

# The Role of Genre in a Text: Reading through the Waterworks

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*A child learns about the complexity of text while reading a book containing multiple story threads and genres.*



*These things [the yellow sheets] are for telling you about the science. These ones [points to speech balloons] are for saying . . . telling you about the story.*

*The print that the kids write is all squiggly an' scraggly like handwriting, and the one that the author writes is . . . is on the computer.*

*A fact is something that's real, and what they were doing in the captions in this case was to speak, "I want my mommy." Well, that one's not—that's a caption too, but it's not coming out of the kid's mouth. It's—oh, it's a label.*

These quotes are comments from readers that show their thinking about a multiple genre text, *The Magic School Bus at the Waterworks* by Joanna Cole (1986). We've examined the reading strategies of proficient and nonproficient readers in our research to show how they are able to construct meaning as they transact with complex texts that contain multiple story threads and genres. In this article, we analyze one fourth grader's reading and retelling to demonstrate how he learns about the complexity of the text while he reads. We first analyze the text, then his reading, and conclude with a discussion about the importance of understanding what a reader learns through transaction with a well-written complex text.

Zachary is a prime example of the readers we have studied to document their active learning experiences as they transact with an unfamiliar text. Zachary was a fourth grader considered by many, including his teacher and his mother, to be a “struggling” reader. We place the term “struggling” in quotes to indicate our tentativeness with the meaning of that term. As a result of our work with Zachary and other readers, we have learned that a struggle with a text serves to challenge readers and can “teach” readers to use reading strategies more efficiently (Meek, 1988). From our perspective, the struggle with a text is something that can be valued and used to help readers become more proficient. We have come to understand that:

- Struggling readers make sense of complex texts.
- In the retelling of a complex text, the reader synthesizes the multiple genres in the written text and produces a

narrative that reflects the reader's unique construction of meaning.

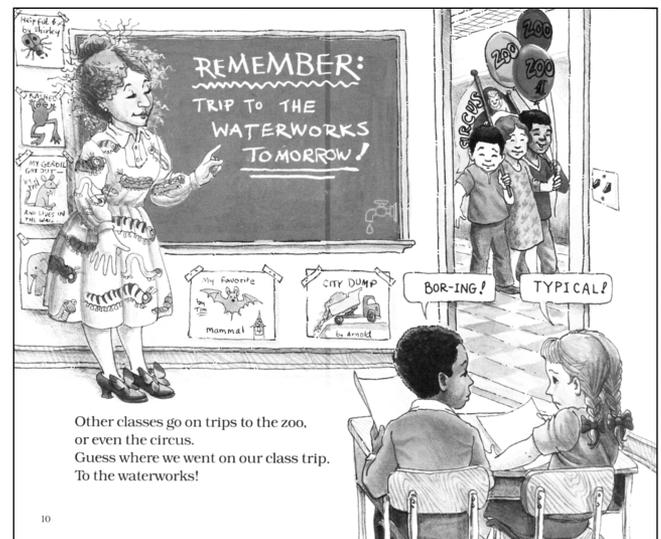
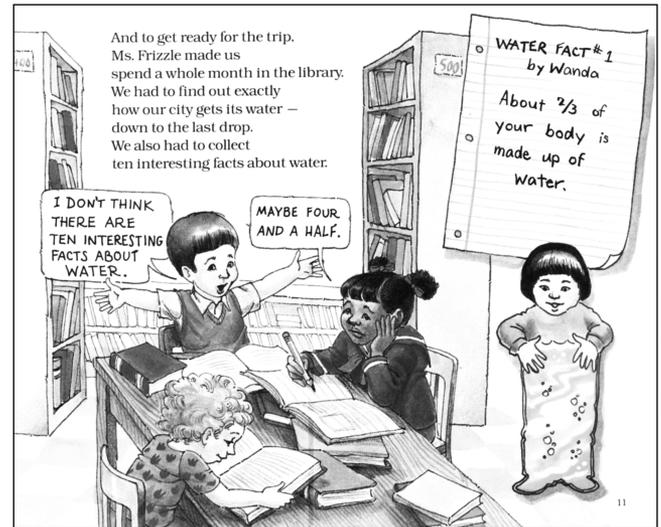
- Patterns of the quality and number of miscues shift across the entire text.
- Patterns of miscues shift across each genre or type within the entire text.
- As readers struggle, they demonstrate developing control over how to “navigate” an unfamiliar text.
- The text plays a mediating role in the reading transaction (Goodman & Goodman, 1990).

Before discussing Zachary's reading transaction, we show how *The Magic School Bus at the Waterworks* “works” as an engaging story, and we explain why we call it a complex text. (See three panels from the book in Figure 1.)



Figure 1.

From *The Magic School Bus at the Waterworks* by Joanna Cole, illustrated by Bruce Degen. Text copyright © 1986 by Joanna Cole, illustrations copyright © 1986 by Bruce Degen. All rights reserved. Reprinted by permission of Scholastic Inc.



## GENRES IN *THE MAGIC SCHOOL BUS* AT THE WATERWORKS

This text is part of a series that can be described as *fictionalized documentary*. We call it a documentary because its primary purpose is to present an explanation of the water purification process by touring a municipal water treatment plant. This documentary, however, is nested in a science fantasy about school children and their research explorations as led by Ms. Frizzle, their teacher, and magic-summoning guide.

