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"Little Pig, Little Pig, Yet Me Come In!" Animating *The Three Little Pigs* with Preschoolers

Mindi Rhoades[1]

Abstract Early childhood education, particularly through the influence of the Reggio Emilia model, traditionally has a strong affinity for arts-based, inquiry-based, interdisciplinary pedagogy. However, in the US, as standardized testing and curricula creep into early childhood classrooms, they marginalize arts-based learning and the kinds of playful, collective, student-centered, experimental approaches it encourages. Relegating arts to the margins ignores their abilities as powerful learning "languages" in their own right, as well as their benefits and the possibilities they open for interdisciplinary and transdisciplinary learning. This article presents a 2-month project in a preschool class that implemented arts-based meaning-making strategies built around student interest in the children's book classic, The Three Little Pigs and the Big Bad Wolf. The subsequent analysis uses an emergent literacy framework, adding two of the eleven core New Media Literacies concerns (play and transmedia navigation), to examine ways arts-based inquiry projects and new technologies can support preschoolers' development of multiple, multimodal, and digital literacies.

Keywords Early childhood education · New media literacies · Interdisciplinary arts-based learning · Emergent literacy · Reggio Emilia influenced · Multimodal literacies · Digital literacies · Play · Transmedia navigation

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Becoming Pigs and Wolves

"Ok, next group. Javon, you're the first pig. Tasha you're the second. Dana, you're third. Marcus, you get to be the Big Bad Wolf." Kids pop up into the circle.

"Once upon a time there were three little pigs," the teacher says as three students smile and nod.

"Their mom told them it was time to seek their fortunes, so they left." The children enacting the roles of the three pigs walk in different directions to the circle's edges.

"The first pig built a house of straw." Javon stacks invisible straw haphazardly into wall shapes, goes inside, sits down, and pretends to play video games.

"The second pig built a house from twigs." Tasha repeats Javon's invisible construction method with more care, creating a slightly sturdier structure.

"The third pig built his house of bricks." Dana pantomime's picking and placing individual bricks carefully, layer by layer, periodically pushing the wall to test its stability.

"The wolf came to the house of straw. When the first little pig saw him, he ran inside and shut the door." Javon slams his straw door, causing a cascade of giggles. Marcus stomps over, banging his fist in the air. Marcus says sternly, "Little pig, little pig, let me come in!"

The class joins, chanting chorally, "Not by the hair of my chinny-chin-chin!"

Introduction

Overemphasis on curriculum standardization and testing is increasingly impacting even young children. High-stakes testing marginalizes the kinds of play-based, interactive, authentic learning experiences necessary and appropriate

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for young children (National Association for the Education of Young Children (NAEYC) 2010; Wohlwend 2008; Yokota and Teale 2014) even as literacy shifts from linear, individual, and print-based to evolving, interactive, and multimedia (Lankshear and Knobel 2003; Wolfe and Flewitt 2010). Arts-based inquiry projects can promote students' learning and meaning-making across multiple media and modes (Jewitt and Kress 2003; Narey 2009).

This paper presents a 2-month project in a multi-age preschool classroom of 3–5-year olds in the Early Childhood Education demonstration school at a large Midwestern public university. The project was a collaboration between the classroom teachers (a lead teacher, co-teacher, and teaching assistants), part-time school librarian, and an Assistant Professor in Teaching and Learning who volunteered weekly for the past 6 years as the de facto studio art teacher, or *atelierista* in the Reggio Emilia parlance. The sixteen students in the classroom reflect the school's deliberate commitment to diversity. Ideally, of the student population, a third comes through the Head Start program, a third from the high-poverty, high-need, neighborhood surrounding the school, and a third from tuition-paying families (on a sliding-scale) associated with the university. This article uses current scholarship around emergent literacy and two of the eleven new media literacies (NML) core concerns—play and transmedia navigation—to consider preschoolers' development of multiliteracies in such projects (Edwards et al. 1998; Jenkins 2006; Malaguzzi 1994).

