THE DESIGNING WORKSHOP: A PEDAGOGY OF MULTILITERACIES IN A THIRD GRADE CLASSROOM

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ABSTRACT

This research conducted with third graders examined a teacher and her students as they transformed their traditional writing workshop to a multimodal designing workshop. Using the New London Group's (1996) pedagogy of multiliteracies and Katie Wood Ray's (2006) units of study as frameworks, students participated in a unit of study on informational texts. After immersing themselves in a study of both traditional print-bound informational books and interactive electronic informational books, the students designed multimodal digital compositions using iBooks Author. The study focused on the teacher's transformation, the students' design process, and students' final compositions. Preliminary results demonstrated that students designed using a cyclical process, transforming to seeing themselves as designers employing a variety of modes. The study has many implications specifically in the areas of students' design process, students' multimodal compositions, and teachers' technological pedagogical content knowledge.

Keywords: multiliteracies, design, design workshop, writer's workshop

Digital technology has allowed for literacy to extend beyond the words and images of a static page. When consuming and creating text messages, blogs, and videos, readers and writers interact with multiple modes, including textural, gestural, spatial, visual and audio (Bezemer & Kress, 2008, Marcus, 2009). Just as Marcus (2009) states, "We think in all ways we experience the world. We think in pictures, in sound, in movement . . . we think spatially, abstractly, and texturally" (p. 1934). Students now have the option of using digital technologies to design in all available modes, just as they, too, experience the world. This digital technology has also enhanced our students' writing experiences by allowing them to consider the affordances and constraints offered by modes and intentionally choose the mode or modes that best meet their specific need.

As a third-grade literacy teacher, I wanted to provide opportunities for my students to consume and design text in both its traditional context and in all the ways new technologies have provided. My goal was for them to understand how modes like text and image come together in meaning-making and to value the content and design of multimodal texts such as webpages, YouTube videos, and digital stories, just as they valued the *Harry Potter* book that they loved. I also challenged them to embrace digital technology and use multimodal modes to design slideshows, movies, and to share their work on the Internet for the world to see. To meet this goal, I attempted to transform my writer's workshop into a designer's workshop.

Just as I had done in my previous writing workshop, I approached the designing workshop as a unit of study (Ray, 2006). A study is a model in which students immerse themselves in a genre of text, deepening their understanding of the genre, and reading and writing like the mentor texts used in the study. My students were familiar with the inquiry model and this process, and using this framework, we immersed ourselves in a study of informational texts in both traditional print-bound books and electronic interactive books. Ray (2006) refers to print-bound books and eBooks as being "containers." Students were given the opportunity to explore and notice the constraints and affordances offered by the two containers.

The purpose of this descriptive qualitative study was to examine students' design process as they composed multimodal informational texts. Eight third-grade students participated in a design workshop for one semester in which they completed a study (Ray, 2006) of both traditional print-bound and digital, interactive informational texts. The students used iBooks Author to design and publish their books, using a combination of text, image, video, voice, and interactive tools.

Review of the Literature

To gain a deeper understanding and determine the breadth and depth of current research, a thorough review of the literature was conducted. Several themes are addressed: pedagogy of multiliteracies, students as designers, and multimodal composing.

A Pedagogy of Multiliteracies

The New London Group (Cazden et al., 1996) saw a shift in terms of how we communicate in the 1990s including, but not limited to, technological advances and with whom we communicate, expanding this network to include the world. In their work, the NLG created the term "multiliteracy" to expand on traditional literacy (Cazden et al., 1996). Anstey and Bull (2006) define multiliteracies in its simplest form as "being cognitively and socially literate with paper, live, and electronic texts" (p. 23). Multiliteracies include reading, writing, and communicating and uniting them with all text, including the text of social situations and electronic platforms such as conversations and websites.

Historically, two factors have contributed to the decline of traditional literacies and the advancement of multiliteracies: changing technologies and increased communication with diverse cultures (Cazden et al., 1996). Changing technologies have created an abundance of new containers of composition: web pages, text messages, and blogs (Ray, 2006). Increased communication occurs as we begin to operate on a more global scale for personal and business opportunities. Ultimately, the NLG's (Cazden et al., 1996) work resulted in a manifesto, *A Pedagogy of Multiliteracies: Designing Social Futures*, calling for a pedagogy of multiliteracies to best support students for the 21st century. The NLG believed that a pedagogy of multiliteracies "focuses on modes much broader than language alone" (Cazden et al., 1996, p. 64). Furthermore, the group believed that the education system in 1996 continued to focus on traditional literacy, reading, writing, and communicating, neglecting cognitive and social literacy practices that were made necessary by the communication shifts. These cognitive and social literacy practices were necessary for students in their future private, public, and working lives.

A pedagogy of multiliteracies supports students in all modes of composition, including traditional styles. Traditional composition refers to all modes offered by print and image. Traditional compositions include picture books, notes, drawings, and others that are not digital. As Anstey and Bull (2006) believe, there are two goals in educating multi-literate students: (a) instructing students to read and write in all modes of text, and (b) preparing students to be critical as they encounter text in various contexts. When technology is explicitly infused in pedagogy in the literacy classroom, students can make the transformation from readers and writers to designers (Jewitt & Kress, 2003, Hyler & Hicks, 2014, Walsh, 2007).

Students as Designers

In the NLG's (Cazden et al., 1996) original manifesto, the group called for approaching composing from a designer's perspective, regarding both teachers and students as designers. Jewitt and Kress (2003) define design as "how people make use of the resources that are available at a given moment in a specific communicational environment to realise [*sic*] their interests as makers of a message/text" (p. 17). Design can remove the emphasis on the teacher as the authority of the learning, suggesting participation and flexibility. In facilitating a classroom of design, teachers can focus on building on students' innovative thinking and creativity (Walsh, 2007).

