JoLLE@UGA®
JOURNAL OF LANGUAGE & LITERACY EDUCATION

Issues of Validity, Subjectivity, and Reflexivity in Multimodal Literacy Research and Analysis

David E. Low
&
Jessica Zacher Pandya

Abstract: In this article we highlight analyses conducted in two qualitative literacy studies to discuss various implications of a blended, or hybrid, approach to multimodal analysis. By investigating several prominent frameworks commonly used together for the purpose of analyzing multimodal data, and describing our own experiences blending these frameworks, we determine that a hybrid approach is not necessarily ineffective at producing data interpretations, but that it is insufficiently reflexive of the role researcher positionality plays in multimodal analysis. We conclude the article by offering recommendations for supplementing hybrid analytical approaches through data co-construction and increased attention to researcher positionality.

Keywords: multimodality, multimodal literacies, visual analysis, data co-construction

David E. Low is Assistant Professor of Literacy Education at California State University, Fresno. A former high school ELA teacher in Tucson, Arizona, David conducts research on how young people's multimodal reading and composing practices – particularly through the medium of comics – facilitate various enactments of critical literacy. Contact him at dlow@csufresno.edu.

Jessica Zacher Pandya is Chair of the Liberal Studies Department and Professor in the Departments of Teacher Education and Liberal Studies at California State University, Long Beach. A former San Francisco kindergarten teacher, Jessica conducts research on children's identity work in diverse urban classrooms, and more recently, ways that English learners make meaning in multiple modes as they create digital videos. Contact her at: jessica.pandya@csulb.edu.

Introduction[1]

"It's not about methodological promiscuity. It's about methodological promise and acuity."
–Leslie Burns, 2015

Literacy researchers are not by necessity trained semioticians, art or film theorists, or Dan Brown-styled professors of symbology, and yet we nevertheless collect and analyze an array of multimodal materials from our research sites. As Hammersley and Atkinson (2007) note, ethnographic field studies entail "gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry" (p. 3). In many field sites and especially those examining literacies in educational contexts, these data include multimodal artifacts. Such artifacts weave together multiple sign systems, such as writing, images, gestures, spoken language, and sound effects to communicate ideas. Examples of multimodal artifacts include drawings, paintings, and other visual markings (on any number of surfaces, with any number of implements), photographs, films, digital stories, and objects, any of which may be streaked with the "sedimented identities, or traces of past experiences" of their creators (Rowsell & Pahl, 2007, p. 388).

At some point, a researcher assigns meaning to the data they have collected, even when an artifact's meaning is unspecified, ambiguous, or symbolic. As we have experienced, multimodal analysis can be a daunting mixture of deduction and invention. In this paper we ask readers to think alongside us through various implications of multimodal analysis as commonly undertaken by literacy researchers. Many of our arguments center around how multimodality researchers attempt to make validity claims in problematic ways. We question why, as qualitative researchers who engage in highly interpretive work, we turn to empiricist and formalist logics for analyzing the multimodal subsets of our data. What is it about multimodal artifacts that drives literacy researchers to employ analytic approaches that imply, if not certainty, then at least the attenuation of subjectivity? In the next sections we attempt to answer these questions by highlighting lessons learned from our own experiences analyzing multimodal data. Ultimately, we examine how researchers might achieve greater "promise and acuity" when making meaning of multimodal artifacts.

Blended Multimodal Analysis

Offering guidance on how to interpret multimodal artifacts, some scholars recommend a blended, or hybrid, approach to analysis. Siegel and Panofsky (2009) write that "there is no ready-made toolkit for analyzing multimodality in literacy studies, but researchers have turned to a range of theories in search of analytic guidance" that can be "productively blended" (p. 101). Rogers (2011) marks a similarly hybrid approach to analyzing discourse, where researchers layer theories and analytics from across disciplinary traditions to yield new data interpretations. Our review of dozens of literacy studies that analyze multimodal artifacts finds their analyses based on a blend of sociocultural theories (drawing on Vygotsky and Bakhtin); techniques derived from Hallidayan functional grammar and social semiotics (e.g., Baldry & Thibault, 2006; Bezemer & Kress, 2008; Kress & van Leeuwen, 2006; O'Halloran, 2004); techniques derived from triadic approaches to semiotic analysis (e.g., Dressman,

---

[1] We acknowledge that there is a gender spectrum and that myriad pronouns exist that can be used to refer to individuals. Throughout this article we use the gender-neutral pronouns they/them/theirs (in both singular and plural form) to recognize the fluid nature of identity, unless referring specifically to authors and participants who identify as female or male, in which cases we use she/her/hers or he/him/his.

2016; Hull & Nelson, 2005); visual, pictorial, and semiotic grammars (e.g., Bang, 2000; Serafini, 2015; Sonesson, 2016; Towndrow, Nelson & Yusuf, 2013); and terminologies imported from film analysis, comics analysis, picturebook analysis, and other art theories (e.g., Anderson, 1995; Bateman & Schmidt, 2012; Connors, 2012; de Roock, Bhatt, & Adams, 2016; Ghiso & Low, 2013; Pandya, Pagdilao, Kim, & Marquez, 2015). There is also often a cultural element to blended multimodal analysis, in which the unit of analysis is not the artifact itself but the cultural mediation around it.

The prospect of drawing meaning from multimodal artifacts can provoke trepidation in a researcher interested in "getting it right" (Richardson, 1997, p. 91); however, the concept of accuracy or *rightness* in multimodal data interpretation remains largely unresolved. Some literacy researchers elect to follow the advice of methodologists such as Saldaña (2013), who encourages researchers to "trust [their] intuitive, holistic impressions" when analyzing multimodal artifacts and confesses he has "yet to find a single satisfactory approach that rivals the tacit and visceral capabilities of human reflection and interpretation" (p. 57). Harste (2014) also argues in favor of researchers relying on intuition to arrive at analytic insights, a type of reasoning he describes as "abductive" (p. 98). To those researchers who desire a more systematic method of data interpretation, layering analytics can offer a semblance of procedural fidelity—that one has properly followed approved procedures. By bringing together an assortment of theories and methods, researchers may feel they can more credibly claim to have arrived at the accurate meaning of a multimodal artifact and move onto discussing its implications. While well intentioned, the impulse to

"There is simply no way to take the researcher out of the research, nor should it be an ideal for which to strive."

suppress one's intuitions is problematic. There is simply no way to take the researcher out of the research, nor should it be an ideal for which to strive.

The goal of this article is to explore the thinking behind, and consequences of, layering theories and methods in multimodal analysis. We begin by linking blended, or hybrid, analytical approaches to validity claims that typically inform models of inquiry more formalist than many literacy researchers claim to espouse. We then survey literature on multimodal composing in schools, including its relationship to anti-deficit counter-storying and the limited impact it has had in affecting policy. As illustrative examples, we share detailed accounts of multimodal data analysis from our own studies of primarily Latinx student populations; we follow each account with a section problematizing our analysis. We conclude by offering four ideas for augmenting a blended approach to multimodal data analysis in an effort to highlight the promise of multimodal literacy research.