This project began in the classroom with a standard literacy activity and text—reading *The Three Little Pigs* aloud during Circle Time. The story resonated with some students and they asked for repeated readings, using its plot and characters in dramatic play, and drawing them. Teachers used this as the spark for a longer-term project. The lead teacher (Sam) immediately approached the librarian (Jenny) about additional story versions, resources, or related texts. She also approached Mindi, the Assistant Professo/*atelierista*. Sam and Mindi met with small groups from the class to brainstorm arts-based ways to work with the text, eventually deciding on animating and narrating the story themselves. Then, the teachers and *atelierista* discussed potential goals for student learning, media options for animating the story, and what these entailed. Given the usual focus on more traditional media during semi-weekly studio visits, this longer-term project enabled using multiple and newer media, in a deliberate and organized manner, for a specific purpose and tangible product.

After brief background information on literacy, multiliteracies, new media literacy (NML), and arts-based learning, this article explores the components of multiliteracies, their affordances and possibilities, and their implementation in the context of a student-instigated multimedia project. Then connecting scholarship with classroom experience produces suggestions for teachers considering this approach, providing "realistic and meaningful examples and support to foster multiliteracies" (Dallacqua et al. 2015; see also Duncum 2008). The conclusion presents a beginning model for moving toward a multiliteracies approach with emergent readers and writers and suggests further steps for continuing this work.

Multiliteracies and New Media Literacies

Traditional literacies of reading, writing, and arithmetic are still vital for students, but no longer sufficient. Instead, a multiliteracies approach combines traditional alphanumeric literacy with flexible skills, knowledge, and practices applicable across disciplines, texts, media, and contexts (Goody and Watt 1968; The New London Group 1996; Street 1993). Multiliteracies embrace printed texts, digital media, and other technologies of communication; therefore, they entail more encompassing curricula and wide-ranging skills for becoming cross-textually literate. Jenkins (2006) proposes new media literacy (2006) as a set of eleven core skills that complement traditional literacy: play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and negotiation (Jenkins 2006). Although NML mostly ignores early childhood education and pre-literacy skills, Alper (2013) believes it offers two benefits: (1) expanding 'media' and 'technology' (analog and digital) to reflect current forms, and 2) encouraging exploration of "the potential positive effects of media and technology" with early learners (p. 176). Early childhood educators can teach media and technology skills at appropriate levels through adapting daily activities (Jenkins 2006; Narey 2009), building on traditional literacies while adding arts-based ones to expand options (Alper 2013).

Arts-Based Learning Provides a Productive Pathway to Multiliteracies

The arts are not frivolous or superfluous to education or life. Exclusive focus on traditional literacies disregards knowledges that exceed narrow confines. Relegating arts to the academic margins hides their past and current contributions while diminishing their power to facilitate rich, complex engagement with ideas, people, and things (McClure 2013). Eisner (2002) notes words and numbers cannot communicate everything, that arts teach us how to think across materials and modes through in-depth explorations of different media and their rich variety of expressive and investigative properties. Arts allow us to re-

present, manipulate, and translate ideas in pursuit of meaningful experience, surprise, connection, and understanding.

The arts provide a range of general improvements in cognition, socio-emotional regulation, attitude, attendance, mental/physical health, empathy, interpersonal interactions, and social and community bonds (Catterall 2009; Cutcher 2013; Goldhawk 1998; McCarthy et al. 2004; Purnell et al. 2007). Arts "motivate and engage children in learning, stimulate memory, and facilitate understanding, enhance symbolic communication, promote relationships, and provide an avenue for building competence" for "all children, at all ability levels" (Goldhawk 1998, p. v). Arts-based education increases student academic performance; facilitates educational enjoyment, engagement, and persistence; improves odds of attending and succeeding in college; encourages autonomous learning and sense of agency; correlates with becoming a contributing member of communities; and produces prosocial behavior (Catterall 2009). These benefits accumulate over time and extend indefinitely. Remarkably, students experience many of these positive benefits from just *attending* an arts-rich school, the benefits growing more pronounced with poorer and marginalized populations (Catterall 2009; Cutcher 2013). Examples of implementing arts-based learning in regular early childhood classrooms can provide impetus for interested teachers.

