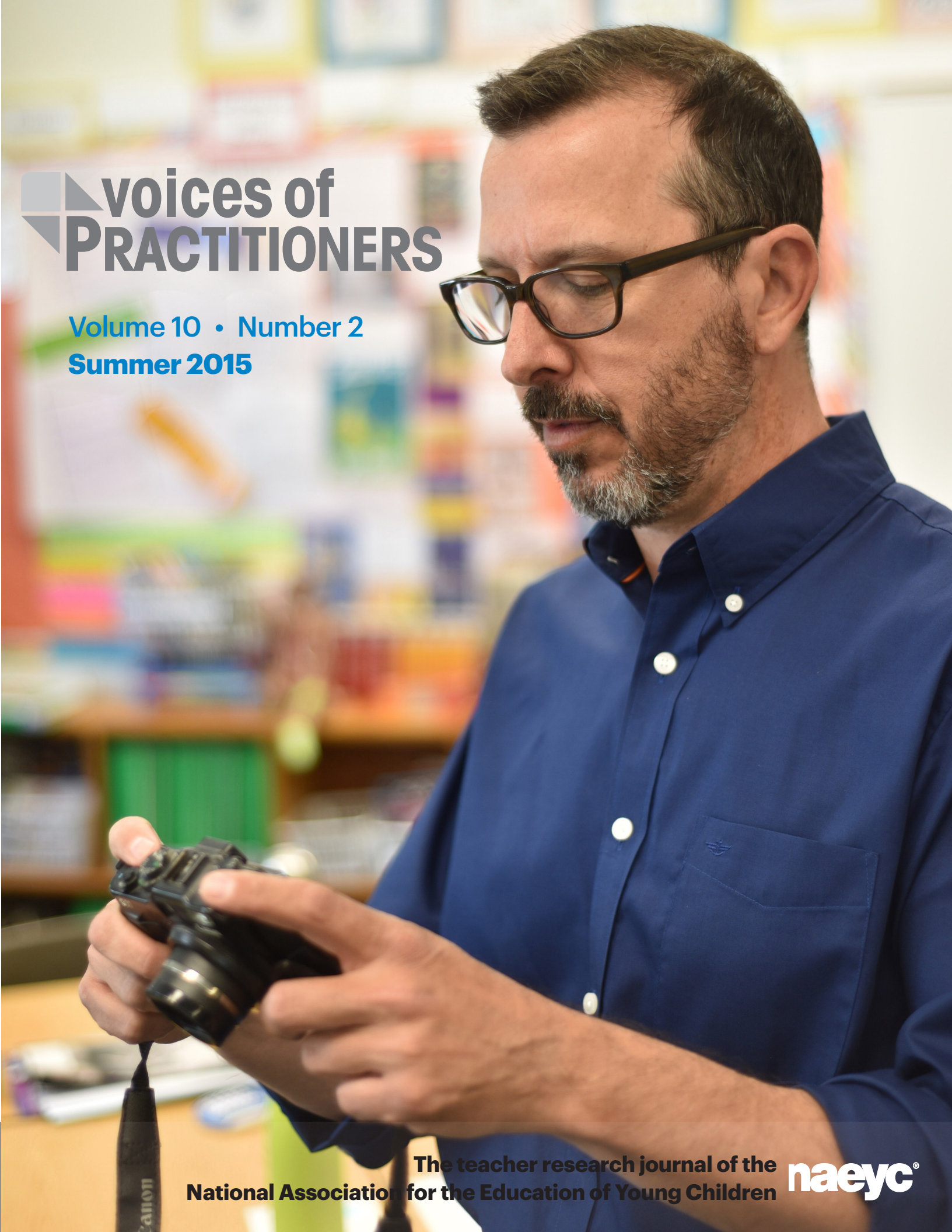


voices of PRACTITIONERS

Volume 10 • Number 2
Summer 2015

The teacher research journal of the
National Association for the Education of Young Children

naeyc®

The National Association for the Education of Young Children offers early childhood educators professional development opportunities designed to improve the quality of services for children from birth through age 8—the critical years of development.

Become part of a respected and growing network of more than 70,000 members and over 300 local and state Affiliates. Since its founding in 1926, NAEYC has promoted high-quality standards in all programs for children, encouraged professional development, and created leadership opportunities at local, state, and national levels. To learn more, contact us:

online: www.naeyc.org
phone: 800-424-2460 or 202-232-8777
fax: 202-328-1846
email: membership@naeyc.org
mail: NAEYC, 1313 L Street, NW, Suite 500, Washington, DC 20005-4101

Voices of Practitioners (ISSN 2378-2609) is published online twice a year by the National Association for the Education of Young Children (NAEYC).