Although we refer to this genre as a *fictionalized documentary*, we call its discrete, constituent parts “subgenres.” These subgenres provide different kinds of textual expressions that serve a variety of functions and are discussed in order by the amount of constituent text in the story from greatest to least.

### • Narrative Text

The “Narrative Text” tells the story of the children as they follow their teacher on an adventure through the waterworks (see an example in Figure 2). The narrative text is central to the relationship between the various subgenres, the orthography, and the illustrations. These all work together to produce the documentary. Zachary noticed this also. At one point, he referred to the narrative text as “computer text,” referring to the angular, uniform, “machined” appearance of the font—like a computer printer produces, as opposed to the hand-drawn manuscript appearance of the other textual expressions.

Before long, each kid was the size of a raindrop. In fact, each kid was *in* a raindrop. The drops began to fall. Ms. Frizzle’s class was raining. (p. 18)

Figure 2. Narrative Text

- Student Research On Display
  - Water Fact sheets
  - Student Labeled Illustrations
  - Mural Signs

The “Student Research On Display” provides incidental factual information about water and water treatment in the language of the students (see Figure 3). The print is represented in upper and lower case manuscript with a “school work” quality.

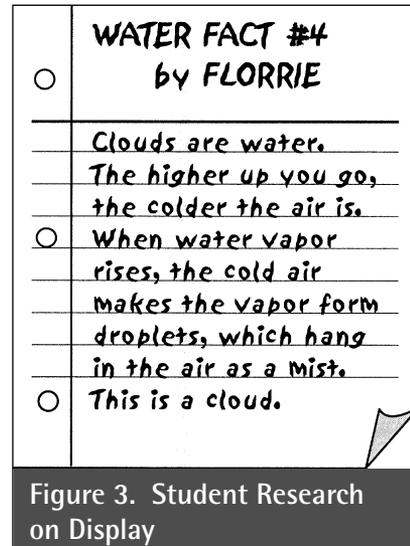


Figure 3. Student Research on Display

### • Speech Balloons

The “Speech Balloons” show the personalities of the characters and their interpersonal relationships. The print is written in an informal upper case manuscript font. The Speech Balloons carry the dialogue in the story with a humorous tone. Some dialogue also appears in the narrative text. (See Figure 4.)



Figure 4. Speech Balloons

### • Environmental Print

- Labels
- Display Titles
- Signs In Bathroom

The “Environmental Print” adds specific knowledge to the text, but in a restricted sense because it displays information that typically resides in the background. This subgenre is usually in upper case font. (See Figure 5.)

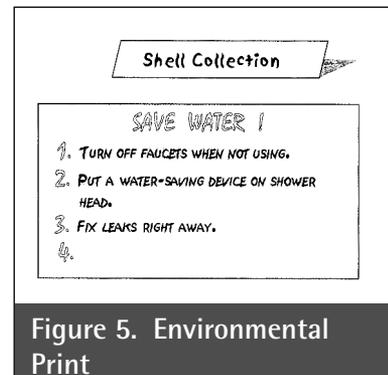
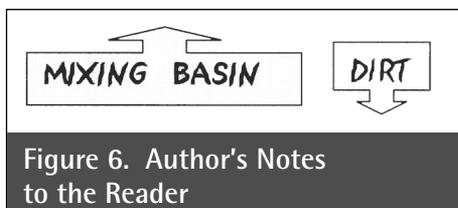


Figure 5. Environmental Print

- Author's Notes to the Reader

The “Author’s Notes to the Reader” do the additional work of labeling and further explaining the world being explored by the characters in the story (see Figure 6). These notes are displayed in upper case and usually in boldface and also reside in the background. Because the Environmental Print and Author’s Notes to the Reader play similar roles, the analysis of these subgenres is collapsed into one category unless otherwise noted.



*The Magic School Bus at the Waterworks* has illustrations that are integral to each subgenre and that enrich the entire text. Although we focus on the written text, we want to make clear that the illustrations add to the complexity of the written presentation and enrich the transactional experience.

### “SHE WAS REALLY WEIRD”: ZACHARY MAKES SENSE OF A COMPLEX TEXT

A common sense view might suggest that the reading of complex texts is challenging for a “struggling” reader, but Zachary was successful at making sense of this text. He read the entire story and demonstrated his comprehension by producing a comprehensible and satisfactory retelling. He doesn’t specifically address the subgenres in his retelling, but they are all integrated in his *construction* of the whole story.

We studied Zachary’s reading during a year-long case study by involving Zachary in talking with us about his own reading, including an examination of his miscues, to help him consider his reading strategies and use of the language cueing systems (Goodman & Marek, 1996). Because *The Magic School Bus* text is somewhat lengthy and because of school schedules, we asked Zachary to stop reading midway through the book, and we collected this excerpt from his retelling of the first half of the story:

Yetta: O.k. . . . Tell us what you read.

Zachary: I read *The Magic School Bus at the Waterworks*.

Yetta: . . . What did you read about *The Magic School Bus*?

