

# The multimodal meaning-making of elementary students in social studies

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## ABSTRACT

*During their participation in a classroom-based research project, 9-10-year-old students had opportunities to develop their visual meaning-making skills and competences, as well as their aesthetic understanding of and critical thinking about multimodal ensembles. The Grade 4 students read, discussed and wrote about picturebooks during Language Arts, Social Studies and Science, and participated in a range of activities that focused on a selection of elements of visual art and design. For the culminating activity of an interdisciplinary Social Studies unit, which was one component of the case study research, the students designed a multimodal poster to communicate their learning about how interactions between Indigenous Peoples and European explorers lead to change. Photographs of four students' Exploration posters and excerpts from their written poster descriptions reveal how the students purposefully selected and orchestrated specific semiotic resources of image and layout to represent and express meanings that realized their objectives as sign-makers in a particular context. Indeed, the students designed multifaceted symbolic images that communicated their historical understandings as well as their knowledge about the elements of visual art and design under study. Discussion of the students' Exploration posters is situated in sociocultural and social semiotics theory, multimodality, and visual competences.*

### **Introduction**

During a Canadian classroom-based study that focused on developing elementary students' visual meaning-making skills and competences, participants read, discussed and wrote about picturebooks during Language Arts, Social Studies and Science. Intentionally designed pedagogy using the foci literature and other multimodal ensembles provided Grade 4 students with opportunities to learn about the meaning potential of various modal semiotic resources (Kress, 2015). In this article, I focus on the multimodal posters students created during one component of the research. At the beginning of Term 2 when I began working with the two Grade 4 classes, the teachers launched a Social Studies unit based on the following inquiry question: How did interactions between First Peoples and Europeans lead to change? Throughout the unit, the students participated in a range of multimodal activities designed to develop their knowledge about traditional life of Indigenous Peoples, early explorers and exploration, and first contact between Indigenous Peoples and

explorers. For the unit, my involvement with the teachers and students consisted of working with the picturebooks *Encounter* (Yolen & Shannon, 1992) and *The Rabbits* (Marsden & Tan, 1998), and leading the culminating project: the design and creation of an Exploration poster by students that communicated their learning about the inquiry question.

As is described below, once completed, the students wrote reflective descriptions about their use of particular elements of visual art and design on their Exploration posters. Theodore (all student names are pseudonyms) ended his poster description with the following statement: 'Through this poster project I learned that I can tell my messages using typography, colour and lines.' In this article, I discuss how the analysis of the students' multimodal posters revealed the what, how and why of their 'messages.' Indeed, analysis of the Exploration posters and the written poster descriptions revealed how the students' artwork communicated their understanding of content addressed during the Social Studies unit, and how the

students purposefully selected and orchestrated specific semiotic resources of image and layout to represent and express meanings that realized their objectives as sign-makers. The findings underscore how the development of student knowledge about the meaning-making potential of elements of visual art and design can inform student understanding, interpretation and design of multimodal ensembles.

A note about terminology: First Peoples, Aboriginal Peoples and Indigenous Peoples are collective names for all original peoples of Canada and their descendants, and these terms can be used interchangeably (Indigenous Corporate Training Inc., 2018). When referring to the teaching and learning activities of the instructional unit, I use the phrase First Peoples because that term is used in provincial Language Arts and Social Studies curriculum documents. However, most students used the term First Nations in their written work. When expressing general ideas and my opinions, I use the phrase Indigenous Peoples because this term is used by the United Nations to refer to Aboriginal Peoples internationally, and by Indigenous Peoples at my university.

Following a description of the theoretical and conceptual frameworks of the study, I review some relevant scholarship. Information about the research context and procedures, and details about the selection of foci Exploration posters are followed by excerpts from the students' descriptions about their posters. I then present an analysis of the students' reflective writing, and discuss the findings and relevant pedagogical issues.

### *Theoretical and conceptual frameworks*

#### **Sociocultural theory**

A sociocultural theoretical perspective, founded on many of Vygotsky's (1978) fundamental concepts and ideas, emphasizes the situational specificity of teaching and learning. The cultural tools (Vygotsky, 1978), both material and symbolic, made available in classrooms mediate students' engagement in activities and their learning of content and practices, as well as their interpretations and understanding of tasks and assignments. The tool of language was key to Vygotsky's (1978) theorization of the social construction of cognition: 'human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them' (p. 88) because 'the process of the *internalization of social speech*' is simultaneously 'the socialization of children's practical intellect' (p. 27). Thus, the adoption of a sociocultural theoretical lens requires knowledge of the particular context in which individuals participate in order to understand the social nature of learning. As is evident by the descriptions below, factors that shaped and

framed student learning in the research classrooms included provincial curriculum learning standards and classroom discourse, as well as teacher ideology, expectations, text selection, and pedagogical and practices.