Multiliteracies are Increasingly Vital to Students

Multiliteracies promote students' overall success by applying arts-based learning broadly (Grushka 2011; Rhoades et al. 2015), encompassing and transcending media and forms (Jewett and Kress 2003). Many children's earliest education involves multiliteracies in the form of picturebooks' visual/verbal combinations (Kiefer 1994) that support pre-literacy skills and later understanding of sophisticated literary elements (Albers 2008; Rose and Magnotta 2012). Key elements of a multiliteracies approach include: (1) extended interactive and social engagement; (2) rich conversations; (3) interdisciplinary and integrated content; (4) emergent literacy skills taught through and across texts; and (5) support for emergent meaning-making (Pelatti et al. 2014; Roskos et al. 2003; see also Elliott and Olliff 2008; Hall et al. 2015; Narey 2009). Translating text through multiple media demands deep understanding of its meaning, isolating its necessary elements, creating re-presentations of these elements in new media, and combining these into a new work. This process undergirds interdisciplinary and transdisciplinary learning (Alper 2013; Jenkins 2006). Multiliteracies strategies are applicable at any age, and students' skill with them, even prior to primary school, can determine much of their future academic path and success (Sandvik et al. 2014, p. 29). Teachers can use these key elements to guide and evaluate their planning and interactions with students.

In the *Three Pigs* project, the book served as our primary source material to support emergent multiliteracies skills and meaning-making in several key ways. Students talked about the pigs and the wolf throughout the project, with teachers and amongst themselves. Conversations often involved actively re-telling or re-interpreting the story, sometimes considering its relevance to real life. What does it mean to be family? Do lazy people deserve help from hardworking people? Why would wolves eat pigs?

The project also involved substantive interdisciplinary integrated learning, covering foundational academic subject-area concepts and skills. Next Generation Science Standards emphasize integrated, inquiry-based learning that incorporates engineering and technology. During the 2 months, students engaged with science concepts around patterns (each pig builds a house, the wolf repeats his actions at each house), cause & effect (the wolf huffs and puffs and blows two houses down), and structure & function (stronger materials make stronger buildings). This project also supported many scientific practices: asking questions, offering hypotheses, gathering data, producing evidence-based arguments, communicating findings with others, and receiving feedback. In terms of mathematics, basic counting is a prime feature of the text, as is formula and repetition. Additionally, mathematics objectives include scale and proportion (pig, wolf, and house sizes), and recognizing similarities and differences (three pigs' personalities). Similar connections to other subject-specific and cross-cutting competencies can also be made. Examples below, though used for other reasons, demonstrate additional interdisciplinary practices and connections.

Multiliteracies Engagement with Texts Enhances Traditional Literacy Learning

4-year-old Jaime sits next to Sam, his teacher, in the studio in front of a laptop holding a line of text copied in his choppy handwriting. The *atelierista* starts audio recording.

"The wolf… The wolf… Came knocking… Door…" he stammers. Recording stops.

"Try it like this," Sam coaches. "The **Big** Bad **Wolf** came **knockin'** on the **straw** house **door.**" She taps on the table, accenting the rhythm of the line. She repeats. The *atelierista* joins her. Then Jaime joins. He is doing it, saying it with the rhythm. Recording resumes.

"The **Big** Bad **Wolf** came **knocking**…on the … on the … door."

Recording stops again; there is more tapping and chanting. When Jaime seems ready, the recording starts

again. The teacher and *atelierista* tap the rhythm softly while Jaime chants alone.

"The **Big** Bad **Wolf** came **knockin'** on the **straw** house **door!**" Jaime beams. Later, his audio track will narrate that portion of the animation.

Early childhood literacy strategies stress a holistic approach that attends to multiple foundational skills and concepts simultaneously, including learning the alphabet, developing phonological awareness and facility, and building vocabulary (Roskos et al. 2003). Arts-based approaches to multiliteracies can incorporate essential early and emergent literacy skills and practices while promoting enjoyable and successful academic and social engagement for all students (Edmiston 2013). Teachers can design lessons that address standardized objectives while incorporating student-driven, project-based, multimedia learning.

