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"That Sounds So Cooool": Entanglements of Children, Digital Tools, and Literacy Practices

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Many observers have argued that minority language speakers often have difficulty with school-based literacy and that the poorer school achievement of such learners occurs at least partly as a result of these difficulties. At the same time, many have argued for a recognition of the multiple literacies required for citizens in a 21st century world. In this study the researchers examined a specific case in which English language learners (ELLs) made short videos about sustainability and social justice, to determine the diverse literacy practices such activities entailed. The researchers found that children produced storyboards and scripts, and videos with titles, and engaged in several other literacy activities, discussing what "made sense" in sequencing in a documentary story, what sustainability and social justice meant, how to report on information they had gathered, and so on. They also examined how new materiality theories might assist us in analyzing how ELLs engage in digital literacy activities. These theories encourage us to think about how human beings interact with other kinds of materials to accomplish perhaps novel tasks. With respect to language learning, such a view might challenge our conceptions of language and literacy learning. For new materiality theorists, language and literacy cannot be an "out-there" kind of "thing" that learners put "inside" themselves. Rather, languages and literacies and people and their activities and other materials accompany one another, and are entangled in sociomaterial assemblages that rub up against one another in complex and as yet unpredictable ways.
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Minority-language-speaking children who are schooled in majority languages generally do not achieve as well in school as their majority-language-speaking peers. In Canada, the United States, Britain, Australia, and New Zealand, observers have noted this gap in achievement (Benzie, 2010; Bourne, 2007; Gunderson, 2007; Gutiérrez, Zepeda, & Castro, 2010; Toohey & Derwing, 2008). Such is also the case in countries in Latin America and Asia (López-Gopar, 2009; Wintachai, 2013). Another gap often noted is that between the majority-language oral interactional skills that minority-language-speaking children seem to acquire quickly and well, and their documented difficulties with school print literacies in the majority language (Cummins, 2009). Many observers have argued that both receptive and productive difficulties with printed language continue to handicap minority-language speakers throughout their school careers, and that the poorer school achievement of such learners is at least partly a result of these difficulties (August & Shanahan, 2006).

At the same time that difficulties in print literacy practices for majority language learners have been noted, many have argued for a recognition of the multiple literacies required for citizens in a 21st century world. Learners of today are surrounded by media that provide meanings through the use of language, but also through a variety of modes: visual, aural, gestural, musical, and so on. Many have argued that educational institutions need to focus on these multiple modes to prepare learners for a world in which messages are increasingly available through multimodal means (Carrington & Robinson, 2009, Gee, 2013; Kress, 2003; Lankshear & Knobel, 2011; Lotherington & Jenson, 2011; Rogers, Winters, LaMonde, & Perry, 2010; Sheridan & Rowsell, 2010).

Bringing together interests in language learning and in multimodal multiliteracies, we have over the past few years observed English language learners (ELLs) in a variety of settings making videos, and have been intrigued by how the activity not only engages learners in a great deal of oral production, but also entails many literate practices. There is a small literature on videomaking with language learners (Li, Gromik, & Edwards, 2012; Lotherington, 2011), which often concentrates on the products of students' activities, their digital creations. We have also written about the products learners complete (Dagenais, Fodor, Schulze, & Toohey, 2013; Toohey, Dagenais, & Schulze, 2012), but we have become increasingly interested in the processes by which learners come to create videos. We have also become interested in how what is often called *new materialities* theory, in concert with theory about multimodality, might provide amplified ways to understand the videomaking processes we have observed. In this article we propose, through examination of a specific case, to address the following questions:

1. What literacy practices do ELLs and their peers employ in the creation of digital video texts?
2. How might theories of the material assist us in analyzing how ELLs engage in digital literacy activities?

Before presenting our data and discussion, we review those aspects of multimodality theory and theories of the material that we see as relevant in answering our research questions.

MULTIMODALITY

Carey Jewitt (2011) opened a handbook on multimodal analysis by defining *multimodality* as follows:

> Multimodality describes approaches that understand communication and representation to be more than about language, and which attend to the full range of communicational forms people use—image, gesture, gaze, posture, and so on—and the relationships between them. (p. 14)

While not denying the importance of spoken and written language, multimodal theorists understand language as one among many communicative modes, and further understand that communicative modes offer particular resources for semiotics, or meaning making. Gunther Kress (2011, p. 54) offered the following as example of modes: "image, writing, layout, music, gesture, speech, moving image, soundtrack." Kress recognized that modes are culturally differentiated; like languages, over periods of time, people's uses of communicative modes become conventionalized, and those conventions may differ from community to community. He also deemed it important to recognize the materiality of modes; the image is different materially from written text, for example, and social actors work with a mode's materiality and its cultural conventions to shape particular potentials for meaning. Examining the practices of professionals in fields like architecture, ballet, and fashion who work in production, design, and multimodality, Jennifer Rowsell (2013) proposed a detailed explanation of the communicative function of modes and their relationship to materials:

