

Struggling Readers' "Noticings" to Make Meaning of Picture Books

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Abstract: For today's elementary teacher, comprehension instruction must include strategies that include viewing to make sense of information in multimodal texts. Using case study methodology, this research describes the extent of how struggling readers notice images in picture books in order to make meaning. Data sources include written transcriptions of 13 video-taped reading sessions, the participants' criterion-based fluency measures and word identification proficiencies per book, and the researcher's field notes. Results reveal the participants most often noticed visual information in interpreting and then used the visual memory of these "noticings" to decode and increase oral reading accuracy. The results further reveal the ways in which the second graders' processed nonverbal information by (1) transacting with images/text via socio-cultural references, (2) interpreting images via representational aspects of the world, interactions of social relations, and compositions of integrated texts, and (3) questioning images/text. While "noticings" of visual information exceed "noticings" of verbal/written information, the students' meaning-making transactions are apparent with both images and text. Frequently, the participants' processing of information includes noticing the composition of an image. Yet, interpretations reference representations from their experiential worlds, such that "gaps" between what is represented/noticed and what the students' knew from prior experiences generated questions.

Keywords: Children's literature, comprehension strategies, elementary education, meta-cognition, struggling readers, visual literacy.

INTRODUCTION

It is springtime and the six "teacher-identified-struggling," second-grade readers are reading aloud and talking about the award-winning picture book, *Big Chickens Fly the Coop* (Helakoski, 2008[#]). In the story, four, fearful chickens set out to find the farmhouse because they want to taste the bugs there. Unfortunately, because they are not sure what the farmhouse actually looks like, their humorous adventures lead them to the doghouse, the tractor, and the barn before they accidentally end up at the farmhouse. The second graders (all pseudonyms) have just read the climax of the story in which the chickens discover their coop was *always* next to the farmhouse.

Kyle: It is next door. Right next door! See! (points to images in the illustration).

Researcher: Was it next door all the time?

Students: Yeah!

Researcher: And they never even -----?

Students: Noticed!

Kyle: I don't think we did either.

Ah, yes, noticing... Youngs and Serafini (2011) maintain that this first level of interpreting visual information requires that readers/viewers access and perceive images and basically "take visual inventory" (Piro, 2002, p. 130). It is a

necessary step for interpretation that requires *seeing* and the ability to construct meaning, rather than just *looking* (Serafini, 2010). Noticing involves deeper, sociocultural and textual interpretations (O'Neil, 2011), as the students show in these additional excerpts. Their viewing and talking begin with the opening endpages:

Kyle: Oh, they [the buildings] are going in order. First, it is there (points to the 'action' of the coop), then there (points to the 'action' of the doghouse), and then there (points to the 'action' of the tractor). It [actions of the plot] goes from here to there to there to here...

Lorena: It's like a map.

Researcher: (Pointing to endpages' illustration) *This* is like a map?

Erica: It is... they are going to head here (points to building) and then they are going to head here (points to building). And then, they are going to be so tired that they want to go back to the chicken house.

Thus, while the second graders' noticing of order and maps indicated how referential meanings attached (Kress & van Leeuwen, 1996) to the composition of the represented images in the layout, they did not fully interpret the spatial relationship of the farmhouse to the chicken coop until the climax of the story and Kyle's exclamation regarding their *lack* of noticing. It is at this point that the second graders begin to interact with the producer of the perceived map (illustrator) with questions.

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- Erica: See! Why is the fence different? They have two different pictures for some reason (flipping back and forth between pages)...On that one, you can see the fence is there, but then it is facing this way. In this picture, you can see it THIS way. And then, this back picture right here (flips to another page), it shows it this way (moves hands to show a different “camera shot.”).
- Researcher: Mmmm. I don’t know. She said, ‘look at this page right here.’ Is the chicken coop right next to the fence?
- Students: Yeah.
- Researcher: Well, let’s look over here. Is the chicken coop right next to the fence?
- Students: No...Yes? (mixed responses)
- Erica: And, look, the chicken coop is facing the other way! SEE!
- Kyle: Oh! So, they [the chickens] didn’t know before!
- Erica: They had to go ALL through that! And they are like—‘we were just right through there!’

Erica’s questioning of the composition of the illustrations forced the students to consider the spatial relationships of the buildings in terms of the illustrator’s drawn perspective which elicited the students’ noticing of different textual meanings (Kress & van Leeuwen, 1996). Erica’s self-questioning or her stopping the others to ask and answer a question related to the text activated the students’ thinking/interpretation. Viewing the images of the buildings filled in the gaps of the text, and the students were now able to construct how the chickens’ challenges in knowing and finding the farmhouse arose. The chicken coop door faced *away* from the farmhouse! Without their acting upon the visual data in the illustration, the second graders would not have achieved a coherent text or “message-entity” (Kress & van Leeuwen, 1996, p. 66), for the written text did not provide such information. It was only in the illustration.

When asked by the researcher, “Why do you think the illustrator did that?” Erica replied, “Because they wanted us to notice and pay attention to the pictures.” Erica, like other children in today’s world, relies on visual forms of communication for deriving meaning (Hassett & Schieble, 2007). However, even though she and other young students have learned that visual images, including those in picture books, signal meaning (Wolfenbarger & Sipe, 2007), they have had few learning experiences regarding how to comprehend visual and design elements in multimodal texts (Youngs & Serafini, 2011). Traditional literacy instruction in our schools has been dominated by written texts and the alphabetic principle (Hassett & Schieble, 2007) with limited teaching concerning “how to read the image” (O’Neil, 2011, p. 222).