The NLG (Cazden et al., 1996) called for three frameworks that would support teachers and students in collaboration and coming together to make meaning: "Available Designs, Designing, and The Redesigned" (Cazden et al., p. 74). These three frameworks create the content in the four factors of implementation: "Situated Practice, Overt Instruction, Critical Framing and Transformed Practice" (Cazden et al., 1996, p. 83). In its simplest form, Available Designs refer all available modes and the combinations of those modes. Modes may be written, visual, oral, spatial, or gestural. In the design process, the learner creates more modes by experimenting with existing modes. When creating a webpage, the designer may use still images to create a video. The learner then adds his voice to create commentary to the images moving across the screen. In this sense, as a designer, the

learner has created an additional Available Design in the video. The reader's understanding of design evolves during the process, impacting both the Available Design and the Designing. Analyzing the new video deepens the learner's understanding of Designing. As the learner critically analyzes his design choices, what he says, why he chose a certain picture, the speed at which the pictures change, and others, the learner may be synthesizing why some design choices are more effective. As improvements are made through Designing, the webpage becomes the Redesigned. The teacher can use this discourse to promote a deeper level of learning. Building on the foundation of available designs, students can begin to analyze the available designs and the designing, evaluating the affordances of modes and inter-play of the modes.

Multimodal Composing and Design

Bezemer and Kress (2008) define a mode as "a socially and culturally shaped resource for making meaning. Image, writing, layout, speech, and moving image are examples of modes, all used in learning resources" (p. 117). Multimodal composing is a process of combining more than one mode. Because our society places a literary emphasis on the written and spoken word, the school tends to disregard this multimodality (Crafton, Silvers, & Brennan, 2009). Students are often rewarded for their handwriting skills or large vocabularies, rather than their natural communication skills of using gestures and voice to tell a story. Reading the traditional textbook pages is a much different experience than navigating the pages on the web. "Writing and image are combined in ways that could not have been conceived of in the 1930s" (Bezemer & Kress, 2008, p. 167). The traditional textbook typically has text features of headings, images, diagrams, and callout boxes. These features are often limited to a two-page spread. Web pages, however, allow the reader to click on links, watch a video, have the computer read aloud, view an animation, click on words and images that link to other pages, and receive immediate feedback from multiple-choice questions. The reader interacts with the text by scrolling, clicking, dragging, listening, and viewing the various modes on the screen. By transitioning from a focus on just textual features for writing to a focus on designing, students will be required to consider various

modes and what they can do for their communicative endeavors (Werderich, Manderino, & Godinez, 2017; Hyler & Hicks, 2014; Hicks, 2014; Yelland, 2018).

The biggest difference between reading and writing and design is best understood by the differences in availability of modes. As Jewitt and Kress (2003) state, "Rather than taking talk and writing as a starting point, a multimodal approach to learning starts from a theoretical position that treats all modes as equally significant for meaning and communication, potentially so at least" (p. 2). As Bomer, Zoch, David, and Ok (2010) believe, "To 'write' as a designer is to bring together the resources and habits of the writer, the artist, the choreographer, the impresario, the musician, and the engineer into one textual event" (p. 10). Designing allows a student to use the most modern of tools to make meaning, embracing recent technological advances.

In the design workshop, students are encouraged to experiment and create with modes. And, while the teacher may continue to share mentor texts of published books, they also show exemplars of multimodal compositions such as web pages, videos, digital stories, and blogs. The teacher guides the students in discussions of why the author chose a particular mode over another. The workshop time is also used for the teacher to model composing in various modes, focusing discussions on the affordances and constraints of those modes.

Research Questions

The purpose of this descriptive qualitative study was to describe students' process in designing their multimodal compositions in a design workshop. I was seeking to understand how my students chose modes and justified their choices.

Q1 How does a pedagogy of multiliteracies support students' constructions of multimodal compositions in a third-grade design workshop?

Q2 How do students design multimodal compositions?

METHODS

Using qualitative descriptive methods, I was able to provide a recount of my experience and of participants' experiences throughout the research at a rural neighborhood school in the western United States.

PARTICIPANTS

As an Academic/Instructional coach at the school, I had the opportunity to work with eight students that were released from their 90-minute reading block because of their advanced reading data. Research participants consisted of four boys and four girls. All students were White, and five had qualified for the district's Gifted and Academically Talented Education (GATE) Program. Students had a varying degree of technology experience and access outside of school.

It is important to note that I, as the researcher, did not believe that a designing workshop should be reserved for only the highest-achieving students. The participants were chosen as a convenience sample. Furthermore, the students' race was not representative of the school or community population. I would have preferred to have participants representative of the whole school, including minority students, and those of all academic abilities. I chose to pursue the research at this site because of my relationship and history with the school and knowledge of the curriculum, assessments, and norms. However, conducting the study with proficient writers, I was able to see how those students were able to perform when shifting their workshop space and providing them more options in terms of media and mode (Hicks, 2014).

IMPLEMENTATION OF THE PEDAGOGY

Using the NLG's (Cazden et al., 1996) Pedagogy of Multiliteracies and Katie Wood Ray's (2006) Units of Study as frameworks, I implemented a design workshop in a third-grade classroom for 90 minutes per day for one semester. I used Ray's (2006) model as a framework for students as they read a variety of information texts in traditional and digital formats and determined what makes an exemplary information text. Using this inquiry method, students dictated the direction of the study in terms of specific daily lessons. As

Ray (2006) points out, "Framing instruction as study represents an essential stance to teaching and learning, an *inquiry stance*, characterized by repositioning curriculum as the outcome of instruction, rather than the starting point" (p. 19). While the overall goal was for students to read and write their own informational *iBooks*, the definition of an informational text was guided by the students' insights and connections with the mentor texts. As a teacher, I had a general idea of the scope and sequence of lessons; but ultimately, the inquiry process dictated the specific daily lessons.