The Problem with Blended Multimodal Analysis

In the interest of claiming credibility, or perhaps confidence in the truth of our findings (Lincoln & Guba, 1985), we as researchers have at times layered an assortment of multimodal analytics, in spite of our knowledge that a findings-as-truth perspective works to minimize a researcher's "intuitive, holistic impressions" (Saldaña, 2013, p. 57). Blended approaches to multimodal analysis flow from a similar wellspring as data triangulation, and are likewise intended to "reduce the risk of chance associations and of systematic biases due to [using] a specific method" (Maxwell, 2005, p. 112). While this

corroborative approach may sound advantageous, it presupposes that triangulation is value-neutral, that intuition is invalid, and that there exists an accurate interpretation of a multimodal artifact researchers would recognize if they could suppress their subjectivity. Dressman (2016) wrestles with this conundrum by turning to Peirce's triadic theory of semiosis in which multimodal analysis is "grounded less in the intuitions of their analysts and more in properties and evidence that can be empirically demonstrated" (p. 119). We see Dressman's discussion as an attempt to court validity while avoiding the value-laden nature of multimodal analysis.

A number of researchers argue that prioritizing claims to validity, as manifested in the form of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985), offers a faulty orientation for examining social phenomena (Kirsch, 1999; Richardson, 1994, 1997). These scholars interrogate the assumption that qualitative data can be definitively, *validly* interpreted, as part of a "regime of truth" (Lather, 1993, p. 674), without reducing, hyperextending, or otherwise deforming their contours. In as many words, the researcher plays a key role in constructing data, rather than compiling a neutral document of *what's there* (Erickson, 2004). The irony is that many literacy researchers who employ blended approaches to multimodal analysis already agree with critiques of value-neutral research. In many cases, they are the same researchers—and we include ourselves here—who avoid formalist analysis *except,* as it turns out, when analyzing multimodal data. This conundrum raises the question: What moves us to stick a pin in a multimodal composition, affirming its genus known, rather than welcoming uncertainty and ambiguity as in our other work? What is so different about multimodal data, and why does interpreting it make us uneasy?

Sousanis (2015) argues that the primacy of words over images has deep roots in Western culture. Due to the dominance of language, we tend not to exercise our full multimodal faculties in acts of perception and interpretation. (There is also, of course, the matter of academic publishing being primarily word-based, leading many scholars to do research that privileges language in the pursuit of publishing and funding opportunities). Sousanis refers to this value as "flatness," a kind of narrow thinking that draws boundaries around the modes we use to engage the world. In a sense, modal flatness eviscerates the "visceral capabilities of human reflection and interpretation" (Saldaña, 2013, p. 57) and contributes to the difficulties literacy researchers have in analyzing multimodal data. This is not to say that interpreting language data (i.e., writing and speech) is uncomplicated, that language is not symbolic, or that language does not require researchers to consider how subjectivity informs our analysis. Our point is that there is something unique about analyzing multimodal artifacts.

When analyzing multimodal data, researchers are left to our own devices to determine if, and when, *this is not a pipe*[2] (e.g., Magritte's *The Treachery of Images,* 1928-29). Further complicating multimodal analysis is the matter of gestalt, that when modes entwine they synthesize into something altogether new. As Hull and Nelson (2005) explain, the experience of a multimodal artifact is "qualitatively different, transcending what is possible via each mode separately" (p. 251). While some scholars have devised semiotic grammars for use in analyzing multimodal texts (e.g., Bang, 2000; Kress & van Leeuwen, 2006), and others have addressed video analysis specifically (Bateman & Schmidt, 2012; de

---

[2] Taken from a painting by René Magritte of a pipe, captioned *"Ceci n'est pas une pipe."* ["This is not a pipe."]

Roock, Bhatt, & Adams, 2016), many literacy researchers are simply less confident the further we stray from word-based data, especially when we feel we ought to depend on our intuitions. Bringing together an assortment of theories and methods is one way to assure ourselves that we are conducting multimodal analysis with some measure of due diligence.

We are concerned that hybrid approaches to multimodal analysis too often mirror a cryptographer's mentality, and that interpreting multimodal data becomes something akin to a "symbologist" cracking a code. The problem is that multimodal materials do not function like encrypted codes concealed in Da Vinci paintings (Brown, 2003). There are no specific analytics or theories that, when overlaid, are able to offer total insight into an artifact's meaning or its maker's intentions. When researchers blend analytics to interpret multimodal data, however, a sort of validity is implied; the resulting hybrid analytics serve as a system of checks and balances, suggesting that analysis was conducted in a rigorous fashion and that the findings are credible. And it's not necessarily that a researcher blending analytics has behaved in *un*trustworthy ways. It's more that they have potentially engaged in a single-player version of The Blind Men and the Elephant. In this parable, originally from the Buddhist *Udana*, a group of blind men – none of whom has ever encountered an elephant previously – each conceptualizes what an elephant is like by feeling a different part of the animal's body. The man who feels the tusk reports that an elephant is like a spear, while the man who feels its leg reports that an elephant is like a tree trunk. The parable's lesson is that people should not

> **"When literacy researchers mash together hybrid assortments of analytics without divulging or thoroughly exploring our idiosyncratic processes, our work is easy to write off. The stakes are too high to allow this to happen."**

claim absolute truth based on limited subjective experience, nor disregard the equally valid experiences of others (Popple, 2010, p. 492).

What would a solo performance of The Blind Men and the Elephant sound like? '*I've felt the animal with my left hand. I've felt it with my right hand. I've felt it with my foot. Having blended these analytics together, I can credibly report an elephant is like a rope.'* Layering methods can embolden researchers to claim we know something by purportedly seeking out counter-patterns and convergences, the oft-stated goal of triangulation (Lather, 1986). However, this process in actuality helps to validate the researcher's initial inferences and theoretical preferences. Whether we care to admit it or not, the selection and application of analytic methods, like the sensation one feels with a hand or foot, is as personal as Saldaña's (2013) "human reflection and interpretation" (p. 57).

Why is this point important? Why write an article on the problem of claiming validity in multimodal data analysis? Because we want our analyses to matter. We want to shift deficit narratives about the language and composing capacities of minoritized learners. We want to bring about positive change in the lives of children and youth. When literacy researchers mash together hybrid assortments of analytics without divulging or thoroughly exploring our idiosyncratic processes, our work is easy to write off. The stakes are too high to allow this dismissal to happen.

