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# Young Children as Researchers

## A Close Look at the Reading Process

Sylvia Read, Ph.D., Assistant Professor, Department of Elementary Education, Utah State University

### Abstract

*When collecting data on how first and second graders go about reading and writing information texts, important features of their work process emerged. In a qualitative study of information writing in the primary grades, twenty-four first and second graders worked in pairs over a period of two weeks to research self-selected topics and to produce written work suitable for classroom publication. Analysis of audio taped data revealed students successfully engaging in a broad range of reading-related tasks, including comprehension of the information texts, gathering information, and situating their learning through connecting with prior knowledge and personal experience. Results suggest that common practice in primary grade pedagogy may be underestimating the developmental readiness of these students to comprehend age-appropriate information texts.*

**Keywords:** Reading Comprehension, Content Area Reading, Early Childhood

### Introduction

Children can become familiar with and have experience with many genres of reading and writing from an early age. Poor performance with reading and writing expository texts in the later grades might be due to a lack of experience with non-narrative texts in the early grades (Caswell & Duke, 1998). Furthermore, for some children, the benefit of reading and writing non-narrative texts goes beyond simply preparing them for future encounters with non-narrative texts. For some, interacting with non-narrative texts may be the best path to overall literacy for some students, particularly boys and struggling readers/writers (Caswell & Duke, 1998).

After much reading and writing of predominantly narrative texts in the primary grades, beginning in third and fourth grades, students are often asked to write formal reports in an expository mode (Harvey, 1998). They are expected to read or process source materials (e.g., encyclopaedia articles, magazine articles, information books, information videos) and write about what they have read in ways that demonstrate their understanding of the material.

We do know that first-grade children can retell information texts (Moss, 1997; Moss et al., 1997). Also, young children are aware of differences between narratives and nonnarrative texts (Donovan, 1997; Langer, 1986).

The purpose of this research is to describe and interpret the ways in which children interact with information texts in order to comprehend them well enough to write their own information texts.

### Review of the Literature

#### Theory

The theoretical framework for my study comes from the work of Cambourne (1988), Hicks (1997), and Delpit (1997). Cambourne's conditions of natural learning are: immersion, demonstration, engagement, expectation, responsibility, approximation, use, and response. Cambourne's work is also relevant to my study because he addresses genre, making specific reference throughout his work to the many textual forms that children need to be reading, writing, and examining. In *Read and Retell*, Brown and Cambourne (1987) describe a teaching procedure that increases students' knowledge of text forms and conventions and increases their control over the reading and writing of various genres.

Hicks (1997) has proposed a synthesis of whole language pedagogy and an explicit emphasis on genre. Her argument is that the process writing method privileges middle-class learners, who come to school already familiar with many discourse genres, including information genres. She calls the teaching used with the "non-middle class" child "deliberately crafted occasions for science talk and writing" and says they are "exemplary of what might be desired for genre-specific instruction in the primary grades" (p. 480).

"Deliberately crafted occasions" are similar to the kinds of explicit instruction within meaningful contexts that Delpit (1997) recommends to "ensure that the school provides children with discourse patterns, interactional styles, and spoken and written language codes that will allow them success in the larger society" (p. 571).





To be truly literate, students, even as early as first grade, need to be immersed in and explicitly taught about all forms of language, all genres and discourses, all forms of meaning-making, so that they use literacy to understand, question, and explore alternative explanations.

Because of the predominance of narrative texts in elementary classrooms, it is sometimes assumed that children are less interested in information texts, are less capable of understanding them, and are less able to write them. This is not the case, however; Pappas (1991) and Moss (1997) demonstrated that primary grade children are able to comprehend, retell, and summarize information texts.

Comprehension can be assessed through retellings and re-enactments or “pretend” reading. Both Pappas (1991) and Moss (1997) argued from their results that children are able to understand information texts at a sophisticated level. Both studies used retelling and re-enactment as a measure of comprehension and both studies found that very young children are capable of understanding information texts at a relatively sophisticated level. Children not only are able to re-enact information texts, they are able to summarize them, identify their main ideas, and evaluate them.

### **Research Questions**

My focus for this research was to describe how primary-grade children interact with information sources and to describe how they comprehend those sources. The research question was: how do primary students interact with and comprehend information sources for the purpose of writing their own information texts?

### **Methods and Procedures**

#### **Participants and Setting**

This study focused on the 24 first and second graders (ages 6-8) in my classroom at Edith Bowen Laboratory School on the campus of Utah State University in Logan, Utah. The students in this class were primarily White, middle class students from homes where education is valued.