Students approached their study of informational texts as designers, ultimately designing their own multimodal compositions, electronic interactive books (see Appendix A for digital tools and applications). While my previous writers' workshop originated with the textual mode, the designers' workshop had its origins in all modes (Cazden et al., 1996, Cope & Kalantzis, 2009, Smith, 2017, Nichols & Johnston, 2020). In designing, students were taught to consider all modes and determine which mode or modes would best portray their message.

Daily Lessons

Immersing ourselves in informational text, I read aloud and conducted class discussion, students read and discussed with partners, and some individual reading occurred. Throughout the reading of mentor texts (Dorfman and Capelli, 2007), in both traditional printed text and digital text, I continually asked, "What choices did the author make in writing and designing the informational text?" Students were supported in reading like a writer, thinking about the choices the writer made that they could emulate.

I then revisited some of the mentor texts to develop specific language regarding the genre of information text. Students were asked to use their learning from the study of mentor texts in their writing and design, constantly reflecting on the specific choices they were making. Students used this information to craft their own information text on a topic of their choice. Students were guided in their cyclical process of researching, drafting, revising, and editing. Throughout their work, I conferenced with them, and they

conferenced with peers with the goal of improving their designing craft. Students' conferences were specific to the genre and phases of the study.

Designing with iBooks Author. I chose to have students design electronic books as a culminating project in the study. An electronic book is simply a "container" for students writing. Ray (2006) uses the term "container" to describe newspapers and other texts that contain multiple formats and types of writing (p. 66). Because the school had purchased MacBooks for students, they used iBook Author, a pre-installed application. But, ultimately, an inquiry of informational compositions resulting in electronic books could be created with a variety of platforms.

During the months of August, September, and October, our genre studies focused on how-to, comics, interviews, and memoirs. While studying these genres, I simultaneously built students' capacity in working with technology tools and applications. The students designed various projects using Mac applications, Keynote, Photo Booth, Pages, iMovie and Comic Life, and web-based tools, Weebly, Animoto, Voki, and Flickr. All these tools could be imbedded or linked in the students' iBooks.

Data Collection

Data collection methods included: observation, interviews, artifact collection, and researcher's analytic memos and reflective journal. Interviews included think-aloud protocols and photo elicitation.

Interviews played a pivotal role in data collection as they allowed me to determine how and why students made certain design choices. To describe the essence of their design process, I conducted unstructured, open-ended interviews with the students throughout the research duration (Merriam, 2009, p. 88). Asking students in the moment when they made their design choices was also guided by the theoretical framework of constructivism, allowing students to reflect on their learning of multimodal composition.

Data Analysis

I began analyzing the data using Glaser and Strauss's (1967) Constant Comparative Method. I used this method of data analysis in looking at all data to get a sense of students' overall design process. The process of making sense of the data began with open coding, followed by axial coding, and selective coding. Specifically, I coded my observations, artifacts, memos, reflective journal, interviews, and student compositions to describe students' process on designing their multimodal compositions, beginning with their study of the mentor texts, and ending when they shared their final compositions with the class. Using observation notes and interview transcripts as a starting point because they were collected each day of instruction, I conducted a line-by-line analysis and made margin notes that attempted to answer the research question (Strauss & Corbin, 1990) to create initial codes. Shortly after the initial codes were developed, I noticed a trend in the codes. I had consistently made codes referring to "available designs," "designing," and "the redesigned" (Cazden et al., 1996). At this point, I became curious about students' process in terms of the NLG's (Cazden et al., 1996) framework of Available Designs, Designing, and the Redesigned, so I chose to recode all the data. I color-coded the data for each of the three frameworks to see if students' process was more linear or cyclical. I also looked to see if students' process focused on one framework over another, looking for evidence that the students were designing by combining available designs in different ways and that they had created new designs in the redesigned composition.

These concepts from using the Constant Comparative Method and the NLG's (Cazden et al., 1996) three frameworks of design were then grouped together, known as categorizing (Strauss & Corbin, 1990). Five categories and subcategories were created including: (a) students learning new set of boundaries and expectations; (b) students applying learning/using Available Designs; (c) students transitioning in their design process from privileging text to considering all modes; (d) students valuing their own work as being on par with published compositions; and (e) students growing in their understanding in intentionality of design decisions.

Following the open coding, the categories and subcategories were further examined in axial coding. During the axial coding process, I continued to do open coding, switching back and forth as data were presented. Axial coding, also known as analytical coding, is the coding that came from my reflections and interpretations (Merriam, 2009). Strauss and Corbin (1990) explain this as putting the data back together. I used The Paradigm Model as defined by Strauss and Corbin (1990) as "link[ing] subcategories to a category in a set of relationships denoting causal conditions, phenomenon, context, intervening conditions, action/interactional strategies, and consequences" (p. 99). Using this paradigm further focused the data in identifying students' design process. In causal conditions, I looked back through the codes, searching for things that would cause a specific phenomenon (category). I also looked at the context of the day just as I had when analyzing the data through the lens of the three frameworks, looking at the day's mini lesson, where students were in relation to their final composition, and whether they had conferenced with me that day. I continued this recursive process in attempt to answer the research questions.

Findings

After a thorough analysis of the data, several findings were evident: (a) students made use of Available Designs, Designing, and the Redesigned as a cyclical process; (b) students transformed to seeing themselves as designers, consuming and producing text from a design perspective; and (c) students used a variety of modes, but relied on text and image throughout their design process. Each of these findings are described below with examples from students' work.

Available Designs, Designing, the Redesigned as a Cyclical Process

Students' process of using available designs, designing, and redesigned was non-linear. In fact, students regularly cycled through all three frameworks. Using Mary's (all names are pseudonyms) book, *K9 Creations*, as an example, she continually looked at available designs by picking up mentor texts and looking at design ideas. She was designing as she

experimented with design features offered by iBooks Author and created the redesigned by combining modes.