Zachary: *The teacher, Miss Virgil, and she was really weird. The way that she acts, the clothes that she dresses. She went on the bus and they went on a field trip to—into, to waterworks. So they were in a tunnel*

*and they came out with diver suits on ’em. Then the bus was full of octopuses and then Miss Frizzle had it too. And then the water was evaporating it and they’re evaporating into the clouds with the water and it started raining so they got smaller. I mean, Miss Frizzle was threatening them, to get out of the bus because they didn’t want to—they were too scared. She was saying to them that she would give them more homework. So they got out and two kids said they would take the homework. And then they all shrunked—they shrunked and they got in a bottle of rain and then they all fell and then they rained.*

Just as he had done during the oral reading, Zachary entertains various pronunciations of the main character’s name (Miss Virgil; Miss Frizzle), eventually settling on the expected response, Miss Frizzle (following miscue procedures, at no time was Zachary prompted for or given a correct pronunciation). Examinations of name substitutions across a text are common in miscue analyses and retellings (Goodman, Watson, & Burke, 1987) and they provide evidence of the thoughtfulness that readers display as they transact with a text to construct a personal meaning. This excerpt is from Zachary’s retelling of the rest of the story he read the following week:

Zachary: *They went on the trip to the cities or something. And then they went through the gravel and sand and all the (unintelligible) and the germs and they came in all that water, then they came to a storage tank and then they traveled through the bubbles and Miss Frizzle found a way out so they went out and they went to a—and from there they went to a city and they came to their classroom and this sixth grade girl went to turn on the water to wash her hands and they came out.*

Alan: *What is the waterworks?*

Zachary: *Place where everything is water and something to hold it down . . .*

Alan: *What happens to the water?*

Zachary: *It makes it clean.*

Yetta: *Why, why would they want to make it clean?*

Zachary: *Cause it’s dirty. It has germs in it? So people can drink it again.*

Yetta: *What do they put in the water so people can drink it?*

Zachary: *Chloride.*

Yetta: *Why would they put chloride in?*

Zachary: *So it wouldn’t make anybody sick.*

Alan: *Anything else they put in?*

Zachary: *Alum.*

Alan: *Anything else?*

Zachary: *Gravel and sand.*

Yetta: *You read it here, there's all different kinds of chemicals and the chemicals do what to the water?*

Zachary: *I didn't say "chemicals," I said system.*

In addition to being able to discuss his reading, Zachary comments on the story and illustrations and reveals his continuous comprehending of the text. On one page, he says "Cool!"; on another he remarks on the trials of the beleaguered character, Arnold, with a singsong "ha, ha." When the school children swim through the mixing basin filter as part of the tour of the Waterworks, Zachary stops reading and asks, "How can they fit through there?" When Zachary observes that Arnold emerges from the bathroom faucet back at the school after the Waterworks tour, he comments, "Sheesh! That's funny, the way he came out." When Ms. Frizzle addresses the class pet chameleon, Zachary wonders aloud, "Why is she saying, 'Down, girl?' She really *is* weird." When one of the characters says, "The last time I saw that bus, it was in a cloud . . . *I think . . .*," Zachary responds, "Ha, ha, ha, *very* funny," in a tone that indicates that he thought the humor was forced. And on the last page of the story, when one of the characters says, "There aren't any volcanoes around here, are there?" Zachary responds with a laugh, "They're going to take another trip!" He recognizes that the last page is a precursor to the next book in the series.

## WHAT WE LEARNED FROM ZACHARY'S MISCUES

The shift in the pattern of miscues across an entire reading gives us insight into how the reading process shifts as a reader's schemas are continually assimilated and accommodated by the inclusion of more and more information. One of the earliest insights from miscue studies came with Dorothy Menosky's (1971) observation that the quality of miscues changes after about the first 200 words of a story, shifting from lower quality to higher quality. The Language Sense statistics in Table 1 for this reading are consistent with Menosky's findings.

Language Sense (Goodman et al, 1987, p. 107) is the percentage of all of the sentences in the story that were

Entire Story	Language Sense = 75%
First Third of Story	Language Sense = 67%
Remaining Two-Thirds of Story	Language Sense = 80%

Table 1. Language Sense Pattern for Zachary

read without disruption of meaning by the reader. It includes the sentences in which no miscues were produced as well as those that either contained miscues that were not corrected and did not disrupt meaning (semantically acceptable) or that were self-corrected. Table 1 shows Zachary read 75% of all the sentences as either semantically acceptable or included unacceptable miscues that he self-corrected. However, in his reading of the last two-thirds of the story, the sentences were semantically acceptable 80% of the time. This data provides evidence of *how texts teach* (Meek, 1988). When readers are given the opportunity to work on their own "problems" with a text, to struggle with the text, miscues provide evidence that readers possess the capability of generating their own solutions.

When we analyze the pattern of miscues for evidence of how reading the various subgenres influences pattern shifts, we see distinct differences. The miscue-marked typescript of page 11 from the book (Figure 7) shows how Zachary shifts his use of reading strategies in response to changes in the conceptual familiarity and linguistic complexity present in the different subgenres on the page.

These miscues are typical of the kinds of miscues Zachary produced during the reading of the story. Substitution miscues are written directly above the "expected response" in the text. Underlining indicates words that have been repeated. A © indicates that the miscue has been corrected. A (UC) indicates an unsuccessful attempt at correction and a (AC) indicates a response that was initially produced as expected but changed to a miscue. A circle around a word indicates that the word was omitted.