Through its publications program, NAEYC provides a forum for discussion of major issues and ideas in our field. We hope to provoke thought and promote professional growth. The views expressed or implied are not necessarily those of the Association. Acceptance of advertising does not represent NAEYC's endorsement of any product or service, nor is NAEYC responsible for representations made by advertisers.

Voices of Practitioners: Teacher Research in Early Childhood Education is NAEYC's peer-reviewed, professional online journal. Its main purpose is to provide a vehicle for publishing the research of early childhood teachers, who are often underrepresented as authors in the educational research arena. This publication includes informative articles, resources, and tools to promote the participation of early childhood teachers in teacher research.

Cover photo © Lisa J. Kessler

Submissions guidelines for *Voices of Practitioners* are available online at www.naeyc.org/publications/vop/about/manuscript.

Contents

Teacher Research

Supporting Teacher Research

Teacher Research

How to make new technologies serve as learning tools, not simply electronic toys or worksheets, is a challenge Carlyn Joy Bracken embraces in her classroom for 4- and 5-year-olds. Attaching an iPad to an LCD projector (bringing the gaze of the children up from the device), limiting the device to one application (Brushes, an open-ended drawing program), allowing children ample time to explore (the entire school year), and providing contexts where children share their discoveries (periodic whole group meetings)—Bracken creates an environment where learning thrives. The discoveries she describes are evidence that, when used wisely, a tablet can enhance children's social and intellectual learning.

—Benjamin Mardell

CARLYN JOY BRACKEN

Using Technology as a Social Tool in Preschool: Matching Philosophy With Application

> "That's our challenge in the digital age: turning these tools into fabulous instruments that support young children, parents, families, and educators. I don't think we need an app for that. We just need to start playing with the tools and figuring how best to use them, and to think about how our smartphones and tablet computers are already fabulous instruments. As my friends in New Zealand say, 'Have a play.'"
>
> *—Chip Donohue, Early Childhood Center, Erikson Institute*

Carlyn Joy Bracken, MA, is a transitional kindergarten teacher and professional development director at One Fifty Parker Avenue School, in San Francisco, California where she continues her search for the most meaningful and intentional ways to incorporate technology in a preschool classroom.
carlyn.bracken@gmail.com

Photos courtesy of the author.

Nearly every child has seen, touched, played with, or owned tablets and other technological devices. In fact, many children are able to navigate these tools with confidence and ease. Avoiding digital technology is nearly impossible. Rapid advancements are making more and more devices affordable and available to a wider range of consumers. But does the relevance of technology affirm its place in the classroom? While many would agree that technology is our future and therefore needs to be taught at an early age, I firmly believe that preschool-age children first need to learn their physical environment and social relationships without the interference of technology. Interactions and social situations are far more important for 4- and 5-year-olds than knowledge base and comprehension. If and when a technological device is integrated into the classroom, it should have a social function, challenging the predetermined uses of the tool.

For the past three years I have been teaching in a transitional kindergarten (TK) class at an independent, nonprofit school in San Francisco. My TK classroom offers an optional year of developmentally appropriate curriculum to children who would otherwise enter kindergarten with a younger birthdate,

typically between September and December. This group of children enters kindergarten with more confidence and a greater set of tools to access than if they had not had that extra year. Our school has been strictly play-based for more than 60 years, honoring uninterrupted time and space to explore.

About one year before I began working at the school, a parent donated two first generation iPads, requesting that we report back to him the ways we decided to use them with the children. At the time, the staff discussed possibilities for using the iPads but had not yet agreed upon a way to incorporate them by the time I joined the school. Within my first week of work we reserved time to have a staff discussion about their potential uses, and the general consensus was that using the devices with children did not seem to fit our philosophy as a school. A few teachers had mixed feelings about ever wanting these devices in the classroom, myself included. Our school philosophy states that "children of preschool age should learn through observation and experience, interacting with peers and teachers, and be encouraged to seek solutions to concrete problems." It also emphasizes the importance of group socialization. Yet the iPad's handheld design lends itself to solitary use.

I framed my research through the following questions:

- How can I integrate a first generation iPad into my classroom while respecting my pedagogical beliefs and values?
- Can digital technology be used as a social tool in my kindergarten classroom?