For the animation, the teachers and *atelierista* drafted a plan to maximize student participation and learning. For example, all students would be included in the voiceover. Sam, the lead teacher, divided the text into lines and distributed them to students. The individual line sets became the center of much literacy-focused learning. Students used their lines to identify letters, trace them with fingers and transpose them onto longer strips of lined paper, practicing the many parts of writing: motor skills, letter recognition, recall, sounding out letters, syllables, and words while learning to "read" their lines.

Students also learned foundational literacy skills collectively. They explored vocabulary through choral readings, dramatic enactments, class discussion, and individual consultations with teachers. Students learned words like "huff" and "puff" from huffing and puffing. They learned "seek" and "fortune" from enacting that process. We considered larger issues around how we use words and more-than-words to tell stories. We extended classroom inquiries into and through the text, both in our academic *real-world* and our imaginary *as-if* fictional contexts (Edmiston 2013; Heathcote 1984).

For the final narration, all students had to develop and navigate a complex set of literacy skills, accessing support and assistance as necessary. Some students easily copied the letters, knew or learned the words, and could *read* them fluently and fluidly. Others needed intensive teacher-directed individualized practice to identify and copy letters and then words. All students knew the story, though, frequently using context clues themselves or collectively with classmates to deduce and summarize their lines. Students' can use their multiple literacies to make meaning from the story, demonstrating ways their conceptual understanding outpaces their technical skills in an uneven progression toward developing multiliteracies. Teachers can use completion of a task like this as a valuable assessment tool for individual students and the larger classroom community.

Multiliteracies Engagement with Texts Produces Rich Dialogic Conversations

"Why did the pigs leave their mom's house?"
"Why did the wolf go to the pigs' houses?"
"Why was the wolf so mean?"
"Were the pigs scared?"
"How do you know?"

Early literacy strategies stress rich conversations around shared texts (Roskos et al. 2003). While teachers have primary responsibility for instigating, scaffolding, and supporting these conversations, rich child-to-child interactions around texts are powerful, too. In initial stages of our project, students' seemingly-endless questions about *The Three Little Pigs* catalyzed our extended engagement. Using an emergent literacies approach allowed us to embrace new media literacy core components. For example, instead of answering questions, such as why a pig chose to build with straw, Sam often solicited student interpretations, hypotheses, and evidence. ("Why do you think…?") Student answers range from guesses ("He loved straw!") to uninformed ("Straw can make a good house.") to practical ("It was the first thing he found." "It was easy."). As students answer, Sam prompts with further questions, often redirecting them to the original text.

Sam asks, "Do you remember why the book said he used straw?"
"He was lazy," one student offers.
Another adds, "It said he built the house fast so he could play."
"So," says Sam, "he used straw because he was lazy and wanted to finish fast and play."

Using these kinds of exchanges, teachers can encourage students to ask questions and seek answers, by critical thinking, discussing with others, and revisiting the original text for evidence.

Multiliteracies Engagement with Texts Extends Interactive Reading

Early literacy development involves extended, repeated, and interactive reading, with storybooks being the preeminent form (Roskos et al. 2003). The initial reading of the *Three Pigs* immediately spurred verbal participation from students who knew the story previously and those who learned the patterns quickly. Students interacted often with the text. In a modified version of Readers' Theater, students dramatized the story as the teacher read aloud repeatedly. Different versions of the book invited comparative textual analysis: Where did the stories match?

Differ? Why? Students could dramatize then discuss these texts to consider individual variations and what their accumulation might mean collectively (Edmiston 2010, 2013; Vygotsky 1978). Students could offer alternative storylines—the wolf negotiating his way into a peaceful dinner with the pigs, for instance. Instead of a static literary text to be decoded and deciphered, the story became a living document, suggesting directions instead of determining the path and destination. Teachers can encourage students to consider such questions through dramatically re-enacting similar situations so students can explore different choices and outcomes.