Situating Multimodal Analysis within Literacy Education

Over the previous two-plus decades, and especially

in minority-serving schools, literacy education has been typified by standardization and remediation (Edelsky, 2006; Pandya, 2011). One result is that minoritized students' knowledge resources—linguistic, cultural, etc.—are afforded lower status than indicators of achievement aligned with White, monolingual standards of knowing, indicators that are assessed monomodally (Low, 2012; Siegel, 2012). It is in this context that opportunities for multimodal engagement are urgent, and where, concurrent with the "digital turn" in New Literacy Studies (Mills, 2010), a number of researchers have committed to examining the genres, modes, media, and embodiments through which young people make meaning and perform identities (Berry & Cavallero, 2014; de los Ríos, 2017; Ghiso & Low, 2013; Kirkland & Jackson, 2009; Mein, 2011). When looked at together, as part of a body of related work, the dual argument of these and other studies is that young people should be invited to critically and agentively compose with multiple modes, and that educators should be better equipped to value multiple modes of student production. As Siegel (2012) writes, a pedagogical emphasis on multimodality can have the effect of "recast[ing] students who are labeled 'at risk' students—whether English-language learners, low-achieving or reluctant readers…or learning disabled—as students 'of promise'" (p. 674). Indeed, numerous studies of multimodal literacy are framed as anti-deficit.

Literacy research has increasingly attended to the multimodal composing practices of academically marginalized students (Anderson, Stewart, & Kachorsky, 2017; Dunn, Neville, & Vellanki, 2018; Falchi, Axelrod, & Genishi, 2014; Low & Campano, 2013; Pandya, 2018; Rogers, Winters, LaMonde, & Perry, 2010; Vasudevan, 2006). Many researchers identify the element of design, or "the ability to harness the multiplicity of semiotic systems across diverse cultural locations" (Janks, 2010, p. 177), as crucial in locating the affordances of multimodality

(Hull & Nelson, 2005; Siegel, 2012). With respect to literacy and identity, much has also been written about how and why young people design multimodal texts, emphasizing their critical engagements with popular media for generating meanings (Halverson, 2010; Lewis Ellison, 2017; Low, 2017; Pandya, 2018).

It is not difficult to understand why multimodal literacy scholarship is often committed to counternarrative, which aims to expose, critique, and supplant discourses that perpetuate racial knowledge hierarchies (e.g., DeCuir & Dixson, 2004; Solórzano & Yosso, 2002). As Fairbanks and Price-Dennis (2011) note, it is vital for educators and researchers to "foreground the sophisticated nature of the multiple literacy practices that [minoritized] youth engage as a result and in spite of the exclusion and marginalization they typically manage in school" (p. 144). In an effort to disrupt deficit discourses, researchers studying youth literacy practices may unintentionally romanticize multimodal creators, *especially* those students who have been marginalized through traditional forms of assessment. One reason such studies may fail to affect school policy is that their approaches to analysis are seen as self-confirming of researchers' prior stances. By setting out to surface counter-stories, and layering analytics in the service of that work, researchers negate other potentials, and our findings—even as they draw attention to the breadth of knowledge and multimodal capacities of marginalized students—are found to be insufficiently rigorous. In the following section, we illustrate how this effacement can happen by examining an earlier analysis from Jessica's digital literacy study.

Illustrative Examples of Blended Multimodal Data Analysis

Research Context 1: Noemi's Case

In 2015, Jessica ended a four-year study of children creating videos on iPads. Esperanza Elementary (all names are pseudonyms) was a dual-immersion, Spanish-English charter school with 70% Latinx students, 60% of whom were labeled English language learners. Jessica's research team worked with approximately 180 children to create 350 individual and group videos over the course of the study. Due to the project's embedded nature, Jessica became familiar with many children and grew to know about their in- and out-of-school lives in addition to their video production work. While helping children make two or three videos per year, Jessica's team conducted and collected hundreds of interview transcripts in addition to field notes, videos, and children's written work. The theoretical perspective undergirding the research was sociocultural, drawing on the work of Bakhtin and Vygotsky. The team aimed to examine digital video composition practices in the particular social contexts of Esperanza Elementary.

The depth and breadth of data accessible to the research team, and their personal knowledge of the children, afforded opportunities to analyze the children's multimodal work in any number of ways (see Pandya, 2018). This wealth of information, coupled with the team's fondness for our participants and desire to see them as agentive in the face of challenges, likely led to the romanticization of some child-created multimodal artifacts. The example we highlight here is a digital autobiography created by Noemi, a ten-year-old Honduran immigrant.

After a long immigration journey, Noemi had attended Esperanza for three years. She struggled academically throughout that time. Labeled an "intermediate" English language learner, Noemi scored approximately two years below grade level on standardized tests. Although the team knew about

her scores, we also knew Noemi, her vibrancy, her lively and engaging personality. As we explain below, the team was predisposed to read her autobiography in as positive and affirming a light as possible to challenge what could too easily become for Noemi a "bureaucratically sanctioned remedial academic identity" (Campano, 2007, p. 50).

As part of the larger project, Noemi and her classmates were asked to write an autobiography as an essay, then turn it into a digital story, illustrated with photographs and hand-drawn images, and narrated by each creator. Noemi's video voiceover began:

> Hi, My name is Noemi. I am a very shy person, but I am outgoing once you get to know me. I am a very funny and playful person. My life had started sad. Then it got better, and better. [My] parents met in a coffee store. I was born in Honduras. The sad part of my life happened when my dad and mom left me with [my] grandmother and [I] got very sick and almost died. I got better, and when I was 2, we moved to Miami, then Chicago, Las Vegas, Georgia, and finally, California. I grew up with my 2 uncles and my grandmother.

Noemi presented a complicated life story in just a few sentences, a story with gaps—what happened to her mother and father?—but a powerful story nonetheless. While we will not comment on each image from Noemi's digital story, we highlight a snapshot she used in conjunction with the spoken line about how her "parents met in a coffee store." As the viewer hears these words, we see an image of a woman and man, the woman holding a small child on her shoulders. They are both smiling, standing on a beach.

One could reasonably conclude these are Noemi's parents. Only later, during our interview about her digital story, did we learn Noemi had no pictures of her parents together, just a single photograph of her mother. The couple pictured was her grandparents; her grandmother was holding Noemi's mother on her shoulders. Learning it was not Noemi in the picture, and that Noemi had few photographs of her childhood, disposed the research team to view her already-fraught autobiography with even more of an emphasis on her agency and resilience.

At the end of her story, Noemi suggested future plans:

> *I want to continue skateboarding and playing soccer. I also want to go to college and become a teacher teaching elementary. I want to visit Miami, Georgia, Fresno, and Hawaii. Maybe one day I will find a good man and have my own kids. I want to be a cool, nice mom, and I had a sad start to my life, but it is getting better, it will get better if I continue to do good. The end.*

Analyzing Noemi's Video

Figure 1. Photo of Noemi's grandparents and mother on the beach

The research team delved into Noemi's video in the course of a larger analysis of student-made videos. The team's hybrid analytical approach began with the use of multimodal transcripts that attempted to capture Noemi's video in a series of still images. In these multimodal transcripts, the image was the unit of analysis and the transcript contained lines for spoken words, musical cues, written text, interview or survey comments about the image, and time (see Fig. 2 for an example of the format of the multimodal transcript). The team combined our analysis of multimodal transcripts with inductive analysis of other compositions and interview responses, creating a series of arguments about immigrant children's identities as displayed in their videos. We argued that Esperanza students presented three types of identities: immigrant (like Noemi), transnational, and "American" (Pandya, Pagdilao, Kim, & Marquez, 2015), and suggested that immigrant children—however they identify—need opportunities to narrate and re-narrate themselves as they traverse the American school system.

