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## Facilitating science understanding through children's literature

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## Facilitating science understanding through children's literature

### Abstract

Americans have been enamored with the achievements of industry until recently considered successful. In fulfilling the goal that all citizens should be literate, assembly line techniques associated with industry have been extrapolated to educational programs for children. The development of the total product has been broken into small segments. Reading instruction, too, frequently has been oversimplified and associated with a scope and sequence of skills for children to master. Students have been subjected to pretest, teach, posttest with mastery of language fragments measured by a percentage level assuming that learning has taken place.

FACILITATING SCIENCE UNDERSTANDING  
THROUGH CHILDREN'S LITERATURE

A Research Paper

Submitted to

The Department of Curriculum and Instruction  
The University of Northern Iowa

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts in Education

by

Michelle A. Sand

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This Research Paper by: Michelle A. Sand

Entitled: Facilitating Science Understanding through Children's  
Literature

has been approved as meeting the research paper requirement  
for the Degree of Master of Arts in Education.

Jeanne McLain Harms

7/13/87  
Date Approved

~~Director of Research Paper~~

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Greg P. Stefanich

7/22/87  
Date Approved

~~Head, Department of  
Curriculum and Instruction~~

Americans have been enamored with the achievements of industry until recently considered successful. In fulfilling the goal that all citizens should be literate, assembly line techniques associated with industry have been extrapolated to educational programs for children. The development of the total product has been broken into small segments. Reading instruction, too, frequently has been oversimplified and associated with a scope and sequence of skills for children to master. Students have been subjected to pretest, teach, posttest with mastery of language fragments measured by a percentage level assuming that learning has taken place.

Teaching language in fragments unfortunately is based on faulty premises, for language is a process rather than a product, it is learned through using it to think and interact with others, and children move from understanding it as a whole to its parts (Goodman, 1986). As the Japanese have shown Americans in recent years, industrial workers to be highly productive need to have more than monetary reward; they need to have a sense of identity with the total. Students in language instructional programs also need to own their experiences as they create meaning (Graves, 1984).

The accountability techniques of industrial management adapted to school instruction allow students little ownership of their language experiences. Classroom teachers under pressure for accountability from administrators who are in turn under pressure

from the media, parents, and society in general often claim that no time can be spared for quality literature being read aloud by the teacher for enjoyment and models of language and for children reading and interacting with others concerning their story construct. The experiences are viewed as frills, or extras, that are too time consuming and enjoyable to be worthwhile educational experiences. The texts in the different areas of the curriculum have to be covered, the workbook pages and worksheets for drill have to be completed. In stressing accountability, educators have only succeeded in making learning to read difficult and meaningless for students.

#### Extending Literature Across the Curriculum

Allowing students to own their language learning can be facilitated through literature experiences extended across the curriculum. The different genres of literature can extend not only language learning but the understandings developed in the arts, social studies, and sciences. Without the narrative element, in textbook materials, emotional connections between human interactions are underestimated. How the concept is presented in written form is as important as what concept is presented (Sawyer, 1987). Science and social studies textbooks tend to offer facts, without including the need to have those facts developed and to further connect that information to the students' background of experiences (Billig, 1977).

Brozo and Tomlinson (1986) have suggested some practical instructional steps to help teachers facilitate students' responses in content areas. The teacher needs to first identify the important concepts to be covered. Second, literature works that complement and expand the concept need to be collected. Third, by taking advantage of students' existing knowledge, the teacher can present the literature pieces before the textbook material. Other related works can be presented during and after the text presentation and discussions. Last, students can choose worthwhile activities to extend their understandings. These responses can guide teachers in assessing students' comprehension of concepts associated with topics and to assist students in establishing further goals for their learning.

In the case of the science area, the textbook offers a few pages of informational-type reading for each unit of study. This reading presents an intense but limited offering of facts which are difficult for many children, especially in the primary grades, to comprehend. Science units can become more meaningful to children through reading other types of literature which offer fewer facts and other dimensions to the topic. Poetry responds to the emotion in experiences. Contemporary poets have offered a wide range of emotional responses involving both praise and protest.