#### **Social semiotics, multimodality and design**

Theoretically, social semiotics aligns with a sociocultural theoretical perspective because of the foci on the socially situated nature of literacy practices, texts, and tools in meaning-making, including the meaning-makers themselves. According to Kress (2015), social semiotics provides 'the theoretical frame and the analytical and descriptive categories and tools' (p. 54) for the domain of multimodality. In the theory of social semiotics, the meaning-making resources of a community are constituted by all the material means of modes, together with the conceptual, 'non-material semiotic categories' (Kress, 2015, p. 55). Bezemer and Kress (2016) defined modes as 'socially shaped, culturally available *material* resources' for making meaning (p. 7). Although each mode has its own set of semiotic resources, organizing principles, and affordances, which affect the possibilities for communication and representation, modes share common purposes, functions and semiotic principles. While I concur with those scholars who theorize colour and typography as modes, these two meaning-making resources were referred to as elements of visual art and design (Samara, 2007; White, 2011) (i.e., semiotic resources of image and layout) when working with the Grade 4 students, and in order to maintain consistency with the research pedagogy, I continue with that conceptualization in this article.

Kress (2015) described a multimodal ensemble as 'a designed complex of different modes... [and] the meaning of the whole arises out of the contribution of each part in its interaction with all other parts' (p. 57). Indeed, sign-makers of multimodal ensembles engage in 'the semiotic work of *design*' (Kress, 2015, p. 57) as they select and use particular modal semiotic resources, organizing principles, and material affordances that meet their interests, which are shaped by a specific context. Multimodal ensembles are subject to the 'semiotic work of *interpretation-as-redesign*' (Kress, 2015, p. 57) when individuals engage with these complexes. Furthermore, since each mode realizes different communicative work, the use of medium-specific analysis, which 'makes use of appropriate analytical tools,' concepts and metalanguage for each mode (Suhor, 1984, p. 249), is necessary to examine the contribution of each mode to the overall meaning of the ensemble. As is described below, explicit instruction about how elements of visual art and design can be

used to denote meaning informed the Grade 4 students' engagement in the semiotic work of both design and *'interpretation-as-redesign'* (Kress, 2015, p. 57) of their Exploration posters. In addition, the students' interpretations of the artwork in the picturebooks they read, discussed and responded to, as well as their retrospective reflections on their own multimodal ensembles, involved medium-specific analysis (Suhor, 1984).

Finally, as noted by Bezemer and Kress (2016), individuals who adopt social semiotics as the overarching theory of multimodality are interested in questions 'about meaning and meaning-making, about the resources for making meaning, about social agents as meaning-makers and about the characteristics of the environments in which they act' (p. 16). Each of these meaning-making dimensions was explored during the research with the Grade 4 students.

### *Visual competences*

Two of the overall research goals were to develop students' knowledge and understanding about how and why elements of visual art and design, and conventions of the medium of comics can be used by people who write, illustrate, plan and create picturebooks and graphic novels; and to explore how students apply their learning about elements of visual art and design and the medium of comics when they create their own print multimodal products. Müller's (2008) visual competence cycle provides an appropriate conceptual framework to situate the research pedagogy that focused on the modes of image and layout.

Müller (2008) explicated how four interrelated visual competences – production, perception, interpretation and reception – are 'connected in a cycle' (p. 104). As is described below, pedagogy about concepts, skills and techniques associated with particular elements of visual art and design provided student participants with opportunities to develop their visual production competence. Since 'we see what we learn to see' (Sipe, 2008, p. 18), the students' visual production competence augmented their visual perception competence, their abilities 'to see and explore' visual representations (Müller, 2008, p. 103). The students' visual perception competence influenced their abilities to ascribe or infer particular meanings to images, their visual interpretation competence. Finally, the students' visual perception and interpretation competences affected their visual reception competence, their emotional and cognitive responses. Müller (2008) noted how the cycle of these four interrelated components unfolds in a 'social, political and cultural context' that is shaped by multiple individual, situational and systemic factors (p. 104). Thus, the contextualized nature of the cycle is consistent with the tenets of the

sociocultural and social semiotics theoretical frameworks of the study.

According to Müller (2008) visual literacy is a 'necessary corollary of visual competence' (p. 102). However, in order for students to develop their visual competences and become visually literate, they need explicit pedagogy about visual design, composition principles, and image analysis. These instructional foci will then affect student selection and production, understanding, response and interpretation of the modal affordances of image – the four visual competences described by Müller (2008).

Students' abilities and disposition to engage in close observation and exploration of visuals can be developed through instruction about the artwork in picturebooks (Pantaleo, 2020a). The brief review below on student response about picturebook artwork is relevant to the data featured in this article because analyzing and interpreting artwork in picturebooks, and creating and explaining the Exploration multimodal posters require similar types of student cognition as well as engagement in medium-specific analysis. Indeed, fundamental to the students' creation and explanation of their posters was their understanding of the intentionality of design and of the meaning-making potential of particular modal semiotic resources.