#### **Context**

The students in my class regularly engaged in self-selected research projects. I was the classroom teacher as well as the researcher and so I functioned as a participant-observer in the classroom. I set up a writing workshop environment (Atwell, 1990; Avery, 1993; Calkins, 1986; Graves, 1983) in which students were required to write but were allowed to pursue topics of their own choosing. I also had a daily “inquiry” time in which the whole class engaged in the study of a particular social studies or science topic through reading and writing from source materials. These were “deliberately crafted

occasions” (Hicks, 1997, p. 480) during which we read about and researched topics with an eye toward writing a class “book” for the classroom library as a whole class, in small groups, and as individuals.

### **Research Paradigm**

Because I was primarily concerned with how children read and write information texts, a qualitative case study method seemed most appropriate. Yin (1994) suggested that when the research questions are of a “how” nature, case study has distinct advantages over other methods. Because the class was a “bounded system” (Smith, 1978 as cited in Stake, 1994, p. 236), case study also was appropriate. I chose this design because I am interested in “insight, discovery, and interpretation, rather than hypothesis testing” (Merriam, 1998, p. 29).

### **Data Collection**

I recorded the students’ conversations over a two-week period as they worked in pairs reading and writing about a topic of their choice. There was a total of about 18 hours of transcribed talk.

### **Instructional Procedures and Timeline**

I began by modelling the research process. Over several days I read aloud an information book about praying mantises. After reading aloud a page or two, I would set the book aside and ask the students to tell me what they learned or what was important about the information I had just read. As they offered their answers, I wrote them down in sentence format on chart paper. At the end of the process after we finished reading the book and writing down what they had learned or thought was important, we reread all of the sentences they had dictated. I then set aside that text and told them we would write our own book about praying mantises. They dictated the sentences to me and I wrote them on chart paper. This text was typed and given to them to illustrate and take home.

Having modelled information reading and writing, I invited them to choose an insect they wanted to learn more about and I would find the books they needed for their inquiry. The students worked in groups of two or three made observations and field notes while students read and wrote information texts about insects of their choice.

In another unit of study, we followed a similar procedure using books about the solar system, space, and astronauts. On another occasion, I modelled note taking from a book about prairie dogs and the students used those notes to write their own original texts about prairie dogs.

Finally, I began the formal data collection. Based upon my observations concerning level of engagement during the instructional activities leading up to the period of data collection, I invited



the students to choose any topic they would like to research. They were put into small groups according to their preferred topic. I gathered books for their research both from the school library and the local public library. I asked them to write down anything they already knew about their topic, read the book(s) provided for them, and write down what they learned from reading them. I did not require them to do these in any particular order or in any specific way because I wanted to observe their decision-making and writing processes. For a 2-week period, I audio taped students as they worked on reading and writing about their information topic.

### **Data Analysis**

To analyse the data gathered through audio taping students as they read and write about information text, I transcribed the tapes and then used the constant comparative method (Glaser and Strauss, 1967) as I classified and coded meaningful chunks according to criteria that emerged throughout the process. As I read the transcripts, I labelled segments of the conversation according to what function I thought the students were primarily engaged in as represented by their talk.

### **Analysis of Student Talk During the Inquiry Process**

As the students worked together, their talk fell into three broad categories: talk about the reading, talk about the writing, and talk about their own behaviour. Though reading and writing were very much intertwined, this paper will focus exclusively on their reading behaviours.

### **Reading the Texts**

Most of the students began by reading the information texts that I provided. As they read, they talked in order to:

1. Clarify the meaning of the text
2. Decode the text
3. Draw inferences
4. Interact with the pictures in the book in order to get information
5. Make a personal connection or react to the text

**Clarifying meaning of the text.** As they read aloud to each other, the students would stop and comment on what they were reading. For example, as Ellie reads aloud to Leslie about pandas, she miscues on some words, but her clarifying statement reveals that she understood the passage.

E: Okay, I'll read you a little bit. [reading aloud from text] Lighting-Lighting (Ling-Ling) friends (finds) that a bright plastic retaining (ring) makes a great toy. They do some sort (somersaults) like circus clowns. So just a plastic thing like this can be a play toy to the panda.