Traditional fiction, folklore, provides examples of humans' use of their imaginations to create enjoyable stories and to

explore the nature of human existence--themselves, others, and the world around. Through these works, children can realize a common bond with other cultures, for people in all times and places have sought the meaning of life and knowledge of the world as seen in the many versions of folk stories. These works are analogies, and their motifs can be representative of the staple of life and the environmental pressures of a specific culture. The themes representative of the wisdom of the ages--humans can overcome evil with good through ingenuity, simple virtues and some sacrifice--can be related to the problem-solving process in the school science program.

Contemporary fiction, both fanciful and realistic, can present humans in modern settings involved in action and then achieving resolve. Historical fiction and biography can also offer models of those who were resourceful and achieve solutions as well as a perspective of human progress in understanding life and solving problems.

Informational works can extend understandings and can focus in depth on a specific concept or aspect of a topic.

#### Developing a Literature-Based Science Unit

In developing a science unit based on literature, attention needs to be centered on the generalizations as they are learned through the process of inquiry. A representative unit for grade two is Small Creatures, focusing on frogs and turtles. The school's



curriculum guide was consulted for a listing of understandings.

They are listed below.

Recognize certain changes in living things

Associate changes with growth and reproduction

Identify basic needs of living things

Recognize ways in which various animals move

Recognize the stages of development of frogs

Distinguish between animals that hatch from eggs and animals that are born alive

Recognize animal homes.

In locating the works of different genres, several references were used. Pictures and informational books were listed by subject in the card catalog. Both the Subject Index to Poetry for Children and Young People 1957-1977 (Smith) and the Index to Poetry for Children and Young People (Brewton) were helpful guides for finding specific poems pertaining to a particular subject published in collections. Finding folklore was a similar process: Single-title editions could be located using author, title, and subject entries in the card catalog and individual stories in collections and specific motifs and subjects were found through folklore indexes. The reference sources are presented in Appendix B.

Some of children's language learning can be facilitated in a literature-based science unit through the activities contained in sustaining centers and also teacher presentations and centers specific to the unit of study. Sustaining centers are part of the

ongoing interests and studies of the classroom and are adapted as the different units of study are presented to be kept up throughout the year. Specific centers, on the other hand, are intended to extend topics of study.

In initiating an activity unit, students need to be introduced to their learning environment in order for students to understand the bounds for behavior and to realize ownership for their own learning experiences. Thus teachers need to explain and demonstrate the potential for meaningful activities. Individual workshop groups which allow for peer interaction can tour their learning environment and also practice with the teacher ways to function in the science and language processes. The workshop groups will be able to utilize both sustaining and specific centers.

An informal teacher-class discussion before the presentation of the unit can assess the children's prior knowledge of the topic.

### Sustaining Centers

#### Reading/Listening Center

A collection of literature and accompanying tapes enhances science understandings and language learning. It consists of works representing all genres associated with the units of study.

#### Poetry Center

A variety of kinds and forms of poetry offers responses to the emotions in experiences. Collections of poetry and tapes pertaining to the units, as well as works of individual poets can be available in this center.

### Author/Illustrator Center

The comprehension/composition connection is extended by focusing on the works of a particular author/illustrator accompanied by a collection of information that shows the relationship of the works, his/her life experiences, and the composition process. This information can consist of biographical sketches, journal articles, and correspondence with the author/illustrator. For this unit, the author/illustrator, Arnold Lobel, can be highlighted because of his popular Frog and Toad books.

### Sensory Awareness Center

This center contains activities that extend experiences dealing with imagery/sensory experiences with the world around. Collections developed by the teacher from many sources, and tapes and questions dealing with aspects of the senses may be included.

### How to Share a Book Center

Ways to share literature are compiled and used as a reference. Some examples include creating displays, book jackets and bookmarks, puppets, games, and letters.

### Storytelling Center

Ways to retell stories and specific experiences with literature accompanied by expressive activity can be offered. Suggested experiences are composing endings for open-ended stories and providing the text for minimal or no-text works. This center provides students with the opportunity to respond to a variety of activities through the use of a tape recorder.