### *Relevant literature*

#### **Student response about picturebook artwork**

Many researchers have reported how knowledge and understanding of principles and elements of visual art and design can cognitively and aesthetically inform and enhance students' reading experiences of picturebooks (e.g., Arizpe & Styles, 2016; Callow, 2013; Macken-Horarik, 2016; Pantaleo, 2012a, 2016, 2017, 2018, 2020b; Sipe, 2008; Unsworth & Macken-Horarik, 2015). In addition to exploring students' meaning-making with picturebooks during Language and Literacies instruction, some researchers have investigated teaching and learning with picturebooks in Social Studies (e.g., Harrington, 2016; Leland & Bruzas, 2014; Lintner, 2010). As noted by Demoiny and Ferraras-Stone (2018), although various materials can be used to expose students to multiple perspectives and to 'challenge the master narrative telling' of historical events (p. 65), research findings have shown high levels of student engagement with picturebooks in Social Studies.

Research by Youngs (2012) explored how Grade 5 students' understanding and interpretation of historical fiction picturebooks were affected by lessons on the modes of image and layout, in concert with the written text and historical content. According to Youngs (2012), over the duration of the study, analysis of discussion transcripts revealed an increase in students'

‘interpretive responses constructed from attending to the visual images’ (p. 383), and development in the sophistication of responses as students ‘increasingly identified objects as symbolic visual images embedded within the visual narrative and connected these images to their historical understanding’ (p. 384).

I have reported on the analysis of Grade 4 students’ responses about one of the picturebooks used for the Social Studies unit featured in this article (Pantaleo, 2021). Content analysis of the students’ text-based writing revealed they inferred the use of colour, point of view and typography as realizing multiple, and often parallel effects or purposes that overwhelmingly focused on characters’ actions, traits/features, relationships, and affective states. The students’ interpretations of examples of colour, point of view and typography revealed how they judged importance, reasoned logically, generated inferences, and offered informed interpretations about the artwork in the picturebook. Student engagement in these types of higher-level thinking skills was also required for the designing of and reflecting on their multimodal posters.

### Multimodal composing

Some researchers have reported on the multimodal composing of elementary and middle school students in Social Studies. During a five-week Social Studies and Language Arts unit on citizenship, middle school students in a study by Pellegrino et al. (2013) created slam poems and either took or ‘collected a pool of photographs to illustrate as many concepts of citizenship appearing in their poems as they could identify’ (p. 225). Subsequent to whole class, peer, and adult-student conversations about the images, the students selected three photographs to incorporate with ‘the final drafts of their poems, using digital production and presentation software’ (Pellegrino et al., 2013, p. 225). In the discussion of their findings, Pellegrino et al. (2013) emphasized the power of images to convey student meaning, described how students’ multimodal poetry projects revealed articulation of ‘sophisticated ideas about citizenship’ (p. 233), and noted the potential of cross curricular units for engaging students in ‘broader considerations of important concepts’ (p. 234).

Dalton (2014/2015) also wrote about the multimodal compositions created by students during a Social Studies unit. Unlike the Exploration posters featured in this article, much of Dalton’s work with elementary students involved the use of digital tools. However, fundamental to Dalton’s instruction was an emphasis on the intentionality of designers when selecting elements of visual art and design for their compositions, regardless of media and tool used in the production.

Indeed, many researchers have emphasized the importance of providing students with multimodal composing opportunities to communicate and represent their learning, and teaching students the metalanguage for the mode of image whether composing with digital tools and media, or print materials, or a combination of media (e.g., Dalton et al., 2015; Pantaleo, 2012b, 2014; Papademetriou & Makri, 2015; Zammit, 2015).

### Transduction and multimodal composing

When students have opportunities to demonstrate their learning with a range of modes, they often engage in transduction when designing their multimodal compositions. Kress (2010) coined the term transduction to name ‘the process of moving meaning-material from one mode to another’ (p. 125). With transduction, ‘the mode changes, and with it so do all entities, relations and processes’ (Bezemer & Kress, 2016, p. 54) and thus meaning potential; all such intermodal changes are ‘productive of new meanings’ (p. 54). An example of remaking meaning across modes would be asking an illustrator or designer ‘to “draw across”, to *transduct*, the written description into the mode of image’ (Bezemer & Kress, 2008, p. 176). Conversely, spoken or written language can be used to communicate the affect and meaning realized in images and layout through visual elements such as colour, point of view, framing or perspective. As is detailed below, the Grade 4 students engaged in the process of transduction when participating in activities about the foci elements of visual art and design, when working with the picturebooks, and when designing and describing their Exploration posters.

### Case study research

Two Grade 4 classrooms constituted the bounded system of the research (Merriam, 1998).

