMARIES

Studying a river provides many opportunities for integration and activity in the social studies and science classroom. The articles summarized below provide ideas and resources for a teacher interested in beginning a river study. The articles, from both science and social study journals, demonstrate that a river study can be motivating and educational for both students and teachers.

"A River Runs Through Science Learning" (Stanley, 1995) describes a river study that grew out of a pre-existing river appreciation program in the community. The students involved in the study explored science and social studies concepts by studying river formation and settlement along the river. Stanley's class used in-class activities to study the water cycle and river formation, making a river model to demonstrate what they had learned. Outdoors, the students took guided walks along the river with parent volunteers who called attention to points of interest and told stories of local history.

The authors of "Making the River's Bed" (Nelson and Chu, 1995) were motivated by the 1993 flooding of the Mississippi River to create a study of the river for local students. The study involves making a model of a river for the classroom, exploring the river current by testing the

stream's velocity, and studying the physical characteristics of organisms that live in the river current. The article also lists a variety of children's literature that involve a river theme.

"Social Education as the Curriculum Integrator: The Case of the Environment" (Lombard, McGowan, and McGowan, 1994) outlines a plan for teaching students about environmental issues with the integration of children's literature. The article contains reviews of several books that would be useful in an environmental unit as well as in a river unit.

The importance of water and the ways in which humans use water is discussed in " 'Thinking Globally, Acting Locally': Using the Local Environment to Explore Local Issues" (Simmons, 1994). The unit plan includes exercises to demonstrate the small percentage of freshwater on the earth and to map a watershed area in order to discover potential pollution sources of the local river. The study also involves students in research of the past and present uses of the river through interviews of community members. The author, Simmons, stresses that a study of water provides a way to introduce students to global environmental issues.

In the "Teaching Ideas" section of Social Education (October 1996), Anita Allen discusses a study of three rivers, the Mississippi, the Nile and the Rhine, developed for use in a high school program. The study centers on the geography, history, and the literature and arts connected

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with each river. Allen list activities for students to accompany each part of the unit. She also provides a listing of "river research contracts", research projects for students to complete independently.

Every river study is different, depending on the local area and the resources available to students and teachers. However, studies of rivers provide a excellent way to integrate literature, science, and social studies in the classroom.

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