### Centers Related to Specific Works of Literature

These centers can be a part of the unit of study.

Title: Changes

Science Understanding: Recognize certain changes in living things

Literature Experiences:

Tim Tadpole and the Great Bullfrog (Flack)

A Frog Is Born (White)

No Ducks in Our Bathtub (Alexander)

A Frog's Body (Cole)

Related Activity:

Retell orally one of these stories.

Draw a picture of an idea which is important from one of the books.

Become an imaginary frog egg. Tape your thoughts and feelings as you imagine your changes and growth into a frog.

Title: All I Need Is . . .

Science Understanding: Identify the basic needs of frogs and turtles

Literature Experiences:

Old Bullfrog (Freschet)

Jump, Frog, Jump (Kalan)

Fish Is Fish (Lionni)

You Can't Catch Me (Oppenheim)

Let's Get Turtles (Selsam)

The Frog (Lane)

Related Activity:

Imagine you are a parent to a frog or turtle. What would you tell your child to help it survive on its own?

Create a list of things into a chart to show how to care for a frog or turtle in a classroom environment.

Title: Watch Me!

Science Understanding: Recognize ways in which various animals move

Literature Experiences:

Fast Friends - Two Stories (Stevenson)

Jump, Frog, Jump (Kalan)

A Frog's Body (Cole)

Frog Went A-Courtin' (Langstaff)

Gorky's Rises (Steig)

The Tortoise and the Hare (Stevens)

Related Activity:

Use puppets to re-enact The Tortoise and the Hare. Write or tell how a frog could be substituted for the hare, or could race on roller skates or in the water.

Make a map of the route of the race.

Make a list of reasons why a frog/turtle moves the way they do. Create a chart showing animals that move in similar ways.

Title: Homes

Science Understanding: Recognize animal homes, especially frogs and turtle habits

Literature Experiences:

Spring Peepers are Calling (Billings)

Fast Friends - Two Stories (Stevenson)

Common Frog (Putnam)

Let's Be Friends (Selsam)

It's Mine (Lionni)

Related Activity:

Collect drawings or pictures of animal homes for a display.

Title: Stories of Explanation

Science Understanding: Recognize animal characteristics

## Literature Experiences:

"Osebo's Drum" Courlander's collection, The Hat-Shaking Dance  
 "Anansi and turtle and pidgeon" McDowell and Lavitt's  
 collection, Third World Voices for Children  
 "How the Turtle Came" Macmillan's collection, Glooskap's  
Country

## Related Activity:

Think of an animal's characteristics, something that seems very common. Create your own folktale telling how it happened to be the way it is now (tails, color, feet, etc.).

## Title: Pets

Science Understanding: Develop awareness for care of pets

## Literature Experiences:

Spring Peepers are Calling (Billings)  
Discovering What Frogs Do (Simon)  
Pig Pig Goes to Camp (McPhail)  
No Ducks in Our Bathtub (Alexander)  
Let's Get Turtles (Selsam)

## Related Activity:

Describe a desirable pet--real or imagined.

Pretend you are a parent or child in Pig Pig Goes to Camp, or No Ducks in Our Bathtub. Act out the dialogue with a partner.

Think about your home environment. Create a picture list of what pets would be welcome in your home and which would not.

Ask your classmates for their choice of a favorite pet and why. Collect the information in a chart.

## Title: Solving Problems Together

Science Understanding: Awareness of possible environmental problems

## Literature Experiences:

Frogs and Toads (Turner)  
The Frog (Lane)

## Related Activity:

Create a list of some problems frogs have living in our world and some possible answers.

If you had the magical powers to change our world in any way, tell what you would do and why. Draw, write, or tell what your new world would be like.

## Title: A Bit of a Surprise!

Literature Experience:  
The Animal (Balian)

## Related Activity:

Read until the marked page. Illustrate and/or write about what you think the "animal" looks like. Then finish the story.