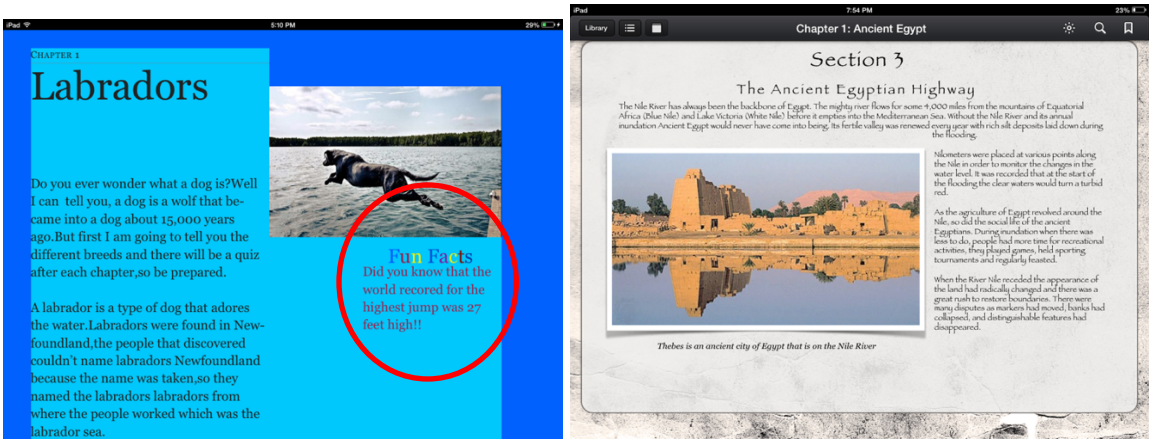
AVAILABLE DESIGNS

Mary consistently made use of a variety of available designs, including those offered by all mentor texts and iBooks Author design tools. Mary had a strong foundation of options in terms of organizing her content, formatting the layout of their pages, and choosing specific modes and media to portray their message from our mini lessons. In coding for Available Designs, Mary chose to write "Fun Facts" in each chapter of her iBook, an idea and available design she saw the author use in the mentor text, *The Way the Universe Works*.

Mary also utilized available designs in the mentor iBooks including content, layout and design, and the author's use of visual, spatial, textual, gestural, audio, and the combinations of these modes. As shown in Mary's chapter page on Labradors in Figure 1, she also included an image, text, and heading in an organized layout, very similar to the mentor text, *Ancient Egypt* (Figure 2).

Figure 1

Mary (left) used available designs in designing fun facts in her iBook (see red circle). She also used a similar overall design on this page as the mentor text, Ancient Egypt (right).

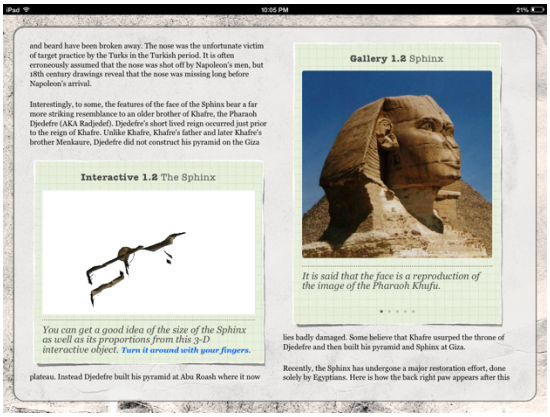


Students were also provided the available designs of the iBook Author Templates. The "Template Chooser" consists of 15 themes offering various layout options with built-in

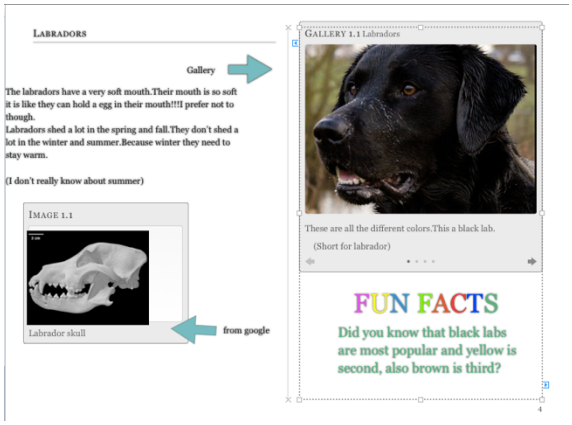
design elements such as backgrounds, fonts, and colors. The designer has the option of changing any of these elements in their design. Figure 3 shows a comparison of the mentor text and Mary's book. Mary's page, lower right, had nearly the same layout, with text and image on the left side of the page and an image gallery with text on the right side of the page.

Figure 3

Comparison of mentor text, Ancient Egypt, and Mary's page.



Page from Mentor Text

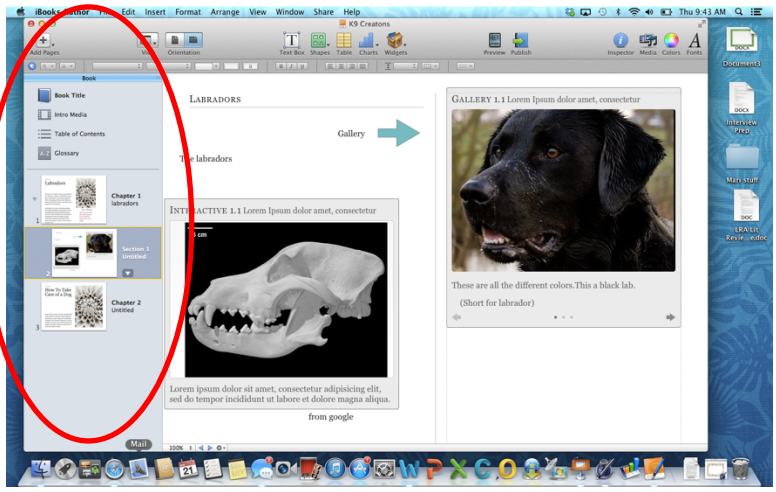


Page from Mary's Book

Oftentimes, students began their design process by building a structure for their books with the available designs of pages, sections, and chapters. In Figure 4, the book outline is shown on the left of Mary's screen. You can see that she built several pages and was beginning to add images to her first chapter.

