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To cite this article: Lynn E. Shanahan (2013) Multimodal representations: a fifth-grade teacher influences students' design and production, Pedagogies: An International Journal, 8:2, 85-102, DOI: 10.1080/1554480X.2013.767768

To link to this article: http://dx.doi.org/10.1080/1554480X.2013.767768

Published online: 14 Feb 2013.

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Multimodal representations: a fifth-grade teacher influences students’ design and production

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(Received 2 July 2011; final version received 27 February 2012)

The purpose of this interpretive case study is to explore – through a close analysis of one fifth-grade class project – teacher’s scaffolding and students’ use of visual and linguistic modes when composing multimodally. Using Kress and van Leeuwen’s multimodal theory of communication as a framework, this case study examines why teachers, whose social and cultural lives have been surrounded by a print-based perspective, need to develop depth of content knowledge when teaching students about multimodal representation. Two research questions guided this study: (a) in what ways did one teacher’s discourse and pedagogical practices mediate students’ communication with visual and linguistic modes within a fifth-grade classroom? and (b) using visual and linguistic modes of communication, in what ways did the students design and produce multimodal texts? Findings revealed the importance of teachers developing content knowledge of the affordances and limitations of different modes of communication, as well as understanding the metafunctions of these various modes.

**Keywords**: multimodality; metafunctions; writing instruction; digital composing

Introduction

For approximately 300 years, teachers living in a Western society have experienced social and cultural lives in which the printed word is the dominant communicative mode or available resource for meaning-making, and the book has been the dominant medium. The ideologies and social practices around the printed word influenced teachers’ instructional discourse or talk (Kress & van Leeuwen, 2001) about composing text. For example, teachers’ instruction of composition primarily focused on the use of words, sentence structure, grammar, paragraph formation and essay writing. Thus, the central focus of instruction was primarily monomodal. Historically, the mediums used in composition were pen and paper, a typewriter or a word processing program, which primarily focused on the strategic use of the linguistic mode (i.e., printed word), with less focus on visual (e.g., images and colour) and audio (e.g., sounds or songs) modes of communication, which were viewed as ancillary.

Of late, the shift in medium to computer-based digital technologies creates the potential to reshape textual and social practices around the use of various modes of communication (e.g., visual, audio and linguistic) because they are more readily available.
Although composing multimodally with digital technologies is an exciting possibility, it does present some instructional challenges because it does not parallel with the assumptions of communicating with printed words that teachers have used for hundreds of years. Theorists and researchers agree that teachers will need to make considerable pedagogical changes, and the culture of schools as related to dominance of print-based forms of communication will need to shift, especially in understandings the significance of design of non-printed modes of communication. Theorists and researchers agree that teachers will need to make considerable pedagogical changes, and the culture of schools as related to dominance of print-based forms of communication will need to shift, especially in understandings the significance of design of non-printed modes of communication.

Without developing a more substantive content knowledge around multimodal communication, teachers may unintentionally miss opportunities to advance students’ learning because teachers can only realize the potential of semiotic modes when they have developed the knowledge for recognizing them. Failure to recognize the communicative potential of semiotic modes most likely results in the use of new digital tools in old print-based ways or what Lankshear and Bigum (1999) call “old wine in new bottles”.

Although models of teaching multiliteracies exist in the research literature and these models often call for explicitly teaching affordances associated with various modes of representation, there are few studies that show the effects of a teacher maintaining a print-dominant perspective when teaching students to compose multimodal texts. Instead, there are more theoretical discussions on the impact of maintaining a print-based perspective. A study from a print-based perspective is important because a characteristic of adult learners is the need to recognize a reason for changing their current practices. Hence, if a teacher does not recognize it is important to understand the affordances of different modes of representation she or he will not change her or his practice. This case study provides evidence that assists teachers in recognizing the need to increase their content knowledge of multimodal representations and, in turn, to establish the need to implement a model of teaching multiliteracies. Further, this study provides a practical case for teacher educators and teachers to investigate how they mediate multimodal composition with digital technologies.

The intent of this study is to consider what happens when a teacher who values the integration of technology – but who maintains a print-dominant perspective – teaches 10- and 11-year-old fifth-grade students to compose a multimodal text using digital technologies. Two specific research questions were asked. First, in what ways did the teacher’s discourse and instructional practices mediate students’ use of visual and linguistic modes within the fifth-grade classroom? And second, using visual and linguistic modes, in what ways did the students design and produce multimodal texts?
Review of the literature

Teacher learning and multimodality

Though access to these digital technologies have increased over the past 10–15 years (Snyder, Tan, & Hoffman, 2006), professional development focused on meaningful multimodal design, where explicit attention to design leads to conscious layering of representational modes to create maximum meaning are rare (Miller, 2008). Instead, many professional development workshops available to in-service teachers are decontextualized “stand-alone workshops” (Miller, 2008, p. 446) that result in little transfer into the classroom, and they often maintain a limited focus on how to use technology or software programs (Miller & Borowicz, 2006). These types of professional development practices neglect the more diverse communicative possibilities afforded to writers of multimodal texts. Research indicates that teachers tend to under use the communicative potential of various modes when composing multimodally because of their unconscious print bias and therefore, explicit attention to the orchestration of multiple modes, such as designing, is a solution to this issue (e.g., Bailey, 2006; Miller, 2008; Miller & McVee, 2012; Shanahan, 2006).