Zachary produced miscues on every page of the text and in each of the subgenres. Miscue analysis research has shown it is not the number of miscues a reader produces that is most important, but the quality of the miscues; that is, whether or not the miscues result in meaning loss (Goodman & Marek, 1996, p. 21). As Figure 7 indicates, Zachary produced 7 substitutions, 8 partial miscues, and 1 omission. Of these miscues, only 2 resulted in some disruption of meaning (*cities* and *our*). The rest of the miscues either were corrected or did not disrupt *the meaning of the story*. For example, in the substitution of *Miss Frizhle* for *Ms. Frizzle*, the change in title of address from *Miss* to *Ms.* is common in Zachary's speech community, and the production of *Frizhle* for *Frizzle* is a phonetic shift in pronunciation. The substitution of 3/4 for 2/3 is a minor shift in meaning (depending on one's depth of understanding about the composition of the human body, of course).

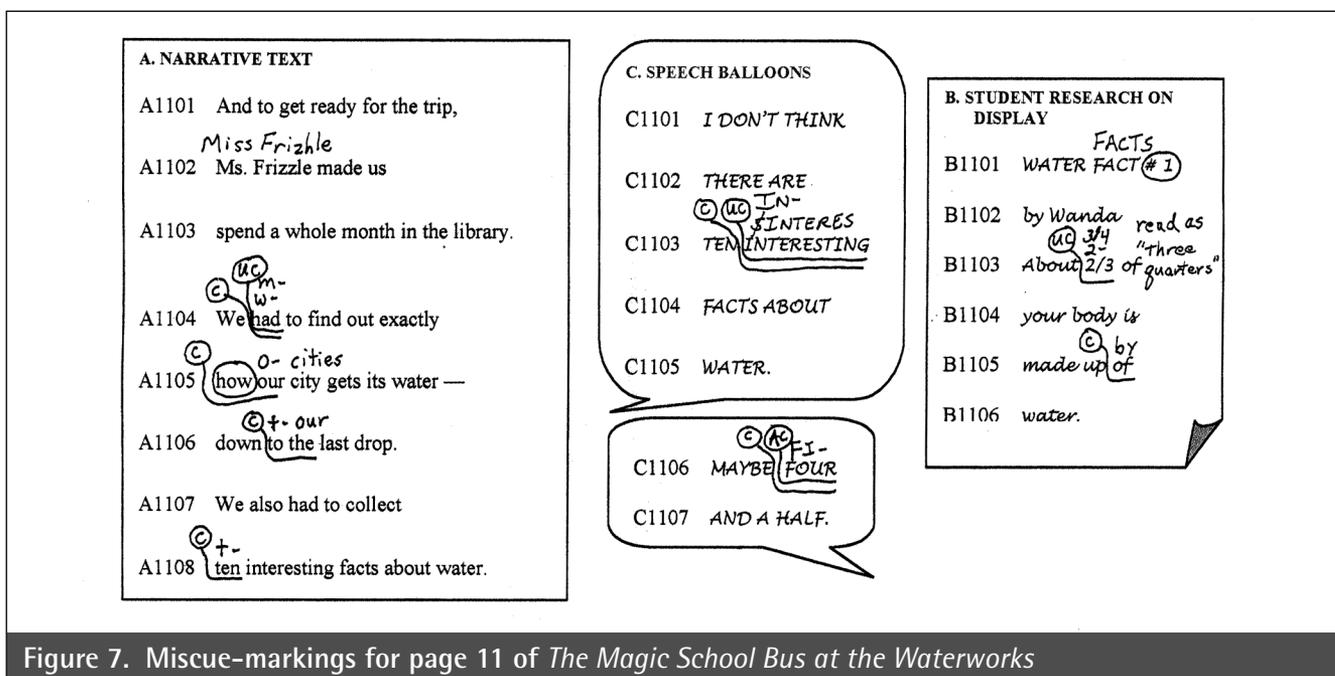


Figure 7. Miscue-markings for page 11 of *The Magic School Bus at the Waterworks*

## A "FOUND" EXPERIMENT: PATTERNS OF MISCUES ARE INFLUENCED BY SUBGENRES

The *Magic School Bus* provides a reader with several complimentary subgenres within one whole text that are transacted within one reading. This sets the stage for a

kind of naturally occurring experiment: the reader remains "the same" while the subgenres that the reader encounters vary within the text. The results provide insights into how readers use different strategies to handle different subgenres. Table 2 summarizes the quality of Zachary's miscues in the reading of each subgenre, and

LANGUAGE SENSE	A. Narrative	B. Student Research	C. Speech Balloons	D. Environmental Print/ Author's Notes	Story Totals
Strength	74%	67%	91%	59%	75%
Weakness	26%	33%	9%	41%	25%
GRAPHIC/SOUND RELATIONS	A. Narrative	B. Student Research	C. Speech Balloons	D. Environmental Print/ Author's Notes	Story Totals
Graphic Similarity					
High & Some	93%	93%	100%	100%	95%
None	7%	7%	0%	0%	5%
Sound Similarity					
High & Some	92%	88%	100%	100%	93%
None	8%	12%	0%	0%	7%
Total Words	831	397	270	203	1701
Total Miscues	78	47	19	31	175
Miscues Per Hundred Words (MPHW)	9.4	11.8	7.0	15.3	10.3

Table 2. Comparison of RMI Procedure II Profiles for Various Subgenres and for Entire *The Magic School Bus at the Waterworks* Story

documents the overall pattern of shifts of reading strategies across subgenres throughout the entire story. The table shows that Zachary applies reading strategies differently in his reading of the different subgenres.