Figure 4

Mary's book outline early in her design (circled in red). She was just beginning her third page.



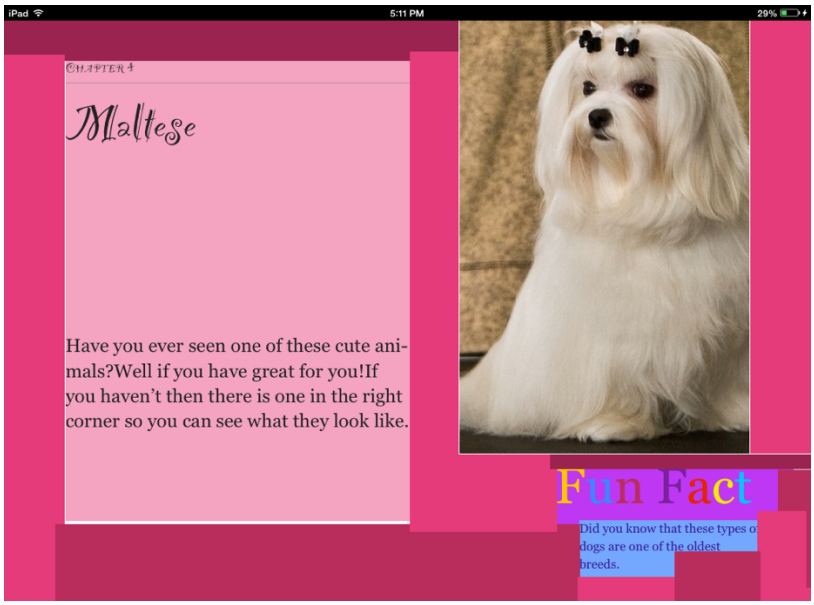
While some students created all the pages of their book first and then went back and created the content, others designed their books one page at a time. Mary chose to design the chapters. Each chapter was about a different dog breed and was two pages in length.

DESIGNING

Mary used available designs, as if layering them together in her designing. For example, Mary would add images to the pages of her books. She would then add frames to the images, followed by a header and caption. Each of these elements––the image, frame, header, and caption––were available designs that were layered together in designing. As a designer, Mary had to think about each specific layer and whether the layer added meaning for the reader as each element served a different purpose. For example, in Figure 5, the page Mary built used image and text. She designed the background and used a "rainbow" font to draw her viewer's attention.

Figure 5

Mary's page using image and text.



When reflecting on the design of her page (Figure 5), Mary said:

Today I worked on my first page of the Maltese. I decided to make the background pink because it's one of my favorite colors, and the Maltese is a small dog. It's also a delicate breed. I also used rainbow font for my fun fact to catch the reader's attention.

During think-alouds and during interviews, students were asked to articulate what, how, and why they were designing specific layers, just like Mary's example above. Students often experimented with various colors, frames, fonts, and specific words to see how they all worked together. As Mary said in her video reflection at the end of a class period:

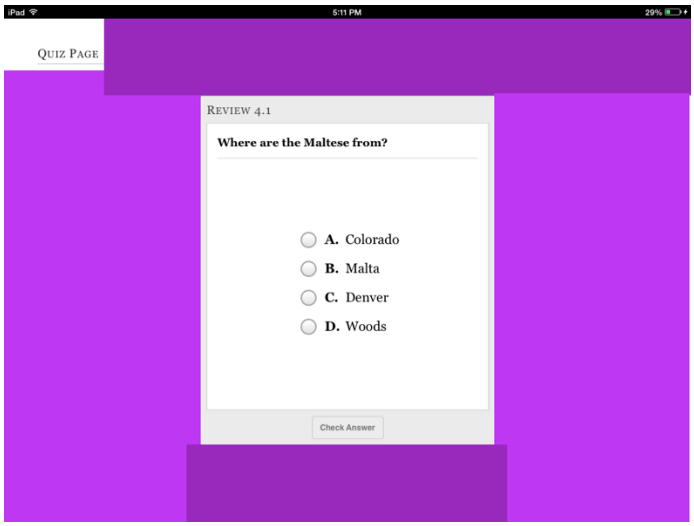
Today I put the frame on the first chapter. I was working on the background on my quiz page. I made the background dark green because I thought it would go with the quiz. I made my quiz questions. It was about the labs being popular so I thought I could do a question on which one is most popular. They frequently referred to the Available Designs during this process, often revising multiple times to find the combination that they felt best met their specific need.

REDESIGNED

Through this designing, students' books contained the redesigned. The redesigned consisted of combinations of modes that had been layered together in their designing. At times, the redesigned was simply an available design set in different colors and using a different font that better matched the topic of the book. Mary included quizzes at the end of her book chapter. The quiz is an available design, shown below in the gray box, and is a "widget" option built into the iBooks Author Application. Mary redesigned the page to match the colors of her Maltese chapter.

Figure 6

Mary's redesigned quiz page.



Mary's final composition was completely redesigned. Her design process of using the available designs and designing to make the redesigned allowed her to consider her learning from the mentor texts and from our lessons in design.

In another student example, Gina wanted to use video to teach her reader about cat species. She used the available designs of her voice for providing an explanation, and she used images she had drawn on the whiteboard. When Gina was recording herself, she made some simple errors and ended up laughing at herself on the footage. As Gina said in her

think aloud, “I just began my American Shorthair video. And instead of typing, I’m going to have a typing area and a place where you can just watch the video. I messed up the video a few times because I started laughing. I think they are funny.” The other students also found these clips entertaining, so she decided to include them in a redesigned “Outtakes” section as the end of her book. Although this was not the original intention of the video, she said that she thought of having outtakes from the *Toy Story* movies. While usually outtakes occur in movies, Gina redesigned this available design to include in her iBook.