> To be a mode that expresses, that represents, that signals a person or a context, it needs to have three functions: interpersonal functions that speak to audience; more immaterial qualities that express ideas, values, beliefs, emotions, senses as ideational functions; and, physical features that materialize these more ephemeral qualities of texts as textual functions . . . . Because there are so many possibilities and combinations of modes, certain materials afford more meaning potential in certain instances than in others. (p. 3)

Multimodal researchers have pointed out that access to combinations of modes for meaning making have shifted with the availability of digital tools like the Internet and personal computing, so that, for example, even children can produce multimodal text that integrates images, hyperlinks, video, audio, and so on. Jewitt (2009, p. 41) examined how the semiotic resources of individual computer applications "present 'the world'"—what is included and excluded and how the resources make available certain semiotic resources (and not others) through their architecture and the internal logic by which they operate.

Recognizing that the accessibility and expansion of semiotic means with digital and Internet technologies change the landscape for teaching and learning, and for literacy education in particular, a number of researchers and practitioners are investigating how to move schools beyond print-based practices. As Rowsell (2013, p. 1) observed, whereas "there is a discrepancy between the conventions we teach students when they produce texts in schools" and those used by producers who work with multimodal forms of expression on a daily basis, the practices of producers might be informative to educators wishing to engage students in multimodal literacies. We have elsewhere (Smythe, Toohey, & Dagenais, 2014) discussed some of the barriers to broadening the focus of literacy instruction and using digital tools in schools fully, but here will describe and analyze multimodal interactions in videomaking that illustrate the diversity of modes child producers mobilized as they created videos. Along with the authors of the other articles in this issue, we suggest that careful attention to what learners do as they adopt multimodal forms of expression might help teachers identify strategies that support students in expanding their communicative repertoires and engaging with the world in more powerful ways.

While multimodality literature always notes the material nature of modes, there is more of an emphasis in such literature on human meaning making than on how materials, in effect, *create* meanings. We have searched for an approach to be added to our understanding of multimodality that would allow us to focus on the material aspects of communication, while at the same time considering what it is humans do or mean with the physical objects they interact with in their particular environments. We have come to see theories of the material as useful in that regard and discuss them briefly below.

THEORIES OF THE MATERIAL

Our attraction to theories of the material came as a result of our (and many others') observations in classrooms over the past few years in which it appeared that the digital tools for and activities involved in

videomaking did not sit easily in the school classrooms we knew (Smythe et al., 2014). French sociologist Bruno Latour (2005), often recognized as an initiator of actor-network theory (ANT), one of several approaches to the study of materiality, observed that the introduction of a novel tool in a familiar situation calls for ecological analyses, analyses that go beyond looking at human action exclusively, to incorporate nonhuman elements in description of events. In the case of child videomaking, we were observing novel tools, novel activities, and novel reactions in classrooms, and we needed to find ways to think about that.

John Law (2007) described ANT as a "disparate family of material-semiotic tools, sensibilities and methods of analysis" (p. 1), which he claimed was, despite its name, not a theory (a strong account of why something happened) but a "toolkit for telling interesting stories about, and intervening in" the world (p. 1). Researchers utilizing ANT have asked how systems (the usual metaphor is network) composed of people and objects become organized and hold together and how they endure or do not endure. Drawing on several case studies of the production of scientific knowledge, Law showed how such accounts usually erased from view (or *blackboxed*) the many negotiations among things, people, settings, measuring devices, mathematical constructs, and so on in the production of accounts of reality.

The metaphor of network seemed useful to us in conceptualizing what we called *school-as-usual*, with desks, children's bodies, teachers' bodies, distinct subjects, defined times, curriculum documents, and so on joined in a very durable network (Smythe et al., 2014). ANT helped us understand why videomaking networks in school were often quite fragile: videomaking "things," discourses, and activities had fewer and less dense connections with other aspects of school, and the networks that videomaking established were easily overpowered by the very strong networks of school-as-usual.

More recently, we have become interested in a related body of theory, often termed the *new materialities*, which also discusses the importance of the nonhuman in human action and sees both the human and the nonhuman as coparticipants in shifting flows of activity. Interest in materiality is seen in anthropology, sociology, geography, and educational research. Metaphorically, these scholars see human beings as part of meshworks of materials (and not isolated nodes in a network as they might be with ANT); neither isolated from nonhuman things, nor "above" such things. As anthropologist Tim Ingold (2013, p. 31) put it, we "return persons to where they belong, with the continuum of organic life, and ... recogniz[e] that this life undergoes continual regeneration." From this perspective, fixed essential attributes cannot be attributed either to the human or to the nonhuman; rather they proceed together in specific kinds of relationships in which change and reciprocal effects are inevitable. Ingold's rejection of essentialism and fixity is like that of