According to Merriam, case study research is particularistic, descriptive, heuristic, and inductive in nature. During the extended time period of the research, the collection of multiple sources of data facilitated the generation of rich descriptions of the particular phenomena under study, as well as exemplified the complexity of the case study. Below, the detailed descriptions of the research procedures and the students’ retrospective descriptions of their Exploration posters reflect the heuristic nature of case study research to produce in-depth contextualized understandings of phenomena under study, and of ‘the meaning or knowledge constructed’ by participants (Yazan, 2015, p. 137). Acknowledging the limitations of case study research, the students’ descriptions about, and my analysis of, their Exploration posters serve to enrich educators’



understanding of how student knowledge about elements of visual art and design can deepen their semiotic work of understanding, interpreting and designing multimodal ensembles in Social Studies.

### *The research context and procedures*

The research site, an independent Kindergarten-Grade 5 school, is located in a city in western British Columbia, Canada. Of the approximately 225 students who attend the school, most are from affluent families; several languages other than English are spoken by the student population.

For approximately 60-75 minutes/day, 2-4 days per week from January to June 2019, I worked collaboratively with the two teachers, Ms. N and Ms. S, as both a teacher and the researcher. Of the 39 students in the two Grade 4 classes, informed consent was granted by 38 students and their parents/guardians. In addition to the two main research purposes described above, the design of the Social Studies Exploration posters was also connected to the third overarching research goal of developing students' critical thinking competences and aesthetic understanding through the examination of multimodal texts.

### **Thinking, seeing and responding**

In both classrooms, instructional time was devoted to student consideration of the meaning of 'deep thinking,' and student engagement in activities designed to have them consider and practice slow looking (Pantaleo, 2020a; Tishman, 2018). The students also talked and wrote about the meaning of the term discussion, generated guidelines for expectations about engaging in discussions, and participated in activities designed to implement and practice discussion etiquette. This foundational work was necessary to prepare students for engaging in peer-led discussions.

To guide their small group, digitally-recorded discussions, the students were provided with questions and/or prompts, developed specifically for each book, that focused on elements of visual art and design. The sequence of literature used in the research was as follows: *Flotsam* (Wiesner, 2006), *Voices in the Park* (Browne, 1998), *Encounter* (Yolen & Shannon, 1992), *The Rabbits* (Marsden & Tan, 1998), and *The Sea Book* (Milner, 2019). After the work with the trade books, the students read a graphic novel in the Science Comics series by First Second.

The students wrote responses to the literature featured during the study. They were required to identify specific elements of visual art and design, include evidence to support their opinions and inferences, and explain the greater significance of their examples to the

particular selection. No further information is provided about the work with the graphic novels or student response writing due to the focus of this article.

### **Elements of visual art and design**

An essential component of the purposely designed pedagogy to scaffold student learning about specific elements of visual art and design was the fostering of a socially situated understanding of the polysemic nature of semiotic resources that afford sign-makers with 'a range of potentials for meaning-making' and interpretation (Bezemer & Kress, 2016, p. 11). Below, I describe the instruction associated with five of the elements students were required to address in their poster design: colour, point of view, typography, framing, and line. A common instructional practice for each element was the use of intentionally selected images from sources such as picturebooks, photographs, magazines, advertisements, large art prints and the Internet for students to view and discuss relevant concepts and features.

For colour, instructional emphasis was devoted to specific concepts and terminology (i.e., primary, secondary, complementary, warm, cool and value) that were referred to throughout the research. Student engagement in independent research on an assigned primary or secondary colour was followed by the formation of homogenous colour groups where as a collective, students wrote ideas, feelings and concepts associated with their colour on chart paper. The students then circulated about the room, considered the content on the charts, and recorded new learnings about each colour in their notebook. Information on the charts was word processed, and a document was created, copied and distributed to the students for reference during the study. As is evident by the students' explanations below about how they intentionally used colours to symbolically represent meaning, the students consulted this document when designing their posters. Other lessons included viewing two brief YouTube videos on colour, and exploring colour value.

A conversation with the students about narrative point of view or perspective with respect to oral and written discourse was facilitated through use of the picturebook *They All Saw a Cat* (Wenzel, 2016). Examples from selections of children's literature, movies and television programs were shared to demonstrate the different points of view that can be utilized for narration. The students then considered how individuals who create visual and multimodal texts (e.g., artists, photographers, film directors) use particular *visual* points of view to intentionally position viewers. Images from various sources were shared, and students identified and discussed the meaning potential of different

visual points of view (e.g., front, back, worm's eye, bird's eye, close-up).

Typography refers to the appearance (form or style) and arrangement (spacing and layout) of typeset material (letters, words and sentences), and has been described as 'the art or process of printing from type' (Guralnik, 1976, p. 1539). The students were introduced to terms relevant to typography such as typeface, font, width, height, weight and posture as they viewed and discussed examples from various texts. For some examples, the students needed to consider how both the colour and the arrangement of letters or words on a page represented meaning. Furthermore, the students were directed to consider the what, why and how of typographical meaning when viewing and discussing the examples.