Review of literature

Schools at all levels are feeling an overwhelming amount of pressure to update and integrate technology to maintain quality standards (Donohue 2015). While it is important for students as young as elementary age to be able to navigate the Internet safely and to be familiar with basic computer software, preschoolers are still too young to benefit fully from this knowledge. The most recent early education studies emphasize active, hands-on, and social learning for young children, but digital technology does not typically lend itself to this type of learning (Donohue 2015). Not only do most technological devices require the user to be stationary, they also draw the gaze toward a relatively small screen meant for individual use, reducing opportunities for socialization. On the other hand, personal interactions offer endless opportunities to share individual perspectives, collaborate, and problem solve, which instills in young children that their voices are important. In the words of Reggio Emilia educator Carla Rinaldi,

> There is a strong cause and effect relationship between social and cognitive development, a sort of spiral that is sustained by cognitive conflict that modifies both the cognitive and the social system. (Edwards, Gandini, & Forman 1998, 115)

When we as teachers encourage children to use their imagination and to think creatively, we are supporting their flexibility as learners.

My teaching philosophy follows a constructivist approach, in which "children actively interpret their experiences in the physical and social worlds and thus construct their own knowledge, intelligence, and morality" (DeVries et al. 2002, 35). I see the importance of developing the child as a whole in a way that is as organic and natural as possible. Each child grows and develops at his own rate, and we cannot understand where a child is developmentally or what type of individual support he needs if our expectations are linear (Edwards, Gandini, & Forman 1998). Because every person learns differently, we must provide open-ended opportunities in the early years for children to explore and learn in a way that makes the most sense to them (Edwards, Gandini, & Forman 1998).

As a play-based school we reserve as much of the day as possible for free choice play. Play is essential to young children's development. Social constructivist Lev Vygotsky described children in play as "ignoring the ordinary uses of objects and actions in order to subordinate them to imaginary meanings and situations" (Rogoff 2003, 298). The foundation of social skills develops in preschool, and as educators we must guide children through these interactions so that they can have a strong self-identity and self-confidence (Gartrell 2004). By giving young children ample opportunities to freely play and interact with their peers, they become flexible thinkers who are more open to cooperation in social situations and have a greater capacity to think abstractly.

Children are competent and able. When children talk or ask questions, we must acknowledge that we hear them to prove that their words are important. It is our job as early educators to support children in finding their own internal compass for them to access as they grow (Edwards, Gandini, & Forman 1998).

Given my strong belief that technology use among preschoolers contradicts the way they learn best, I knew it would be difficult to find a meaningful use for our donated iPads. Nonetheless, I took on the challenge to find a use that would align with my teaching pedagogy and our school's play-based philosophy. NAEYC's statement on technology declares,

> When used wisely, technology and media can support learning and relationships. Enjoyable and engaging shared experiences that optimize the potential for children's learning and development can support children's relationships both with adults and their peers. (NAEYC & Fred Rogers Center for Early Learning and Children's Media 2012, 1)

I began to search for a way to use our iPads to create "enjoyable and engaging shared experiences."

Because I was interested in the direct connection between young children and technology, I found Brian Puerling's *Teaching in the Digital Age* (2012) to be a huge support for my teacher research study. This text looks specifically at technology use with children 3 years old to third grade. While

seeking ways to integrate technology in my classroom, I looked for ways to bring the children's gaze up from the iPad screen and found the answer in Puerling's text:

> When photographs, artwork, videos, student work, and math manipulatives are projected onto a large screen, they provide children with an opportunity to observe closely. Children become easily engaged in conversation over what they are observing. . . . When images are projected, the learning experience becomes social in nature. (2012, 70)

Methodology and research design

Participants and setting

My research was conducted over the course of eight months, from September 2013 to May 2014. The school is located in the Laurel Heights neighborhood of San Francisco. Originally a home, the building was converted into a preschool in 1954 and some characteristics of the original layout still remain. Currently there are 61 children enrolled in our three programs. The 14 children in my TK class participated in the study. The children were ages 4 and 5 and attended school five days per week, four and a half hours per day.

Data collection and analysis

I observed children as they interacted with the iPad, using the following materials to collect my data:

- Photographs
- Video recordings
- Voice recordings
- Work samples
- Field notes that consisted of observations and anecdotes

I collected the photographs, video recordings, and voice recordings on my iPhone 4s because of its ease of accessibility and transcribed the dialogue from the videos and voice recordings onto my computer. The work samples came from the children, one of which I collected directly from the classroom iPad. I then exported the children's work from the iPad by taking screenshots of images and sending them to my personal computer by email.