Students See Themselves as Designers

Students made an evident transition from readers and writers to designers over the semester. Not only did they move past consuming multimodal texts to producing multimodal texts, their understanding and complexity of modes and design greatly increased.

Students’ use of text decreased, and their use of other modes increased. Once students had the structure of their books in place with chapters, sections, and pages, they were able to focus on how which mode would best portray each piece of information. All students began the process by building a structure for their books with pages, sections, and chapters. Some students built a page at a time, while others created the outline of the entire book before adding content and other modes. For instance, Cole began by creating every page of his book. He then inserted page headings to identify the content. Next, he inserted images on every page. Early in the process, Cole commented, “Today I made a page on my iBook, and I entered 15 pages with at least one photo on each. I made some text boxes, photos, and galleries.” Cole continued in this fashion for several more days before adding video of him and another student playing football, paragraphs of text, and other content which described the history of football, how to play the game, and famous players.

In contrast, Isaac, who wrote about space, literally built his iBook one page at a time. Although he knew from the beginning that he wanted to have a chapter about each planet and wanted them to go in order from closest to farthest from the sun, he completed his

Mars page before beginning Venus, then moved on to Earth, and so forth. He reflected on one day early in the project:

I made a sentence on my Earth section in my Chapter One. I looked for some photos. And, we were trying to get the 3D images. I looked on Flicker and searched for Earth. I got two pictures, but I only used one. Tomorrow, I'm going to write about how fast the Earth rotates. I'm going to put the rest of the information to finish my Earth Chapter. I chose not to include sub-headings after my conference. I made my Earth font blue and green.

Isaac's statement demonstrates his process for writing about Earth. And, while Cole and Isaac completed their books, but they went about their designs using different processes. While Cole created the entire book and went back to fill in the content, Isaac created one page at a time. The students continually shared their processes with each other and gave each other feedback and ideas. With teacher guidance, students embraced one another's methods and asked about these intentional design choices.

After establishing the structure of their books, students continued to rely on text, but were able to honor all modes over time, decreasing their use of text. When I asked Jim about his choice of image for his book on soccer, his first response was, "I used it because it matches the prompt." In his homeroom class, Jim has been doing a lot of prompt writing in preparation for the state assessment, so this idea of his ideas "matching a prompt" have been reinforced many times. While he chose the topic of soccer for his book, he related the idea of a topic to his homeroom teacher's usage of "prompt".

In the first few weeks of working on their iBooks, students were eager to share the number of pages they had designed during each class period. During their reflection think-alouds at the end of each class, the number of completed pages was often the first thing they shared. As Sam said, "I worked on my iBook today. I got lots of images, and it was really fun. I also

added lots of info and tried to get a 3D image. It was mostly text, about four pages, and I added information and compare and contrast."

During my conferences, I also noticed that students got frustrated as they spent entire class periods creating very short videos. As Mary reflected at the end of class one day, "Today I worked on a video. I made it with Photo Booth. It took the whole class time, and it's four minutes and one second." After spending so much time, the video took up three square inches of space on the book page. At that point, they were honoring the quantity of space the information took, as opposed to the quality of the information portrayed as I overheard them comparing how much they had completed at the end of class one day. The students compared their work in terms of the quantity of pages completed.

With time, students stopped monitoring their progress and comparing the quantity of pages completed with their peers. They began spending more time creating and exploring with the options afforded by videos. Students interviewed each other, recorded themselves in front of the whiteboard or modeling an activity, and used montages of still images, text, and music to create their own videos.

At the same time, video data and reflective notes showed that students spent less time over the course of the semester exploring different stylistic features such as font types, text box frames, and slideshow transitions. Although specific mini lessons were conducted on how these stylistic features add to the reader's meaning, students seemed preoccupied with increasing the quantity of content, rather than focusing their attention on those details. They continued to recognize the importance of keeping the reader's interest with visual elements, having a focal point on each page and choosing the mode which best portrayed each specific piece of information.

Thinking Critically

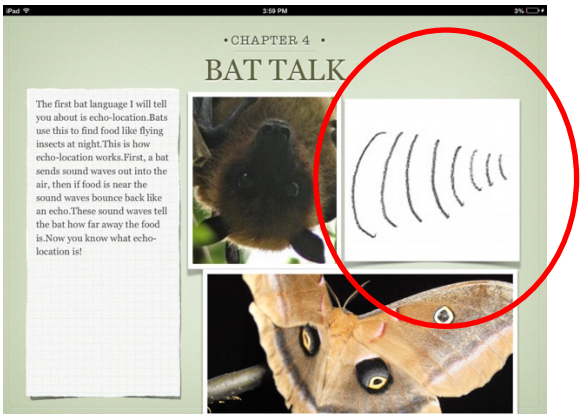
Students also began thinking more critically as they reflected on work that was published, that of their peers, and their own. Students demonstrated this increase in their depth of

knowledge around design in class discussions and interviews. This change was evident in their eagerness to design their own images, rather than use those available on the Internet, their ability to critique published iBooks and provide feedback and suggestions to their peers, and their increasingly more complex discussions in designing conferences and think-alouds.

As Amy looked online for images representing echolocation, she knew what she was looking for, but couldn't find it. During our conference, I was trying to help her search when she decided that she could easily draw the exact image that would demonstrate echolocation for her viewer. Amy, Mary, and Dana chose to draw images for their books (see Figure 7). The girls believed they could better represent the exact image, rather than using images online. In these cases, the girls saw the value in their own work as being better than published images.

Figure 7

Amy drew an image (see red circle) for her chapter, Bat Talk.



Amy drew this image, scanned it, and uploaded it to her iBook.