many contemporary identity theorists, as he argued "what we are, or what we can be, does not come ready-made. We have, perpetually and never-endingly, to be making ourselves" (p. 7). However, he suggested that such evanescence happens as humans and nonhuman materials *together* make reality. As Elizabeth de Freitas and Nathalie Sinclair (2014) put it: "new materialisms break with binaries that set organic against inorganic—and animate against inanimate—so that matter might be reanimated more generally and seen in terms of potentiality and emergent generative power" (p. 39). For those interested in the new materialities, human bodies, discourses, environments, technologies, and so on are continuously changing, learning and adapting in intra-action (Barad, 2011) with one another. Ibrar Bhatt and Roberto de Roock (2013) used the term *sociomaterial assemblage* to describe these interactions and to describe a method that is able, as they put it, "to attend to the ecology of practices (and their contestations, impasses, breakthroughs, etc.) in a digital literacy event to see how sociomaterial relations are assembled and their realities (such as class work, assignments) are done" (p. 6). We have discussed sociomaterial assemblages in relation to describing literacy events previously in Toohey and Dagenais (2015).

Ingold's (1999) discussion of learning as the result not of "information transmission but of guided rediscovery" (n.p.) is consistent with his focus on ecological and material analyses of phenomena. For him, learning occurs as people develop their "own embodied skills of perception and action" (n.p.) as they make their way through their daily lives, developing skills in perceiving and attending to the sociomaterial relations of their surroundings, through observing and imitating the practices of others and improvising new solutions to new problems and ecologies. Ingold rejected any assumption that the expert is distinguished from the novice on the basis of mental representations; rather he saw the expert as having "greater sensitivity to cues in the environment and a greater capacity to respond to these cues with judgement and precision" (Ingold, 2011, pp. 161–162). This echoes sociocultural psychologist Barbara Rogoff's (2003) argument that "learning is a process of changing participation in community activities," and arises in practice (p. 284).

This scholarship encourages us to closely examine sociomaterial assemblages, and to query in schooling sites how human bodies, the physical setup of classrooms, classroom materials (furniture, books, paper, computers, and so on), discourses about teaching and learning, what is considered to be knowledge, school district policies, the curriculum, and so on are *entangled* with one another, and how they may be moving and changing together. As ethnographers of schooling, we gather photographs, field notes, artifacts, and videos to document classroom ecologies, but from an assemblage perspective, we must also consider how we as researchers are also "always and already entangled with the very

apparatuses (cameras, recordings, software, etc.) we use to record, or rather re-present, the phenomena in question" (Bhatt & de Roock, 2013, para. 27). Taking into account the multimodality and materiality of our recording devices, as well as the materiality of our bodies and our voices and choices about what to attend to as we observed, further complicates how we come to represent that which we observe. Feminist philosopher and physicist Karen Barad (2003) argued that "apparatuses are not mere static arrangements in the world, but rather ... are dynamic '(re)configurings of the world' and therefore 'are themselves phenomena'" (p. 816).

With repeated reviewings of our process videos portraying children working with iPads (and other materials) as they produced *their* videos, we have come to understand some of the limits of what our data can tell us, but we also see possibilities for representations to provide "space for generous, open-ended, comparative yet critical inquiry into the conditions and potential of human life" (Ingold, 2013, p. 4). Ingold urged would-be teachers to tell stories, stories about what could and might be, stories that offer guidance without explicit direction. For Ingold (2013), the "telling of stories is an education of attention. Through [stories], things are pointed out to novices, so that they can discover for themselves what meanings their stories might hold in the situations of their current practice" (Kindle version, n.p.). We are educators who work (or will work) closely with preservice and in-service teachers, and we are conscious of the ways our research must offer guidance to novices. We hope to alert our students to stories of practice, stories that may help them to reconfigure or reconsider their own practice. And, by moving away from an androcentric perspective on child video production, we hope to show that interactions among people are only part of the interactions evident in literacy events.

METHODOLOGY

The video project to be described here was conducted with a class of 26 nine- and ten-year-old children in Grade 4 in a Canadian school, who were asked to make videos on iPads about sustainability and social justice with respect to the large urban park they lived near. The topics of sustainability and social justice chosen by the children's classroom teacher and the technology-support teacher who worked with her occasionally, as well as the researchers, were linked to the social studies and science provincial curriculum for Grade 4. Most, but not all, of the students in this school came from homes where English is not spoken, and were designated as ELLs at some point in their schooling. On provincial tests of reading, writing, and mathematics, the children at this school regularly scored "below expectations." Although evidence of the children's ELLness was not particularly evident in their oral production, many

certainly did have difficulties with reading comprehension, and their teacher reported that the writing of several students was "not up to grade level." It was interesting to us that the teacher referred to some of her students as being ELL in the past, but did not characterize anyone in her class as being ELL presently. This is typical of teachers in our acquaintance, for whom ELLness seems to cease to be a relevant category after children have attained oral fluency in English.