Literature Experience:  
The Frog Prince: A True Story (Canfield)

## Related Activity:

Write, illustrate, or tell where you think the frogs went and why.

Literature Experience:  
The Frog on Robert's Head (Cleveland)

## Related Activity:

Read the dialogue.

Choose a character and tell or write the story from that character's viewpoint.

Literature Experience:  
Who's in Rabbit's House? (Aardema)

## Related Activity:

Make masks for the story characters and act out the play.

Use puppets to act out the story line.

Title: Fun with Frogs

Literature Experiences:

Frog Goes to Dinner (Mayer)

One Frog Too Many

Frog, Where Are You?

A Boy, A Dog, and A Frog

Frog on His Own

Related Activity:

Choose one of the following Mercer Mayer books which has no text. Create the storyline by either writing or taping it.

Title: The Race

Literature Experiences:

The Tortoise and the Hare (Stevens)

The Hare and the Tortoise (Castel)

Related Activity:

Make a list of how the versions are alike and different.

Write or tape how you would persuade your friend to read one of the books.

Title: Fun with Frog and Toad

Literature Experience:

Frog and Toad Together (Lobel)

Related Activity:

Extend one of the five stories, for example:

"A List" - Create lists of frog and toad's favorite foods, activities, groceries, authors/illustrators you enjoy.

"A Garden" - Use magic seeds to plant in your own garden. Write about what might come up.



"Cookies" - Write a recipe for cookies frog and toad could not resist.

Write when you had to use your will power.

"Dragons and Giants" - Write, draw, or tell about an experience when you were frightened, but had to be brave.

"Dream" - Write, draw, or tell of a dream you remember.

Title: Kiss a Frog

Literature Experiences:

Claude and Claudine (Berson)

The Frog Princess (Isle)

The Frog Prince: A True Story (Canfield)

"The Frog Prince" (Haviland)

"The Frog Prince" (Arbuthnot)

Related Activity:

Choose a version and tell it from the viewpoint of one of the characters.

Compare and contrast the versions.

Title: Friendship

Literature Experiences:

Frog and Toad Are Friends (Lobel)

Days with Frog and Toad (Lobel)

Fish is Fish (Lionni)

Timothy Turtle (Davis)

Bullfrog Builds a House (Dauer)

Fast Friends - Two Stories (Stevenson)

Related Activity:

Create a list of how friends can help each other.

Illustrate a picture of you and a friend doing something special.

Write several ways you can be a good friend.

### Summary

A literature-based science unit provides an opportunity to expand knowledge beyond the textbook. The literature works representative of different genres in the study of small animals--frogs and turtles--offer an enriched learning experience. By extending meaningful literature experiences, the potential for learning, and the desire for learning, is increased. Students will not only learn science understandings but gain many dimensions of a topic. An annotated bibliography of works from different genres is presented in Appendix A.

## Appendix A

## LITERATURE TO SUPPORT THE SCIENCE UNIT

## Study of Turtles

Poetry

The poems with frog and images are listed by form, imagery, the element of surprise, and science understandings.

## Form

McCord, David. "Turtle," One at a Time. Boston: Little, 1974.

McCord, David. "Limericks," Speak Up. Boston: Little, 1980.

Maestro, B. "Slow Moving Turtle," Fat Polka Dot Cat and Other Haiku. New York: Dutton, 1976.

Prelutsky, Jack. "The Turtle," in An Arkful of Animals, coll. W. Cole. Boston: Houghton Mifflin, 1978.

Worth, Valerie. "Turtle," Still More Small Poems. Boston: Farrar, 1978.

## Imagery

Farber, Norma. "Turtle Song," Small Wonders. New York: Coward, 1979.

Ryder, Joanne. "A Stone in the Grass," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Ryder, Joanne. "So Busy," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Ryder, Joanne. "Something Angry," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Ryder, Joanne. "The Sun," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Swenson, May. "Living Tenderly," in A Book of Animal Poems, coll. W. Cole. New York: Viking, 1973.