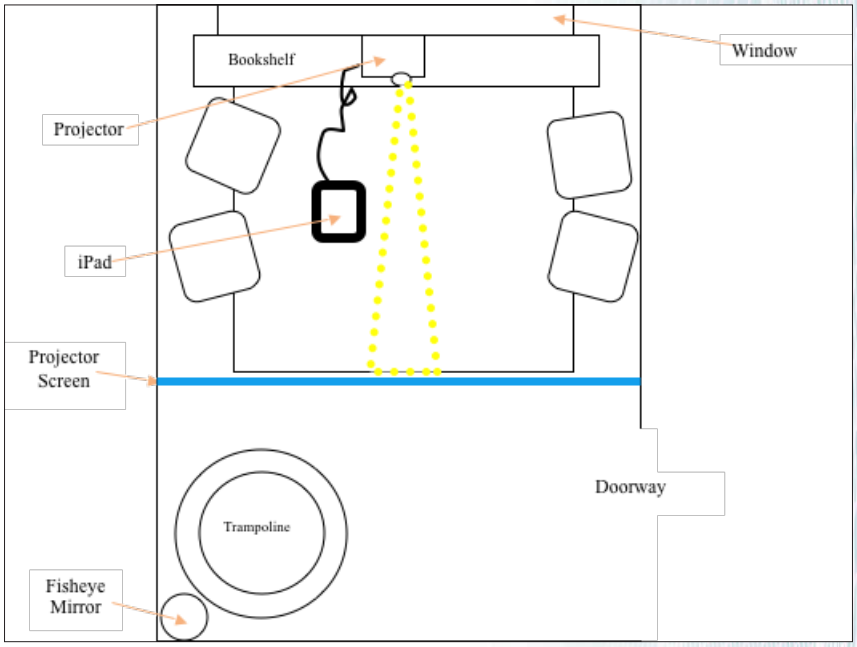
Research plan

With a simple Apple 30-pin to VGA adaptor I easily connected the iPad to our school's projector. This was the beginning of our classroom's technology integration, and this setup accomplished my goal of directing the children to lift their gaze up from the handheld device. My next step was to select a suitable app for the children to use on the iPad. At the same time that I was considering connecting the iPad to the projector, I coincidentally read about a local art exhibit that was featuring paintings created on an iPad by

English artist David Hockney, who made his paintings using a free app called Brushes. The Brushes app opens up with a blank white screen and allows for open-ended drawing. It offers several brush size and shape options as well as an extensive color palette, and it also has a playback feature that allows the artists to replay their entire painting process. Knowing the app was open ended, had an option to revisit the process, and offered something familiar to the children (drawing), I chose to download Brushes as the only app on the classroom iPad.

The iPad room

As a building that used to be a home and is more than one hundred years old, our school has lots of nooks and crannies that are excellent for changing functions depending on our current need. One such small room was a perfect place to set up the iPad with the projector because it has only one window and very little furniture. I set up what came to be known as the "iPad room" in a way that invited multiple children and encouraged different approaches for using the equipment.



The iPad room layout.

First, I found a white curtain our school had in storage and tacked it across the width of the center of the room to create a projector screen that could be seen from both sides. I then hung blackout curtains on the window to darken the room and set the projector on the bookshelf beneath the window, aiming the projector light at the projector screen. I laid out a few pillows and blankets on the floor to invite multiple children to come in, relax, and interact with one another. A trampoline (one of many tools recommended by occupational therapists for sensory integration that our school offers) was also in the room, near the doorway on the opposite side of the screen from the projector. The trampoline has consistently been a part of this back room, even as the room's function changes, because this room offers the best space for uninterrupted jumping—a popular activity among the children and one that encouraged children to enter and engage with the iPad room.

Using the iPad

The iPad room was open most mornings for the children to explore and draw throughout the nine months of the study. It was open during our 1.5-hour free play each morning, during which time the art room and

manipulatives were also open and there was a free flow throughout the classroom. Because of the iPad room's availability throughout the year, activities were child-directed rather than teacher-directed.

To create a time when children could discuss their work with one another, I designated meeting times to report on and revisit the children's work and experiences. In these meetings, the iPad and projector were brought into the main room of our classroom with the iPad projecting directly onto a wall so that all 14 children could fit comfortably in one room. One child, or "artist," would volunteer to stand near the projector with the iPad and replay one of his or her drawings through the Brushes app. The artists were invited to describe and discuss their work before answering questions from their peers. My intention for this setting was to make it easy for the children to reflect on and share their observations, allowing them to "apply background knowledge to develop judgments and questions about what they are seeing" (Puerling 2012, 71).

A view of the room as a child reports on her drawing.

Findings

Overall, I found digital technology could be integrated into the classroom in a way that is open ended and encourages children to interact with one other. It could also allow children to learn in a way that makes the most sense to them. There was a definite contrast in the children's approach to using the device and in the complexity of their social interactions from the beginning of the year to the end.