When introducing the design element of framing, the students viewed examples of visual framing, and were directed to think about what was being framed, the nature of the frame itself, and the effects or possible intention of the framing. Students had opportunities to consider how lines, borders, colours, shapes, objects, and superimposition can be used for a variety of framing purposes (e.g., focus, emphasis, inclusion, exclusion, separation, organization, or enhancement of appearance).

Subsequent to brainstorming words to describe types of line, the students viewed a short YouTube video on line, drew an assortment of lines in their notebooks with teacher guidance, and discussed potential meanings associated with the different types of lines. The students also explored how various emotions can be conveyed through the use of lines for eyebrows and mouths, and how body can be considered as line. In addition, the students were introduced to implied line; they viewed examples from picturebooks and considered how and why artists intentionally use the illusion of line to lead viewers' eyes.

As is described below, criteria for the Exploration poster required students' intentional use of colour, visual point of view, typography, framing, and line in their multimodal ensembles.

### Social studies exploration poster

The students designed and created their multimodal posters as the culminating activity of a Social Studies unit that focused on Indigenous Peoples, European explorers and first contact. During the unit, *Encounter* and *The Rabbits* were two foci picturebooks used as resources for instruction about European exploration and colonization. *Encounter* is written from the point of view of a Taino boy living on San Salvador. As narrator, an Indigenous child conveys his trepidation about the arrival and the ensuing interactions with

Christopher Columbus and his crew, and as an adult he reflects on the ultimate devastation of the Taino people as a result of contact with the Europeans. The second picturebook, *The Rabbits*, can be interpreted as an historical allegory. Tan (2001) described *The Rabbits* as an historical narrative of 'the European invasion of Australia and subsequent injustices against the indigenous population. More universally, it's the story of colonization everywhere, about power, ignorance and environmental destruction' (para. 5). Both picturebooks have received positive reviews, as well as criticisms for the depiction of Indigenous Peoples (Pantaleo, 2021). The artwork and/or descriptions of some students' posters referenced content in the two picturebooks.

The students received both an oral explanation and a written description of the poster criteria; they were reminded daily to refer to the criteria document as they designed the draft and completed the final version of their multimodal ensemble. The central image designed for the poster needed to address the focus question of the exploration unit: How did interactions between First Peoples and Europeans lead to change? The image was to be significant in meaning, and reflect students' deep understanding of the content of the exploration unit. Suggestions for images were generated as a class, and once students designed a central image, they explained its significance to a peer. In order to successfully meet the criteria for the central image of poster, the students needed to purposefully use a minimum of two examples of colour, one example of point of view, a minimum of one example of framing, and a minimum of two examples of line. The students' artwork was outlined with a black marker and coloured with pencil crayons.

In each Grade 4 classroom, three charts were created as word cache resources. The students brainstormed words for the following three topics related to the Social Studies unit: First Peoples' world views, exploration and explorers, and first contact. The typography criteria for the inclusion of words on the students' posters were as follows: include 4-6 words that represent key concepts of the unit (refer to the word cache posters); and consider the use of colour, font, size, weight, height, and posture when representing the words. The appearance of each word was to communicate its meaning in a unique and intentional way. The students understood they would select three of the words to explain during their poster interview with a peer.

Although smaller images could be included on the posters, these visuals needed to be connected to the focus unit question and to be minimum in number. A

sheet of paper approximately 36 x 52 cm (14 x 20.5 inches) in size served as the background of the poster. The students were to paint the background with purposefully selected colours and to consider experimenting with shade, tone and gradient. For layout, the final aspect on the poster criteria document, the students were to thoughtfully consider the physical arrangement of the central image, the words, and any extra images on the painted background paper. The students mounted their finished poster on black construction paper.

Once completed, the students explained their poster to a peer during a digitally-recorded interview. A guide sheet, with the same assignment criteria, was provided to the students to facilitate the interview. Subsequently, the students engaged in a similar exercise of explaining their meaning and design choices, but in writing. The Word document template used by the students to fill in their descriptions and explanations required them to write about fewer criteria examples than they had discussed during the peer interview. Finally, the students digitally recorded themselves reading their written descriptions. The student files on the digital recorders were uploaded into a folder on each teacher's

Google Drive. In one classroom, a student was shown how to create QR codes and he did so for all of his peers. In the other classroom, the teaching assistant created the QR codes for the students. The posters, the written descriptions, and accompanying QR codes with students' names were displayed in the school's foyer and hallways (see Figure 1). A 'How to scan a QR code' poster was also created for those individuals unfamiliar with this system. Thus, people could view the posters, and either read the descriptions or listen to the students reading their own poster descriptions.

### Student data selection

Initially, I read the students' written descriptions while simultaneously displaying a photograph of their posters on a computer screen. I then reread the descriptions with the goal of identifying those students whose writing demonstrated deep understanding of both the content addressed in the exploration unit, and the elements of visual art and design featured during the second term. Overwhelmingly, the writing of every student revealed a deep understanding of at least one criterion of the poster assignment. After two more readings of the 38 poster descriptions, I selected 16 as potential data sources to analyze further. Following another reading of the students' writing, I selected the work of six students as the focus for my analysis because their work features several examples of descriptions and interpretations that are more explicit in nature. Four of these students' work is discussed below. With respect to meeting Grade 4 level expectations in Reading and Writing, the foci students represent a range of academic achievement, and one has an Individual Educational Plan for learning issues associated with literacy.