### The Element of Surprise

Lindsay, Vachel. "The Little Turtle," I Like Poems and Poems Like Me, coll. P. Pagliaro. Kailua, HI: Press Pacific, 1977.

McCord, David. "Lost," Every Time I Climb a Tree. Boston: Little, 1967.

McCord, David. "LMNTL," One at a Time. Boston: Little, 1974.

Ryder, Joanne. "Ant," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

### Science Understandings

Garder, J. A. "The Turtle," A Child's Bestiary. New York: Knopf, 1977.

Ryder, Joanne. "Stalking the Field," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Ryder, Joanne. "Today," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Yolen, Jane. "The Turtle Sings an Egg Song," Dragon Night. New York: Methuen, 1981.

### Folklore

The folktales represent a variety of different cultures.

Aardema, Verna (coll). "Tusi and the Great Beast," in Behind the Back of the Mountain: Black Folktales from Southern Africa. New York: Dial, 1973.

Arbuthnot, May Hill (coll). "The Hare and the Tortoise," in Time for Fairy Tales, Old and New. New York: Scott, Foresman, 1961.

Belting, Natalia (coll). "In the Beginning, There Was No Earth . . ." in Whirlwind is a Ghost Dancing. New York: Warne, 1973.

Castle, Caroline. The Hare and the Tortoise. New York: Dial, 1985.

Courlander, Harold (coll). "Osebo's Drum," in The Hat Shaking Dance and Other Ashanti Tales from Ghana. New York: Harcourt, 1957.

- Elliot, Geraldine (coll). "The Tortoise and the Osprey," in Where the Leopard Passes: A Book of African Folktales. New York: Schoken, 1968.
- Galdone, Paul. The Turtle and the Monkey; A Philippine Tale. New York: Clarion, 1983.
- Green, Margaret (coll). "The Flying Turtle," in The Big Book of Animal Fables. New York: Franklin Watts, 1965.
- Jagendorf, Moritz (coll). "Little Head, Big Medicine," in Noodlehead Stories from Around the World. New York: Vanguard, 1957.
- Johnson, Clifton (coll). "How the Mud Turtle Came to Live in the Water," in What They Say in New England and Other American Folklore. New York: Columbia University, 1963.
- Leach, Maria (coll). "How the Turtle Keeps from Getting Wet," in How the People Sang the Mountains Up. How and Why Stories. New York: Viking, 1967.
- McDowell, Robert and Lavitt, Edward (coll). "Anansi and Turtle and Pidgeon," in Third World Voices for Children. New York: Joseph Okpaku, 1971.
- Macmillan, Cyrus (coll). "How Turtle Came," in Glooskap's Country and Other Indian Tales. New York: Oxford University, 1956.
- Tooze, Ruth. Three Tales of Turtle; Ancient Folk Tales from the Far East. New York: Day, 1968.

### Fiction

- Asch, Frank. Turtle Tale. New York: Dial, 1978.  
A young turtle learns by trial and error what a wise turtle would do.
- Balian, Lorna. The Animal. Nashville, TN: Abingdon, 1972.  
Patrick's friends imagine an increasingly larger and more dangerous animal, until they see what he really found.
- Davis, Alice Vaught. Timothy Turtle. New York: Harcourt, 1940.  
Timothy has help from his friends to get him back on his feet again.
- Graham, Al. Timothy Turtle. New York: Robert Welch, 1946.  
Written in rhyming verse, Timothy Turtle seeks adventure. He quickly learns life was not so bad on Took-a-Look Lake.

- Hoban, Lillian. Stick-in-the-Mud Turtle. New York: Greenwillow, 1977.  
Fred Turtle's family gets caught up in the quest for a better life.
- Hoban, Lillian. Turtle Spring. New York: Greenwillow, 1978.  
The family is puzzled by a bump in Fred Turtle's lettuce bed. They discover the newness of spring comes in many forms.
- Marshall, James. Yummers! Boston: Houghton Mifflin, 1972.  
Eugene Turtle tries to help Emily Pig lose weight by going on a long walk.
- Oppenheim, Joanne. You Can't Catch Me! Boston: Houghton Mifflin, 1968.  
A bothersome fly brags one too many times.
- Stevens, Janet. The Tortoise and the Hare: An Aesop Fable. New York: Holiday, 1984.
- Stevenson, James. Fast Friends; Two Stories. New York: Greenwillow, 1979.  
A snail and a turtle learn what it is really like to be 'fast' friends. A turtle and a mouse learn how to be friends by experience.
- Williams, Barbara. Albert's Toothache. New York: Dutton, 1974.  
Albert's Grandma is the only one who believes him when he complains of a toothache.