Through the experience I saw collaboration, critical thinking and problem solving, child-directed activity, and inclusion. These are my four major findings:

1. **Collaboration:** Rather than directing the children's focus on the technology, the experience with the iPad invited peer collaboration and enhanced the children's social interactions
2. **Critical thinking and problem solving:** The children's interactions became more exploratory and intentional as they sought solutions to the situations that arose as they worked with the process, using their concrete experiences to learn

3. **Child-directed:** Closely related to the above finding, the children worked independently with minimal direction from teachers
4. **Inclusion:** All children were interested and participated in the process regardless of their competency with the technology

1. Collaboration: Rather than directing the children's focus on the technology, the experience with the iPad invited peer collaboration and enhanced the children's social interactions

Although the children were certainly interested in the technology and what they could accomplish with it, the children used it as a means to engage in an interactive and enjoyable experience, as opposed to just pushing buttons. Whenever the children drew, their gaze was up on the projector screen and with their peers. Their interactions became notably more complex as the school year progressed and as they had uninterrupted time to explore the setup of the room and the iPad itself.

At the beginning of the school year, the children's collaboration was relatively simplistic, as they slowly began learning from one another.

> When children began to use the iPad to draw and new children entered the room, the child entering would ask questions like, "Is it drawing by itself?" to understand what they were seeing on the projector screen. Often the children would draw until the entire screen was one single color, and then they would replay the entire process with the playback feature.

As Puerling observes, "When children share their observations and questions, they learn that their peers can be a source for answers to their questions, and that others may share the same questions or observations." (Puerling 2012, 71). In line with this, the children drawing on the iPad would eagerly share an explanation of the drawing and how the projector screen was working that would enhance both their understanding of the activity as well as their peers'.

As the school year progressed and the children became more familiar with the technology, they began to discover new approaches through their collaboration.

> During one exchange later in the year, as one child was drawing on the iPad, two children stood facing each other on the same side of the screen and began to develop a story when they noticed their shadows projected there. One child pretended to brandish a sword, narrating his story saying, "When I wave the sword, you fall back!" As the two children moved, another child drawing on the iPad found that by making the brush its largest size, she could change the color of the entire screen with one touch. Creating a backdrop for the two actors and their shadows, she said, "You guys, look! It's a rainbow! It goes different colors every time you move!"

The increasing complexity of collaboration around the iPad was evident to me in this situation. The child drawing on the iPad would not typically have engaged with the pair of boys acting out a fighting scenario, but with the iPad setup, she independently initiated collaboration and found her own role in their game as the boys used the projector as a tool to enhance their storytelling.

Two children create a story play with their shadows.

Our class reporting times also allowed for collaboration, as children had the opportunity to use their peers as references. Having a designated time to present their work to their peers supported the children's self-confidence and self-identity, validating their work and its process. One child's response was particularly striking:

> One boy, who was not typically interested in sitting through classroom circle times or even connecting with his classmates was infatuated with his peers' drawings and eventually was thrilled to share his own work. After his drawing played during one of our reporting times he asked, "Who wants to see it again?" When his peers responded with an exuberant, "Me! Me!" the boy beamed as he said, "If everyone wants to see it again, I'll do it. They really love it!"

2. Critical thinking and problem solving: The children's interactions became more exploratory and intentional as they sought solutions to the situations that arose as they worked with the process, using their concrete experiences to learn

Not surprisingly, the children's interactions with the iPad and projector screen became more complex and intentional with time. First, the children acquainted themselves with the physical hardware and the new experience. Though the app had options for changing the color, brush shape, and brush size, the children's focus during the first few weeks was solely on what happened when they moved their finger across the iPad screen. During this time the color remained orange and the brush the same size. Most often, their fingers would move in circular motions around the iPad and their eyes would follow the movement on the projector screen.

> One child started drawing toward the center of the iPad and moved in a spiral shape out toward the edges of the screen while narrating, "It's getting fatter and fatter and fatter and rounder and rounder and rounder!"

As the children became more comfortable with the setup and the device, their intentions while drawing became more practical. Not only were they adjusting the brush size, shape, and color, they were using it as a tool to create costumes and stories.

> While a child stood in front of the projector screen one day, the children drawing on the iPad attempted to sketch a hat sitting atop her head. The spatial challenges of finding the point on the iPad that would match the top of the girl's head on the projector screen required problem-solving skills. One child discovered the top of her head in relation to the iPad by touching different spots and erasing until the children were satisfied with the drawing's placement. Another child drew on the iPad screen as close to the girl's head as possible and then told her to bend down or stand on her tippy toes so that it would be properly placed on her head.

Children begin interacting with the iPad.

Children also learned from playing with the projector. At first, most of the children's interactions were accidental. Some children would unknowingly sit in front of the projector, not realizing it was their shadow blocking the images on the screen until their friends urged them to move. Other times, the children raised their hands above their heads to experience the shadows that could be made by waving their arms back and forth. Still others would simply enjoy the control they had over the projector's light, covering it with their whole hand to make the light disappear.