As students were designing their informational iBooks, I also modeled designing a book about pizza that I entitled *Pizza Pizzazz.* The text included chapter titles and brief descriptions of the content of the chapters. When sharing, one student commented that he did not like the font I had chosen for the chapter titles because it was too "old" looking. I responded that I chose the particular font, "Herculanum," because I wanted to portray

pizza's long history and European heritage. Other students chimed in that several of the letters were too "round," and they didn't like it. Ultimately, their reasoning and suggestions convinced me to change the font. The students had the same opinions and suggestions on other work and their own.

Students considered all elements of the books in thinking critically as they, too, were making countless design decisions every class period and with every element in their books. Students' justification and reasoning of their choices also grew in complexity. Early in his design, when I asked Jim about his choice of color for his title page, he simply said, "I just like it." And, in December, when I asked him what he was working on, he responded, "I'm using the 'Dance Party' theme for my intro media because the music and colors are upbeat and fun just like Soccer." Rather than choosing a font color because they liked it or using video to convey information because it was easiest, the students understood that bright, colorful fonts may catch the eye of the reader or that the reader would best understand how to play the game of soccer when shown how on a video, as opposed to reading about it.

Students Designed with a Variety of Modes

When considering how students designed their multimodal compositions, I surveyed their published iBooks for the quantity of various modes. In the eight student books, there were 1,098 instances of modes used. Table 1 highlights the number of instances of modes used in each book. When comparing the students' quantity of modes to that of the mentor texts, their usage was much less. The example show above in Figure 4 compares a page of Mary's book with the mentor text. While Mary, a third grader, has two paragraphs of information, the professional published mentor text has four paragraphs, both have titles, and an image. Mary's page has a "fun fact" and the published book has an image description.

Table 1

Total Modes for Individual Books

Book	**Total Occurrences of Modes**	**Percentage of Total**
Dogs	210	19%
Dolphins	158	14%
Bats	143	13%
Bow Hunting	118	11%
Football	111	10%
Soccer	107	10%
Space	94	9%

Students used a variety of modes in their iBooks, but continually relied on text to convey their information. Table 2 below highlights the total instances of individual modes and the percentage of instances of each type of mode (text, image, etc.) in relation to the total number of instances of all modes. These ratios of text to image and text to video were similar to the professional published books. In both the students' iBooks and the mentor text, for each image, for example, designers included a title and heading to describe the image.

Table 2

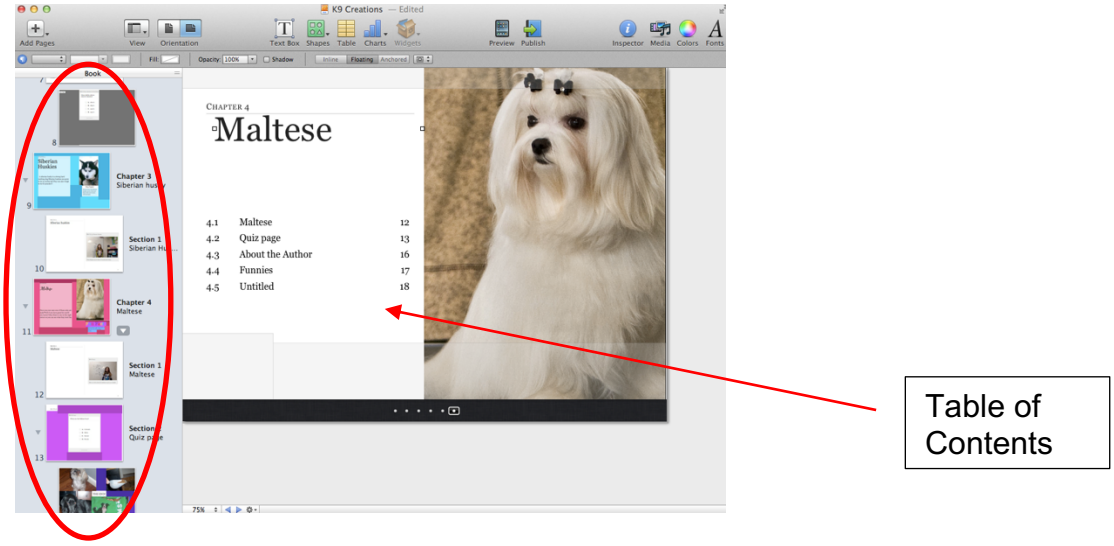
Instances of Modes and their Percentage of the Total Modes Used

Mode	Number of Instances	Percentage of total
Text	568	52%
Image	479	43%
Video	44	4%
Hyperlinks	7	.6%
Voice	1	.09%

Text was the dominant mode in seven of the eight books, used in each book in the following instances: (a) dogs, 48%; (b) dolphins, 61%; (c) football, 60%; (d) space, 49%; (e) bow hunting, 47%; and (f) soccer, 51%. In the final student book, *Bats,* text was used 48% of the time, but was surpassed with the instances of image. It was apparent from the beginning of students' design process that students were using text frequently to organize their book pages. When students designed a new page, they always began with the Available Designs, writing a header for the page; this was necessary as iBooks Author automatically integrates the headings of pages into the table of contents (see Figure 8).

Figure 8

Book outline (see red circle) and its corresponding page in the Table of Contents of Mary's iBook.