Multimodal transcripts are a frequent tool of blended multimodal analysis (Baldry & Thibault, 2006; Flewitt, Hampel, Hauck, & Lancaster, 2009). Drawing on film theory and social semiotics, the act of multimodal transcription—which involves taking screenshots of a video and demarcating time, speech, and other units—may reveal the semiotic power of a multimodal artifact to be greater than the sum of its parts (Hull & Nelson, 2005). In Jessica's experience, however, producing multimodal transcripts may also lead researchers to feel that their data has been clearly and credibly mapped, with the component pieces all thoroughly accounted for. It is what Collini (2012) refers to as the "fallacy of accountability," or the "belief that the process of reporting an activity in the approved form provides some guarantee that something worthwhile has been properly done" (p. 108).

Figure 2. Multimodal transcription of Noemi's video

In retrospect, we see that Jessica's research team relied in large part on "the visceral capabilities of human reflection" and that we trusted our "intuitive, holistic impressions" (Saldaña, 2013, p. 57) of Noemi's work, even while adopting more concrete analytics. The team did not name our visceral capabilities, nor sufficiently consider from where our intuitive impressions derived. We interpreted Noemi's video in ways that confirmed our ideological commitments—i.e., the commitments presaging our visceral reactions to Noemi's work— while simultaneously obscuring those commitments. We mapped the modes in our multimodal transcript, took meticulous screenshots, timed how long images appeared on screen, and reviewed and included interview and field note data. That these steps worked to validate our initial assertions went unchallenged.

Troubling our Analysis of Noemi's Video

Subsequent readings of Noemi's digital video and related artifacts suggest an analysis influenced by researcher positionality. The research team included one immigrant, two children of immigrants, and Jessica herself, who is the spouse of an immigrant. Three of the four researchers identified as female, and one, Jessica, as White. Two were credentialed teachers who had worked with immigrant children in a variety of contexts. Partially due to our shared immigration histories, we wanted (subconsciously or

consciously, we still do not really know) to show a resilient immigrant and to offer an example of a girl who, in spite of her difficult life history, framed her life trajectory and possible futures positively. It is difficult for us, coming as we do from critical sociocultural backgrounds that highlight counter-storytelling, to avoid this romanticization even when writing about our analysis after the fact. And, as we trouble the analysis here, we find it hard to let go of the positions we hold and the filters those positions create. This issue will be evident as we turn our attention to a second example of hybrid multimodal analysis: David's analysis of Alexi's map.

Research Context 2: Alexi's Case

Our next case concerns David's three-year qualitative study with students in a K-8 parochial school in Pennsylvania. Drawing on New Literacy Studies and critical literacy research, the project was designed to examine how students constructed and performed race and gender identities through their composition and discussion of graphic novels and manga. One of the children participating in the Comics Inquiry Community (CIC) was Alexi, who spent his 4th and 5th grade years as a core member of the group. Alexi was a frequent multimodal reader and composer, borrowing two or three graphic novels per week and filling notebooks with his drawings. He often sketched ideas he had for murals and comic books, pulling on a range of influences from 19th century Mexican printmaker José Guadalupe Posada to contemporary Japanese-American graphic novelist Kazu Kibuishi. David considered Alexi quite brilliant in the ways he collected disparate materials to remix, but brilliance was not the dominant (school sanctioned) narrative of Alexi. Through interactions with Alexi's classroom teachers, David was informed the nine-year-old was "slow to learn and lazy," that Alexi "doesn't read or write," and that "things just don't click for him." Once, a teacher said they needed to work on correcting Alexi's "bad speaking habits" because "there is no grammar in the Spanish language."
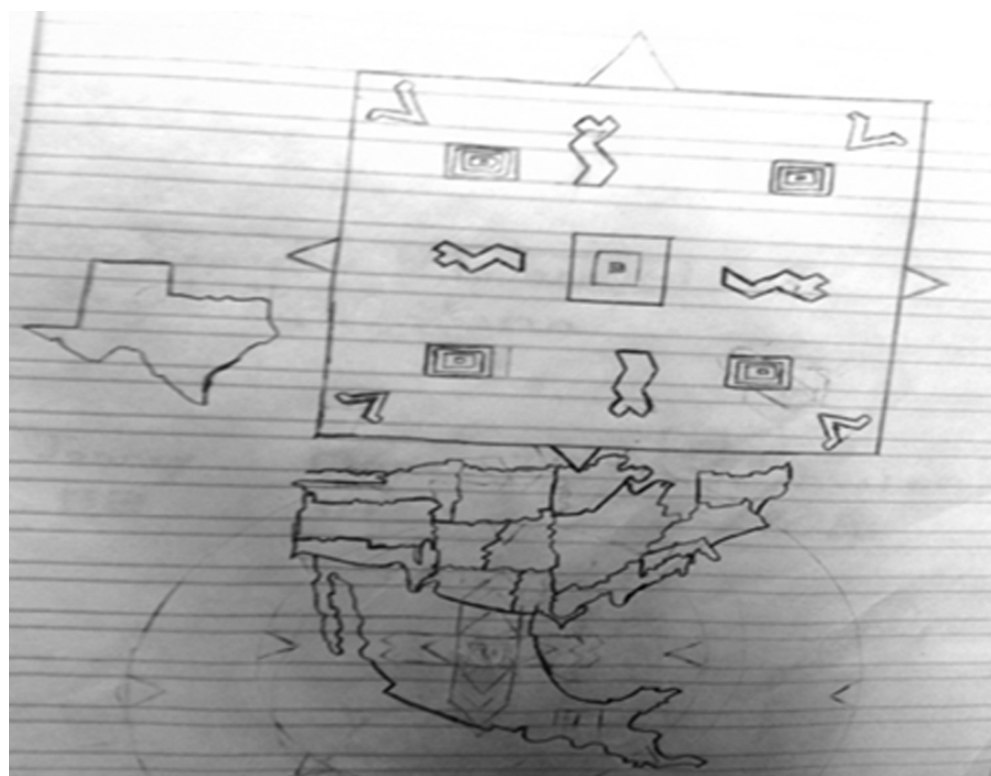

Figure 3. Alexi's map of the United States and Mexico

Aside from these statements being inaccurate, David believed they represented a narrative that positions immigrant students as "vulnerable, susceptible, and in need of particular forms of adult intervention" (Petrone & Lewis, 2012, p. 256). David was committed to disrupting this narrative and felt Alexi's multimodal engagements provided a way to do so.

One afternoon, Alexi showed David a sketch of a map he made (see Fig. 3). By this point in the study, David had elected to use a blended approach to analyze multimodal artifacts and felt confident in its promise of triangulated validity. The specific analytic lenses David layered borrowed from social semiotic, pictorial, and picturebook analysis, and later, Chicanx visual rhetoric. These analytics were incorporated alongside field notes, memos, audio recordings, and interview transcripts to identify convergences and divergences across data sources. David's decision to layer these particular analytics was influenced in part by his own methodological predilections and in part by the personal histories students had shared with him.