The statistic for Language Sense strength varies from one subgenre to another ranging from 59% for the Environmental Print/Author's Notes to 91% for the Speech Balloons. This means that the percentage of sentences containing miscues that did not disrupt meaning or were corrected in the Speech Balloon subgenre was much higher than the corresponding percentage in each of the other categories. We can infer that Zachary dealt with the text in the speech balloons more confidently and used reading strategies more efficiently than when reading the other subgenres.

Table 2 also shows that, as the Language Sense strength increases, the number of miscues per hundred words (MPHW) decreases in the reading of each subgenre. Thus, when reading the Speech Balloons, Zachary produced miscues at a lower rate (7 MPHW) than when reading the Narrative (9.4 MPHW), Student Research (11.8 MPHW), or Environmental Print/Author's Notes (15.3 MPHW). This pattern also suggests that Zachary displayed greater confidence and efficiency when dealing with the Speech Balloons as compared to his reading of the other subgenres.

One of the patterns in Table 2 relates to the graphic and sound similarity of miscues produced while reading the various subgenres. Analyses of graphic and sound relations are important because they provide insights into the reader's knowledge of phonics, how they go about sampling information from the graphophonic features of text, and the role that the sampling strategy plays in relation to other strategies. Graphic and sound similarity refers to the degree to which a substitution miscue looks like or sounds like the corresponding word in the text. For example, these miscues have high graphic and sound similarity when compared with the corresponding words in the text: *playing* for *paying*; *following* for *flowing*; *reserver* for *reservoir*. High percentages for graphic/sound similarity are often found among profiles of readers who are not reading a text with optimal efficiency (Goodman et al., 1987). These readers seem to be placing concerns about "getting words right" over making sense of the text (Goodman & Marek, 1996).

The patterns for graphic and sound similarity are remarkable because although there is a wide disparity between the Language Sense for the Speech Balloons (91%) and Environmental Print/Author's Notes (59%), the pattern of graphic and sound similarity for the miscues in both sub-

genres is 100%. This poses a theoretical dilemma because the statistic for Language Sense suggests that the Speech Balloon subgenre was indeed read with high proficiency whereas a pattern of such high graphic similarity is typically associated with less proficient readings. Why did Zachary read the Speech Balloons more confidently and produce a miscue pattern associated with lower proficiency? What is it about the text in the Speech Balloons and the text in the Environmental Print/Author's Notes that contributed to this disparity?

The dilemma is resolved by closer inspection of the types of language structures and concepts present in each subgenre and by scrutinizing the reading strategies Zachary used when transacting with the text in these subgenres.

### Speech Balloons

The language in the Speech Balloons was easier for Zachary to deal with because he already *knows* what kids sound and act like. The text in this subgenre was predictable because the informal language "spoken" by the characters is familiar and natural. Thus, when Zachary reads the Speech Balloons, he is sampling text and predicting language structures efficiently as he goes about constructing meaning for himself. The familiar language and the richness of available context cues allowed for predictions (most of which were expected responses) that were quickly confirmed or rejected on the basis of additional sampling. For example, in a Speech Balloon on page 12, Zachary substituted *opposite* for *octopus* as he read "Oh no! Not the opposite . . . not the octopus dress." (See Figure 8.)

There is no meaning loss because Zachary corrects this miscue. But to understand the role of prediction in reading, it is important to make reasonable conjectures about what he may have been expecting to read: "Oh no! Not the *opposite of what normal teachers wear*," or some similar construction.

In another Speech Balloon on page 15, Zachary substitutes *playing* for *paying* in the sentence "Arnold, are you paying attention?" (See Figure 9.)


<p><b>Analysis:</b> Graphic similarity for substitution of <i>opposite</i> for <i>octopus</i>: some Language Sense: <b>no meaning loss</b>, miscue is corrected.</p>
<p>Figure 8. Speech balloon miscue—no meaning loss</p>


<b>Analysis:</b> Graphic similarity for substitution of <i>playing</i> for <i>paying</i> : high Language Sense: <b>no meaning loss</b> , miscue is corrected.
<b>Figure 9. Speech balloon miscue—no meaning loss</b>

We can infer that Zachary's substitution of *playing* for *paying* stems from an expectation of an alternate structure—something like “Arnold, are you playing around when you should be listening to me?”—just the sort of thing a teacher might say. After producing this substitution, Zachary apparently samples additional text, produces the partial miscue “attenti—” and then self-corrects *playing* to *paying* and reads the rest of the sentence as expected.

These examples show that the highly predictable language of the Speech Balloons constrains the possible meanings at each point in the text and allows Zachary to efficiently use text sampling strategies to make predictions as he produced expected responses. On those occasions when he produced miscues, his responses were not only sensible, they also looked very similar to the written text. This unique set of circumstances (the authentic text and the expectations Zachary brought to the text), led to both the high Language Sense percentage *and* the high percentages for graphic and sound similarities for substitution miscues. Other miscue studies support the idea that dialogue is read with greater proficiency than other syntactic structures (Goodman & Altwerger, 1981).