Our project was an ethnographic study designed to look at what happened when these children from diverse minority-language backgrounds interacted with digital tools for videomaking: iPads, camera and video editing applications, web sites, in addition to other more traditional classroom objects like paper and pencils. Our data collection involved shooting what we called *process video* (video taken by the researchers of the children as they made their videos), as well as taking field notes of observations, photographing, and collecting artifacts (scripts, storyboards, rough notes, and so on), and interviewing students and teachers formally and informally. Collecting data were two university professors, three doctoral research assistants, a videomaker who leads the education arm of a local nonprofit film society, and a videographer from our university who has a great deal of experience videotaping in classrooms. The research assistants, the videographer, and/or the videomaker shot video on every occasion we met with the children (18 times, sometimes for full days, others for half days over 3 months). As the teachers were not experienced in videomaking with children, members of the research team, in addition to collecting data, instructed the children at times in various aspects of their tasks. The researchers interacted often with the children who frequently needed help navigating the software used to make videos, needed adults to accompany them out of their noisy classroom to other quieter spots to record narration, and so on. With research grant support, we were able to bring six iPads, small microphones, and tripods to the classroom and leave them in the class at the end of the project. Children worked in groups of four or five to make their videos, with each group having use of an iPad for the duration of the project.

We organized our video data with the help of the video analysis software Studiocode (http://www.studiocodegroup.com). Because we accumulated approximately 60 hours of process videotape, software was needed to organize the data, and we devised several different functional coding themes to categorize interactions of various sorts (e.g., disputes among children, use of first language, writing on paper, reading from the Internet). We also assembled all the video recordings of each group of children, and then assembled all the video in which the children we determined to be focal were present. We identified segments of the classroom interaction that for one reason or another we found interesting, and then transcribed, viewed, and reviewed those segments.

These data are very rich and we have other stories (besides this one) to tell.

According to Barad (2007), "knowing does not come from standing at a distance and representing but rather from a direct material engagement with the world" (p. 49). As researchers who often use ethnographic methods, we have had the experience of being more or less engaged with the worlds of our investigations. In this project in particular, as we have already mentioned, we found it impossible to "stand at a distance," and perhaps more than usually our presence in the classroom (and there were sometimes seven adults present in addition to the teachers and children) was apparent. With our tools, interests, and interventions, we documented classroom events while children were making their videos, but we were also participants in shaping what happened there, entangled as we were in the videomaking assemblages and sociomaterial events occurring. We were heavily invested in the children's success in making the videos, for example, and our interventions in their activities were substantial and directed toward our goals. A longer discussion of how sociomaterial reflexivity in research like this might be achieved is beyond the scope of this article, but it is an important topic for researchers to consider.

PROCESS VIDEO EXCERPTS

We present still screen captures and transcriptions of excerpts from the video footage we shot of interactions among one of the videomaking groups on the last day of the project as children were completing their 2–3-min videos; in this group of four children, two were native speakers of English (Ashley and Hamilton), one bilingual in English and Spanish (Ferdinand), and one bilingual in English and Japanese (Kiki). This group had had apparent difficulties throughout the project, and were frequently reminded by the adults (teachers and the research team) to "include everyone" in decision making about the video, to share the "driving" of the iPad, and to "get along." The inclusion directive was often made as adults perceived that Kiki was left out of decision making and activities. In some cases, we witnessed her exclusion, but we saw even more dramatic examples of it after reviewing our video footage. Kiki's group mates regularly disagreed with her suggestions, tried to silence her, and scolded her. Her reaction was often to withdraw physically, just a little, from the group interactions, enough so that adults at least noticed her peripheral involvement. She was silent, and over the course of the project she participated less and less.

At the beginning of these video excerpts, the children were engaged in recording choral speech on the iPad for the end of the group's video.

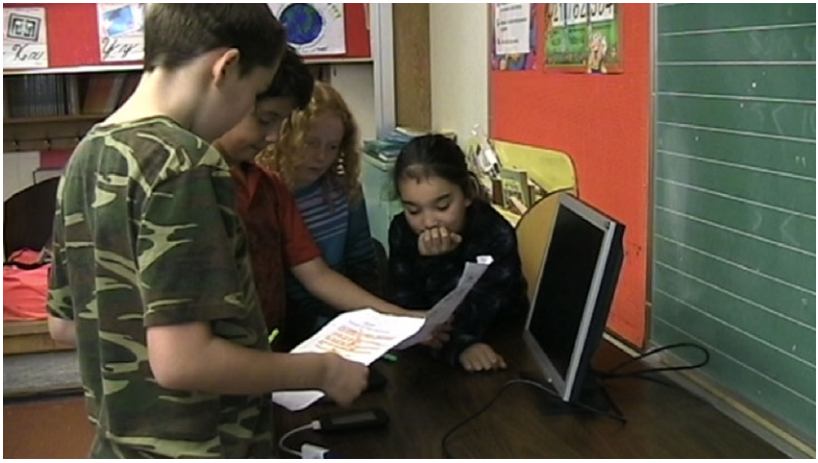

FIGURE 1. Recording the end of the video.