Unfortunately, for many students—including Kyle, Erica, Lorena, and the other members of their reading group—the written text of automatic word identification “requires so much cognitive energy that limited resources remain for understanding” (Rich & Blake, 1994, p. 271). They *struggle*

with reading. Researchers have questioned if drawing attention to illustrations in picture books may serve to reduce these students’ cognitive demands and thereby facilitate their comprehension (Pike, Barnes, & Barron, 2010). Some years ago, Gambrell and Jawitz (1993) stated that research indicated “illustrations help readers to focus their attention on information in text and to reorganize the information into useful mental models” (pp. 266-267). They suggested that illustration effects might be increased if more direct instruction to visual information was presented. Unfortunately, in the twenty years since their suggestion was offered, “pedagogical approaches addressing various strategies for comprehending visual images” (Serafini, 2010, p. 86) in picture books have only recently begun to emerge. Moreover, while studies show that self-questioning can be another effective comprehension strategy for elementary-aged readers (Taylor *et al.*, 2002), Walker (2005) asserts that struggling readers do not engage in self-questioning.

PURPOSE OF THE RESEARCH

Thus, the purpose of this research was to describe how young struggling readers used viewing or noticing as a comprehension strategy, as well as to describe how self-questioning facilitated these readers’ interaction with images to make meaning. Specifically, the study sought to answer, “To what extent and in what ways do struggling second grade readers attend to images in picture books that are read aloud in order to make meaning?”

Background and Significance of the Research

According to the National Assessment of Educational Progress (US Department of Education, 2011), 34% of fourth graders read below the basic level of proficiency. Ganske *et al.*, (2003) surveyed elementary teachers in several states and observed that they were most concerned with how to support their struggling readers and writers. Clark, Deshler, Schumacher, Alley, and Warner (1984) maintain that teaching students learning strategies, such as self-questioning, is one approach for meeting the needs of these readers. Self-questioning is an instructional tool supported by extensive research, although most often with upper elementary readers (Lublinter, 2004). Lublinter (2004) argues struggling readers with decoding and word identification difficulties are more challenged to generate self-questions because they devote so much of their cognitive resources to decoding words.

Hibbing and Rankin-Erickson (2003) suggest these readers’ working memory processes overload, thereby limiting their construction of meaning. They suggest that illustrations and visual representations, such as those in picture books, offer struggling readers what Gambrell and Jawitz (1996) refer to as a “peg” (p. 266) or way in which key images associate important information for storage and retrieval. Pike *et al.* (2010) investigated this aspect in a group of 7 to 11 year-old students and concluded that illustrations were not factors related to reducing working memory processes. However, the researchers noted that the children in their study had above average working memories and suggested future research was needed to ascertain how low ability readers’ use of pictures influence their capabilities to infer.

It is within this juncture that Serafini's (2010) arguments for pedagogical attention toward developing one's awareness of visual elements in illustrations, images, and graphics intersect. When observed, instructing students to attend to illustrations in texts has been seen to increase both listening and reading comprehension (Gambrell & Jawitz, 1996). Moreover, combining a cognitive strategy with attention to text-relevant illustrations was more effective than just increasing students' attention to illustrations (Gambrell & Jawitz, 1996). Teachers' instruction in both cognitive (e. g., self-questioning) and visual-meaning-making strategies may offer struggling readers an alternative processing pathway for making meaning. Such a strategy of seeing, thinking, and wondering (STW) is advocated by Richards and Anderson (2003) for young readers, but evidence of the strategy's effectiveness appears limited to anecdotes only. Exploring how primary-aged, struggling readers attend to visual aspects of a text and transact with ideas over the course of reading may offer elementary teachers learning strategies that they can utilize to improve their young students' reading.

Theoretical Framework of the Research

The research question, "To what extent and in what ways do struggling second grade readers attend to images in picture books that are read aloud in order to make meaning?" relates to several theories, including (1) Paivio's (1971) dual-coding, (2) Kress and van Leeuwen's (1996) visual grammar, (3) Rosenblatt's (1986) transactional, as well as (4) cognitive strategies (Palincsar & Brown, 1984). Connectively, these theories provide a framework for the study.

DUAL-CODING THEORY

For some time, teachers have utilized picture books for instruction within the elementary reading curriculum. Nikolajeva and Scott (2000) define picture books as books in which both pictures and texts working together is essential for telling a story. Serafini (2011) adds to this explanation by stating that today's picture books are often multimodal—meaning, "they incorporate a variety of modes, including visual images, hypertext, and graphic design images" (p. 342)—to tell the story. To successfully comprehend picture books, readers must focus on both the written and visual modes of information.