The current changes in digital technologies coupled with teachers’ apprenticeship with print-based literacies require that literacy researchers and teacher educators further examine ways to support teachers in recognizing the need to change their practices on the orchestration of multiple modes (Bailey, 2006; Miller, 2008). According to Miller and Borowicz (2006), expanding the notion of literacy to include multimodal meaning-making systems beyond printed text for all students is a critical task for schools in the twenty-first century.

Several scholars have proposed theoretical models that would lead to more professional development opportunities. For instance, Leander (2009) has put forward a solution he calls “parallel pedagogy” (p. 148) where composition is taught by exploring the relationship between “new” literacy practices and more conventional print-based practices that affords teachers the opportunity to show how “new media has dimensions of old media within” (p. 163), and how particular semiotic resources have certain affordances and limitations with different media. Leander’s parallel pedagogy provides a bridge between new and old media, which would be advantageous in a school context. In a similar vein, Bearne and Wolsencroft (2007) propose the teaching of writing by drawing on visual approaches. Using visual approaches to teach writing offers a more multimodal approach to communicating, while Miller and Borowicz (2006) refer to an instructional focus for visual design that might include the teaching of page layouts, screen formats, spatial positioning, the use of colours or black and white and gradations of colour. Although numerous calls for change have occurred, the shift in focus remains a challenge for teachers. I argue that in order for these models of multiliteracies or pedagogical frameworks for teaching multimodal communication to be taken up in practice, they must be recognized as relevant to literacy practices.

Multimodal discourse

In this article, I use Kress and van Leeuwen’s (2001) theoretical framework of Multimodal Discourse as an analysis framework to understand how a fifth-grade teacher educated her students on how to use semiotic resources when composing with multimedia. This framework was selected because of the four strata of making meaning: discourse, design,
production, and distribution afforded me the opportunity to examine how the teacher participant was shaping the use of communicative modes throughout the entire composition process (e.g., design, production and distribution) keeping in mind the social, cultural and historical influences found in discourse. In this section, I explain the four non-hierarchical strata that weave across one another resulting in a final production and distribution of a multimodal text.

The first stratum, discourse, considers the socially constructed ideologies, values and practices within a specific context. These contexts can be broader social contexts, such as the discourse of a western, post-industrial society (i.e., United States) or narrower like the composition practices in the institution of an elementary school. When thinking of composition practices in elementary schools, the printed word has been viewed as the central mode of representation, with other modes being seen as ancillary (Kress & van Leeuwen, 2001). Within this study, analysing discourse from the broader perspective provided a sense of the historical and social contingencies of the arrangement and configuration of practices and modes in the school context. Ultimately, understanding the historical and social contingencies revealed how the discursive practices, like multimodal composition in an academic context, were influenced by the social practices of the culture.

In the second stratum, design, composers form ideas by discussing uses, combinations, and arrangements of semiotic modes (Kress & van Leewen, 2001). These discussions become the “blueprint” (p. 48) for the production of the semiotic artefact (e.g., multimodal music video). Knowing that the strata of discourse and design are overlapping provides the expectation that the ideologies and values of the broader culture may impact both teacher’s instruction and students’ conversations on designing a multimodal text. Thus, how information is represented through the use and arrangement of modes is defined by discourses, which represent cultural values and beliefs. These discourses define culturally acceptable design choices that answer: what modes to use for what purpose and which layout is acceptable in this particular context. It is critical to understand that design is separate from the third stratum, production, in that design does not include the act of creating the material artefact, but instead is focused on the conception of ideas.

As composers design their compositions they also have to be cognizant of the third stratum, production, or the “actual material production of the semiotic artifact” (p. 6). For example, in this study, the students had to consider the capabilities of the software program HyperStudio, the content of their presentations and the social cultural influences around sign use in this context while actually expressing their ideas. Important to the stratum of production is the idea of medium, which is the material used to produce the artefact, such as pen and paper or computer and software. Production also entails the technical skills required to use the medium. For instance, the composer must consider how to insert a picture if an image is needed for meaning-making. The fourth stratum, distribution, addresses the saving and distribution of the product. In this study, the students saved their multimodal compositions as they worked on them and distribution entailed playing their compositions on a large screen. Due to the limited model of distribution, I do not address distribution any further within the analytic framework.