### Environmental Print/Author's Notes

On the other hand, the language contained in the Environmental Print/Author's Notes texts is constrained in such a way that it makes the language *less* predictable to the reader. It is less predictable in that labels and signs are not usually embedded in running text and thus provide fewer linguistic context cues. In most cases, the Environmental Print texts stand alone. Some have an air of authenticity to them (like the specimen trays labeled “Beetles” and “Butterflies” in the display cupboards in the classroom, or the “Save Water” sign in the bathroom). But others seem less authentic, like the Author's Note, “Fluoride,” written on the side of a tank at the Waterworks, or the label etched into the

side of a drawing of a section of culvert pipe labeled “Concrete.” When the Environmental Print/Author's Note is presented as connected text, the text is presented in an abbreviated syntax with some function words (like *the* and *a*) omitted. (Example: *Fence Keeps People and Animals from Dirtying Reservoir.*) These constrained linguistic structures put greater demands on the reader to make sense of the text by requiring that he or

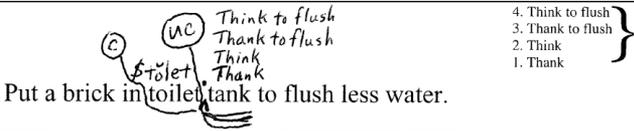
she have the kinds of experiences with these texts and structures that make them comprehensible (see Figure 10). (The dollar sign [\$] in these examples indicate the reader's production of a non-word—a response that is not a meaningful word in English, although the syntax is often retained).

On the occasions when comparatively richer syntactic and semantic cues in the text were unavailable, Zachary produced significantly more non-words that looked like the words in the text, but did not make sense (see Figure 11).

### Language and Concept Knowledge

When it comes to linguistic complexity and the density of concepts, the Speech Balloons and Environmental Print/Author's Notes occupy two ends of a continuum, whereas Narrative and Student Research on Display occupy a middle range. Accordingly, the patterns of miscues and strategies that characterize Zachary's reading of the Narrative and Student Research also range between those patterns of proficiency observed in his reading of the Speech Balloons and Environmental Print/Author's Notes.

We attribute these substantial differences in Zachary's reading of the various subgenres to his schema construction, his familiarity with the language structures, and the density of the concepts presented in the text. It is not the complexity of having several subgenres present in one text that challenges this reader; rather, it is the somewhat


<b>Analysis:</b> Graphic similarity for substitution of <i>\$toilet</i> for <i>toilet</i> : high Graphic similarity for substitution of <i>think</i> for <i>tank</i> : high Language Sense: <b>no meaning loss</b> because the reader corrected the miscue of <i>\$toilet</i> for <i>toilet</i> and then transformed one syntactic structure into two similar structures that did not disrupt meaning. Reader's final version: “Put a brick in toilet. Think to flush less water.”
<b>Figure 10. Environmental print miscue—no meaning loss</b>

<p style="text-align: center;"><i>\$enjurly</i>  <u>Leaves</u> make energy from the sun.</p>
<p><b>Analysis:</b>  Graphic similarity for substitution of <i>\$enjurly</i> for <i>energy</i>: high  Language Sense: <b>meaning loss</b>, miscue was not corrected</p>
<p style="text-align: center;"><i>\$BUTTERFILES</i>  BUTTERFLIES (part of a list of specimens)</p>
<p><b>Analysis:</b>  Graphic similarity for substitution of <i>\$BUTTERFILES</i> for <i>BUTTERFLIES</i>: high  Language Sense: <b>meaning loss</b>, miscue was not corrected</p>
<p><b>Figure 11. Environmental print miscues—meaning loss</b></p>

unfamiliar concepts and language structures that offer comparatively fewer supports (labels, author notes, environmental print—generally text that appears in one-word expressions) that he finds challenging. And we believe that these challenges support new ways to negotiate meaning when they are embedded in a text that Zachary finds “cool,” interesting, and funny.

## NAVIGATING THE WATERWORKS: ZACHARY’S INITIATION AND SELECTION STRATEGIES

New kinds of texts give readers opportunities to develop new ways to navigate through a text. Another interesting observation relates to the choices Zachary made each time he finished a page in the story. Initiation (recognition) and selection strategies (Goodman, 1996a) are used by readers as they decide what to read on a page and where to read next. Initiation and selection strategies both require the reader to selectively attend to various aspects of the text. Selection strategies are used when the reader consciously deliberates on what to do next, such as deciding where to look on the page to gather information. When a reader is using initiation strategies, he or she is making decisions about which graphic marks on a page are “readable” (or worth reading) and which are not. For example, throughout the text, Zachary systematically omits reading the “#” in the heading of each of the “Water Facts” sheets. He read “Water Facts #9” as “Water Facts Nine.” While initiation is also related to selective attention, the use of initiation strategies is not necessarily deliberate, in that the reader isn’t aware that he/she is consciously making decisions.

The organization of the *Magic School Bus* text is different from picture books and novels in which the syntactic structures (usually sentences) that were begun at the

bottom of one page wrap around and continue onto the following page. In the *Magic School Bus*, the syntactic structures don’t cross over to successive pages. The Narrative stops at the end of the last sentence on each page. This is true of the Speech Balloons and the Student Research also. And the signs that contain environmental print are self-contained messages that stand by themselves.

In addition, the placement of the subgenres in relation to one another varies from page to page. On some pages, Speech Balloons might be the first item on the left side of the left-hand page; on other pages it might be the Narrative, the Environmental Print,

or the Student Research on Display that comes first. Because each of the subgenre texts on each pair of facing pages ends as a complete syntactic unit, Zachary had to make a decision about which subgenre to begin reading every time a page was crossed or turned.