Analyzing Alexi's Map

Alexi was born in Mexico, and with his mother and sister, passed through Texas on their way into the United States. Though the family resided in Pennsylvania at the time of the study, David noted the state was not given a cue of salience in Alexi's map (Kress & van Leeuwen, 2006). Neither was cartographic verisimilitude Alexi's objective. David wondered what affordances mapmaking might have for Alexi as a multimodal composer, and began identifying visual features in Alexi's drawing he felt indicated symbolic meanings. For instance, David found it significant that Alexi marked the border between the U.S. and Mexico with a line the same width as those separating individual states. "Lines have great expressive potential," writes picturebook

scholar Cheri Anderson (1995, p. 307), and this statement resonated with David. He reasoned that in the case of Alexi's map, the lines marking international borders were as inconsequential as any others: a strong geopolitical statement from a nine-year-old. Picturebook analysis helped David reach that interpretation, although Alexi's map was not a picturebook in any sense.

At around this time, David presented the map as part of a collaborative review of data during which they focused on the symbols above Alexi's map. One colleague suggested that the symbols referenced Mesoamerican codices or the Aztec *Calendar of the Sun*. David turned toward Chicanx literary and visual rhetoric and learned that the use of Aztec imagery often suggests borderland themes and the blending of traditions (Baca, 2008; Savin, 1995). This signification seemed likely in the case of Alexi's map, but David wanted to know what the images meant to Alexi. Were the map's reconfigured borders a tribute to Aztlán, the ancestral homeland of the Aztecs? Kress and van Leeuwen (2006) argue that all design choices are ideological as well as aesthetic; David wanted to better understand how Alexi brought ideology into his design.

David and Alexi met regularly in the CIC and often discussed Alexi's interpretations of graphic novels. Why couldn't such discussions extend to Alexi's multimodal compositions as well? Beyond member checking, David invited Alexi to co-construct an analysis with him. As the following transcript excerpt shows, Alexi provided details that would otherwise have remained invisible to David.

> David: What do these symbols mean up here? Are they symbols you've seen in other places?
>
> Alexi: I've seen them in murals but it's not like that. It has like the same designs. I made that one up, and that one.

David: You made up the one in the middle?

Alexi: Yeah, those.

David: Alright, so you saw some of this stuff from murals?

Alexi: Yeah. That symbol and that one, I got it from somewhere else. You see that circle?

David: Yeah, the circle that's kind of faint in the background? Yeah, tell me about it.

Alexi: I was making it, just that, I knew what it meant. Just that it didn't look so good. It looks more like... You see like the lockers? 'Cause you see the line?

David: Yeah, it's like the twisty combination part of a locker.

Alexi: Yeah but, it didn't go in the front. I did it on purpose. 'Cause they're not supposed to ever open it.

David: You mean they're not supposed to open the mural?

Alexi: No.

Within his map, Alexi mixed Aztec-inspired imagery—pulled from Chicanx murals he had seen—with school locker combinations. He then erased the latter symbol into the background for the purpose of keeping its meaning hidden (see Fig. 4). Given the power structures at his school and larger discourses around immigration in the U.S., the symbolic locking away of his composition's meaning is perhaps not surprising. David thought it significant that Mexico appeared at the center of Alexi's lock pictograph, his national heritage being the aspect of his identity Alexi aimed to protect. Using both ends of his pencil, Alexi responded to a

Figure 4. Alexi's map, with his semi-erasures restored and emphasized

politics of erasure with *literal* erasure, and demonstrated some of the power of multimodal composition in the process. To David, Alexi's drawing served as a reminder of how immigrant children imaginatively, critically, and even ambiguously represent their experiences (Campano & Low, 2011; Ghiso & Low, 2013).

Troubling our Analysis of Alexi's Map

We have several concerns about David's analysis of Alexi's map, both before and after he conferred with Alexi. One concern is that, as with Jessica and Noemi's digital story, David did little to reference his own positionality and ideological leanings as relevant to the analysis. David is a White, Jewish, male. A significant portion of his worldview borrows from Smedley's (2007) definition of a "culturally structured, systematic way of looking at, perceiving, and interpreting various world realities" (p. 18). It derives from the shtetl culture of his ancestors and its diasporic, othering aftereffects (e.g., Freedman, 2005). David brings this worldview into his work with children and adults who experience vastly different circumstances than he has, to be sure, but who also navigate insider/outsider dialectics in the United States.

Although David is neither an immigrant nor Chicanx, he is committed to advancing positive counter-stories by and about immigrant students. This dedication to counter-narratives is significant, as it influenced both his initial visceral reactions and his later interpretations of the map. Similarly, David's decision to employ the analytic lenses he did reveals as much about him as it does about the data. Pictorial semiotics, picturebook analysis, and Chicanx visual rhetoric are far from neutral or inevitable choices. As Erickson (2004) writes, "analysis is never theory-independent or theory-neutral" (p. 489). Although it feels obvious to us now that both David's and Jessica's analyses were

idiosyncratic and informed by ideologies, the decision to triangulate via layering analytics kept us from seeing this possibility earlier, as if we believed that a system of checks and balances could not be gerrymandered to elicit particular results.

A related concern, perhaps more significant on a practical level, is that David's analysis of Alexi's map did little to persuade Alexi's teachers to update their opinions of him. Just as David highlighted Alexi's map as an example of the nine-year-old's multiliterate depth, so could his teachers choose to focus on Alexi's standardized test scores or "bad speaking habits" as evidence of his deficits. Each data source tells a story of the learner and reflects ideological commitments and analytic lenses. Just as in The Blind Men and the Elephant, each can be argued valid, no matter how partial its purview. Each can confirm what its proponent believed to begin with, whether the belief valorizes, pathologizes, or romanticizes the learner. As researchers, we have little control over how our work will be taken up, or what impact it may or may not have in shifting discourses. What we can do is strive to be more diligent and deliberate in troubling the ideological commitments that underpin our research.

Moving Beyond Blended Multimodal Analysis

While issues of ideology and bias affect all types of social science research, we maintain that the primarily visual nature of multimodal data compels literacy researchers like ourselves, who are vested in the primacy of language, to pursue methods for credibly analyzing nonverbal texts. Our goal is to make the medley of theories and analytic tools applied in multimodal analysis more deliberate, and more centered on researcher positionality, so that it may have a greater practical impact. It is not that hybrid approaches to multimodal analysis are *ineffective* at producing data interpretations. Rather,

they are insufficiently reflexive, derive from the logic of triangulation as validity insurance, and are easy to disregard. We offer an approach that supplements the "productive blend" of multimodal analysis by retaining a researcher's intuitions – mitigating the approach's problematic claims to validity – while integrating four additional elements. Distilled from the analytic vignettes we shared, these elements are intended to advance a more productive framework for multimodal analysis. None of these elements on its own is new, and some are already considered sound practice within social science research. What is new, then, is bringing them to the center of studies that make use of blended approaches to analyze multimodal data.