Although multiple examples could have been selected from the foci students' writing, below I present each student's explanations about two or three of the criteria. I also purposefully selected examples to feature a minimum of two samples of student writing about each criterion of the poster assignment. Ellipses are used in some students' poster description excerpts to indicate missing content. Finally, I conventionalized a few examples of students' spelling and punctuation.

Following each student's written excerpt, I offer a descriptive analysis of how the student's use of specific elements of visual art and design communicate and represent meaning, and how the student's artwork and text-based writing convey their understanding of content addressed during the Social Studies unit.



Figure 1. Poster display



*Students' posters and analyses*

Kaiden



**Figure 2. Kaiden's exploration poster**

For Kaiden's Exploration poster, I focused on his explanations about the central image, his use of colour, and the typographical appearance of two of his words.

When you look at my poster, please notice that for my central image I created a tentacle about to crash on an island. The island is meant to be San Salvador. The Taino people lost their island when Christopher Columbus arrived. The tentacle represents European explorers. I used red for the tentacle because red can mean aggression and violence. This is effective because the tentacle is very aggressive. I also used yellow for the tentacle because yellow can mean caution. This is effective because it's like saying 'warning' to the Taino people. [...] I included the word power because the Europeans had more power than the Taino people. I chose to write the first two letters big and bold and I pressed hard on them when I colored them green because it represents that they have more power. Then I made the last three letters small and I lightly colored them green because the Taino people have less power. I also included the word claim because the Europeans took the Taino people's island and claimed it for themselves. I chose to write it bold and there are hands coming out because the Europeans took without asking.

Kaiden's artwork and written description focus on the colonization experiences of one particular group of Indigenous Peoples, the Taino people of San Salvador, as depicted in the picturebook *Encounter*. The excerpt reveals Kaiden's focus on the relationship between the Taino people and the European explorers, as well as the behaviours and goals of the explorers. Kaiden explains his creative and symbolic use of the tentacle to represent the explorers' power and aggression. He also describes the symbolic nature of his colour choices for the tentacle. Although Kaiden does not explain his design choice of bells on the tentacle, the artwork on the recto of opening six in *Encounter* portrays a Taino youth holding a leather strip with small metal bells given in

trade to the Indigenous Peoples. Kaiden explicates how his intentional design choices for the height and colour value of the letters in the word 'power' represent both the initial and subsequent differential power relationship between the explorers and the Indigenous Peoples on San Salvador. For 'claim', Kaiden creates word art to symbolically emphasize the taking of the Taino's land by the European explorers. Overall, Kaiden's design choices convey unifying messages about his understanding of the changes experienced by the Taino people as a result of their interactions with explorers.

Emmett



**Figure 3. Emmett's exploration poster**

I focused on Emmett's explanations about his use of colour and line on the central image, and about his choice of colour for the background.

When you look at my poster, please notice that for my central image I created a totem pole turning into a flag because I wanted to show how the First Nations lost their culture when the explorers came. I used purple on the flag because purple can mean self-importance, ambition and power. The European explorers were powerful and they didn't always think about others when they were taking over their land. I also used red on the totem pole to represent the European explorers because red can mean leadership, domination and



danger. These traits describe the European explorers because they caused the First Nations to lose their own language and have to speak a different language. Also, the European explorers took leadership over the First Nations people. [...] An example of line in my poster is the jagged bold line on the totem pole at the top. Jagged lines can mean danger and destruction. This shows that the First Nations culture was being chipped away and eventually it just broke. [...] Finally, I painted the background with blue, purple, red and yellow. The purple frames everything and purple can mean self-importance. The Europeans showed they had lots of self-importance because they only cared about themselves and the resources that they could get from the land.

Emmett explains how his colour choices for the central image represent specific characteristics and behaviours. Emmett describes how particular traits and actions of European explorers, conveyed symbolically by his use of the colour red, resulted in the loss of culture for Indigenous Peoples. He also explicates his use of a jagged line on the totem pole. During the classroom pedagogy on the element of line, the students learned that among other meanings, zigzag or jagged lines can communicate excitement or nervousness or imply danger and destruction. Emmett's design choice of using a jagged line on the totem pole powerfully represents how interactions with explorers resulted in the 'chipping away' of the culture of Indigenous Peoples. Emmett notes how on his poster background, the colour purple symbolically conveys the self-importance displayed by the actions of European explorers. Emmett's colour and line design choices on his poster effectively communicate his understanding of the nature and conduct of the explorers he had learned about, and about the consequences for Indigenous Peoples as a result of their interactions with European explorers.