Kress and van Leeuwen (1996, 2001) draw upon Halliday’s (1978) metafunctional theory to frame the purposes of various communicative modes. Theoretically, the visual semiotic mode functions for three different purposes: (a) representational, (b) interactive and (c) compositional. The representational function means the visual mode is used to represent or symbolize an idea. The way in which the idea is conveyed varies by mode, as each mode has different syntactic structures. For example, language and music are sequenced, while visual modes tend to be based on spatial syntax. Visual modes also function in interactive ways when enacting social relations between the author and viewer.
for specific social purposes. For example, when communicating through image, three factors are involved in creating social relations; contact, distance and point of view. Contact means the viewer establishes a connection with an image, and an example would be an image of a person who looks directly into the eyes of the viewer. The direct gaze from the image creates an imaginary connection between the image and the viewer. The distance between objects or people in the text creates different interactions for the reader. For the third factor, point of view, it is done through angles of images. The final metafunction, compositional meaning, is the formation of text (e.g., speech, advertisement and hypermedia text of acid rain) using different semiotic modes. Compositional meaning includes the layout, placement and relative salience of the pictures and text. There are three resources of compositional meaning; information value (e.g., placement of modes), framing (e.g., connection or disconnection of modes), and salience (e.g., use of size and colour contrast to catch reader’s eye). In sum, the four strata and three metafunctions were used to analyse how these fifth-grade students were taught and engaged in the multimodal communicative process.

Methods

Context and participants

I conducted this research project in one fifth-grade classroom with Mrs Bowie (all names are pseudonyms) and her students. At the time of this study, Mrs Bowie had taught for 13 years. She integrated the use of “new technology into traditional classroom practice” (Apple Classroom of Tomorrow, 1995, p. 19), for example, by using graphic tools, spreadsheets and word processors. Mrs Bowie’s use of technology was connected to more procedural and technical use of technology (Miller, 2008), with very little consideration of the communicative potentials available through digital technology. I purposely selected Mrs Bowie as a participant because of her desire to be a life-long learner, positive attitude and interest towards technology integration, and because of her reputation as an exemplary teacher.

Mrs Bowie taught at Landers Elementary, which was located in a district that provided ongoing professional development, computer access, and students working mostly at grade level, as indicated by the Directed Reading Assessment (DRA). The research site for this study was in a small suburban district in a Northeastern city in the United States. The district served 3864 students; 493 students attended Landers. Students were predominantly White and less than 10% qualified for public assistance. Out of students, 82.8% scored at or above proficient level on the fourth-grade state English/Language Arts exam.

I selected six focal students for my study, and they worked as partners to determine the effects of acid rain; April and Krystal worked from the perspective of a chemist, John and Abigail worked from the perspective of a biologist and Jeremy and Danielle worked from the perspective of an economist. These students all demonstrated proficiency when using print-based texts, reading at or above grade level. While engaged in the project, students used preselected Internet sites to research through a WebQuest. After the students completed their WebQuests, they created a multimodal composition through HyperStudio. Students created the hyperlinks between pages, drew pictures, pasted images, typed printed text and included sounds. Each group composed a home card (e.g., the first card of the stack of cards) and story cards (e.g., all the cards linked to the home card). For the purposes of this article, I focus mainly on the discourse, design and production that occurred while composing their multimodal text about acid rain, not the WebQuest, or the limitations of HyperStudio as a compositional tool.
Mrs Bowie’s actions in the classroom demonstrated her beliefs in a learner-centred environment. The classroom context was one where students collaboratively worked on solving problems at their tables and at the computers. Mrs Bowie was not viewed as the only resource; students asked each other questions, used resources around the room and consulted with other educators in the building. Mrs Bowie was quite aware that on matters of technology use, in many cases, her students were more technologically savvy than she was. For example, when the students were adding animations to their HyperStudio projects, Mrs Bowie had a student demonstrate the process of adding a particular animation.

Mrs Bowie also understood the pedagogical value of modelling. She began the project by modelling her expectations in the library. Mrs Bowie chose the library because of Internet access, as well as a computer that was connected to a projection unit. When she was not modelling, she moved between groups that were designing at worktables and producing at the computers.

Data sources

Data sources consisted of (a) field notes; (b) transcriptions of classroom discussions between the teacher and students and discussions among students while they composed multimodal texts; and (c) HyperStudio multimodal artefacts. The classroom discourse and multimodal artefacts (e.g., home card and story cards) were collected over the 6-week instructional unit during every 45-minute science block. Students worked on this project four days a week, totalling 1080 minutes. Audio recordings of interactions between the teacher and students, and students together were transcribed, which allowed for close examination of classroom interactions and specific information about ways in which both the teacher and students mediated each other’s use of modes within this particular social and cultural context. Collection and analysis of artefacts, such as the students’ Hyperstudio products, provided evidence on how the classroom design instruction shaped the ways in which students arranged the visual and linguistic modes in their compositions.