Collaborate on Multimodal Analysis with Other Researchers

Our first recommendation is for researchers to perform multimodal analysis alongside other researchers. While collaborative analysis *can* be done by members of the same research team, we feel it is important to seek support from differently situated researchers (i.e. co-research, which draws from multiple researchers' complementary perspectives and assets; Hartley & Benington, 2000). By inviting lenses that depart from the researcher's own, not only can new interpretations be derived, but the analysis might encounter *actual* checks and balances not intended to validate initial reactions. Rather than asking colleagues to corroborate one's interpretations of multimodal data, colleagues should be invited to offer independent insights.

Collaborative inquiry and co-research are parts of many qualitative research traditions and we believe they should be more purposefully brought into the

> **"Collaborative inquiry and co-research are parts of many qualitative research traditions and we believe they should be more purposefully brought into the analysis of multimodal artifacts."**

analysis of multimodal artifacts. The descriptive review process (Himley & Carini, 2000) represents one such method of collaborative analysis for understanding how children learn by closely examining, and discussing in structured rounds, child-made compositions. Although the protocols were originally designed for teachers to better understand the intellectual development of children through detailed examination of their work, there is little reason the process could not be adopted by literacy researchers to interpret multimodal data. As with teachers, structured group analysis of multimodal artifacts might unearth much that a single researcher would otherwise overlook. Seeking collaborative insights may also produce gentle reminders from critical friends that a researcher's analytical choices are arbitrary, ill-fitting, culturally inappropriate, or just plain bizarre.

Perform Multimodal Analysis with Text Creators Themselves

The dominant tendency of many research traditions is to treat participants "as informants, data sources, or deliverable constituencies who provide details to be interpreted by others" (Campano, Ghiso, & Welch, 2015, p. 40). The result is that participants are often framed "as the raw material for theorizing rather than as epistemic agents and partners in research" (p. 40). While imbalances between the researcher and the researched are manifested across all types of social science research, and thus potentially implicate all forms of data analysis, we find this mentality especially prevalent in scholarship examining multimodal artifacts, including our own.

To avoid romanticizing multimodal composers, analysis should be designed as co-constructed.

Rather than using member checking to seek validation for interpretations already reached, researchers can co-construct multimodal data with an artifact's producer to arrive at shared meanings. This is not to say multimodal composers possess perfect meta-knowledge of their compositions; a creator's intentions are not necessarily any more transparent to them than a researcher's are. There may also be times when a creator does not want to discuss their composition or simply has nothing to say. However, it is likely a text creator will bring their own insights to a discussion, as Alexi's explanation of his map indicates.

Erickson (2004) informs our concept of negotiated co-construction, arguing "whatever the means of making analytic decisions…the ultimate validity test is whether the categories and frameworks constructed by the analyst can be shown to have some relation to the meaning perspectives of those whose actions are being analyzed" (p. 492). Would Noemi have chosen to isolate the still images, spoken words, and written text of her video, so they could be organized into a multimodal transcript? It is doubtful. Would Alexi have used picturebook analysis to explain the width of the lines in his map? Certainly not. Does this mean researchers should reject all frameworks our participants would not themselves use to explain their multimodal products and processes? Not necessarily. Literacy researchers have undergone specialized training our participants have not, and we must maintain the flexibility to employ different interpretive frames (although it is worth adding that literacy researchers have not necessarily been trained to question our own ideological leanings). If anything, the terrain of multimodal data analysis, as with all forms of analysis, is complicated and full of hazards. Co-constructing meaning with participants forces us to be more aware of the paths we take and dissuades us from assuming we have discovered *the* path to meaning.

Engage in New Ways of Looking

We recommend developing an analytic toolkit that includes creative forms of analysis and representation and taps into unexpected ways of interpreting data. Such approaches to analysis use crystallization as a metaphorical alternative to triangulation. Richardson (1994) writes that crystallization "combines symmetry and substance with an infinite variety of shapes, substances, transmutations, multidimensionalities, and angles of approach," providing researchers with a "deepened, complex, thoroughly partial understanding of the topic. Paradoxically, we know more and doubt what we know" (p. 522). Such thinking, we argue, should be applied *especially* to the interpretation of multimodal data. Hull and Nelson (2005) have already argued the whole of a multimodal text is greater than the sum of its parts, but crystallization goes a step further. We *never* get a whole, but instead a series of fragments that requires adopting a reflexive stance to achieve at least partial sense-making.

Our recommendation is for literacy researchers to draw upon "new" analytic methods that compel them to interpret multimodal artifacts differently than they would otherwise. Jacobs (2013) argues that adopting creative approaches enables researchers to produce both "intended and serendipitous" insights (p. 272). We would like to see this mentality applied to multimodal analysis. One potential "new" method among many is visualization as inquiry (Smith, Hall, & Sousanis, 2015). It asks researchers to conceive of "multimodality in inquiry as introducing an additional eye or ear—another vantage point to engage our subject" (p. 3). Smith et al. recommend that researchers themselves engage in multimodal production as a form of analysis to "expand our sight" and become "aware of the numerous ways our sight is limited" (p. 10). As in the story of The Blind Men and the Elephant, literacy researchers might

consider how our methods of looking determine what we see, and attempt to see differently. Engaging in new ways of looking is greatly facilitated by turning to crystallization as a metaphor for multimethod analyses of multimodal data.

Foreground Researcher Positionality in Multimodal Analysis

Analyzing multimodal artifacts requires examining the contexts of a text's creation as well as the formation of new contexts created by the researcher in imparting value through their own interactions with the text (Jones, 2017). We advise literacy researchers to reflect throughout the research process on how our interpretive lenses, values, and identities are interwoven as we examine multimodal artifacts. As Berger (1972) argues,

> The way we see things is affected by what we know or what we believe ... To look is an act of choice [and] we never look at just one thing; we are always looking at the relation between things and ourselves. Our vision is continually active, continually moving, continually holding things in a circle around itself, constituting what is present to us as we are. (p. 1)

Researchers must think about how we make meaning from and of multimodal texts, how we choose what to look at, and how our ideological underpinnings move us toward our interpretations. This reflection requires continually cultivating meta-awareness of our "epistemological grounding" as researchers (Lather, 1992, p. 92). We reject the notion that layering or blending analytics provides credibility by somehow corralling our subjectivities. Instead, as researchers of multimodality, we have

aimed to recognize how our beliefs influence us, as we do in other aspects of our research, and we will also now ask: What makes our reactions to this multimodal artifact visceral (or not)? And: What political and ideological commitments do we have that make us want to tell this narrative about the multimodal composer and not that narrative? To generate and respond to such questions, it is necessary to engage in rigorous, continual reflection and work to disrupt our own sense of expertise. As researchers of multimodal literacies, we must do better to acknowledge how we frame the people and artifacts we study. Whether employing methods new or old, we bring as much to our analysis of multimodal artifacts as the artifacts and composers themselves.