Multiliteracies Engagement Supports Interdisciplinary and Transdisciplinary Learning

"How do we want to tell the story of the three pigs?" Sam asked the small group.
"We can act it out again!" shouts one.
"Like a play?" Sam wonders.
"We can make a movie! But we don't have any real pigs, just puppets," says another.
"We can make a movie with cartoon pigs!" suggests a third.
This idea sparks rapid-fire discussion about cartoons and animals and favorite characters.

"We could try stop-motion animation, like the *Wonderpets*," the *atelierista* interjects. "You make characters with moveable parts. Then you take a picture, move the character a little, take another picture, move it again. When you put the pictures together and show them fast, it looks like a movie."

After more discussion, the class chose stop-motion animation as their medium for re-presenting the story. Using an arts-based framework and media for meaning-making then enabled teachers and the *atelierista* to develop a project that supported multiliteracies - including discipline-specific, interdisciplinary, and transdisciplinary skills, concepts, and practices—through student-driven learning and production (Roskos et al. 2003).

The educators provided scaffolding and points of entry. The *atelierista* created flat, featureless cardboard forms for the characters approximately the size of the children, referencing mathematical concepts of dimension and scale, enabling students to dress them in Lost + Found clothing. Other math concepts included numbers, counting, repetition, and formula (a specific sequence of repeated actions), proportionality (relation of inputs to outcomes), and logic (if the house blows down, then run; if the pig relocates, follow). The project involved scientific concepts. Students discussed properties and durability of different building materials and construction. Using inappropriate materials makes a structure unstable. They invoked Newton's Third Law of Physics: for every action, there is an equal and opposite reaction. If the force of the wind blowing against a structure is stronger, the structure will collapse. These concepts influenced representing the wolf blowing down the houses, showing pieces break off swirling into an invisible current, away from the wolf, with the remaining structure tumbling along behind. Social studies concepts appeared in class discussions around community, fairness, sharing, and negotiating alternative outcomes.

Importantly, they learned all these by *doing*, with many different activities and discussions and engagements around the shared text as their touchstone. As teachers follow student interests to develop arts-based learning projects, they can consider how their current media and knowledge (i.e. children's television and movies) and technology skills (i.e. digital photography; digital audio recording) can combine to suggest workable solutions for students (stop-action animation with narration). While teachers may not know or have access to the best, most efficient, or professional technology tools and art supplies, there are always multiple ways to accomplish or approximate the desired goal. With the *Three Pigs*, no one knew *how* to do stop-action animation; we knew it was possible and it involved taking pictures and putting them together. We researched the simplest options given our available resources and used iMovie, although there are many free and low-cost easy-to-use alternatives. Teachers cannot know about or how to use all available media, but teachers can follow student interests, and learn alongside them, by developing arts-based and project-based learning activities that stimulate authentic integrated, interdisciplinary, and transdisciplinary learning.

Multiliteracies Engagement Supports All Students' Learning

In many ways, the focal components of early literacy - emergent reading and writing—received primary attention during this project through more traditional classroom literacy activities. Teachers re-read the book, located additional versions, and made them available throughout the project (Roskos et al. 2003). Children could *read* the text to themselves silently or aloud or with partners. The project also prompted an authentic need for writing. Every student had to say a line, so they all needed to write and "read" one. Students received strips of red-and-blue-lined handwriting paper with their children′s oral language printed by the teachers. Using this strip as a guide, students practiced copying and rewriting their lines with pencils, pens, markers, and crayons. Students also re-read their lines

often, rehearsing them for their eventual recording sessions. Technically, reading and writing for many qualified more as pre-writing and pre-reading, with some still primarily making scribbles and marks and others able to reproduce recognizable letters; with some able to sound out words and others relying on near-memorization or remembering major words and/or ideas (Hall et al. 2015). Reading lines for our movie was a major motivator, eliciting loads of enthusiastic practice around these foundational skills for almost all students, but not for Aiden.