### Informational Books

- Blassingame, Wyatt. Wonders of the Turtle World. New York: Dodd, 1976.  
Photographs help show the characteristics and habits of various types of turtles as they are discussed.
- Selsam, Millicent Ellis. Let's Get Turtle. New York: Harper, 1965.  
Two friends decide turtles fit their criteria for pets, but they soon discover they must also learn how to care for them.

## Study of Frogs

Poetry

The poems with frogs and images are listed by imagery, the element of surprise, and science understandings.

## Imagery

Ailken, Conrad. "Frog," An Arkful of Animals, coll. W. Cole. Boston: Houghton Mifflin, 1978.

Issa. "A Drop of Rain," In A Spring Garden, coll. Richard Lewis. New York: Dial, 1965.

Issa. "The Frog," In A Spring Garden, coll. Richard Lewis. New York: Dial, 1965.

Lutton, M. "Bullfrog Communique," An Arkful of Animals, coll. W. Cole. Boston: Houghton Mifflin, 1978.

McCord, David. "Frog in a Bog," One at a Time. Boston: Little, 1974.

McCord, David. "Frog Music," One at a Time. Boston: Little, 1974.

McCord, David. "Speak Up," Speak Up. Boston: Little, 1980.

Merriam, Eve. "Wake Up," The Birthday Cow. New York: Knopf, 1978.

Moore, Lillian. "Song of the Tree Frogs," Something New Begins. New York: Atheneum, 1982.

Ryder, Joanne. "Even Old Catfish," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Worth, Valerie. "Frog," An Arkful of Animals, coll. W. Cole. Boston: Houghton Mifflin, 1978.

## The Element of Surprise

Bodecker, N. M. "Frog," Snowman Sniffles and Other Verse. New York: Atheneum, 1983.

Gardner, J. A. "The Frog," A Child's Bestiary. New York: Knopf, 1977.

McCord, David. "Notice," One at a Time. Boston: Little, 1974.

#### Science Understandings

Hoberman, M. A. "Frog," Yellow Butter Purple Jelly Red Jam Black Bread. New York: Viking, 1981.

Ryder, Joanne. "Frog Waits," Inside Turtle's Shell and Other Poems of the Field. New York: Macmillan, 1985.

Snyder, Zilpha Keatley. "Frog," Today is Saturday. New York: Atheneum, 1969.

#### Folklore

Different cultures are represented in the variety of folklore, including several versions of "The Frog Prince."

Arbuthnot, May Hill (coll). "The Frog-King," in Time for Fairy Tales, Old and New. New York: Scott, Foresman, 1961.

Arbuthnot, May Hill (coll). "The Frog and the Ox," in Time for Fairy Tales, Old and New. New York: Scott, Foresman, 1961.

Berson, Harold. Charles and Claudine. New York: Macmillan, 1980.

Darrel, Margery (coll). "The Frog Prince," in Once Upon a Time: The Fairy Tale World of Arthur Rackham. New York: Viking, 1972.

Isele, Elizabeth. The Frog Princess. New York: Crowell, 1984.

Leach, Maria (coll). "How Tadpoles Lost Their Tails," in How the People Sang the Mountains Up. How and Why Stories. New York: Viking, 1967.

Leach, Maria (coll). "Why Frogs Croak in Wet Weather," in How the People Sang the Mountains Up. How and Why Stories. New York: Viking, 1967.

McFarland, John. The Exploding Frog. Boston: Little, 1981.