Conclusion: A Challenge and a Conundrum

We encourage researchers to augment hybrid approaches to multimodal analysis, and we believe our suggestions—described as four separate ideas above, but easily reconfigurable—can help move beyond the implied validity of triangulation and toward the concept of crystallization. Analysis should not be about making decrees from a neutral position, but sharing co-constructed interpretations from a self-reflexive position. We take heart in Richardson's assurance that "there is no such thing as 'getting it right'; only 'getting it' differently contoured and nuanced" (1997, p. 91). Researchers of multimodality might embrace the partial in partiality. Indeed, we see our colleagues in literacy research working to move beyond blended analysis in a variety of ways (e.g., de Roock, Bhatt, & Adams, 2016; Harste, 2014; Jacobs, 2013; Smith, Hall, & Sousanis, 2015), and want to recognize that all of us are in this analytic effort together.

"Analysis should not be about making decrees from a neutral position, but sharing co-constructed interpretations from a self-reflexive position."

We must also remind readers of the conundrum literacy researchers face between rigor and uncertainty. In today's educational environment, hard data are used to justify decisions of policy and practice. Literacy researchers are called on to provide rigorous analyses of data, which increasingly include student-made multimodal compositions. It would seem that in an era of evidence-based instruction and measures of effective teaching, researchers ought to move beyond our intuitions and visceral reactions to effectively argue why students' multimodal composing is important. And, while the methods we describe are aimed at going beyond intuition alone, it is equally important not to elevate rigor at the expense of uncertainty. On the contrary, we need not bow to formalist logics in an effort to defend the validity of our studies. If we want our multimodal analyses to matter—to students, teachers, and policymakers—we must be more intentional and transparent about how we bring together hybrid assortments of analytics.

Doing so may provide a means of generating a sort of "catalytic validity" (Lather, 1986) that recasts students like Noemi and Alexi not in deficit terms, but as students of promise on the basis of their acuity as multimodal composers.[3]

"In the story of the blind men and the elephant, what's usually ignored is the fact that each man's description was correct. What [we] won't understand and may never understand is that there is not one true [account] hidden by many false ones. Rather, there is one true [account] hidden by many other true ones ... [Our] belief that only one of these is true obscures the larger truth, which was ultimately the problem with the blind men and the elephant. It wasn't that they were blind—it's that they stopped too quickly, and so never knew there was a larger truth to grasp."

-Nathan Hill, 2016, p. 667

References

Anderson, C. (1995). The role of picturebook illustration in visual literacy. *The New Advocate, 8*, 305-312.

Anderson, K. T., Stewart, O. G., & Kachorsky, D. (2017). Seeing academically marginalized students' multimodal designs from a position of strength. *Written Communication, 34,* 104-134.

Baca, D. (2008). *Mestiz@ scripts: Digital migrations, and the territories of writing.* New York, NY: Palgrave Macmillan.

Baldry, A., & Thibault, P. J. (2006). *Multimodal transcription and text analysis: A multimedia toolkit and coursebook.* London, UK: Equinox Publishing.

Bang, M. (2000). *Picture this: Perception and composition.* Boston, MA: Bullfinch Press.

Bateman, J. A., & Schmidt, K-H. (2012). *Multimodal film analysis: How films mean.* New York, NY: Routledge.

Berger, J. (1972). *Ways of seeing.* London, UK: Penguin Books.

Berry, P. W., & Cavallero, A. J., with Vásquez, E., DeJesús, C. R., & García, N. (2014). Sustaining narratives of hope: Literacy, multimodality, and the Dr. Pedro Albizu Campos High School. *English Education, 46,* 279-299.

Bezemer, J., & Kress, G. (2008). Writing in multimodal texts: A social semiotic account of designs for learning. *Written Communication,* 25, 166-195.

Brown, D. (2003). *The Da Vinci code.* New York, NY: Random House.

Burns, L. (2015, December 2). *Vital issues*. Talk presented at the annual meeting of the Literacy Research Association, Carlsbad, CA.

Campano, G. (2007). Honoring student stories. *Educational Leadership*, 65, 48-54.

Campano, G., Ghiso, M. P., & Welch, B. (2015). Ethical and professional norms in community-based research. *Harvard Educational Review, 85*, 29-49.

Campano, G., & Low, D. (2011). Multimodality and immigrant children: A response to Marni Binder. *Contemporary Issues in Early Childhood, 12,* 381-384.

Collini, S. (2012). *What are universities for?* London, UK: Penguin Books.

Connors, S. P. (2012). Toward a shared vocabulary for visual analysis: An analytic toolkit for deconstructing the visual design of graphic novels. *Journal of Visual Literacy*, 31, 71-92.

DeCuir, J. T., & Dixson, A. D. (2004). So when it comes out, they aren't that surprised that it is there: Using critical race theory as a tool of analysis of race and racism in education. *Educational Researcher, 33*(5), 26-31.

de los Ríos, C. (2017). Toward a corridista consciousness: Learning from one transnational youth's critical reading, writing, and performance of Mexican corridos. *Reading Research Quarterly, 53*(4), 455-471.

de Roock, R., Bhatt, I., & Adams, J. (2016). Video analysis in digital literacy studies: Exploring innovative methods. In C. Hine, Y. Morey, S. Roberts, H. Snee, & H. Watson (Eds.), *Digital methods for social sciences: An interdisciplinary guide to research innovation* (pp. 105-121). London, UK: Palgrave Macmillan UK.

Dressman, M. (2016). Reading as the interpretation of signs. *Reading Research Quarterly, 51,* 111-136.

Dunn, A. H., Neville, M. L., & Vellanki, V. (2018). #Urbanandmakingit: Urban youth's visual counternarratives of being #morethanastereotype. *Urban Education.* doi: 10.1177/0042085918798065

Edelsky, C. (2006). *With literacy and justice for all: Rethinking the social in language and education* (3rd ed.). New York, NY: Erlbaum.

Erickson, F. (2004). Demystifying data construction and analysis. *Anthropology in Education Quarterly, 35,* 486-493.

Fairbanks, C., & Price-Dennis, D. (2011). Studies on popular culture and forms of multimodality. In V. Kinloch (Ed.), *Urban literacies: Critical perspectives on language, learning, and community* (pp. 143-144). New York, NY: Teachers College Press.

Falchi, L., Axelrod, Y., & Genishi, C. (2014). "Miguel es un artista"—and Luisa is an excellent student: Seeking time and space for children's multimodal practices. *Journal of Early Childhood Literacy, 14,* 345-366.

Flewitt, R., Hampel, R., Hauck, M., & Lancaster, L. (2009). What are multimodal data and transcription? In C. Jewitt, (Ed.), *The Routledge handbook of multimodal analysis* (pp. 40-53). London, UK: Routledge.

Freedman, J. (2005). Transgressions of a model minority. *Shofar: Race and Jews in America, 23*(4), 69-97.

Ghiso, M. P., & Low, D. E. (2013). Students using multimodal literacies to surface micronarratives of United States immigration. *Literacy, 47,* 26-34.