Screen Shot 1: Recording the End of the Video

Ferdinand and Ashley read from storyboard in Ferdinand's left hand (Figure 1). Hamilton reads from a copy of the script he holds. Kiki holds her hand over her mouth but is apparently following the reading from the storyboard. The iPad recording them is on the table in front of Hamilton.

Ferdinand, Ashley, and Hamilton: *So please respect [name of park] so all the plants and animals will stay for a long time.*

Ferdinand puts down the storyboard and the children all lean in to hear the recording of their choral speech.

Screen Shot 2: Listening to the iPad

iPad: *So please respect (name of park) so all the plants and animals will stay for a long time.*

Ferdinand lifts his head and looks around, smiling.

Ashley: *We should do it again, 'cause I think we . . .*

Ferdinand: *Okay, okay.*

Hamilton reaches over to touch the iPad Ferdinand is holding.

Hamilton: Before you do it, you should go over here.

Ferdinand brushes his hand away.

Ferdinand: Look, you got, I got, I made it up, okay?

The children engage in a quiet, unintelligible discussion. Kiki leans forward and touches something on the iPad that gets into "Themes" in the iMovie app.

Kiki: Over here is the style . . .

Hamilton: News.

iPad: Music (a "breaking news" theme)

They all listen to the five seconds of music. All the children laugh and smile. Hamilton turns around, grinning excitedly and looks into the camera. The other three children stare intently at the iPad, still in Ferdinand's hands, facing him. (See Figure 2.)

FIGURE 2. Listening to the iPad.

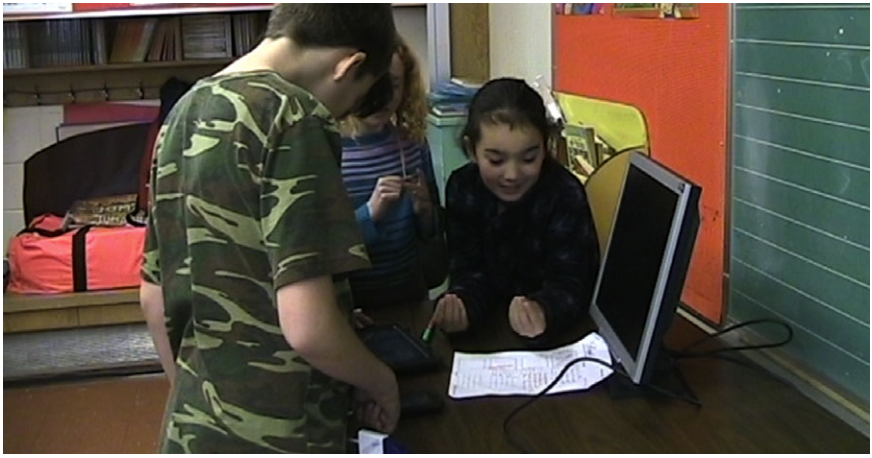

FIGURE 3. I want to add it!

Screen Shot 3: I Want to Add It!

Kiki snaps her fingers in imitation of rhythm of the music saying: *Yeah, I want to add it, I want to add it!*

Ashley: Di di da, di did da, da (imitating the sound of the music) Kiki joins in: Da did da, da.

As the girls sing together, the boys stare at the iPad, Ferdinand pressing buttons (Figure 3).

Hamilton: Okay, we're recording another instrument, right?

Kiki smiles, snaps her fingers and sings: *Tadada tadada tadada . . . bommmmm . . . that sounds so cooool!*

Ferdinand: I know, right? (not clear who he is addressing)

Screen Shot 4: Sounds Like This!

Ferdinand and Hamilton continue to look at the screen, not visibly attending to Ashley or Kiki (Figure 4).

Kiki: Yeah, I want to do that.

FIGURE 4. Sounds like this!

Ashley starts to point and press the iPad. Ferdinand moves her hands away.

Ferdinand: Wait, wait. No, you'll wreck it . . . (inaudible discouragement to Ashley)

Kiki looks at the boys, rotating her body so she is opposite Ferdinand, and opens her palms.

Kiki: So it goes like this . . .

Kiki and Ashley (together)*: Tadada tadada tadada.*

Ashley is playing with her hair and the two boys continue looking at the iPad, while Kiki picks up the storyboard.

Screen Shot 5: Kiki Lifts the Storyboard

Kiki reads from the text in an exaggerated low tone, mimicking a newscaster: *Today, invasive species are threatening plants and animals in* [name of park] (Figure 5). (The storyboard says, "Invasive species are threatening plants and animals in [name of park].")

She turns to Ashley, who is playing with her hair, and at the boys, who are looking at the iPad, Ferdinand holding it with two hands. She looks back and forth among the other students as she speaks:

FIGURE 5. Kiki lifts the storyboard.