### Solanna

I focused on Solanna's explanations about her use of framing and line on the central image, and the typographical appearance of three of the words on her poster.

An example of framing in my central image is the thorns around the arms. This framing means the connection of the Europeans and the First Nations didn't result in a smooth and soft way. It resulted in a thorny prickly uncomfortable way. An example of line in my poster is the pointy lines on the thorns. Pointy lines can mean danger and destruction. The danger and destruction is the result of the Europeans encountering the First Nations. [...] I included the word 'change' in big bold letters because when the Europeans took over they changed the First Nations' land and their culture. I used the colours yellow, purple and red on the word 'change' because they mean caution, dishonesty and

danger. I also included the word 'encounter'. I chose to write it as tall letters towering over. I used the color green because it means greed and wealth. The Europeans were wealthy but they were greedy and wanted more land and resources. My third word is 'unfair' I made it so there was one bold letter and then the letters decrease in size. I created the word like that to show how the First Nations started out as bold and strong but then the Europeans came and took over and their land and culture faded away.



Figure 4. Solanna's exploration poster

Solanna's design choice of thorn branches to frame the forearms of an Indigenous individual and an explorer serves several purposes including emphasis, inclusion, and enhancement of appearance. As noted above, the students learned that jagged or zigzag lines can imply danger and destruction. Although the thorns on plants are indeed pointy in nature, Solanna describes how her use of thorn branches symbolically represents the 'prickly' nature of the interactions between Indigenous Peoples and European explorers. Solanna also explains her purposeful design of three words on the poster. She describes how her symbolic use of colour hue, colour value and height of typography represent particular meanings. Noteworthy is Solanna's

variation of letter height in the word ‘unfair’ to symbolize the initial courage and strength of Indigenous Peoples before their interactions with European explorers.

### Sanjay

For Sanjay, I focused on the framing of his central image, the typographical appearance of two of his words, and the colours on the background of his poster.



Figure 5. Sanjay's exploration poster

I used loaded bows, arrows, guns, and bullets for my framing. I put them in their positions because at the top there is an arrow and loaded bow, being ‘chased’ by the bullet to represent how the Europeans forced the First Nations onto a much smaller piece of land. [...] I included the word ‘curiosity’ because the Europeans were very curious and they liked to explore. I used a person holding a magnifying glass for the letter c to represent the Europeans when they were exploring. I turned the u into a boat because boats were very important to the Europeans for exploring. [...] I wrote betrayal tall with jagged and sharp lines to represent a dagger like back-stabbing. I coloured it yellow because yellow can mean betrayal. The Europeans betrayed the First Nations by building up trust and then they became violent and took their land and culture. Finally, I painted the background many colours to represent multiple things such as yellow for betrayal, red for

violence, and green for nature because a lot of the things the First Nations did occurred in nature.

Sanjay describes how both the nature and the position of the objects he used to frame his central image are significant in meaning. His design choices portray a contrast of weaponry available to Indigenous Peoples and European explorers, which had major ramifications for their interactions, and for the cultural ways of Indigenous Peoples. Sanjay devoted much time to designing the words he featured on his poster. He designed a meaningful and creative visual image for each letter in the word ‘curiosity.’ Sanjay explicitly describes how his use of colour and types of line for the word ‘betrayal’ communicate actions by the explorers that resulted in the loss of land and culture for Indigenous Peoples. Finally, Sanjay explains how the various colours he painted on the background represent different aspects of the multifaceted and complex Social Studies unit. The bleeding of the paint colours on Sanjay's background symbolically underscore how both Indigenous Peoples and European explorers were forever changed by their interactions.

### Discussion

Viewing the multimodal posters and reading the written excerpts reveal the students' understanding of the explorers' goals and intentions with respect to searching for what these individuals considered to be ‘new lands.’ Numerous characteristics about the nature and actions of the explorers are communicated through the students' artwork and words on their multimodal posters, as well as through their written descriptions. Several foci students addressed the conquest of Indigenous Peoples by explorers through their words and images. Overwhelmingly, the students focused on the demographic, and language and cultural effects of interactions between Indigenous Peoples and European explorers, and conveyed their understanding of how this contact profoundly impacted the human and legal rights of Indigenous Peoples.

The students' artwork and written descriptions provide evidence of their designing multifaceted symbolic images that reflected their historical understandings as well as their knowledge about the elements of visual art and design under study (Pantaleo, 2021; Youngs, 2012). Similar to the multimodal compositions created by middle school students in the study by Pellegrino et al. (2013), the images featured on the Grade 4 foci students' multimodal posters convey sophisticated and complex ideas that addressed the inquiry question.

As meaning-makers, the students engaged in the

semiotic work of design as they purposely selected, adapted and orchestrated semiotic resources that were the focus of the research pedagogy to meet their purposes, goals and interests in a form that was appropriate for the context and for the specific audience (Bezemer & Kress, 2016). Indeed, the intentional instruction on elements of visual art and design, and the assignment criteria were significant factors that affected the students' making of and writing about their posters. Recognition of situating the 'sign-making and the agentive work of the sign-maker in a specific place and time' (Jewitt, & Kress, 2010, p. 342) reflects tenets of a social semiotics take on multimodality and of a sociocultural theoretical lens.