Manning-Sanders, Ruth (coll). "The Frog," in A Book of Princes and Princesses. New York: Dutton, 1958.



Opie, Iona, and Peter (coll). "The Frog Prince," in The Classic Fairy Tales. New York: Oxford Press, 1974.

Stoutenburg, Adrien (coll). "Froggie Went A-Courting," in The Crocodile's Mouth; Folk-Song Stories. New York: Viking, 1966.

Toor, Frances (coll). "The Frog Bride," in The Golden Carnation, and Other Stories Told in Italy. New York: Lothrop, 1960.

### Fiction

Alexander, Martha. No Ducks in our Bathtub. New York: Dial, 1973.

David's mother finally agrees to some "fish eggs" for pets. Upon returning from vacation, they are surprised to discover 103 frogs in their bathtub.

Canfield, Jane White. The Frog Prince; A True Story. New York: Harper, 1970.

A sculptor wishing to create a statue of the Frog Prince chooses a "lordly-looking" bullfrog. Something strange occurs when she returns him to his pond.

Cleveland, David. The Frog on Robert's Head. New York: Coward, 1981.

Robert's sister comes up with a solution to get a bored frog off of his head.

Dauer, Rosamond. Bullfrog Builds a House. New York: Greenwillow, 1977.

With his friend Gertrude's advice, Bullfrog has all the important items a house needs--except for one thing.

Duke, Kate. Seven Froggies Went to School. New York: Dutton, 1985.

Master Bullfrog teaches the seven little frogs some important lessons.

Flack, Marjorie. Tim Tadpole and the Great Bullfrog. New York: Doubleday, 1934

The Great Bullfrog encourages Tim Tadpole to swim. He soon discovers he has arms and legs and is now Tim Frog instead.

Freschet, Berniece. The Old Bullfrog. New York: Scribner, 1968.

While pretending he is asleep, the wise old bullfrog elludes the hungry heron and shows how he became so old and wise.

- Kalan, Robert. Jump, Frog, Jump. New York: Greenwillow, 1981.  
A cumulative and repetitive tale describing how the frog tries to catch a fly without getting himself caught.
- Lionni, Leo. Fish is Fish. New York: Pantheon Books, 1970.  
Frog leaves the pond only to return telling Friend Fish about the world. After a near disaster, fish decides he is satisfied with his world.
- Lionni, Leo. It's Mine! New York: Knopf, 1986.  
Three selfish frogs bicker over who owns the pond and earth. A sudden storm helps them realize their problem and learn from it.
- Lobel, Arnold. Days with Frog and Toad. New York: Harper, 1979.  
Frog and Toad are Friends. New York: Harper, 1970.  
Frog and Toad Together. New York: Harper, 1972.  
The friendship of Frog and Toad is detailed.
- McPhail, David. Pig Pig Goes to Camp. New York: Dutton, 1983.  
Pig Pig goes to his first summer camp, so much, that he brings some of his new friends home with him.
- Mayer, Mercer. One Frog Too Many. New York: Dial, 1975.  
Frog, Where Are You? New York: Dial, 1969.  
A Boy, A Dog, and A Frog. New York: Dial, 1967.  
Frog on His Own. New York: Dial, 1973.  
Frog Goes to Dinner. New York: Dial, 1974.  
A series of small wordless texts that develop the storyline and relationship of the characters.
- Steig, William. Gorky Rises. New York: Farrar, 1980.  
A magic liquid allows Gorky to float through the air and turn a rock into an elephant.

### Informational Books

- Billings, Charlene. Spring Peepers are Calling. New York: Dodd, 1978.  
This book contains information on the development of spring peepers and their care in captivity.
- Cole, Joanna. A Frog's Body. New York: Morrow, 1980.  
A frog's anatomy is closely inspected with photographs and detailed text.
- Lane, Margaret. The Frog. New York: Dial, 1981. The life cycle of a frog, from tadpoles to mating, and the problems facing 20th century frogs are discussed.

McClung, Robert. Peeper, First Voice of Spring. New York: Morrow, 1977.

The peepers signal the beginning of spring in the woods.