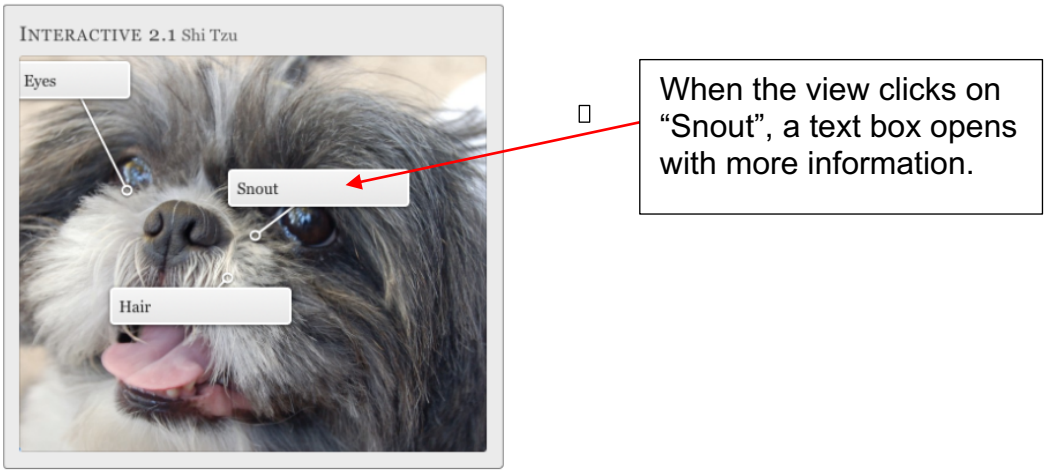


Additionally, when students embedded an image in their book, the image contained a title and caption 70% of the time. In cases such as those, during the frequency count, there would be two instances of text for each image. Students used the text in those cases to introduce, name, or give directions on the navigation of images. Text was also used in call-out boxes and diagrams to give definitions and specific information to a part of an image. The interactive image below from Mary's book (Figure 9) labels the parts of the dog's face when the viewer clicks on these images, definitions, and descriptions. For example, when

the viewer clicks on “snout,” the text of the call-out box reads, “These creatures have a tiny mouth that is powerful. My shi tzu has two layers of teeth. She won’t lose any though.”

Figure 9

An interactive image from Mary’s iBook.



Images accounted for 43% of the total instances of mode in the eight student books. Images were used in the following percentages per book: (a) dogs, 46%; (b) dolphins, 35%; (c) football, 33%; (d) space, 47%; (e) bow hunting, 48%; (f) soccer, 45%; and (g) bats, 50%. Images included those used from the Internet, student photographs, and students’ scanned drawings. Images included in the frequency count also included clipart and image frames. Students used images on 100% of their double-page spreads.

There was a total of 43 videos in the eight student books, accounting for used video 4% of the total modes. Videos occurred in students’ books at percentages of: (a) dogs, 3%; (b) dolphins, 4%; (c) football, 6%; (d) space, 4%; (e) bow hunting, 5%; (f) soccer, 3%; and (g) bats, 1%. Some videos used were taken with a digital camera or on Photo Booth and were embedded into the iBooks. Other videos used were created in iMovie or Animoto or were videos taken of avatars made using the Voki website. The videos gave explanations, directions, and information and allowed the students to speak candidly about their topics.

Seven hyperlinks were used in student books, making up less than 1% of the total instances of modes. The student book on dogs contained six hyperlinks, and the student book on dolphins contained one hyperlink. The hyperlinks occurred most frequently in students' reference pages; however, two instances were embedded in the content pages of books. Embedding the links in the content allows the reader to go to click on a word, phrase or image and be automatically directed to a website, document, or different page of the iBook to learn more.

There were 78 interactive elements imbedded in the students' iBooks. Interactive elements were not counted in the total frequency mode of 1,098 modes. Interactive elements included modes that do not occur without the reader interacting with them. For example, with a slideshow, the image appears on the screen. The reader must swipe the image to move on to the next slide, can also zoom in and zoom out, or click the image to make it appear on the full screen. With a three-dimensional image, a two-dimensional version image appears on the screen; however, the reader can interact with it by using two fingers to rotate the image, looking at all sides of it. The reader can also zoom in, zoom out, and click the image to make it appear on the full screen. The interactive images allow the viewer to take an active role in making meaning, choosing what they want to learn more about. The students used the interactive images to make their books more interesting and further clarify their topic.

Implications and Conclusions

As the options for literacy continue to expand with new technology, there is a great need for research in implementing a pedagogy of multiliteracies. Not only is there a need for teachers to deepen their understanding of the implementation at the classroom level, but it is also important to understand students' experiences as they become critical consumers and producers of multimodal compositions. Building on the framework of the NLG, I had to expand my pedagogy to support literacy beyond traditional reading, writing, and communicating to include new technologies.

Teachers must develop their understanding of not only multiliteracies, but also the specific technology tools and media that expand students' design options. This understanding begins with teachers developing an understanding of all modes, beginning with the spatial, textual, and visual modes afforded by traditional literacy.

Students used the NLG's (Cazden et al., 1996) three frameworks of available designs, designing, and the redesigned cyclically when composing. Supporting students in using available designs of all modes allows for more possibilities in designing. Further, by designing using all options of modes, students must think critically in terms of the affordances and constraints of the modes and which mode will best convey their message in the redesigned. In this study, students tended to rely on text, when it may or may not have been the best mode of communication. They often defaulted to text because it was too tedious and time consuming to create a video or design with other modes. The students continually valued the quantity of filled pages, despite intentionally instruction on modality and design.

Teachers must not only give students the time to design with multiple modes, but we must further coach them in becoming designers. Explicit teaching is needed to support students in their design options in terms of intentionally choosing modes that best fit their purpose as they deepen their understanding of all modes and the combinations of modes that are used in making meaning.

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Appendix A

Digital Tools Used in the Designers Workshop

Tool/Application	Description
iBooks Author	Apple e-book author tool, discontinued in 2020 and replaced by Pages (all design options are still available)
iMovie	Apple video editing application (only available on Mac Operating Systems but similar to Windows Movie Maker)
Photo Booth	Apple application for taking photos and videos using computer camera
Animoto	Video creator using photos, videos, images and text, cloud based. Available online at animoto.com.
Voki	Presentation tool for creating a speaking avatar, cloud based. Available online at www.voki.com.
Keynote	Apple presentation application (only available on Mac Operating Systems but similar to PowerPoint)
Comic Life	Downloadable application for creating comics from photos and images. Available at https://plasq.com/apps/comiclife/macwin/.
Weebly	Free, cloud-based website builder. Available at https://www.weebly.com/.
Flickr	Online photo management and sharing application. Available at https://www.flickr.com/.