Kiki: The Rabbits group in [name of school] will need some help in . . . (same low tone)

Kiki looks back to the storyboard.

Kiki: And they said (she switches to her normal voice): If they take over, the plants and animals will . . .

Screen Shot 6: We Can Do That!

Kiki looks up at the boys who are still gazing at the iPad. She smiles and seems very excited, while Ashley reaches towards her (Kiki's) hair (Figure 6).

Ashley: Can I do your hair?

Kiki: We can do that! So, it goes (she snaps her fingers to the beat), tadada tadada tadada . . .

Ashley starts stroking Kiki's hair, brushing it and arranging it. Ferdinand looks at Hamilton excitedly, clapping his hands and apparently not listening to Kiki.

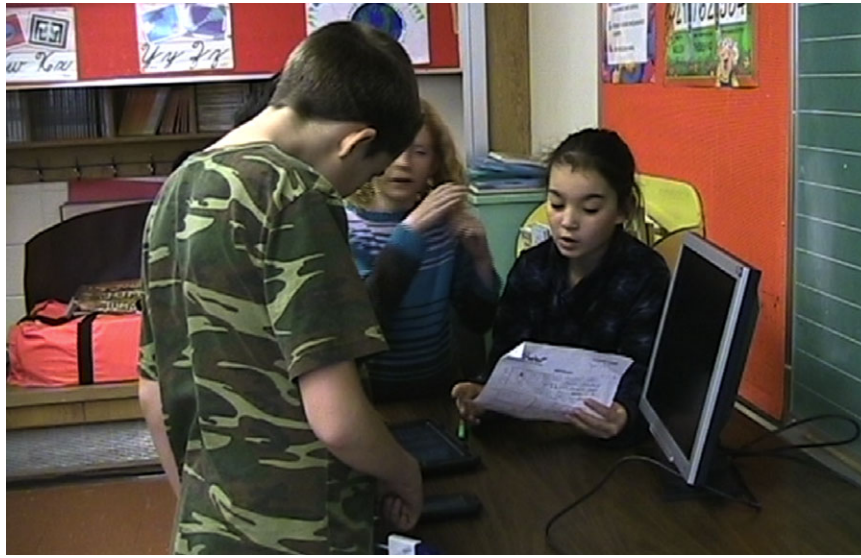

FIGURE 6. We can do that!

Ferdinand: We're done. We're done!

A student from another group in the room shouts "*Quiet on set!*" The hubbub in the classroom immediately stops. As the other group is doing the recording, Ferdinand and Hamilton dance, mouthing "*We're done!*" Kiki continues to look at the storyboard while Ashley plays with her hair. As soon as the other group finishes their recording, the off-screen student says "*Hey, it's okay now.*"

Ferdinand turns and looks at Author (behind him out of camera range) and says: *Um, we're done.*

Author: Well let's see.

Screen Shot 7: No, but We Could Do . . .

Kiki: (tapping Ferdinand on the arm) No, but we could do, we could do . . .

Author: (behind Ferdinand and not visible in the video) Have you got your credits and the titles?

Ferdinand: Oh yeah, no.

FIGURE 7. No, but we could do . . .

Author: Go for it.

Ferdinand and Hamilton hunch over the iPad, their bodies closing off iPad access (Figure 7). Kiki looks alternately at the storyboard and at the boys who are not looking at her.

Screen Shot 8: Or We Could Do . . .

Boys look at Kiki as she speaks and snaps her fingers (Figure 8).

Kiki: (in a news anchor voice, emphasizing words): But we could do, "tadada, tadada, tadada."

Hamilton leans over the iPad. As soon as he touches the screen, Ferdinand gently pushes his hand away.

Ferdinand: No, I'll do that.

Kiki: ***Today*** *(emphasis) . . .*

Ferdinand: I'll do that.

Kiki: A group called the Roberts. A group called Rabbits . . .

As she speaks, the boys have an inaudible discussion about the iPad, not visibly attending to Kiki, and working on the titles.

This interaction among the children, the iPad, and the storyboard (and the furniture, the other groups in the room, the ambient sound,

FIGURE 8. Or we could do . . .

the classroom, and so on) continues for 10 minutes more, during which time Ferdinand and Hamilton insist to Kiki that the video is "done," Ashley continues to play with Kiki's hair and makes several joking comments, and Kiki requests a pencil from Ferdinand (which he gives) and writes on the storyboard the sentence she thinks would frame the video as a newscast, and as she writes she speaks the words. The boys do not visibly attend to her, and move their bodies in such a way that she has no access to the iPad. She continues to bid for their attention and Ferdinand tells her, "That's too much to say" (meaning her opening will make the video too long), lifting the iPad near her to show her how close they are to their 3-min limit, whereupon she grabs the iPad and points to the screen and argues that there is enough space to record some more.