Data analysis

Based on Kress and van Leeuwen’s (2001) framework of Multimodal Discourse, initial coding of data began by dividing the transcripts into three episodes: (a) teacher’s instruction of multimodal design, (b) students’ conversations as related to design and (c) students’ conversations that moved between design and production. The first two episodes were periods when students were not producing on the computer, but instead, they were engaged in conversations around designing. Conversely, the last episode was comprised of conversations students had about design while in the act of producing. The weaving between the two strata of design and production was logical because both strata were not linear, but recursive in nature (2001). Each episode was further analysed by (a) visual mode, (b) linguistic mode and (c) layout. At this point in the coding, themes began to emerge related to the way the teacher and students positioned the modes to function in the multimodal text. Hence, I coded the data according to Kress and van Leeuwen’s (1996) three metafunctions: (a) representational, (b) interactive and (c) compositional.

Using the themes that emerged from the data, I subsequently analysed the multimodal compositions to examine how the design conversations shaped the students’ productions. Drawing upon the three resources of compositional meaning – information value, framing and salience – I analysed the layouts of the multimodal compositions and compared the results of the production analysis with the classroom conversations. For example, I analysed
the students’ design conversations and products that focus specifically on a visual mode, such as colour, to understand how students used colour to communicate information as an element to engage readers.

In the next section, I present my findings and discuss them in three sections based on Kress and van Leeuwen’s (2001) framework of Multimodal Discourse: (a) Mrs Bowie’s shaping of design, (b) students’ weaving through design and production and (c) the final product. Through multiple phases of analysis, I used the Kress and van Leeuwen’s Multimodal Discourse as a lens to examine and understand Mrs Bowie’s instruction and students’ compositions of multimodal texts. Given that the social and historical nature of discourse are embedded in each stratum, there is no separate section for discourse, which is the first stratum.

Findings

Mrs Bowie: shaping design

Mrs Bowie never produced a multimodal text with the students; instead, her instruction entailed teaching multimodal design through consuming and critiquing pre-existing websites. Through these critiquing sessions, she introduced the use of visual and linguistic modes (design choices), the layout of the composition, and how the modes should function (i.e., compositional meaning). For instance, during a lesson with the entire class, Mrs Bowie discussed the design of the home card and story cards and shared the following with the students:

“Words are important, but they are not as important as visuals. For me personally, I would think you would rather see visuals than words, especially on the home card [first card of stack of HyperStudio cards]. Maybe buttons [buttons link one card to another] bring you places that teach you things where the words are.”

At first glance it would seem that Mrs Bowie positioned the visual mode as more valuable than the linguistic mode when she said, “Words are important, but they are not as important as visuals.” However, as instruction proceeded and she designed the layout of the home card further it became clearer that the main purpose of visual images on the home card was to interact with readers so they would be interested in the words. Notice that Mrs Bowie did not discuss the use of image for purposes of representational meaning. Instead, her comment, “Maybe buttons bring you places that teach you things, where the words are” demonstrates that the information to be taught should be represented through the linguistic mode on story cards. Ultimately, through her instruction, the visual mode was positioned to function as a way to obtain the readers’ attention because “you would rather see visuals” and the linguistic mode functioned to represent meaning.

The example below reiterates Mrs Bowie’s design focuses on the visual mode for interactive purposes and the linguistic mode for the representational purposes:

“Maybe you’ll have a picture of a skyscraper or a statue that is affected by this [acid rain]. Then you can click on it [image], the invisible button and make it go somewhere and teach you about what happened to that building . . . then out comes a text box that tells you what is going on.”

Notice that Mrs Bowie implicitly discussed having an image (e.g., skyscraper or statue) that relates to the content information represented linguistically. Mrs Bowie’s use of the visual mode here is similar to a type of elaboration Barthes (1977) termed *illustration,*
meaning, in this case, that the image is illustrative of the printed word. Although Mrs Bowie guided students use of images to be illustrative of the linguistic message, the ultimate function of the visual image was to “Make it [image] go somewhere, [to a text box] and teach you about what happened to that building” bringing the readers to story cards where the linguistic mode represented information about acid rain. There was never any explicit teaching of the use of image for representational purposes beyond illustrating the linguistic representations. In this case, Mrs Bowie implicitly alluded that the purpose of the visual images was to complement the written word and build interactive relationships between the reader and the information around acid rain.

As the lessons proceeded, Mrs Bowie cautioned the students about overusing image. She warned,

You look at this goofy guy and it attracts you to this information by saying, “Hey, what is that telling me there?” It makes you want to read it [referring to reading the text]. You don’t want to go overboard, because, if it is too funny, they are not going to read it. [meaning the written words]

In this statement, the use of the visual mode was again referred to as a way to interactively engage the reader to attend to information about acid rain. It is interesting to note here that Mrs Bowie did not consider interpreting visual images as “reading”.