Paivio's (1971) dual-coding theory relates *reading* to cognition and establishes two mental subsystems: one specializes in representing and processing language (words for objects, events, and ideas) and the other represents nonverbal systems, which may comprise visual images as well as other modalities (e. g., auditory, haptic). According to Sadoski *et al.*, (1991), "Information in the verbal system is organized in a way that favors sequential, syntactic processing" (p. 473), whereas nonverbal information is organized more holistically and is available for processing in a synchronous manner. Importantly, in terms of picture books, readers alternate attention between words and pictures and thereby represent verbal and nonverbal information in separate cognitive structures (Sipe, 1998). "It is possible to have nonverbal images only or images that also include associated words" (Hibbing & Rankin-Erickson, 2003, p. 759). Readers/viewers interconnect both systems by

creating images when they see/hear words and generate names or descriptions of things when they see images, graphics, or pictures in books. Processing involves activating particular mental referents via verbal/nonverbal external stimuli, whereby language can referentially evoke images, as well as visual images can evoke language (Sadoski, *et al.* 1991).

Visual Grammar Theory

Specifically, Kress and van Leeuwen's (1996) logic of written grammar holds that visual images governed by spatiality, composition, and simultaneity (Kress, 2003) differ from how verbal systems are ordered in terms of time and sequence. Just as readers process verbal information by making sense of syntax, semantics/pragmatics, and grapho-phonics, readers/viewers process nonverbal information by making sense of the relationships among the structures or elements in visual images. In their semiotic theory, signs or symbols must represent objects and their relations to the world outside of the representational system. These (1) *representations* may reflect narrative processes which serve to present unfolding actions and events, processes of change, and spatial arrangements or they may reference conceptual processes, like classification systems or analytical and symbolic processes. As such, images represent the relations between people, places, and things they depict in the experiential world and viewers reference these to construct meaning (Kress & van Leeuwen, 1996). In making sense of these representations, receivers and producers of signs (2) *interact* with each other within the contexts of social institutions. Contacts initiate interactions via direct views, close-up or distant shots, perspectives, or points of views using the position of angles that often construct subjective and socially determined attitudes (Kress & van Leeuwen, 1996). Additionally, the "composition of the whole, the way in which the representational and interactive elements are made to relate to each other, the way they are integrated into a meaningful whole" (Kress & van Leeuwen, 1996, p. 181) communicates meaning. In terms of composition, three interrelated systems of salience (attracting the viewer's attention by placement in the foreground or background, relative size, contrasts in tone or color), informational value (placing elements within the whole to reflect differing values), and framing (dividing lines in order to disconnect or connect elements of the image) occur. Thus, "visual texts are motivated to perform specific social actions... [which] need to be activated by producers and viewers" (Serafini, 2010, p. 89); as such, they are always interpreted within a socio-cultural context.

Transactional/Reader Response Theory

The reader/viewer's "stance toward what is being aroused [or activated] in consciousness" (Rosenblatt, 1986, p. 124) is *key* to Rosenblatt's theoretical perspective of reader response. She asserts readers construct meaning through rich transactions with a text in a given context/situation—transactions, she says that involves selective attention to a multitude of possibilities (e.g., syntax, ideas, or visual signs). Rosenblatt explains, "...what is brought into awareness, what is pushed into the background or repressed, depends on where, on what aspects... the attention is focused" (p. 123). In terms of picture books,

one's stance may be activated by gaps between the words and the pictures (Sipe, 1998) or by selectively attending to the illustrations because "referential meanings are constructed by the forms of visual representations" (Unsworth & Wheeler, 2002, p. 69).

COGNITIVE STRATEGY

"Activity" on the part of the reader is embedded in unlocking verbal and nonverbal codes, relating elements of an image, and evoking transactions within a text. It is thus critical in terms of a reader's ability to increase his/her comprehension of text. Guided by cognitive skills strategy research, Palincsar and Brown (1984) focused on developing comprehension-fostering/comprehension monitoring activities that they believed served dual functions by both enhancing comprehension while at the same time affording students' opportunities to check on whether comprehension was occurring. One such activity, the strategy of self-questioning, encourages readers to be active in their own reading processes, as one's own questions guide thinking and searches for meaning, as well as intrinsically motivate.

Unfortunately, finding the questions in written text is quite challenging for struggling readers (Palincsar & Brown, 1984). But, in a picture book, the visual image opens up a peg (Gambrell & Jawitz, 1991) that links associative information—information that can be named, interacted with, and critically analyzed (Kress & van Leeuwen, 1996). With self-directing questions, the process of integrating verbal and written information is initiated, and as such, the illustrations become useful tools for creating meaning (Hibbing & Rankin-Erickson, 2003).

METHOD OF THE RESEARCH

Framed by the theories of dual coding, visual grammar, transactional/reader response, and cognitive strategies, this study took place in an urban elementary school in a mid-western state's largest school district during November to May of the 2012-2013 school years. The elementary school sits in an older section of the city and draws children from primarily lower socioeconomic homes. Because the investigation sought to describe the struggling readers' comprehension characteristics, the strategy of inquiry was a case study (Creswell, 1998). In this "case," the participants were bounded by a particular time and setting. Although in probing for students' thinking, the researcher modeled metacognition, the intent of the study was not for comprehension achievement. Rather, rich descriptions of the students' "noticings" were thought to offer pedagogical assertions for teaching comprehension.