Multiliteracies Engagement Allows Communication (Mostly) Without Words

Aiden is a child with a slight build and short-cropped, somewhat unruly straw-like hair. He's not very verbal. He has periods of intermittent attendance. He's so quiet, and can disengage so thoroughly, he can become almost invisible. Sam often holds his hand, leading him to activity areas, helping transition him into groups. Once situated, he usually complies passively, seeing more than speaking, a spectator watching other kids actively pursuing ideas.

Aiden likes the studio. He isn't more talkative there, but the focus on art-making and materials means opportunities for doing instead of talking, for him to use other ways to communicate (Rose and Magnotta 2012). The *atelierista* tries to engage him individually in the studio when things run smoothly. He doesn't necessarily follow directions or do that day's studio activities, but he likes to manipulate materials. Sam or the *atelierista* sometimes sit with him, encouraging him to use materials. When he does, he often fills the surfaces, like taking a crayon and covering a piece of paper in intense red, waxy glory. Sometimes the teachers position themselves with a hand over his, guiding his physical movements. He likes the process and the results when working together. He smiles. In this studio, like in his classroom, there are other languages he can learn to speak, tools to use for exploring, expression, and communicating with and without traditional words.

New Media Literacies Emphasize Skills for Contemporary Communication

While essential early literacy components provide a strong start for developing multiple literacies (Elliott and Olliff 2008; Hall et al. 2015; Pelatti et al. 2014; Roskos et al. 2003), communications tools and media increasingly require cumulative and evolving skills. For these, Jenkins (2006) proposes New Media Literacies (NML) with eleven core transdisciplinary skills: play, simulation, performance, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and negotiation. Instead of discrete skills or specific knowledge, NMLs are more a set of "lifelong metacognitive skills for critical thinking than an explicit blueprint for digital technology literacy" (Alper 2013, p. 180). Although little research attends to NMLs or digital literacies in early childhood education, Alper (2013) insists these are relevant for young children's learning, in and out of school, and Jenkins (2006) recommends educators embed them in daily activities. While our *Three Pigs* project involved all the NMLs, two are particularly relevant to our studio work: play and transmedia navigation. The next sections address and analyze these two NMLs specifically within the context of our project.

Play Promotes Multiliteracies in Early Childhood Education

Along with multiliteracies, the topic of play as pedagogy is gaining attention in academia. Early childhood educators embrace this as affirmation of their longstanding educational philosophies and practices (Edmiston 2013; Rowe 1998; Wohlwend 2008). Jenkins (2006) defines play as "the capacity to experiment with one's surroundings as a form of problem-solving," and believes it crucial to children's development across multiple domains (p. 22). Play invites "open-ended speculation" (p. 24) with space for imaginary contemplation without significant material consequences. Despite these acknowledgements of play's importance, childhood educators remain concerned that standardized testing's encroachment into curriculum will further decrease the amount of educational play and dedicated playtime (Yokota and Teale 2014). To counteract or balance this, play-based language and practices during teacher-supported literacy interactions can embed "early literacy experiences in authentic contexts" connected to "meaningful curricular themes" (p. 5).

Play is the way young children naturally learn. Scholarship around Reggio Emilia pedagogy and practices documents its instructional and educational role and value as a developmental tool (Edwards et al. 1998; Malaguzzi 1994). In Reggio models, it is the role of the *atelierista*, or school-based studio artist, to provide materials, instruction, techniques, and ideas that support children's exploration and learning (Alper 2013). Our *Three Pigs* project was thoroughly permeated with play. Classroom play led to studio play. Without prior animation experience, the *atelierista*, students, and teachers took a playful approach. The *atelierista* provided an animation entry point by providing blank cardboard pig- and wolf-shaped cut-outs. Students painted and transformed these into characters with article of clothing, augmenting their faces with assorted and

moveable simple shapes for eyes and mouths. Students played with arranging and moving characters' features to communicate certain emotions: big eyes for surprise, teeth apart then together then apart again for talking. While some kids read, others moved shapes, like flat paper puppets. The enjoyment and success of this project relied on its playful approach, keeping students engaged for the duration.