Thus far, I have presented examples detailing how Mrs Bowie instructed students on the design of compositional structure using visual and linguistic modes. The discussion around the visual mode focused on the use of images, which is only one aspect of the visual mode. Colour is also considered a visual mode. In a whole class discussion Mrs Bowie talks about the use of colour to design text:

Mrs Bowie: So when you are planning your storyboard you want to keep that kind of stuff in mind. You want to think about who is your audience? Are they kindergarteners or fifth graders? They’re fifth graders so you all know. And what is going to make them attracted to your page?

April: Fun, colors.
John: Colors.
Mrs Bowie: Colors and animation.
April: Yeah.
Mrs Bowie: Cartooney looking things look a lot better than technical things.

There are several important points to note from this exchange. First, we can see that Mrs Bowie and the students identified the visual elements of colour, animation and cartooney images as being kid-friendly or less “technical”. Mrs Bowie and the students only identified the visual modes on the screen (i.e., colours, animations and cartooney images) functioning for interactive purposes. She did not discuss compositional meaning with any depth. For example, she did not have discussions that focused on composition structures, like information value, salience or tonal contrasts to make elements “more eye-catching” (van Leeuwen & Jewitt, 2001, p. 150).

These examples are representative of reoccurring instances across my data set. Here, it is apparent that Mrs Bowie taught that the one function of image and colour was to engage readers in interactive ways. The visual mode did not function as a central information medium or as a meaning-making source for the reader. Instead, Mrs Bowie taught her students that images functioned to illustrate the linguistic message (Barthes, 1977).
Instructional organization: shaping design and production

Not only did Mrs Bowie’s instructional approach position the linguistic mode as the carrier of information, so did the way in which she organized the composition activity. The students were first asked to view websites and take notes on the information. Once all of their information was gathered, they were allowed to collect images. Mrs Bowie said they wanted to use images to “help illustrate acid rain and the problems it creates.” She checked with each group in the following manner, “Once you plan your pages and what you think you say, you should go and get your pictures.” By “plan your pages” Mrs Bowie was suggesting that the student write the linguistic content. In Figure 1, I share a draft of a story card students were required to complete before they composed.

In Figure 1, we can see that students wrote out all the information they wanted to represent the impact of acid rain and included the button layout (e.g., back button, direction button and home button). For the visual mode, the students were only required to write the word picture because they understood that visual images were ancillary, and in this case, were to be illustrative of the linguistic message. There were no further design discussions by Mrs Bowie about the ways the visual mode could function to represent meaning. As students searched for pictures, Mrs Bowie’s design instruction on the types of images to locate and the layout of image was vague. She instructed students to search for “good pictures” and to “grab some graphics you might need” but there was no explicit design instruction about using images for meaning representation and compositional structures, such as the placement of the modes (e.g., left, right, centre or margin), the framing (e.g., connection of disconnected relationship between modes) or the salience (e.g., size, colour and contrast).

After analysing how Mrs Bowie introduced the use of the visual and linguistic modes when teaching design, I analysed the design and production conversations between the students without the teacher. In the next four sections, I address students’ use of both colour and images to represent meaning and to serve as interactive functions between the author and reader.

Figure 1. Draft of a story card.
Students’ conversations: weaving through design and production

Students’ initial design and production conversations revealed that their tacit knowledge of how modes functioned exceeded Mrs Bowie’s. To reiterate, Kress and van Leeuwen (2001) assert that designing entails the formation of ideas, which includes combinations and arrangements of semiotic modes, while production is the actual creation of a semiotic artefact. In the next section, I present findings that illustrate students working in both strata.

Using colour to represent meaning

When the students designed and produced at the computers, they negotiated colours of backgrounds and images they drew, specifically representing acid rain content to the readers. Representing the chemist’s point of view, April and Krystal, selected a colour for an image of fish on their story card and eventually realized that their intended message was not communicated. Notice how their conversation evolves as they design and produce:

Krystal: What do I do? Fish, orange fish.
April: Orange, ahh, this one?
Krystal: Yeah, that’s good!
April: That looks kind of paleish like he is going to die.
Krystal: He is not going to die.
April: I know, so that one. [pointing to a brighter color on the color palette]
Krystal: Ok, go to fill it.
April: Fill it
Krystal: Perfect, he looks too cute.

In this dialogue, an understanding of cultural interpretations of colour was relevant. Typically in Western culture, the colour orange combines the energy of red with the joy of yellow and is associated with happiness (Dondis, 1973; Kress & van Leeuwen, 2002). However, in this excerpt, when April and Krystal selected a lighter orange, the intended meaning was lost because the pale colour was associated with sickness – and as April pointed out – death. Because Krystal and April did not want the reader to interpret the fish as dying they changed the saturation of the colour to a brighter orange, thus treating colour as a mode to represent meaning.