Participants

Participants in the study consisted of six second grade students—four boys and two girls—all of whom had parental-signed consent forms which were approved by the Institutional Review Board. In their regular classrooms, these children participate in whole and small group reading instruction via a core reading program. Individual and small, tiered-group instruction often result from teachers' analysis of data collected from district and teacher assessments. For this study, then, purposeful sampling (Creswell, 1998)

occurred, in that the participants' two classroom teachers identified each child based on (1) Fall AIMSweb (NCS Pearson, 2013) criterion-based reading (fluency) measures, (2) observations of reading ability during the first nine weeks of the school year, and (3) lack of identification for special needs services. The teachers used a criterion-based fluency measure (CBM) to determine comprehension, even though they recognized that the fluency CBM assessed word identification skills as well as comprehension. These particular students showed difficulties in word identification, and, as such, data relating a comprehension of text (or MAZE) criterion was not applicable. Table 1 is a demographic summary of the students' characteristics. Four of the six students' CBM rated in the 11 to 24th (or below average) range. Jimar's rating was in the 1 to 10th (or well below average) range. Only Lorena's CBM rated in the 25 to 75th (average) range. Her teacher selected her because he felt the increased oral language occurring in the small group setting would benefit Lorena's comprehension of text.

Materials

To begin, the researcher adapted Serafini's (2011) teaching framework for studying visual images in picture books with the utilization of a "search and find" book (contains more visuals than text). Because the read alouds required the participants' grappling with both verbal and nonverbal systems of information (Paivio, 1971), locating books with enough text to be measured was difficult. The researcher chose picture books, not illustrated books (Nikolajeva & Scott, 2000), as both visual and written/textual aspects were needed for interpretation in terms of the research. To explain, in the picture book, *Chicken said, "Cluck!"* (Grant, 2008[#]), Earle and Pearle plant pumpkins, but have to consistently "shoo" Chicken from the garden. Chicken responds with "Cluck" repeatedly throughout the plot. At a certain point, however, the illustrations shows a visual image of Chicken with her beak and body (in a horizontal position) touching the ground, reflecting her reaction to their "shooing." In this text/picture arrangement, the visual information communicates meaning—Chicken's dejection at being "shooed"—as the text only shows the word, "cluck" (p. 17).

Thus, even though Nicholai, Jimar, and Kyle's CBM's were below the 70 Lexile[®] level, that targeted criterion was selected in order to choose quality picture books. Moreover, increasingly textually-complex books were selected to force the readers to grapple with grade-level, quantitatively measured text (Council of Chief State School Officers, n.d.). Specifically, the following criteria was used: (1) Picture books that progressively increased in Lexile[®] levels; (2) Quality stories (well-developed plots, characters, etc.); and (3) Engaging, colorful, and varied illustrations that reflected differing design elements and photographs. By employing the *Children's Literature Comprehensive Database* (www.clcd.com) as a resource for literary specialists' reviews of stories and illustrations and textual reading measures, fiction and nonfiction picture books were determined (shown in Table 2). The interests of the children were limited to animals.

Table 1. Demographic characteristics of participants.

Participant/ Pseudonym	Gender	Ethnicity	Socio-economic status	Fall AIMSweb [©] CBM fluency lexile measure [®]	Personal interests
Lorena	Girl	Latina	Low	165L	"I like to play soccer and dance."
Jerrick	Boy	African-American	Low	80L	"I like football; I like basketball."
Nicholai	Boy	White	Low	20L	"I like chicken and butter."
Erica	Girl	White	Middle	75L	"I like animals and I like to sing."
Jimar	Boy	African-American	Low	BR	"I like basketball and football and wrestling and boxing and soccer."
Kyle	Boy	White	Low	20L	"I like to play skateboard and ride dirt bikes and play basketball."

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Table 2. Materials selected for the study.

Title and Author of Picture Book	Lexile [®] Level (www.cled.com)
<i>I Spy Santa Claus</i> by Jean Marzollo [#]	NA
<i>Can I Play, Too?</i> by Mo Willems [#]	70L
<i>Chicken said "Cluck!"</i> by Judy Ackerman Grant [#]	70L
<i>Hi! Fly Guy</i> by Tedd Arnold [#]	210L
<i>Wiggle and Waggle</i> by Caroline Arnold [#]	300L
<i>Frogs</i> by Elizabeth Carney [#]	410L
<i>Big Chickens Fly the Coop</i> by Leslie Helakoski [#]	300L

Procedure

Researcher’s role. In the few weeks prior to implementing the study, the researcher interacted with the second graders during individual and small-group reading activities in their classrooms. At the end of November, weekly reading groups—usually 25 minutes in length—were initiated and then continued until mid-May, for a total of 14 sessions. In these sessions, because the research focus was to describe the participants’ comprehension, questions probed the children so that they might show their thinking (“What does that mean? What are you thinking?”). The participants volunteered to read orally, with text usually consisting of one-or-two page spreads. Researcher facilitation consisted of clarification probes, word elaborations, decoding assistance, and occasional prompts to read chorally. The perusal of each book began with looking at the cover page, title, and visual images.

Overview of the sequenced procedures. (1) In the first reading group session, participants were introduced to noticing in the picture book, *I Spy Santa Claus* (Marzollo, 2005[#]) with a request that they investigate images in the photographs/visuals. Directions given were simply “to look at the pictures and think.” The strategy of looking/thinking was emphasized similarly in the second reading session with the picture book, *Can I Play, Too?* (Willems, 2010[#]). (2) In

the third reading session, the students were prompted to do two things: “Look at the pictures and think” and “Ask questions.” Modeling of questions was implicit, but prompts like “What questions do you have?” did occur. Moreover, when Jerrick posed a statement as a question, the second graders discussed the difference between telling and asking. (3) In the remaining reading group sessions, the students began textual reading by recalling the two things that they were to do. Occasional prompts of, “What do you notice?” and “What questions do you have?” occurred. After the strategy introduction, the students pointed to images in an illustration to name what they had noticed or simply stated, “I have a question...”