Transmedia Navigation Skills Enable Flexible Thinkers and Communicators

The most prominent NML core skill in our *Three Pigs* project is transmedia navigation, or "the ability to follow the flow of stories and information across multiple modalities…[and] multiple media" (Jenkins 2006, p. 46). Today's students need skills for locating, consuming, and comprehending content, as well as being able to produce and communicate messages across media. For Alper (2013), this requires reading, writing, and thinking "across all available modes of expression" (p. 189), echoing "the hundred languages" of children Reggio principle (Edwards et al. 1998; Malaguzzi 1994). Digital media merely adds more languages, more vocabulary, and more tools to an expanding set of competencies and literacies. In fact, they scaffold and support traditional reading and writing through access to authentic audiences, interpersonal support, and communities of common interests (Jenkins 2006).

Examples of transmedia navigation abound throughout this project, including traditional and newer digital media. In the studio, transmedia navigation shifted to the creation of 2D/3D story components: locating images online of pigs and wolves characters; drawing house shapes; and transferring these silhouettes and shapes to large sheets of cardboard. After the *atelierista* cut out the shapes, students transformed them into the characters and the pigs' homes, using real clothes, straw, sticks, and cardboard "bricks."

To animate their re-telling of *The Three Little Pigs*, these pre-kindergarteners also used a variety of analog and digital tools and technologies (Wolfe and Flewitt 2010). This complex process involved oscillating between a familiar written text and an imagined animated version to-be-made, between students as children's literature consumers to children as multimedia digital storytellers (Albers and Harste 2007; Burnett 2010; Kamil et al. 2000; Lankshear and Knobel 2003; Wohlwend 2008). We started with traditional materials (picturebooks, paper, and pencils), moved into multimedia development (pigs, wolf, houses), then entered the multiliteracies process of telling the digital animated version of the tale.

The studio hosted most of our technology work. Students used a digital camera to take photographs; uploaded these to a computer; imported them into iPhoto image software; reviewed, edited, and re-shot them; transferred images into iMovie; combined these into video clips; then compiled clips into a single animation. For audio, they recorded, reviewed, and edited narration; added edited audio to the video; processed completed files; then exported the final video into usable and shareable movie file formats. After this, students watched, discussed, and re-watched the video. Teachers duplicated and distributed CD-Rom copies to students' families. The Center posted the finished version on its website. In these ways, the *Three Pigs* project used technology to support existing literacies and encourage "processes [and] possibilities associated with new literacies," particularly those involving digital texts (Burnett 2010, pp. 2–3). Their work also reached multiple authentic audiences—themselves, their teachers, other students, their families and friends, and people who find their animation online.

Digital Literacies Belong in Early Childhood Education

Given the relative lack of scholarship around digital literacies in early childhood education (Burnett 2010), this project provides an example and demonstration of the potential benefits (and drawbacks) of emphasizing digital technologies and literacies with young children. Kamil et al. (2000) suggest dynamic, heavily visual forms of meaning-making like animations, modeling, and simulations, are more effective for students when constructing mental models and comprehending structures, forms, and stories. Such studies also hint computers can foster human interaction and collaboration; increase enjoyment of schoolwork and motivation to do it; and then increase improvements in reading, writing, and the development of more complex and multimodal language and literacy skills (Duncum 2008; Kamil et al. 2000; Lankshear and Knobel 2003; Narey 2009).

In our experience, all students wanted to participate in all aspects of creating their stop-action animated version of *The Three Pigs*. Everyone wanted to take photos and upload them. Everyone wanted to move props. Students recognized the tools and flexibility that digital media afforded us to capture, reproduce, and redo things. The children quickly learned to operate these tools themselves—replaying a take, judging its quality, deciding on keeps and retakes. Digital technology enabled their networked and collaborative learning. Students worked in organic groups, rotating as the main technology user, with watchers actively engaged in questions, suggestions, or directions. Such situations offered opportunities to capitalize on students' prior knowledge within the community (Burnett 2010). Digital media offered students

opportunities to create chaos and new challenges, important components of digital literacies. Unconscious keystroke combinations, improper equipment use, and casual user errors damaged and deleted some digital data, but it was un-catastrophic. We simply recovered or remade it.