In the following excerpt, Danielle and Jeremy produced a graphic animation of a car crossing a bridge and they realized when they clicked on the graphic to drag it across the screen, the car’s colour changed from sky blue to school bus yellow. The following conversation occurred between Danielle and Sarah, a classmate sitting next to her.

Danielle: It doesn’t do anything [There was no animation to move it. She clicks on the graphic and it gets darker and lighter] Whoo, Whee, Whoo, Whee [as the graphic on the car changes color to school bus yellow]
Sarah: It changes color, do it again.
Danielle: Whoo, Whee . . .
Sarah: It looks like a school bus.

This excerpt illustrates the power of colour in conveying meaning to the reader. The shape and size of the automobile never changed, but the colour yellow altered the interpretation of the vehicle from a car to a school bus. Hence, colour as a visual mode strongly affected the associative meaning and functioned to represent meaning, an area of instruction of which Mrs Bowie never expanded.
Not only was colour used in associative and symbolic ways to convey meaning, but colour was also used to establish relations with the reader. These examples demonstrated how students were more aware of metafunctions of various modes not discussed by Mrs Bowie. In the next section, I describe the students’ use of colour to develop interactive meaning.

Using colour for interactive meaning

As seen through Mrs Bowie’s instruction, one goal of an author was to gain the readers’ attention through visual modes. The students’ design and production discussions revealed that the students not only used colour to represent meaning, but colour also functioned to sustain the reader-text interaction, which aligned with Mrs Bowie’s introductory lessons. When April and Krystal reviewed their story card design, the following discussion occurred:

April: We have lots of blue cards.
Krystal: I know, let’s pick something dramatic. Like green or something, green, black, something different than blue. Make it like red or something.
April: This one. I am going to have green.
Krystal: Ok.
April: It’s going to be green. Should I do that one?
Krystal: Yes, do that one now.

Here, Krystal and April focused on attracting the readers’ attention by using colour that would appear “dramatic” and not boring. Bolder colours, like red and black, tend to attract the attention of readers because they are more salient colours than blue or green. The colour blue and those close to blue on the colour wheel are considered cool and more restful and peaceful (Dondis, 1973; Kress & van Leeuwen, 2002). Krystal attempted to select a more dramatic colour or salient eye-catching colour like red. The partners eventually agreed on green, a tranquil and stable colour. In their decision-making process of reader considerations, April and Krystal use colour in order to make the engagement of the reader more interactive.

Another example of April and Krystal using colour to capture the readers’ attention involved a brighter or more saturated colour, pink. In the exchange below, we can see how April and Krystal selected a background for their story card.

April: Do you want that? Do you want this color?
Krystal: Let’s make it a funky color, let’s make it pink, make it pink, please make it pink.
April: We are going to make it that one, whatever color that is. OK?

As seen in these excerpts, the fifth-grade students made personal colour choices, resulting in decisions that are less symbolic, less defined and more personal and subjective (Dondis, 1973; Kress & van Leeuwen, 2002). That is not to say that underlying social norms for the interpretation of colours did not influence their choices. Unless there was a specific associative meaning for the selection of background, most groups tended to select stable colours like blue or green. In the next section, I discuss ways in which April and Krystal engaged in design and production.

Using colour for representation and interactive meanings

It is essential to note that many times students used colour simultaneously for representational and interactive purposes. However, for analysis purposes, I dealt with
representational and interactive purposes separately. As April and Krystal were designing and producing a story card, the following conversation ensued.

April: Ok, let’s do like a dark blue. Not a dark blue, like a . . .
Krystal: Like a grayish kind of bad color.
April: No, let’s do like a blue actually, not a dark blue but a light blue.
Krystal: Like this, there.
April: There, that one, like this, to grab the reader.
Krystal: How about gray? More like this?

This excerpt reveals April and Krystal used colour for two different reasons. Krystal’s comment, “Like a grayish kind of bad colour” pointed out the negative effects of acid rain represented by the grey colour. However, the other reason to use colour was to consider how the reader might interact with the text, which is suggested when April says “There, that one, like this, to grab the reader.” Interestingly, both girls negotiated the representation of meaning and also considered interactive meaning. April and Krystal’s perspective is more aligned with Kress and van Leeuwen’s (2001) than Mrs Bowie’s, in that Kress and van Leeuwen proposed that any semiotic mode functions for three different purposes, namely representational, interactive and compositional. Here the girls discussed two out of three functions.

Using images to illustrate the written message

Remember, Mrs Bowie implied that images should complement or be illustrative of the written message and gain the readers’ attention. She did not instruct students in how to leverage different modes into more complex representations of subject matter. I now turn to a different team of students – John and Abigail – to examine how their images functioned in a multimodal text. In this example, look closely at the story card in Figure 2, paying attention to how the images functioned.