Data Collection

Data sources for the study comprised the following: (1) Written transcriptions of 13/14 videotaped reading sessions (excludes the introductory session). A graduate assistant videotaped each session using a wide range angle instead of close-up views of the students’ reading. This occurred because the participants appeared distracted when the close-up shot was first initiated. (2) Fall 2012 and Spring 2013 AIMSweb[©] (NCS Pearson, 2013) CBM reading reports for each participant. (3) Word identification calculations of each participant’s (taped) oral reading performance in 13 read aloud sessions. Errors include substitutions, omissions, insertions, and other participant or researcher assistance in decoding. (4) Field notes (inclusive of informal conversations with the classroom teachers).

Data Analysis

In analyzing the data, written transcriptions were read, reviewed, and reread multiple times as a means of coding the participants’ attending to images in picture books. Using the idea unit as the unit of analysis (Chafe, 1987), and the constructs of dual coding (Paivio, 1971), each idea or meaningful instance were categorically aggregated (Creswell, 1998) in relationship to visual and verbal text processes. According to Chafe, an idea unit is a unit of intonational and semantic closure in oral or written texts. By looking at *both* the participants’ visual and verbal

“noticings,” how much attention directed toward images could be ascertained. Moreover, because the participants read increasingly complex texts, calculations of word identification accuracies were analyzed to reflect what extent the noticing of images had on their verbal processing of text. Additionally, in interpreting the meaningful issues inherent to the students’ ideas, a pattern of their transactions/making meaning with both visual and verbal information emerged. To explain, in their “noticings,” they often shared making-meaning connections. These transactions were coded in relationship to Rosenblatt’s (1986) transactional theory (principles).

After categorizing visual-coding-processes idea units, these same units were analyzed for ways (strategies) in which they reflected *how* the participants’ attended to the images. Use of Kress and van Leeuwen (1996) visual grammar theory’s descriptive codes as guides—though simplified in terms of complexity—occurred. In coding, an overlapping of patterns was noted, but the researcher consistently examined the idea unit in terms of the participant’s perceived intent. To explain, in noticing Snake in *Can I Play, Too?* (Wilhems, 2010[#]), Jimar argues, “No, it’s a snake because it can go up like a cobra.” Jimar’s idea (unit) reflected his referencing of a snake’s attributes in the world, even though his noticing may have been spurred initially by seeing Snake’s color (a salient element of composition). Finally, after coding the participants’ transactions in processing visual and verbal information, direct interpretation of these same meaningful issues analyzed how questions spurred thinking. Determination of questioning/thinking patterns considered how divergent (high) or convergent (low) a response was required for answering. To explain, coding questions from the participants’ reading of *Hi! Fly Guy* (Arnold, 2005[#]) indicated, “These are all wild animals. Why are they not attacking or something?” as high and “What one [pet show award] did this animal win?” as low. In summary of analyzing data, abstracting the important concepts meant, after the initial coding, a delving for more layers.

Trustworthiness of the study involved inter-rater reliability (Creswell, 1998) as dually-written transcriptions of the videotapes occurred (between the graduate assistant and researcher). To increase credibility, peer scrutiny (Shenton, 2004) via colleagues’ challenging assumptions in the data analysis process and offering feedback occurred. Each colleague offered expertise (Shenton, 2004) due to his/her varying backgrounds.

RESULTS AND DISCUSSION OF THE RESEARCH

In order to answer the research question of, “To what extent and in what ways do struggling second grade readers attend to images in picture books that are read aloud in order to make meaning?” the researcher examined the results as two separate components of the question: (1) To what extent do struggling second graders attend to images? and (2) In what ways do they attend to images in picture books? Initially, descriptions of the extent of the participants’ viewing reflect quantitative results, but also reflect how attending to images impacted the participants’ identification of words in processing verbal text. For the second component, descriptions of the ways in which the second graders viewed images using specific strategies occur. To

help unpack and clarify these descriptions, a discussion of each component is provided *concurrently*.

(1) Attending to Images

The participants’ results reflect their dual coding (Paivio, 1971) of text, whereby attention to images by processing (1) nonverbal or visual information and (2) verbal (written text) in separate, but interconnected ways is apparent. As shown in Table 3, their viewing reflected a processing of both pictures and words, but data indicated they most often (85%) attended to visual stimuli/information in the picture books.

While the extent of both visual and verbal processing is noticeable, further analysis of the participants’ verbal processing reflects the extent to which “attended-to” visual information assisted in identifying words. As noted by Sadoski *et al.* (1991), the verbal system in reading functions as a separate system from the visual information system, but the two can interconnect. Procedural directions to attend to the illustrations in the picture books encouraged the children to engage with visual stimuli *first*. Barnes *et al.* (2010) offer that illustrations cue readers as to important information for their salient features make “relationships between the important elements of text more transparent” (p. 245). It appears reorganizing that important information into useful mental models allowed the participants a bridge to process verbal information (Gambrell & Jawitz, 1993) more proficiently than had been previously observed on CBM measures. To explain, stored language evoked from the initial processing of images was retrieved from memory (Gambrell & Jawitz, 1993) and used to assist in decoding. Such evoked language reduced the demands of organizing phonemes, graphemes, and morphemes into meaningful word structures and resulted in fewer word identification errors, thereby increasing meaning.