> One child looked very closely at the beam of light coming from the projector and noticed dust specks dancing through it. After watching it for a while, he touched the tips of his pointer finger and thumb together in a repeated pinching motion. "I'm eating the bugs," he described.
>
> Another child noticed a peer's shadow in profile on the projector screen one day and said, "Talk! Cause when you talk, the screen talks!"

Two girls stand in front of the projector screen as other children draw crowns over their heads.

Our class reporting times provided further opportunities for children to engage in critical thinking. Revisiting their work gave children the opportunity either to confirm their original intentions for their drawings or to transform them into something new. This discussion time supported the children's flexibility in thinking and learning. For example, as a child played back her drawing, she gave the following explanation:

> I was inspired by Bodie's drawings, but I chose to do a different pattern. And I chose these colors because I kind of felt like they made me happy and I liked them. The red and, like, the greenish blue are really pretty, and it's like a sunset or something. When I first made the blue I thought I was using the same pattern Bodie was using but then I realized, "No, maybe my own way is more better than someone else's way." And I figured out when I was tapping all the purple on the iPad it was like I was tapping a horse on his shoulder because when they're doing good things you tap them on the shoulder.

3. Child-directed: Closely related to the above finding, the children worked independently with minimal direction from teachers

While my school is strictly play-based, we find inspiration through a number of different philosophies and teaching approaches, including the Reggio Emilia approach. The Reggio Emilia approach encourages taking the time to revisit new open-ended materials and tools long term so that children can learn to use them at their own rate and then create new uses for them. This was my intention with making the iPad room available every day. The children's work in the iPad room was entirely their own. Once I set up the room, the children took it from there and created these incredible experiences with minimal teacher guidance.

One topic that children spent a significant amount of time exploring was light and shadow. With the projector screen hanging in the middle of the room, shadows formed only on the side of the screen facing the projector. As a result, the children began an ongoing dialogue about how and why shadows are created, during which they developed their own theories.

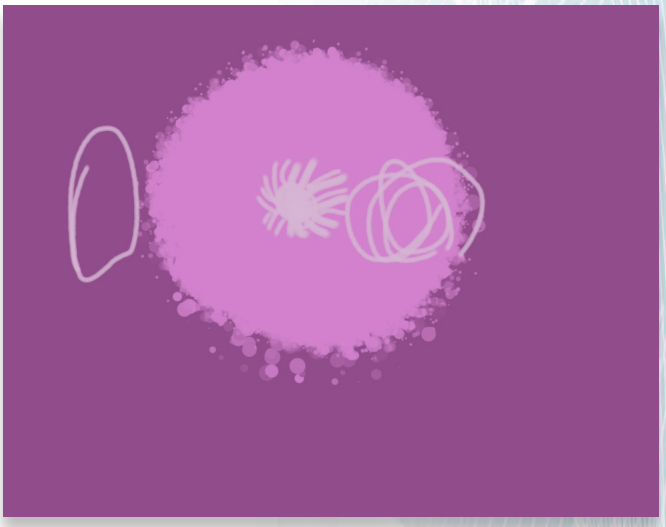
> One child ran to the opposite side of the screen from the projector and danced in front of the screen during his first few visits to the iPad room. As he did this he would ask, "Can you see me dancing?" and "Do you see my hands?" Eventually, as one child drew on the iPad, she remarked, "Dance on this side! Where the light is."

Another popular point of exploration was the app's zoom feature. Some of the children were already familiar with the touch screen on an Apple device and knew that they could use their pointer finger and thumb to zoom their image in and out. With the Brushes app, the children could zoom in so far that it would distort the image and zoom out so far that the entire image was a tiny speck on the screen. As the image increased or decreased, the children's interpretations of the image also changed.

> When the zoom was at 1555 percent, one child suggested the image looked like Legos. The children often encouraged one another to zoom in as far as possible, or to "make it 2000 percent!"

Eventually the children discovered ways to make the app's zooming feature a meaningful part of their drawing experience when partnered with the playback feature.

> The playback feature always replayed the children's drawings at 100 percent, regardless of whether the children had been zoomed in while drawing. One child discovered this after drawing while zoomed in as far as possible so that she could draw tiny details in her picture. When she hit the playback button to replay her drawing, forgetting she had been zoomed in, the octopus that she had drawn replayed very tiny on only one portion of the screen. She was sure to share this newfound information with other children, and they enjoyed drawing zoomed in designs and watching them unfold as tiny images in the playback feature.



A child's drawing.

The child's drawing zoomed in.