Implementing a Multiliteracies Model

As digital technologies continually emerge and evolve, they are transforming virtually everything. Students need skills that enable them to understand and create meaning across multiple media, often simultaneously, in more than words and numbers (Albers 2008; Eisner 2002; Narey 2009; Serafini 2010). Also, while arts are valuable in and of themselves, students clearly benefit more broadly from, and need, the kinds of multiliteracies they engender. Given the minimal amount of art education or preparation for most early childhood teachers, they often feel unprepared and hesitant to employ arts, technologies, and new media within their classrooms. This section suggests components of a multiliteracies model for emergent readers/writers that blends traditional literacy practices and texts with new media literacies [play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and negotiation (Jenkins 2006)].

First, a multiliteracies arts-based approach need not be artificially separate or an abandonment of previous classroom practices. The NMLs are a set of cross-cutting skills more than knowledge of any specific technology (Alper 2013), and are meant to be embedded in daily classroom activities (Jenkins 2006). In our example, the use of a classic children's book provided easy entry. Then, teachers used familiar practices to support traditional components of early literacy learning (Pelatti et al. 2014; Roskos et al. 2003) while expanding students' meaning-making options (Alper 2013; Jenkins 2006; Narey 2009).

Teachers can construct and adapt a flexible overarching project plan that ensures students cover standardized curricular objectives through documentation and holistic forms of assessment. In fact, using traditional texts can signal attention to these standards while incorporating multimedia and digital technologies that promote multiliteracy skills through interdisciplinary, authentic arts-based learning (Grushka 2011; Kress 2003; Narey 2009; The New London Group 1996; Rhoades et al. 2015). Also, while the process and reflection are the key components of multiliteracies project-based learning, having an end product determined in consultation with students provides focus and a goal. Plans can be modified during the project if attention shifts or extends. For us, having a final

animated and narrated version of The Three Little Pigs allowed us to back-map the different components needed and the interdisciplinary knowledge and tasks necessary to create each.

By translating meaning from one medium into multiple others, our students created a cohesive, multi-layered narrative, demonstrating their developing multiliteracies, using traditional, arts-based, and digital tools and technologies to understand then re-tell a known story themselves (Albers and Harste 2007; Burnett 2010; Lankshear and Knobel 2003; Wolfe and Flewitt 2010). Throughout this process, teachers assisted students through dialogic discussion of texts, provocative questioning, locating and accessing resources, and supporting student research and learning as needed. This enabled teachers to embed subject-specific, interdisciplinary (across multiple subjects) and transdisciplinary (general learning skills) in regular practice (Alper 2013; Jenkins 2006). Documentation of the process and the artifacts provided rich material for representing process, play, and experimentation in the pursuit of understanding, response, and expression. Transmedia navigation demands collaborative inquiry and interaction. It can involve frustration, mistakes, and failures. It requires problem solving and perseverance. Most importantly, students learn to communicate what they know and what they want to tell in multiple forms, including in non-verbal and non-numeric ways.

Conclusions + Next Steps

This practical, field-based example builds on the small but growing body of scholarship around emergent literacy skills and NMLs (Alper 2013; Jenkins 2006). More research and examples are needed to understand how to support early childhood teachers in developing, implementing, and revising curricula and classroom practices that support a multiliteracies learning perspective. What knowledge, support, and access do they need to incorporate digital media and tools? How can we modify traditional activities to include technology in meaningful, authentic, and aesthetic ways? How do we adapt and incorporate key concepts, media, modes, and texts from multiple art forms (dance, drama, music, painting, sculpture) with preschoolers?

Research into arts-based teaching and learning shows incredible continued promise as an interdisciplinary educational approach (Eisner 2002, 2009; Narey 2009). There is already a strong history of early childhood education embracing an arts-based, inquiry-based, interdisciplinary pedagogy, given the success and wide-ranging influence of the Reggio Emilia approach (Edwards et al. 1998; Malaguzzi 1994). More specific research is needed around how to apply, adapt, and adopt similar pedagogies using newer

media and technologies; they open options for *all* students to participate, contribute, and communicate more fully.

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