Figure 2. Image illustrating the written message.
Abigail had the following content information “acid may come through taps we drink from and can damage our brains” written in her notes. She cut and pasted the content onto the card and then searched Google images. She located an image of a brain and commented to John, “For acid water systems we’re using a picture of a brain because it causes brain damage.” Here the intent of the written word was that it would carry the information and the visual image would complement that message. In this instance, John and Abigail primarily used images on a literal level to repeat the meaning of the linguistic text. These choices aligned with the instructional, social and cultural norms established by Mrs Bowie.

However, there were two specific conversations where students’ design discussions entailed using visual modes as the central mode of representation, which conflicted with Mrs Bowie’s design instruction. When Krystal and April designed one story card, they wanted to convey the negative effect of chemicals from acid rain, which we can see in the following discussion.

April: I’ll put the small words chemicals on the fish?
Krystal: Why do you have to put everything into words? How ‘bout a little bottle?
April: Ok, fine, ok, here. How ‘bout this fish goes to something else and I’ll put this bottle.
Krystal: Maybe a bottle spilled over here. Then we’ll have it tipped on its side.

While April’s design decision followed the pattern established by Mrs Bowie, in this excerpt, we can see how Krystal challenges April to use an image of a chemical bottle to represent the acid rain chemicals from the environment without a linguistic label. It is not clear why Krystal decided to question April’s approach, but the end result conveys that the girls attempted to move beyond the approach Mrs Bowie promoted.

On another occasion, Jeremy also proposed a design where the use of an animation, also a visual mode, carried meaning not represented linguistically:

Jeremy: One of our animations can be trees running away
Group: [laughs in unison]
Abigail: These trees can be diagonal and lean away.

In this exchange, Jeremy and Abigail’s comments imply that the purpose of using animation to show the leaning or running away of trees was to convey that the trees wanted to escape the negative effects of acid rain. If the group had followed through and created the animation, they might have been able to use a voice-over where the trees could express why they were leaving and the visual animation would show the trees leaving. Combining the use of linguistic and visual modes, in the way I have suggested would have been a departure from Mrs Bowie’s instruction. In both of these cases, students did not follow through with either idea. Instead, they decided to use images to illustrate the written message.

Using linguistic modes for interactive meaning

Students had limited discussions about representing meaning with linguistic modes. The lack of conversation representing meaning with words was not a surprise because when they engaged in their WebQuest they took notes, copying almost verbatim the written text on the websites. Students’ conversations around the use of words occurred more for interactive purposes. The excerpt below illustrates this assertion:
Jeremy: We just need to know what title we should use, buildings or effects on buildings or what?

Krystal: Effects

John: You got to make it sound cool though. So it is not totally boring! Then we could have effects on each other.


Jeremy: Buildings effect

Danielle: You know, being very kid-friendly, kind of is really hard.

Jeremy: Write acid rain and buildings. You want to write acid rain and buildings. No put, acid rain. Do this acid rain versus buildings

Danielle: Oh, yeah! What is it? We’ve got our title. Acid Rain vs. Buildings. Is that kid friendlyish?

John: It is cool!

When John stated, “You got to make it sound cool though. So it is not totally boring!” and when Danielle responded by saying, “Yeah, in the back of your mind. Not boring” they both demonstrated that they understood that linguistic modes of communication also have an interactive function. Although Mrs Bowie positioned the use of linguistic modes to represent the content, this example conveys how the students understood words on the title of a page could also function in interactive ways to attract a reader. One way Jeremy suggests enticing a reader to read the page is by using the word “versus” instead of “and” in the title. Jeremy said, “Write acid rain and buildings. You want to write acid rain and buildings. No put, acid rain. Do this acid rain versus buildings.” Here Jeremy’s suggestion is accepted by Danielle and John as being “kid-friendlyish” – as Mrs Bowie suggested – and “cool” which was a student’s interpretation of a way to attract a reader to the screen.

**The final product**

Students in this classroom looked towards Mrs Bowie to establish the conventional norms for multimodal text construction. In turn, Mrs Bowie relied on the current social and historical practices to inform her instruction. The ideologies and values present in a society that has been primarily print based influenced her instructional discourse and, in turn, student composition. For instance, when Mrs Bowie designed the compositional structure of the home card, she emphasized the use of the visual mode to obtain the readers’ attention, thus serving interactive functions. When I analysed students’ compositions, it was evident that the home card was the only one that used the visual mode as a central form of communication. Print was used to label the images on the home card (see Figure 3).

Conversely, when I analysed the layout of the story cards, the linguistic mode was the central form of representation (see Figure 4). Recall that Mrs Bowie taught the students that the story cards were where the information about acid rain was located, and they should represent that information with words. Thus, using linguistic modes served more purposeful representations.