Oxford Scientific Films. Common Frog. New York: Putnam, 1979.

The physical characteristics and habits of common frogs from Europe, United States, Australia, and elsewhere are described.

Simon, Seymour. Discovering What Frogs Do. New York: McGraw, 1969.

Information on hunting, capturing, and caring for developing frogs is presented.

Turner, Edward. Frogs and Toads. Milwaukee, WI: Raintree, 1976.

This book contains information about development, hibernation, defenses reproduction, and other characteristics. It also includes their relationship with man and ability to be pets.

White, William. A Frog is Born. New York: Sterling, 1972.

The focus of the text is on the development of fertilized frog eggs into mature frogs.

## Appendix B

## REFERENCES FOR LOCATING LITERATURE WORKS\*

Poetry

Two major indexes of children's poetry are available:

- YRP/808/S Smith, Dorothy B. and Eva L. Andrews. Subject Index to Poetry for Children and Young People, 1957-1977. Chicago: American Library Association, 1977.  
This single volume indexes 263 poetry collections published between 1957 and 1975, but they are indexed by subject only. Appropriate grade levels are indicated.
- YR/808/B Brewton, John E. and others. Index to Poetry for Children and Young People. New York: H. W. Wilson, 1942. Suppl. 1954, 1965, 1972, 1978, and 1983.  
This multivolume set, which includes title, subject, author, and first line entries, has been consistently updated with supplements making it not only the most complete but also the most current resource available on the subject.

Folklore

- YRP Eastman, Mary Huse. INDEX TO FAIRY TALES, MYTHS AND  
010 LEGENDS. Boston: Faxon, 1926.  
E -----, INDEX TO FAIRY TALES, MYTHS AND LEGENDS.  
Supplement. Boston: Faxon, 1937.  
-----, INDEX TO FAIRY TALES, MYTHS AND LEGENDS.  
Second Supplement. Boston: Faxon, 1952.
- YRP Ireland, Norma Olin. INDEX TO FAIRY TALES, 1949-1972.  
010 Westwood, Mass.: Faxon, 1973.  
I -----, INDEX TO FAIRY TALES, 1973-1977. Fourth  
Supplement. Westwood, Mass.: Faxon, 1979.
- YRP MacDonald, Margaret Read. THE STORYTELLER'S SOURCEBOOK:  
010 A SUBJECT, TITLE, AND MOTIF INDEX TO FOLKLORE  
M COLLECTIONS FOR CHILDREN. New York: Neal-Schuman, 1982.  
556 folktale collections and 389 picture books are included in this newest index of folklore for children. MacDonald has promised to keep the index current with supplements in the future. Separate indexes have been compiled for motifs, titles, subjects and ethnic/geographic locators. Like Eastman and Ireland, MacDonald

uses abbreviated citations for sources. The citations refer to full bibliographic entries provided in the back of the volume.

Some library users find the sourcebook difficult to use because motifs are listed according to the intricate Stith Thompson motif-index numbering system. If this becomes a problem for you, refer to pp. xiii-xvi in the introductory section.

YRP Ziegler, Elsie B. FOLKLORE: AN ANNOTATED BIBLIOGRAPHY  
398 AND INDEX TO SINGLE EDITIONS. Westwood, Mass.: Faxon,  
Z 1973.

Single-title editions are indexed by title, subject, motif, country, illustrator, and type of folklore. Although this publication is old, its subject and motif lists are still very useful.

\*Lucille J. Lettow, Youth Collection, Donald O. Rod Library,  
University of Northern Iowa, Cedar Falls, Iowa.

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- Brozo, William G. and Tomlinson, Carl M. (1986). Literature: The key to lively content courses. Reading Teacher, 40(3), 288-293.
- Goodman, Ken. (1986). What's Whole in Whole Language? Exeter, N.H.: Heinemann.
- Graves, Donald. (1984). The Researcher Learns to Write. Exeter, N.H.: Heinemann.
- Sawyer, Wayne. (1987). Literature and Literacy: A Review of Research. Language Arts, 64(1), 33-39.