4. Inclusion: All children were interested and participated in the process regardless of their competency with the technology

Although most of the children had some prior exposure to digital technology, they all had different levels of competency. As with any technological device, the iPad and projector sometimes experienced technical difficulties and cords often had to be reinserted to reconnect the devices. A number of children understood how these things worked and could be the go-to helpers for peers experiencing errors on the screen who were unsure of how to fix the problem.

Additionally, the iPad was set up and locked on the Brushes app before the children entered the classroom so that all the children needed to do to use the iPad was to go around the projector screen and draw on the blank iPad screen. All of the children were familiar with the touch screen and knew how to initiate the drawing process upon their first exposure to the classroom device. Those children who spent more time in the iPad room and became more familiar with the app were excited and eager to share its more advanced features with their peers, including brush size, brush style, and the layering option.

> "See? I locked and close-eyed it so you don't even know that someone drew on it! You think that no one drew on it. And it's a surprise that someone drew on it! Cause when you press this (the play button) it comes on," one child described as he demonstrated how to use the layering option.

Implications and conclusions

This study taught me that it is possible to integrate technology into a preschool classroom in a meaningful way. I did not anticipate the children's experience with just one app to be so rich, and as a result, I became more conscious of the content presented to young children. There are hundreds of thousands of educational apps available, and many researchers throughout the US have spent time rating the quality of these programs, but our standards for classroom use must be different. At home, children most often use an iPad in solitary moments for a limited amount of time, and in these scenarios, learning apps trump mindless games or videos (Donohue 2015). When children are at school, however—and especially a school like mine that values social-emotional development—children should be given the opportunity to explore and interact together so that they can learn from their own experiences rather than relying on an app to do the teaching.

From this study, I drew four conclusions about using technology in the classroom:

1. School and classroom set up are important
2. When integrating technology, educators should ensure that their chosen technology use aligns with their pedagogical beliefs
3. Technology can be a social tool
4. All apps are not created equal

1. School and classroom set up are important

So many state and federally funded schools pop up wherever a space is available and then proceed to eliminate the character and quality of the building. If my school had renovated the former house where we are located so that every classroom was one large open space, my experiment could not have taken place. The charm of the small, unusual spaces in my classroom truly brought the iPad and projector to life and allowed a piece of my classroom to undertake a long-term transformation. Because the children had access to the iPad room every day, they were able to make unique and advanced discoveries that took months to develop. In fact, most of the children's experiences simply could not have happened if the iPad room had only been available short term.

2. When integrating technology, educators should ensure that their chosen technology use aligns with their pedagogical beliefs

I stand by my original statement that technology should not be used in preschool as a way to teach technology use. Again, children have all of their elementary and high school years to learn the ins and outs of technological devices. Our job as preschool teachers is to use technology as a way to support young children's development. My school's philosophy and my

own pedagogical beliefs understand social skills to be the most important developmental tool that young children can learn. Therefore, every step of integrating the iPad into my classroom focused on using it socially.

While, of course, I recommend all early educators take this same approach when adding digital technology to their classroom, this experience taught me how important it is for educators to integrate technology in a way that aligns with their teaching beliefs. (See the Appendix for another approach I took with the iPad that was less social but was, for the most part, consistent with my pedagogy.) When educators use their personal teaching beliefs as a guideline to determine the intention of technology use in their classroom, the experience becomes more organic for the teacher and more natural for the children. The more comfortable and confident the teacher is, the more motivated the children will be.

3. Technology can be a social tool

Technology can be used as a social tool in the classroom when educators are intentional about its integration. In the case of our classroom, the iPad became a social tool with the use of the projector and the advantage of a small room that could transform into a permanent space for the technology. Social interactions were fostered throughout the entire experience in keeping with my personal pedagogy and my school's overall philosophy.

4. All apps are not created equal

Individual features of the Brushes app made the experience a richer one, most notably the playback option. The children's interaction with the iPad would not have been as rich with a lesser quality app. Although I did not initially search for a drawing app with a playback feature, stumbling across it became one of the most important pieces of the children's experience with the iPad. This feature gave the children a chance to focus on their drawing process by revisiting it as often as they liked.

Entering into this experience with goals and a set plan kept me on track to integrate technology into my classroom in a way that aligned with my pedagogy. Trusting that the tool would be social and that the children would learn together as they interacted with the device was only the beginning. I could not have planned for the end results. Instead, the experience emerged piece by piece as the children came up with new ideas. I would highly recommend other early educators make an attempt to integrate technology into their classroom in a way that makes the most sense for them.

References

DeVries, R., B. Zan, C. Hildebrandt, R. Edmiaston, & C. Sales. 2002. *Developing Constructivist Early Childhood Curriculum: Practical Principles and Activities.* New York: Teachers College Press.