Sometimes the clarification of meaning builds on itself, beginning with a rudimentary statement and then working up to a more complex understanding, as in this exchange about volcanoes between Mitchell and Evan:

E and M (reading chorally): Ay-shez (Ashes) covered the countryside. Winds carried them as far as two hundred miles away. Houses and churches were covered. Whole towns were buried under ash. Dinon Puldo (Dionisio Pulido) whatever farm was gone. It had become a volcano nearly a quarter mile high.

M: Well a mile isn't actually pretty long.

E: I don't know what a quarter mile is. Do you?

M: No. But I know what a mile is. So I think I know what a quarter mile is. It's like half of a mile.

E: Probably.

M: It's half of a half of a mile.

E: So it's like half and then half and then half of a mile?

M: See if you have four quarters, it's a dollar. So if I have four quarters of a mile, it's like...

Mitchell never finished his sentence because Evan interrupted to have Mitchell look at another illustration in the book, but they each came to a better understanding of the text through this conversational thinking out loud.

As Cameron was writing, he often talked aloud, which gave John a chance to correct him. In this case, they returned to the text on pyramids to clarify the meaning.

C: The smallest pyramid Giza--

J: No. That tells you what kind of pyramid it is. Let me see how tall the Giza is. The smallest is 217 feet.

J: The largest Giza pyramid is 482 feet.

C: 482.

J: feet. And it's built with 23 hundred thousand blocks!

C: It's built with about--

J: twenty three hundred thousand blocks.

C: Twenty three hundred thousand!

J: I know. That's almost a million.

C: No. Maybe that's two million, three thousand.

J: Two million, three hundred thousand.

C: Two million, three hundred thousand!?

J: I know. It would only have a comma if it was a million.

C: That's a lot.

Through their interaction, they were able to come to a better understanding of what they had read and this in turn was reflected in what they wrote.

Sometimes the clarification talk took the form of a dispute. Mitchell was trying to recall what he learned from a *Reading Rainbow* video about volcanoes. Evan did not seem to remember, but Mitchell tried hard to defend his understanding and his recall.

M: But that's just cold lava. Black lava is colder than red lava.

E: It's hot also.

M: I know it's hot, but it's colder than red lava.

E: No it's not.

M: Actually, black lava is cold. Black lava is not as hot.

Reading texts together with a partner gave these students many opportunities to rehearse and refine their understanding.

**Decoding the text.** Unless they are taught not to, students naturally provide words for each other and correct miscues. Carole corrected Lisa at every opportunity.

L: [reading aloud from text] Many century (scientists) believe that dolphins

C: No it's not century. It's scientist.

L: Scientists. [reading aloud from text] Many scientist

C: Scientists. You said scientist.

L: Stop bugging me. [reading aloud from text] Believe that dolphins have good eyesight both in and out of water.

Sometimes she did not give Lisa a chance to figure it out, but jumped in with the word.

L: [reading aloud from text] Many people were upset. They stopped eating tuna. Children sent letters to tuna companies. They--

C: Begged.

L: [reading aloud from text] begged them to help the dolphins. At last many companies. . .

C: Listened.

L: [reading aloud from text] Listened.

Lisa did get a few opportunities to correct Carole as well, and she did it with confidence and authority.

C: [reading aloud from text] Two years later, the same man came back. The min-ut—minute Kay-thee

L: Kathy

C: [reading aloud from text] Kathy saw him she tossed the ring right to him.

In the following example, she not only corrected Carole's reading of the word, but justified the correction by explaining the meaning:

C: [reading aloud from text] If people stop buying without this seal on the can the tuna companies may be forest

L: That's not forest. It's not forest. Forced, like made.

C: [reading aloud from text] Forced to change their way of fishing. That's the end. Okay!

Though children might benefit from the chance to figure out words on their own without intervention from a teacher or peer, they also benefited from having a peer available and interested in helping to figure out words.

Jennifer and Lori found a way to get around the problem of not being able to decode the word "engagement."

L: Okay. [reading aloud from text] An emerald is a symbol of success in love and so can be used in an en-- (engagement ring).

J: Just skip that word.

L: in a ring. I can't even understand it, okay? [reading aloud from text] An emerald is a symbol of success in love and--

J: An emerald is a symbol of success in love. Just write that.

In another example, Jennifer and Lori decide that the word "atoms" is pronounced "items." It is a good substitute since it is such a close match phonetically and semantically.

J: [reading aloud from text] Matter is everything that makes up the word and all matter is made up of atoms, items--

L: I think it's items.

J: [reading aloud from text] items, or arrangements of items called molecules. An item is the basic unit of matter, and molecules are similar or different items chemically bound together.