Zachary demonstrated developing control over how to navigate through the *Waterworks* text. By making a map of where he went as he moved from one subgenre to another in the story, we gain insights into the kinds of *selection strategies* Zachary used—the decision-making process he employed in deciding which subgenre to pursue as he proceeded through the text. Zachary made deliberate, thoughtful, and economical decisions about how to deal with this complex text. His decision-making process seemed effortless and was filled with enthusiasm, like “a kid in a candy store.”

Zachary’s selections of what to read first were neither random nor haphazard. When he turned a page, he began reading the narrative text 80% of the time, regardless of whether or not it was the first to be presented. And when Zachary crossed a facing page from left to right, he did not always begin with the first subgenre to appear in the upper left of the right-hand page. Every time he crossed over a page, he was faced with 4 or 5 different genres. This means he was afforded a 1 in 4 or 1 in 5 chance of switching subgenres (20%–25%). But about 50% of the time, Zachary selected the same subgenre that he had been reading before he crossed over. 50% is about twice what one would expect if his jumping from subgenre to subgenre was random.

This analysis shows the focus and purposeful intent that Zachary brought to his reading. He pursued a subgenre until he was satisfied before deciding to select

and pursue another subgenre. And on those pages where Zachary did *not* begin with the first subgenre to appear on the page, he most frequently selected the more predictable and less linguistically complex subgenres—the Narrative Text and the Speech Balloons.

In examining Zachary's omission of text features, we noted that he read the story without omitting any blocks of Narrative Text or any Speech Balloons (they tell the story and keep the action going), and he only omitted one Student Research Water Fact sheet. However, he was much more selective in his dealings with the Environmental Print and Author's Notes.

The environmental print in the story functions much as it does in real life. As members of a literate society, we are immersed in environmental print, but only pay attention when we need to. Many of the labels and signs around us do not require our attention and go unnoticed. Zachary's reading of this text showed a similar pattern: his attention was *selective*. After noticing and reading the Environmental Print/Author's Notes in the first few pages, he began to omit reading these subgenres. But his omissions were neither careless, random, nor deliberate in the way that a reader might choose to skip a word they don't know. Rather, he was carrying over a strategy from the real world, selectively attending to the text when it was necessary to understand the story. On 26 out of 48 different instances of Environmental Print/Author's Notes to the Reader (more than 50%), Zachary did not attempt to read the text nor did he indicate his awareness of its presence on the page. For example: on page 26, Zachary first omits *fluoride* when the word is represented as a label in an Author's Note, but he subsequently reads it as expected in the Narrative Text on the *same* page. Conversely, on page 27, Zachary first reads *concrete* as expected when it's part of running text in the Water Facts Student Research, but he subsequently omits it when the word is etched on a concrete culvert pipe as an Author's Note.

That Zachary produces the expected response on some occasions and not others is more evidence that reading is much more than merely pronouncing words. Thinking and decision-making are involved. Through miscue analysis, we repeatedly see that the reader is actively engaged in a complex language—thinking process.

### STRUGGLING WITH A TEXT AND BUILDING A SENSE OF THE STORY: SUPPORTING A ZONE OF PROXIMAL DEVELOPMENT

Keeping track of repeated miscues provides additional insights into how readers go about solving problems. Miscue analysis has demonstrated that if readers are allowed to work through—or struggle with—a text, the un-

derstanding of the story that they are building becomes more inclusive (that's why the teacher/researcher sits quietly next to the reader without collaborating in the reading of the text). As readers gain additional information in a story and their understandings become more enriched, concepts and language that were at first unfamiliar become understood.

To illustrate this principle, Zachary's repeated miscues for *disease* are presented in the order and manner in which they were produced during the reading of the story:

Page 25 Speech Balloons: "*Class, these layers of sand and gravel strain out the tiniest bits of dirt left in the water—even most of the disease germs.*"

Page 25 Student Research: "*Impurities are dirt, dust, and disis germs—anything that should not be in a glass of water.*"

Page 26 Student Research: "*Clear water is not always clean water. It may still contain disease . . . dis- . . . disis- . . . disease germs that can make you sick.*"

Page 26 Narrative Text: "*Chlorine kills any remaining disease germs.*"

His transactions with the text, his struggling, allows Zachary to build meaning for himself as he repeatedly miscues on *disease*. By the third time the word is encountered (in the Student Research genre where it is connected with the concept of illness), the miscue shifts from a non-word to the expected response. And by the fourth time the word is encountered (in the Narrative Text), *disease* is efficiently produced without Zachary needing to make multiple attempts at producing the word. Zachary's comprehending across the text has allowed him to build a concept that helped him to know a label. He may also have learned that *disease* can occur in an adjective position in addition to its usual position as a noun.

We believe that when readers struggle with a text, especially one that has the support offered by well-written text, an opportunity is created for problem solving. And, as Zachary demonstrates, readers teach themselves (Meek, 1997). Written texts that readers find engaging and interesting are the kinds of texts readers should be encouraged to read even when challenged to problem solve. Throughout our analysis of Zachary's transaction with *The Magic School Bus at the Waterworks*, we see his continuous struggle to construct meaning as he uses the textual features to mediate the text. The transaction between the reader and the text supports a zone of proximal development (Vygotsky, 1978) where readers mediate the concepts presented in the text and at the same time learn about the organization of the text itself (Goodman & Goodman, 1990). Readers learn to read at the same

time that they are reading to learn. Learning to read is a lifelong developmental process; it doesn't happen prior to a desire to make sense of written language.