Indeed, situating a discussion of teaching and learning in sociocultural theory recognizes how the students' participation in a particular setting/context affected their understanding of the concepts under study, which consequently shaped their multimodal compositions, the content of their writing, and their interpretive practices. Kress (2010) wrote that 'signs made 'outwardly' are the best evidence that we can get for understanding the 'inner' processes of learning' (p. 183). However, it is important to acknowledge how students' visual arts and written language competences affected the 'outward signs' they designed, composed and wrote about for the assignment. In addition, the students' communication of their learning about the inquiry question on their Exploration posters was constrained by the nature of the assignment itself.

As explained above, the intentional pedagogy delivered during the research reflected Müller's (2008) visual competence cycle, and provided the students with learning opportunities to develop their awareness and knowledge of, and appreciation for, particular elements of visual art and design. Data gathered during the research revealed how the students' visual production knowledge influenced their visual perception and interpretation of, and responses to the artwork in the literature, as well as the design and interpretation of the multimodal posters. Furthermore, the emphasis on intentionality of design (Dalton, 2014/2015) throughout the pedagogy with the picturebooks with respect to visual production was fundamental to the students' design of their Exploration posters.

The students partook in the 'semiotic work of *interpretation-as-redesign*' (Kress, 2015, p. 57) as they remade meaning when they were interviewed and wrote about their use of colour, visual point of view, typography, framing, and line on their posters. As remakers of messages, the students engaged with their own designs and provided interpretations of their semiotic work. The students employed medium-specific

analysis (Suhor, 1984) using appropriate metalanguage to identify, describe, and interpret how their intentional use of specific elements of visual art and design realized communicative purposes. Macken-Horarik (2016) uses the term *metasemiosis* to describe such 'reflection on meaning making; it is "meta" to the processes of meaning making' and she states that 'metalanguage is a crucial aspect of this knowledge' (p. 88).

Furthermore, student engagement in '*interpretation-as-redesign*' (Kress, 2015, p. 57) involved the semiotic work of transduction – the students were required to think about and interpret how meanings were 'realized in one mode' (Kress, 2010, p. 124) and use different modes to communicate and represent those meanings when designing and describing their posters. The students remade meaning across modes when they used oral and written language to describe and explain meanings expressed or represented through semiotic resources of the modes of image and layout on their multimodal posters. Additionally, it was fundamental for the students to explain their agentive work of using particular resources to represent meaning as opposed to the teachers and myself solely generating inferences about the students' semiotic work.

### Conclusion

A diverse range of visual and multimodal texts are available for instructional purposes in Social Studies (Brugar, 2017), and researchers are unanimous about the need for explicit instruction about visual representations in textbooks and other multimodal texts used for pedagogy in Social Studies (e.g., Brugar & Roberts, 2017; Roberts & Brugar, 2017). Purposeful planned instruction about how to read, understand and compose visual representations can enhance students' appreciation of the complexity of, and the capacity and agency for critically reading and designing multimodal texts. Indeed, the findings from the literature on student response to picturebook artwork reviewed earlier, as well as the analysis of the students' posters and written descriptions, communicate the need for and the importance of authentically-embedded instruction, integrated throughout the year and across curricular areas, to develop students' abilities to analyze and think critically about how the modes of image and layout are used to represent and communicate meaning. Explicit instruction about the what, how, why and when of making meaning with various modes will expand students' 'observational powers and their repertoire of analytical categories' (Suhor, 1984, p. 249) for viewing, reading, responding to and creating multimodal texts. Furthermore, knowledge of the appropriate metalanguage will support more informed and critical



interpretations of students' multimodal compositions as well as those in other contexts.

Silseth and Gilje (2019) wrote that 'teachers appear to lack experience with and research-based knowledge about how to assess multimodal texts' (p. 28). Assessment of students' multimodal products and processes should be intricately connected to and reflective of teacher pedagogy and assignment criteria. However, teachers need to develop their schemata about the affordances of modal semiotic resources for meaning-making because teacher knowledge affects students' learning. Indeed, it is essential that when students are afforded with opportunities to demonstrate their learning in a range of different modes that teachers have 'the means for recognition' of student knowledge and understanding (Bezemer & Kress, 2016, p. 54).

A multifaceted suggestion for future research would be the exploration of how instruction about elements of visual art and design through the use of picturebooks, since researchers have reported high levels of student engagement with this format of literature in Social Studies, affects students' comprehension, interpretation and design of an array of multimodal texts in Social Studies. As well, such exploration could include pedagogy about how the modes of image and layout are used as meaning-making resources by designers of specific types of visual representations (e.g., graphs, tables, maps, diagrams) to communicate meaning in all curriculum materials.

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