Even though Jennifer got it right the first time, I am guessing that "atoms" was an unfamiliar word whereas "items" was familiar and a good enough fit.

When presented with texts to read for information, the children read them the best they could with help from each other, the teacher, and with other coping strategies such as skipping a word.

**Drawing inferences.** Drawing inferences is an important part of reading comprehension. Through the process of reading aloud to each other and discussing their texts, some of the students revealed their inferencing ability.

Ira reached the logical conclusion of the text in the following example:

L: wish. (Acting out what's happening in the book)

I: I know. I know. [reading aloud from text] The quintain swings around. William is knocked right off his horse. That's gotta hurt when you land.

Carole predicted what the dolphin would do and based her inference on the illustration showing the ball in the dolphin's pool and the text.

L: [reading aloud from text] There are big pedals (paddles) in the dolphin's tank. The white pedal (paddle) means yes. The black pedal (paddle) means no. The trainer asks the dolphin if there's a ball in this pool.

C: And then he's gonna press white I bet.

Mitchell and Evan provided the most examples of inferencing through their "what if?" conversations as they read.

E: Look at that!

M: The earth is shaking over there.

E: Uh oh. It might even erupt here.

M: I know. See it says the volcano might erupt tomorrow. South American plate. Are we in South America?

E: Are we in South America?

T: No.

M: Shew!

E: What are we in then?

T: North America.

E and M: North America?

M: North American Plate. We have lots of volcanoes.

E: Look at how many volcanoes we have! We have a lot.

M: But we won't get any 'cause we're far away from the volcanoes, right?

They made connections among various geological and weather disasters that showed a high level of inferencing.

M: [reading aloud from text] Volcanoes and the trembling forces in the ground called earthquakes happen all the time. They are part of nature and begin far below the earth's surface. You know what? Earthquakes are kind of good. Because of these earthquakes. If you want mountains, you need earthquakes.

E: Yeah, earthquakes. Tornados!

M: Pretend there's land, like, pretend this paper is some land. An earthquake comes that shakes it and it makes it go together so it makes a mountain.

E: Yeah, it protects the land from tornados. Like this is the top land. Whish, whish. Because like there's no mountains, and it's just flat land.

M: There's no mountains in the center of a tornado. There's no mountains to block it. And floods, if they happen.

E: Both of them.

M: There would be no mountains to--

Clearly, Mitchell and Evan were high-level thinkers and the situation that allowed them to read aloud together also allowed them to advance their theories to each other.

**Interaction with pictures for information.** One of the ways that the children used books without reading them was to study and talk about the pictures in order to gain information. An excellent example of this is the way that Ira and Louie preferred to use books. Before I specifically asked Ira to read aloud to Louie (who could not have read any of the books on his own), they flipped slowly through their books and looked at the pictures and talked animatedly about what they saw.

I: Look, there's all these arrowheads.

L: Ooh look at that.

I: Yeah they're for food though.

L: Those are gold.

I: There's a difference between gold because there's gold and brass.

L: Brass is kind of brown.

I: This is a knight right here. This is the knight chess piece in side view.

Ellie and Leslie interpreted some pictures in their *Zoobooks* magazine about pandas without reading the text.

L: Oh look at how sick that is.

E: Okay, that's our teeth. It's human teeth. And that's panda teeth. They never brush their teeth so that's why they--

L: They have so many cavities. Right there and there.

E: They eat lots of-- You know bamboo has lots of sugar inside of it?

L: No.

E: You know that sugarcane? They eat sugarcane and bamboo and so that's why they get cavities.

Though they made incorrect inferences from the pictures, Ellie and Leslie would not have improved their understanding if they had read the text. The text only explains that panda teeth are wide for grinding food, which would not have given them enough information to correct their inference. They were connecting the information in the picture with their prior knowledge of sugar and cavities.

Mitchell and Evan understood the illustration of the seismograph even though they later could not reliably decode the word.

M: [reading aloud from text] Long ago, there was no way of telling when an earthquake or volcano would strike and many people died. Today, scientists have ways of finding out about earthquakes and volcanoes.

E: See, the more it shakes, the closer it gets.

M: (looking at the lines drawn by a seismograph) At first it's straight and then it goes, kuh, kuh, kuh.

These examples show how much early readers look to illustrations for information content; they do not relate to images as mere ornamentation. The children in this study used illustrations and photographs alone and in combination with the text to glean information, make and correct inferences, and make connections with their prior knowledge.

**Personal connection or reaction to text.** Reading their texts in pairs gave the children many opportunities to express their opinions and state their reactions.