The use of miscue analysis to examine the role of genre and the written text provides many opportunities to observe readers struggling, problem solving, and experimenting with text meaning and structure. Through our miscue analysis of Zachary's reading, we have shown the importance of Zachary having many opportunities to transact with a text and learn from the experience. Each reading of a text is unique for the reader, and Zachary showed that he learned not only about the content of the literature, but about unfamiliar organizational and syntactic structures as well. Zachary's miscues and his talk with us about his reading revealed sophisticated problem-solving strategies as he searched to make sense. Although the speech and narrative subgenres in this text were easier for him to read, he learned to engage the other subgenres with greater proficiency. He made fewer miscues and produced miscues of higher quality toward the end of his reading of the whole text and within each subgenre of the text. The miscue analysis illuminated Zachary's meaning-making strategies continuously at work during his reading as well as his growing proficiency as he read independently and became more familiar with the text as a whole. For these reasons, we are concerned when students' reading is limited to leveled books, often controlled by a formula based on letter/sound relationships, word frequency, or sentence structures with no reference to the reader's knowledge, culture, or interest. We recommend careful decision making by teachers as they select a range of simple to complex written material for students to read and involve students in selecting their own reading material. We are convinced that well-written texts that are engaging to readers entice readers into wanting to struggle—to experiment with the strange and the unknown.

## REVALUING READING AS A STRUGGLE

Many parents and teachers become concerned when they believe a reader is struggling with a text. We argue that this concern is often misplaced, and that the expression of such concern generally reveals more about the observer's beliefs about reading than it does about the reader. Many parents and teachers become anxious when a reader fails to meet expectations for "getting words" or reading "fluently." We believe that expressions of anxiety resulting from misunderstandings about the reading process ultimately do a disservice to readers.

Ken Goodman (1996b) has referred to struggling readers as "readers in trouble." It is an expression that shifts attention away from the individual reader and calls into

play the range of family, school, and community contexts that contribute to the ascription of "struggling reader." The term "readers in trouble" acknowledges that the reasons for the "problem" need not rest solely with the individual reader. Someone or something else can get a reader in "trouble"—ranging from a reader's nonproficient reading of a complex text, to others in the reader's life who fail to value the use of reading strategies that the reader already controls, to curricular and school structures like nonengaging and exercise-ridden instructional schemes that fail to support the learner. The expression "readers in trouble" opens the door to insights that come from viewing literacy as a social activity—not solely a psychological one.

Zachary was one such reader in trouble. From the point of view of his mother and teacher, he read slowly, stumbling as he read, making many miscues and avoiding reading when he could. But as this analysis demonstrates, Zachary's trouble was not of his own making. Rather, Zachary is an effective, capable reader who makes flexible use of a variety of reading strategies when he engages in a challenging text. Our theory and our analysis helps us to *revalue* Zachary and appreciate his strengths, just as it helps us to see all struggling readers from a different vantage point. We all *struggle with reading*, we *enjoy being challenged*, and most of us believe that we *develop as readers* throughout our lives as we encounter new texts and unfamiliar genres.

As we have learned to revalue readers, we have also come to revalue the power of well-written complex texts in teaching (Meek, 1997). There are attempts to have teachers match text difficulty with reader ability in simplistic ways. The assumption that guides this practice suggests that readers should be spared from reading books and stories that are deemed too difficult—they must be sheltered from "struggling" with texts. The assumption stems from a word-centered view of reading that requires readers to read texts accurately and fluently before moving to those with longer words and sentences, and more complex language and concepts. Taken to its extreme, such a practice denies readers the opportunity to transact with rich, complex stories, and undermines the reader's right to select books based on interest and appeal. It suggests that easy-to-read texts based on simplistic formulas should comprise the main diet of developing readers.

We challenge the legitimacy of these practices based on our work with readers reading authentic texts. We believe that such practices are counterproductive because they undermine a reader's authority and do little to support the development of reader self-confidence. And confidence is a key aspect of change as readers shift

toward more proficient use of reading strategies (Flurkey & Goodman, 2000).

We value authors who respect readers by writing interesting and challenging texts with new and complex genres. We see over and over again how readers are drawn into authors' and illustrators' creative expressions even when such works do not fit simplistic notions of text complexity because they use sentences that are long, start with dependent clauses, or use low frequency vocabulary.

Readers sometimes display a shift in confidence and a corresponding shift in proficiency from as little as one uninterrupted reading of a whole text. Such experiences can be even more powerful when they are accompanied by the validation that comes with conversations about how "struggles" are not only reasonable expectations, but are normal and can be explored and explained in terms of our understandings of reading as a process of meaning construction (Goodman & Marek, 1996). The alternative, where a reader is stopped during the reading of a challenging text—told how to sound out, told what the next word is, or given something simpler to read along with additional word-oriented instruction—sends a negative message to the reader. Instead of sheltering kids from complex texts, we should be sharing insights about the reading process with them and encouraging them to say, "Bring it on—I can read this!"

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