What is notable here – but not surprising – is that because the discourse of composition within the institution of school historically privileged linguistic modes of communication, Mrs Bowie unknowingly constrained the use of other communication modes. She knows no other discourse around multimodal composing and is unaware of the affordances of different modalities. While her efforts for exposing her students to multimodal text compositions should be applauded, it should be noted that Mrs Bowie lacks the content
knowledge to prepare her students to communicate with this new medium. Although Mrs Bowie and her students have access to digital technologies, she maintains a discourse and design for a print-based medium (i.e., book), which aligns with the findings of others (e.g., King & O’Brien, 2002; Kress & van Leeuwen, 2001; Lankshear & Knobel, 2006). The lack of content knowledge impeded Mrs Bowie’s ability to realize the potentials of the semiotic modes and the digital technologies (King & O’Brien, 2002; Kress & van Leeuwen, 2001), and the enhanced values and benefits that such knowledge would afford her fifth-grade students.
Discussion

Mrs Bowie’s story represents many teachers’ stories in that they have to rethink literacy instruction to include discussions around communicative modes beyond the written word. For her entire life, the printed word had been the main focus within schools she attended and in the school where she educated children. Mrs Bowie focused instruction on the use of technology as an end in itself using a print-based perspective, not understanding the affordances of multiple signs and the diverse communicative possibilities afforded through digital technologies. Theorists (i.e., Kress & van Leeuwen, 2001, 2002; van Leeuwen & Jewitt, 2001) describe the fact that there are three main kinds of work that the visual mode does simultaneously; it creates (a) representational meaning, (b) interactive meaning and (c) compositional meaning. From the design instruction in Mrs Bowie’s lesson, she explicitly taught the students that the linguistic mode had one function, which was representational and the visual mode had one function, which was interactive. She was unaware that colour functioned in the three ways mentioned above. For example, colour can express ideas or represent meaning (e.g., coloured tabs on the spine of a book can denote the level of the book). Colour can also be used for interactive purposes to invite readers to interact with the text. Readers are 80% more likely to read a text with colour (Kress & van Leeuwen, 2002), and so adding some colour to the text would increase readership. Finally, colour can function for compositional meaning. For instance, when colour is used in repetitive ways, colour can unify a text so that it appears stable. In order for Mrs Bowie to explicitly teach students about the affordances of various communicative modes, she would need to have a more developed understanding of how all modes function. Having this information may have altered her design instruction and the pedagogical practices around design.

While the students were designing, we learned that in some cases their understandings about ways to communicate with various modes exceeded Mrs Bowie’s understanding, but their final productions illustrated their compliance with the cultural norms. Thus, illustrating that how particular tools, such as digital technologies or the software program, are used within a cultural context that defines the tool (Vygotsky, 1978).

From the discourse, design and production (Kress & van Leeuwen, 2001) in this classroom context, we may conclude that teachers need depth in understanding how visual and linguistic modes convey interactive and simultaneous functions. To support teachers to shift their thinking and instructional performance, higher education and those who offer professional development opportunities must continue to educate teachers in how to use the software and various digital tools, but they must also open up conversations with teachers about the potential affordances and limitations of communicating with certain sign systems. For example, Mrs Bowie wanted the students to use images for interactive purposes, but she never explicitly explained compositional meaning. Teaching: (a) information value, which entails teaching placement of modes, (b) framing, which involves explaining ways to connect or disconnect modes or (c) salience, meaning altering size and colour contrast or tonal contrasts when composing a text. Equipped with new knowledge on metafunctions, a teacher can in turn discuss the potential communicative value of modes and recognize opportunities to extend student understanding, and thus their knowledge of literacy. A shift away from one dominant mode of teacher discourse – in this case, print – to discussions around multimodal resources that can act interactively or separately (Kress & van Leeuwen, 2001) may result in a more complex use of semiotic resources when students design and produce multimodal text. In addition, the communicative potentials of digital technologies can be realized.
Accomplishing this shift in focus to multimodal communication requires not only clearer descriptions of portraits of teachers’ practices, but also portraits of classroom practices where print-based perspectives are still held, such as the one presented here. Studies such as this one argue for the importance of developing teachers’ content knowledge of explicit teaching of the affordances associated with various modes of representation. Armed with depth of content knowledge around multimodal communication teachers can turn to pedagogical frameworks (e.g., Bearne & Wolstencroft, 2007; Healy, 2008; Kalantzis & Cope, 2005; Leander, 2009; Unsworth, 2001; Zammit, 2010) to guide multimodal literacy practices, especially the explicit teaching of the affordances of various signs. For today’s students, knowing how to compose multimodal text will be essential because the screen is becoming a dominant medium for communication (Kress, 2003) and, in the future valued forms of literacy will be “those that tend toward the highest order manipulation of symbols to generate the data, words, oral and visual representations” (Lankshear & Knobel, 2003, p. 455).

References