In Table 4, data of the participants’ word identification proficiencies for each picture book reflect an average proficiency of 92 percent, indicative of instructionally-appropriate material, even though the students’ were grappling with increasingly complex text. In a similar setting, Clark *et al.* (1984) concluded seventh graders with learning disabilities were able to apply learning strategies of visual imagery and self-questioning to texts above their measured reading ability levels.

(2) Ways of Attending to Images

Results (see Table 5) reflective of the second component of the research question indicate ways in which the second graders noticed images and verbal text in order to interpret. Patterns in the data analysis reflect the participants’ (1) transactions (personal, meaning-making experiences) with images and verbal text, (2) interpretations of images via *representational* aspects of the world, *interactions* of interpersonal social relations, and *composition* of integrated texts (in terms of salience, informational value, and farming), and (3) questioning of images and text.

Transactions (meaning-making experiences). In noticing the different ways images represent and communicate meaning, the participants’ responses revealed how they transacted with the visual information by drawing upon their own “reservoir of public and private

Table 3. Number of participants’ attending to/noticing visual images and verbal text per picture book.

Title of Picture Book	Number of “Noticings” of Visual Images	Number of “Noticings” of Verbal Text
Can I Play, Too?	15 - 83%	3 - 17%
Chicken said, “Cluck”	24 - 83%	5 - 17%
Hi! Fly Guy	68 - 87%	10 - 13%
Wiggle and Waggle	66 - 81%	15 - 19%
Frogs	79 - 86%	13 - 14%
Big Chickens Fly the Coop	103 - 93%	8 - 7%
Average Number of “Noticings” <i>n</i> =409	355 -85%	54 - 15%

Table 4. Participants’ average word recognition accuracy per increasing levels of picture books.

Participant	Titles and Levels of Picture Books and Word Recognition Accuracies					
	<i>Can I Play, Too?</i> 70L	<i>Chicken said, “Cluck”</i> 70L	<i>Hi! Fly Guy</i> 280L	<i>Wiggle and Waggle</i> 300L	<i>Frogs</i> 410L	<i>Big Chickens Fly the Coop</i> 300L
Lorena	100% WR	86% WR	100% WR	99% WR	92% WR	100% WR
Jerrick	100% WR	96% WR	97% WR	95% WR	89% WR	90% WR
Nicholai	100% WR	80% WR	94% WR	95% WR	94% WR	81% WR
Erica	100%WR	94% WR	98%WR	90% WR	92% WR	91% WR
Jimar	75% WR	Absent	86% WR	92% WR	96% WR	81% WR
Kyle	100% WR	94% WR	100% WR	84% WR	74% WR	96% WR

significances” (Rosenblatt, 1986, p. 123). Importantly, in drawing from personal socio-cultural frames of reference, the second graders interpreted both visual and verbal information by sharing lived-through experiences. For example, noticing the ball in the endpages of *Can I Play, Too?* (Wilhems, 2010[#]) elicited an array of *ball* stories, from football to soccer to 4-square. Even though the students’ “noticings” of visual information far exceeded their “noticings” of verbal/written information, they connected personally to both images (57%) and text (43%) similarly--indicating both transactions activated their making of meaning.

“**Noticings” of images.** Over 350+ incidents of *noticing* reflect how the participants’ referenced visual (1) representations of experiential knowing, (2) interacted with producers of images, and interpreted the (3) composition or “different ways in which objects can be represented and different ways in which they can be related to each other” (Kress & van Leeuwen, 1996, p. 40). For these participants, how the composition formed an integrated text emerged as most reflective of what they attended to and how they constructed meaning. To illustrate, 44% of their verbalizations showed varied processing of an image’s salience, informational value, and framing. Importantly though, the second graders’ noticing of images also reflected how much they attended to and referenced representations (38%) and how interactions with these representations (18%) were interpreted. Examples and discussions of verbal responses reflect these “noticings.”

Representational. Kress and van Leeuwen (1996) assert that in order for visual information to communicate, it must be able to represent aspects of the experiential world. To show this phenomenon, in the reading of *Frogs* (Carney, 2009[#]), the participants’ talk reflects much “noticing” regarding the Green Frog’s eating of a dragonfly. At this particular point in the chapter, they are reading about “Frog Food.”

- Erica: I am looking at this frog right here [Green Frog] and I am wondering what this is? (points to circular marking on the side of Green Frog’s head). It looks kind of like an egg, but I’m not really sure.
- Lorena: It’s probably his ear. But do frogs have ears?
- Students: No.
- Kyle: This is freaky.
- Jimar: Uhhh. Is it the thing that the frog uses when it is like talking?
- Erica: Oh, you mean, it is kind of like a boom box?
- Jimar: Yeah. This is the thing that makes it come out—makes the sound louder.
- Researcher: Do you think it is kind of like an amplifier?
- Erica: It’s kind of like that...