Halverson, E. R. (2010). Film as identity exploration: A multimodal analysis of youth-produced films. *Teachers College Record, 112,* 2352-2378.

Hammersley, M., & Atkinson, P. (2007). *Ethnography: Principles in practice* (3rd ed.). London, UK: Routledge.

Harste, J. (2014). Transmediation: What art affords our understanding of literacy. In P. J. Dunston, S. K. Fullerton, M. W. Cole, D. Herro, J. A. Malloy, P. M. Wilder, & K. N. Headley (Eds.), *63rd Yearbook of the Literacy Research Association* (pp. 88-102). Altamonte Springs, FL: Literacy Research Association.

Hartley, J., & Benington, J. (2000). Co-research: A new methodology for new times. *European Journal of Work and Organizational Psychology, 9,* 463-476. doi: 10.1080/13594320050203085

Hill, N. (2016). *The nix.* New York, NY: Alfred A. Knopf.

Himley, M., & Carini, P. F. (Eds.). (2000). *From another angle: Children's strengths and school standards: The Prospect Center's descriptive review of the child.* New York, NY: Teachers College Press.

Hull, G., & Nelson, M. (2005). Locating the semiotic power of multimodality. *Written Communication, 22,* 224-261.

Jacobs, G. E. (2013). Reimagining multiliteracies: A response to Leander and Boldt. *Journal of Adolescent & Adult Literacy, 57,* 270–273.

Janks, H. (2000). Domination, access, diversity and design: A synthesis for critical literacy education. *Educational Review, 52,* 175-186.

Jones, R. A. (2017). Towards dialogic epistemology: The problem of the text. *Qualitative Researcher, 17,* 457-472.

Kirkland, D. E., & Jackson, A. (2009). "We real cool": Toward a theory of Black masculine literacies. *Reading Research Quarterly, 44,* 278-297.

Kirsch, G. E. (1999). *Ethical dilemmas in feminist research: The politics of location, interpretation, and publication.* Albany, NY: State University of New York Press.

Kress, G., & van Leeuwen, T. (2006). *Reading images: The grammar of visual design* (2nd ed.). London, UK: Routledge.

Lather, P. (1986). Issues of validity in openly ideological research: Between a rock and a soft space. *Interchange, 17*(4), 63-84.

Lather, P. (1992). Critical frames in education research: Feminist and post-structural perspectives. *Theory Into Practice, 31,* 87-99.

Lather, P. (1993). Fertile obsession: Validity after poststructuralism. *The Sociological Quarterly, 34,* 673-693.

Lewis Ellison, T. (2017). Digital participation, agency, and choice: An African American youth's digital storytelling about Minecraft. *Journal of Adolescent & Adult Literacy, 61,* 25-35.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage.

Low, D. E. (2012). "Spaces invested with content": Crossing the 'gaps' in comics with readers in schools. *Children's Literature in Education, 43,* 368-385.

Low, D. E. (2017). Students contesting "colormuteness" through critical inquiries into comics. *English Journal, 106*(4), 19-28.

Low, D. E., & Campano, G. (2013). The image becomes the weapon: New literacies and canonical legacies. *Voices from the Middle, 21*(1), 26-31.

Magritte, R. (1928-29). *The treachery of im*ages [Oil on canvas]. Los Angeles County Museum of Art, Los Angeles, CA.

Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.

Mein, E. (2011). Multimodal literacies, pedagogy, and the construction of identity-based social movements: The case of *espina y jugo* in Mexico. *Equity and Excellence in Education, 44,* 296-310.

Mills, K. A. (2010). A review of the "digital turn" in the New Literacy Studies. *Review of Educational Research, 80,* 246-271.

O'Halloran, K. L. (Ed.). (2004). *Multimodal discourse analysis: Systemic functional perspectives.* London, UK: Continuum.

Pandya, J. Z. (2011). *Overtested: How high-stakes accountability fails English language learners.* New York, NY: Teachers College Press.

Pandya, J. Z. (2018). *Exploring critical digital literacy practices: Everyday video in a dual language context.* New York, NY: Routledge.

Pandya, J. Z., Pagdilao, K. C., Kim, A. E., & Marquez, E. (2015). Transnational children orchestrating competing voices in multimodal, digital autobiographies. *Teachers College Record, 117*(7). Retrieved March 29, 2019 from https://www.learntechlib.org/p/161201/.

Petrone, R., & Lewis, M. A. (2012). Deficits, therapists, and a desire to distance: Secondary English preservice teachers' reasoning about their future students. *English Education, 44,* 254–287.

Popple, A. (2010). Individual differences in perception. In E. B. Goldstein (Ed.), *Encyclopedia of perception* (vol. 1, pp. 492-495). Thousand Oaks, CA: Sage.

Richardson, L. (1994). Writing: A method of inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 516–529). Thousand Oaks, CA: Sage.

Richardson, L. (1997). *Fields of play: Constructing an academic life.* New Brunswick, NJ: Rutgers University Press.

Rogers, R. (Ed.). (2011). *An introduction to critical discourse analysis in education* (2nd ed.). New York, NY: Routledge.

Rogers, T., Winters, K-L., LaMonde, A-M., & Perry, M. (2010). From image to ideology: Analysing shifting identity positions of marginalized youth across the cultural sites of video production. *Pedagogies: An International Journal, 5,* 298-312.

Rowsell, J., & Pahl, K. (2007). Sedimented identities in texts: Instances of practice. *Reading Research Quarterly, 42,* 388-404.

Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage.

Savin, A. (1995). A bridge over the Americas: Mexican American literature. *Bilingual Review/La Revista Bilingüe, 20,* 122-127.

Serafini, F. (2015). Multimodal literacy: From theories to practices. *Language Arts, 92,* 412-423.

Siegel, M. (2012). New times for multimodality?: Confronting the accountability culture. *Journal of Adolescent & Adult Literacy, 55*, 671-681.

Siegel, M., & Panofsky, C. P. (2009). Designs for multimodality in literacy studies: Explorations in analysis. *Yearbook of the National Reading Conference, 58*, 99-111.

Smedley, A. (2007). *Race in North America: Origin and evolution of a worldview*. Boulder, CO: Westview Press.

Smith, A., Hall, M., & Sousanis, N. (2015). Envisioning possibilities: Visualising as enquiry in literacy studies. *Literacy, 49*, 3-11.

Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-story telling as an analytical framework for education. *Critical Inquiry, 8,* 23-44.

Sonesson, G. (2016). The phenomenological semiotics of iconicity and pictoriality—including some replies to my critics. *Language and Semiotic Studies, 2,* 1-73.

Sousanis, N. (2015). *Unflattening.* Cambridge, MA: Harvard University Press.

Towndrow, P., Nelson, M. E., & Yusuf, W. F. B. M. (2013). Squaring literacy assessment with multimodal design: An analytic case for semiotic awareness. *Journal of Literacy Research, 45*, 327-355.

Vasudevan, L. (2006). Looking for angels: Knowing adolescents by engaging with their multimodal literacy practices. *Journal of Adolescent & Adult Literacy, 50*, 252-256.