Ellie and Leslie made a personal connection when they were having a misunderstanding about the word "acres." The context is a comment about how much pandas eat; Ellie tried to express it in terms of acres, but she did not pronounce it clearly. Leslie thought that Ellie was saying "anchors," but Ellie's explanation makes it clear that she is talking about "acres." This particular comment about her grandmother's field is the one that began to clear up the misunderstanding between them.

L: Anchors are just about as big as you, but--

E: No, they're not as big as me. They're way wider than me. You know what acres are? They go to my grandma's field. She has 2000 acres.

L: Anchors are like--

E: No acres are the acres of land. Do you know how long those are? Longer than this room.

L: They look like this? (draws an anchor)

E: No, not boat anchors!

L: Oh!

E: They're acres of land.

L: Oh! Acres!

John's personal reactions to Cameron's fascination with mummies are amusing.

C: Now I remember. You were right. There. Look. See this is the top of the case and this is the mummy inside. And this is the little thing where they keep the guts. You know they're hollowed out.

J: Don't--

C: They even take out the brain.

J: Ooh. They even take out the thinker. Don't say all that gross stuff.

C: I think it is interesting.

J: Yeah. You're right. It is interesting. Might gross people out. It's gross! No, it's interesting, said Jack. (Referring to a character in the *Magic Tree House* series).

This kind of personal reaction to the text and to the information they were learning shows that these children were highly engaged in their research. I think their engagement was also high because they had chosen their topic and the partner with which they were working. In addition, as these excerpts showed, they had many chances to talk about the text with their partner--a luxury not as readily available in whole group or even small group instruction.

## Discussion of Findings

My students had three main goals while reading the texts: constructing meaning, gathering information, and situating their learning. I will discuss these goals in terms of the categories of data that support and explain them.

**Constructing meaning.** The majority of the students' energy expended while reading was directed toward comprehending the text they were reading. When the children were clarifying the meaning of the text it is obvious that they wanted to comprehend the text they were reading. They stopped to discuss the ideas, to fix up misunderstandings due to syntax, to rehearse their understanding of the text. The children struggled to decode the text at times and they also corrected each other's oral reading. Their self-correcting of decoding errors and their propensity for correcting each other also showed that they wanted to comprehend the text. Inferencing occurred during conversations that took them beyond the literal level and they were able to do this in the context of interacting with a classmate over a book they were enjoying. They posed "what if?" questions, followed thoughts in the text to their logical conclusions, and made predictions based on their inferences.

I believe that all of this comprehension conversation was made possible by the social situation in which I asked them, or allowed them, to work. Had I asked the students to work alone, the positive potential of conversing with each other would not be possible.

**Gathering information.** The next goal that they pursued was the gathering of information from their books. The books I provided for the students were high quality information books with good illustrations with which they interacted. The illustrations supported the text, but were also sources of information by themselves. My students studied the pictures and talked about them, pulling information from details in the pictures. Most of the time they read the text that accompanied the pictures, and then their understanding was clarified,

but the examination of the pictures then served as a kind of prereading activity to build their schema for the information. Sometimes, however, they did not read the accompanying text and then the pictures alone served as their source of information.

**Situating their learning.** During the reading of the texts, they also situated their learning; they were providing themselves with a context for their learning, building their schema for the topic they were studying, and finding the meaningfulness of their topic for themselves. The students made personal connections with their texts and reacted to what they were reading. In this case, they were situating their learning within their own world view. Students have a lot to say about books and in a whole-class context, they have few chances to talk. Because they were working in pairs, they had the opportunity to respond and react to their reading. The social context gave them the opportunity to internalize their new understandings.

### Implications for the Classroom

Young children are capable of reading and interacting with information source texts and writing

about the information. Most of the students in this study worked in collaborative partnerships which embedded their work in social interaction, thus taking advantage of the social nature of learning. The collaboration also aided comprehension of the source texts that they read. Because they had a partner with whom they could talk about the text, they were able to process the meaning more thoroughly by clarifying or disputing the meaning, making inferences, and extending their understanding through talk.

These students were able to read, write, talk, and draw productively. The partners managed each other and their research task responsibly. They demonstrated that Cambourne's conditions of natural learning (1988) worked for these students. If teachers model reading and writing information texts through "deliberately crafted occasions" (Hicks, 1997) and provide explicit instruction within meaningful contexts (Delpit, 1997), students will not only enjoy, but greatly benefit from these reading and writing experiences.

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