Screen Shot 9: Kiki Recording

Kiki recording: ***Today*** *(emphasis)* . . . *a group called The Rabbits in [name of school] said* . . .

Kiki overlays her recording with the newscast music. Ashley smiles and looks at Ferdinand who watches what Kiki is doing. Kiki smiles and looks at Hamilton (Figure 9).

Kiki's introduction is kept in the children's final video.

FIGURE 9. Kiki recording.

DISCUSSION

On one level, the video excerpts tell what some might call a redemptive educational story. This is a well-known trope in many schooling stories in which a child goes from some kind of negative state to a more positive state because of a teacher intervention, a particular learning resource, or some other thing or event. In this case, Kiki, an ELL, goes from being withdrawn and nonparticipatory to being agentive and effective. She exercises "human agency" to resist the boys' dismissing of her opinion, and ultimately triumphs in getting her idea into the group's final video. She recognizes a genre of the media, and works toward altering the group's video to reflect that genre. While such a story focusing on Kiki's struggle for agency may be plausible, we are not certain it adequately captures the processual quality of what occurred, nor does it examine how entities other than the children were involved in what happened. We are also aware that our view of Kiki as an ELL is not the view her teacher has of her, and thus the themes of our representation might not map onto her teacher's.

Nevertheless, it is abundantly clear that this is a multimodal interaction, with children making meaning through a complex meshwork of modes using different semiotic resources and materials: voiced language, gestures, movements, and repetitions, along with beats, musical themes, text, and visual representations (the iPad screen and their video). The children are increasing their knowledge of how to operate

an iPad, and have learned about many of its capabilities. They are creating a digital product and in so doing come to externalize their (perhaps) implicit knowledge of how a video message might be put together.

When the newscast music plays, the children laugh and smile. Kiki and Ashley continue smiling, taking turns imitating the beat and voicing the rhythm of the music. Kiki snaps her fingers and sings "*Tadada tadada tadada . . . bommmmm . . . that sounds so cooool!*" and the two girls join together to repeat "*tadada tadada tadada*." Kiki considers the theme music to be a captivating mode and uses a variety of resources to build an argument for including it in the video. She uses language to draw on her previous experience with newscasts as she verbally adds "*Today*" to the sentence "*Invasive species are threatening plants and animals in* [name of park]," the children's original sentence in their script. She also identifies who is speaking: "*The Rabbits group in* (name of school) *will need some help in . . . .*" She draws on different materials to construct her argument, including the pencil; the storyboard, which has been authoritative previously; and parts of her body such as her voice to sing and speak, fingers to snap, hands to point and touch the storyboard, gaze directed to the script and her male team members to draw them into the communicative realm (Jewitt, 2009).

However, the semiotic resources and materials that constitute the mode for her argument are not convincing enough for the others, apparently, until she grabs the iPad and enacts her idea to include the music, showing on the iPad screen that there is enough room for the music to overlap the recorded script, and then demonstrating how it is possible to provide a new introduction incorporating what she had written on the storyboard. Having the digital production tool in her hands, she builds a more powerful mode and wins the argument, establishing a place in the production team.

The materiality of this interaction is also quite evident. The children's bodies (their hands and fingers used not only to snap but also in relation to the iPad and the storyboard, and the way their bodies align or not to one another), the iPad, the iMovie for iPad application, the "themes" and specifically the sounds of the breaking news and its accompanying graphic template (which is not evident in the process video, but the children looking at the iPad saw it), ambient sounds in the room, and so on, are all involved. Our documentation apparatuses and procedures and inscriptions are also entangled with the literacy event we purport to represent. Because we have video footage of this event, we are able to see some of the children's facial expressions and gestures, and to provide verbal transcriptions that would be difficult to capture had we only field notes as evidence for our representation. However, the fixed camera gaze and the capabilities of the video camera and the microphone, as well as the ambient

noise in the rooms in which we videotaped, made it impossible in some cases to decipher what the children were saying and what they were doing and so our representation is thus limited. The "naturalistic" transcribing style we use to support the still photos makes it difficult to convey all that was happening, moment by moment, especially with respect to how much the children are moving around throughout the interaction. The "happy dance" Ferdinand and Hamilton do when they think they have finished their video, the increasing intensity with which Kiki snaps her fingers and moves in concert with Ashley, and many other moves are all material aspects of the interaction that articulate with one another.

Another contribution materiality theory might offer is to alert us to the shift that occurs in the trajectory of this group and the interactions among the children, the iPad, and the theme music when Kiki touches the screen and the music plays. She recruits the newscast theme, the iPad, the storyboard, and a pencil into her efforts to do something to the group's video. At the outset, Ferdinand has control of the iPad, but as the children lean in to listen to their choral reading, Kiki is close enough to the device to quickly touch a theme on the iMovie for iPad screen, which plays newscast music. This sound pleases all the children, and their faces all show at least momentary enthusiasm with something that Kiki has made available through her contact with the iPad screen. Kiki is very excited, and she and Ashley join together in responding to the rhythm of the music, which seems to increase the intensity of interactions and the urgency of Kiki's contributions to verbal exchanges. Repetition of the beat and the girls' proximity to one another (and later Ashley's rhythmic "grooming" of Kiki's hair), signal alignment and provide Kiki with momentum to get the boys to pay attention to her and her idea.