Table 5. Participant strategies observed in attending to visual images and verbal text per picture book.

Title	Strategy Observed in Attending to Visual Images and Verbal Text								
Can I Play, Too?	"Noticings" of Images					Transactions		Self-questioning	
	Represent 11 73%	Interactive 0 0%	Composition 4 27%			Visual 8 80%	Verbal 2 20%	High 0 0%	Low 3 100%
	Saliency 3 75%			Inform Value 0 0%	Framing 1 25%				
Chicken said, "Cluck"	"Noticings" of Images					Transactions		Self-questioning	
	Represent 1 4%	Interactive 5 22%	Composition 17 74%			Visual 35 62%	Verbal 21 38%	High 2 40%	Low 5 60%
	Saliency 17 100%			Inform Value 0 0%	Framing 0 0%				
Hi! Fly Guy	"Noticings" of Images					Transactions		Self-questioning	
	Represent 26 37%	Interactive 15 22%	Composition 28 41%			Visual 23 54%	Verbal 19 46%	High 18 78%	Low 5 22%
	Saliency 18 64%			Inform Value 7 25%	Framing 3 11%				
Wiggle and Waggle	"Noticings" of Images					Transactions		Self-questioning	
	Represent 27 40%	Interactive 13 20%	Composition 26 40%			Visual 31 44%	Verbal 40 56%	High 14 61%	Low 9 39%
	Saliency 25 96%			Inform Value 1 4%	Framing 0 0%				
Frogs	"Noticings" of Images					Transactions		Self-questioning	
	Represent 45 57%	Interactive 5 6%	Composition 29 37%			Visual 37 46%	Verbal 44 54%	High 18 75%	Low 6 25%
	Saliency 17 59%			Inform Value 0 0%	Framing 12 41%				
Big Chickens Fly the Coop	"Noticings" of Images					Transactions		Self-questioning	
	Represent 18 17%	Interactive 39 37%	Composition 48 46%			Visual 26 58%	Verbal 19 42%	High 10 71%	Low 4 29%
	Saliency 24 50%			Inform Value 5 10%	Framing 19 40%				
Averages	38%	18%	44%			57%	43%	70%	30%

Jimar: Because he's got this thing (points to egg-like image). He puffs up as far as he can go, and this thing like helps it [the sound] come right out—BRMVRF (sound)!

Serafini (2010) explains that the visual resources of a picture book are always interacted with and interpreted within a social context. To Lorena, in relating referents to her experiences, the “egg-like image” was a visual structure positioned where an ear would be located. But, she and the other students reflect confusion because their background experiences did not consist of the notion that frogs have ears. Kress and van Leeuwen (1996) state that “pictorial structures do not simply reproduce the structures of ‘reality’... [but are also] bound up with the interests of the social institutions within which the pictures are produced, circulated, and read (p. 45).” In the data collected, the second graders’ referencing of representations prompted questioning of incongruent visual data, like the frog’s ear, which often led to more questions, sharing of transacted background knowledge, and a search within both the visual information and written text for answers. In other words, their verbal responses reflected a pattern of finding questions within this *gap* of seeing images and knowing representations from their worlds.

Interactive. Conceptual relations among the people, places, and things are depicted in images (Kress & van Leeuwen, 1996). But interactions occur between the real people who produce the images and those who make sense of the images. These pseudo-social interactions are achieved through various means, such as the selection of an angle to reflect a point of view (Unsworth & Wheeler, 2002). The second graders’ viewing reflected this involvement by pointing out how elements communicated a certain attitude or system of contact (Kress & van Leeuwen). This is exemplified by Lorena and Jimar’s verbalizations about *Wiggle and Waggle* (Arnold, 2009[#]), when the worms react to the rain making puddles in the garden.

Jerrick: (Reads aloud) “... A big puddle filled the middle of the garden...They looked into the puddle.”

Lorena: How is that big? (points to puddle in illustration)

Jimar: It is big to them.

Lorena: But not to us.

Integrated textual composition reflective of salience. O’Neil (2011) maintains that artists use various compositional elements in an illustration to inform the reader. Salience or what catches one’s eye, according to Kress and van Leeuwen (1996), is one way that visual elements attract the reader/viewer’s attention in order to provide information. To exemplify this, the participants are just beginning to read the picture book, *Can I Play, Too?* (Willems, 2010[#]).

Jimar: (Read alouds) “Pig. Let’s play catch.”

Students: (Correct pronunciation) “Piggie”

Jimar: (Rereads text) “Piggie. Let’s play catch.”

Researcher: Who’s saying that?

Lorena: Elephant

Researcher: How do you know?

Erica: Because the arrow is pointing right there toward Elephant (points to callout image)

Jerrick: (Continues reading) “Yes.” “I love playing catch with friends!”

Erica: (Holds up her hand) It looks like when Elephant is talking, it’s [callout] like a gray color, and when Piggie is talking, you got like a pink color [callout]—so you know which one is which...

Jimar: (Introduction of Snake) Okay, the gray one is for the elephant, the pink one is for the pig, and the green one is for the snake.

The second graders viewed and then processed the color of the callouts as the means by which the characters interacted with each other (i.e., speech bubble colors aligned to the character). Naming color as a referent gave this aspect of the illustration meaning in terms of relating the actions/talk of the characters to each other. Salience was frequently reflected.

Integrative textual composition reflective of framing. Another aspect of integrating the composition into a whole is through the producer’s use of framing—an aspect the students’ viewing often reflected. Kress and van Leeuwen (1996) explain that framing is observed in various ways, but oftentimes via vectors. In this particular excerpt, the students notice a “connectedness” to them. The students had just begun to read aloud the picture book, *Big Chickens Fly the Coop* (Helakoski, 2010[#]). At this point, Jimar interrupts the book reading.

Jimar: I have a question...I am talking about this page (illustration in which the chickens enter the doghouse).

Researcher: Okay, what’s your question?

Jimar: How did he (points to the chicken) jump his head in there? [reference to the water bowl on top of the chicken’s head] How did the dog bust out of here? They are all like busting out of there!

Erica: I can answer that!

Researcher: Well, let’s read and answer it together.

Jerrick: Why do they all look so weird? The dog—he is slobbering on the chickens... and they all look crazy.

Kyle: The chicken is like saying, WAAA!

Erica: (Reads on)...

Researcher: (Restates refrain) “We would’ve stayed home except---.” What did they want to do?

Erica: Go the farmhouse!

Researcher: So, are they happy or sad?

Jimar: Happy!

Erica: Sad! Well, they are scared...

- Jimar: No, they are happy... Look at the next page! They smile.
- Researcher: And that means?
- Jimar: They want to go—just like me. I never want to give up...

Jimar and Jerrick noticed salient aspects of the dogs (water bowl, slobbering, jumping)—elements that draw their attention “out” of the picture toward them (the viewers). The images in the illustration are not separated by white or empty space or markers/lines, and, as such, the lines of motion (vectors) reflect a connection “out” of the illustration to the reader. Jimar’s noticing of the “busting out” (vectors) in the illustration leads him to interact with or contact the producer. This is confirmed by his personal connection that, just like him, the chickens are not quitters.

Questioning. Data collected reflects how the participants noticed “gaps” between what was represented in the image and what they knew (perceived). Gaps between contacts with the producer of the images were additionally revealed. These incongruities prompted the second graders to generate questions, with searches for answers primarily involving visual information. But the results also reflected questioning verbal information (as will be shown). As displayed in Table 5, questioning facilitated the processing of information with high level thinking (70%), such that increased cognitive activity occurred (Palincsar & Brown, 1984). In such activity, the students’ noticing reflects an awareness of linear/temporal relationships evoked by verbal structures (question/answer relationships). This is exemplified by Jimar’s “found” answer to, “Why do frogs’ chins go down so far?” while reading *Frogs* (Carney, 2009[#]): “Look at this frog croaking! Some frogs’ throats puff up when they make sounds.” Jimar interrupts his own reading and says, “Oh, that’s probably why they have to come down so far!”

LIMITATIONS

Various limitations of the study include the small number of participants, the materials used in the reading sessions, the limited time of the study, the simplified analysis of data (theoretical constructs), and the researcher modeling of meta-cognition as well her interpretive lens.

IMPLICATIONS OF THE RESEARCH

The purpose of this research was to describe comprehension characteristics of struggling second grade readers who notice images in picture books to make meaning. Results revealed the participants most often noticed visual information in interpreting and then relied upon visual memory of these “noticings” to increase oral reading accuracy. The results further revealed the ways in which the second graders’ processed information by (1) transacting with images/text via socio-cultural frames of references, (2) interpreting images via representational aspects of the world, interactions of interpersonal social relations, and composition of integrated images, and (3) questioning images/text. Although the case study only involved a few participants, assertions regarding teachers’ implementation of multiple comprehension strategies can be drawn. First, in terms of comprehension teaching, as Serafini (2011) urged, teachers need to facilitate students’ attention to

the multimodal nature of texts and the importance of teaching visual literacy skills (e.g., color, line, perspective). Use of illustrations as resources for identifying words may provide struggling readers an efficient decoding strategy, especially if combined with cognitive learning strategies. Secondly, because self-questioning spurred the second graders’ activity to read images/text and transact socio-culturally (Rosenblatt, 1986), elementary teachers should encourage inquiry and use such prompts as, “What questions do you have?” instead of asking all the questions (Lohfink, 2012). Importantly, future directions should consider a content analysis of illustrations to determine how certain modes impact the type of strategy employed.

CONCLUSION

As noted, the research project was not intended as an instructional intervention, but rather to gather descriptive information regarding struggling readers’ visual processing and comprehending of picture books. While the classroom teachers did not respond to end-of-year interviews regarding the second graders’ meaning-making, they did indicate all participants showed improvement on final CBM measures (see Table 6). These results indicate that elementary teachers can increase their students’ comprehension by embracing a more dynamic model of reading comprehension. Alternative literacy pathways that allow for other modes of information—not just verbal/written—might prove especially effective for struggling readers.

Table 6. Comparison of participants’ fall and spring aimsweb criterion-based fluency measurements.

Participant	Fall AIMSweb [®] CBM Lexile [®]	Spring AIMSweb [®] CBM Lexile [®]
Lorena	165L	325L
Jerrick	80L	245L
Nicholai	20L	230L
Erica	75L	195L
Jimar	BR	120L
Kyle	20L	120L

CONFLICT OF INTEREST

The author confirms that this article content has no conflict of interest.

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