This analysis of interactions during the videomaking process reveals that as children engage in production they make choices about the semiotic resources and materials that can provide them with more powerful modes to express their intentions. What also becomes apparent is that it is not only their contact with other people, but also with things, both material and immaterial, that shape what happens. And what becomes salient for us as researchers, is not so much to name or classify all the things involved in the interactions, but to closely attend to movements and shifts in the learning environment. For it is along trajectories in the world of materials that knowledge is constructed as multiple elements interact simultaneously according to Ingold (2011), who suggests,

> [K]nowledge is perpetually "under construction" within the field of relations established through the immersion of the actor-perceiver in a certain environmental context. Knowledge, in this view, is not

transmitted as a complex structure but is the ever emergent product of a complex process. (p. 159)

Following Ingold (2011), we are less concerned with identifying fixed attributes of learners (ELL/non-ELL, successful/unsuccessful) and things in literacy environments (good/bad tools, programs, approaches) and are intent instead on telling a story of movement along a particular path in a particular setting through "an unfolding field of relations" (Ingold, 2011, p. 160) in which things connect, become bound up with each other, change, and have effects.

CONCLUSION

The questions that motivated this article were:

1. What multimodal literacy practices do ELLs and their peers employ in the creation of digital video texts?
2. How might theories of the material assist us in analyzing how ELLs engage in digital literacy activities?

Our first research question is partly answered by the data presented in this article, but we do not have room here to describe in any detail all the activities in the children's creation of their videos over the months of the project. However, briefly, the children together produced storyboards and scripts, and eventually videos with titles, and they more or less collaboratively engaged in several other literacy activities: discussing what "made sense" in sequencing in a documentary story, what sustainability and social justice meant, how to report on information they had gathered in field trips to the park, and so on. Many urban Canadian classrooms enroll both ELLs and English-speaking children, and wide ranges of familiarity with English and English literacy characterize many such sites. The group we described here contained two English speakers and two ELLs, and while their English print literacy experiences and practices varied, all contributed in different ways to the product. They rehearsed their speaking on tape, and were relentless in making sure that their recorded language was well enunciated and fluent. While Kiki did not participate in the choral reading at the beginning of the data excerpt presented here, she listened and was present for it. And, as someone familiar with themes on the iMovie app, and newscast music and discourse, she was able to contribute to the shape of the final product. All in all, we believe that the videomaking exercise engaged the ELLs and their peers in a variety of multimodal literacy activities in ways that did not privilege native speakers, and drew on

all the children's experience with documentaries and newscasts. It also contributed to their ease with digital technologies and to the possibilities such tools might offer.

As was mentioned before, the addition of new tools in familiar places may encourage observers to pay more attention to how those tools are involved in whatever "reality" comes to be created there. With respect to our second research question, we believe with others that the introduction of digital tools in schools *can*, in concert with other things, change what happens there, although there is much evidence that those tools seem more often to be used to accomplish the "same old" objectives of school-as-usual (Thumlert, deCastell, & Jenson, 2014). We think theories of the material encourage us to think about how material human beings interact with other kinds of materials to accomplish perhaps novel tasks. With respect to language learning, such a view might challenge our conceptions of language and literacy learning. For new materiality theorists, language and literacy cannot be an "out-there" kind of "thing" that learners put "inside" themselves. Rather, languages and literacies and people and their doings and other materials accompany one another, and are entangled in socio-material assemblages that rub up against one another in complex and as yet unpredictable ways.

We are aware that we have only begun a process of applying some of the ideas offered by materiality theory to our analyses of ELLs and videomaking, and that there is a great deal more to be considered. However, considering how the materiality of classrooms (and research), the people, activities, and knowledge are entangled with one another alerts us first to the arbitrariness of our representations, to the "what good, if any, will this information or representation do?" question of research, and to potentials for matters to be otherwise. As de Freitas and Sinclair (2014) argued, attention to matter may increase our understandings of what happens and what *could* happen in classrooms, with various assemblages of children, adults, and other materials involved in institutionalized schooling.

We began this article reporting what many observers in global locations have noticed: minority language-speaking children have difficulties with school-based print literacies in majority languages. We also observed that, in effect, the literacy "ante" is going up worldwide, as citizens are said to increasingly require multiliteracies and multimodalities. Children making videos may be a small example of the kinds of new activities with new tools that teachers might explore as they struggle to help all children meet the increasing communicational demands of the present. We would urge such educators to consider not only abstract notions like *literacy* as they search for such

approaches, but also to pay attention to the material resources and their demands in working in new ways with learners.

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