Donohue, C., ed. 2015. *Technology and Digital Media in the Early Years: Tools for Teaching and Learning.* New York: Routledge.

Edwards, C., L. Gandini, & G. Forman, eds. 1998. *The Hundred Languages of Children: The Reggio Emilia Approach—Advanced Reflections.* 2nd ed. Greenwich, CT: Ablex.

Gartrell, D. 2004. *The Power of Guidance: Teaching Social-Emotional Skills in Early Childhood Classrooms.* Clifton Park, NY: Delmar Learning.

NAEYC & Fred Rogers Center for Early Learning and Children's Media. 2012. "Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8." Joint position statement. Washington, DC: NAEYC. www.naeyc.org/files/NAEYC/file/positions/PS_technology_WEB2.pdf.

Puerling, B. 2012. *Teaching in the Digital Age: Smart Tools for Age 3 to Grade 3.* St. Paul, MN: Redleaf Press.

Rogoff, B. 2003. *The Cultural Nature of Human Development.* New York: Oxford University Press.

Self-portraits as a non-social use

While the absolute main goal of integrating the iPad into my classroom was to use it as a social tool, other uses presented themselves and created wonderfully rich experiences. One of the most meaningful opportunities that came about was allowing the children to use the iPad to take self-portraits. This opportunity was only possible because the children had already become familiar with the iPad and the iPad room.

During one of our staff development days, my director, coteachers, and I spent part of the day visiting the Exploratorium in San Francisco for inspiration. While we were there, I noticed an exhibit of black and white portraits featuring a diverse group of men and women all holding a sign with a single word written on it. The 5x7 images covered the wall from the floor to the very tall ceiling, each one held only by a mini binder clip and a thumbtack. Each portrait showed the top half of the model's body in front of a white background, and the models all seemed to be sitting in a chair. The purpose of the exhibit was to illustrate media influence as the models held one word that they had learned only since the 9/11 attacks. "Terrorist," "Al Qaeda," and "Ground Zero" were a few of the words written on these images. The exhibit was powerful for this reason, without a doubt, but what stood out to me the most were the models' facial expressions. The uniformity and simple design of these images drew the viewer's eyes to each model's face. Gesture, expression, comfort level, emotion, pride, and personality are a few of the things that shone through when all other distractions were eliminated from the pictures.

My preschoolers had already been working on self-portraits and different ways to approach them throughout the school year. Each month the children would create a new picture of themselves using different media. Most of the self-portraits involved drawing tools, but the children used different methods each month to develop their final product and were allowed to revisit their self-portraits three or more times. For example, they might sketch an outline of their body with pencil as a first step, trace it with black permanent marker as a second step, and then fill it in with colorful watercolors. After my experience at the Exploratorium, I decided to incorporate photography as a self-portrait medium.

The classroom's first generation iPad did not have a built-in front facing camera. However, I happened to own a DSLR camera with a Wi-Fi transmitter that allows the photographer to use a cell phone or other electronic device as a remote for the shutter. In basic terms, a small device is plugged into the camera and a Wi-Fi signal is transmitted when the camera is turned

A child holding the iPad while taking a self-portrait.

on. Most portable devices can connect to the camera's Wi-Fi signal, and the image that is seen from the camera then appears on the portable device (through a free app called Nikon Wireless Mobile Utility). The touch screen on the portable device has a button that the photographer can press, which will then release the shutter and take a picture from the digital camera. With this feature I was able to connect the DSLR and iPad quickly and easily.

My next step was to create my own version of a photo studio. I hooked up the iPad to the projector as I had been doing throughout the entire year. Then I set a small stool in front of the white curtain that hung across the center of the iPad room. A few feet in front of the stool was a small table where I placed my DSLR. I moved the projector to the opposite side of the room on a high shelf (behind the curtain where the model would sit on a stool), and the image projected on a separate white curtain that I tacked in front of the window, facing the model. This setup allowed the children to sit on the stool one at a time and to see the image of their face projected on the wall in front of them. With the iPad in their hands, they used the touch screen to release the shutter and take near-professional black and white self-portraits. The purpose for using the projector for this project was to attempt to make the experience social and to encourage the children to look up as they took their own pictures.

Initially I intended to display only one image for each child's March self-portrait, but after looking through all of the children's photos, I realized each image told a story. I ended up printing four black and white photos for each child and displaying them in a vertical line as if they were a photo strip. The end result was incredible. Each child's personality, comfort level, and character shone through in every one of the images. The children often reference their own pictures and those of their peers, which are displayed in the classroom at their eye level. The self-portraits have been an excellent support in talking with the children about self-identity and encouraging them to take a closer look at themselves.

Classroom display of the children's self-portraits.

Parallel Voices Commentary on the teacher research of Carlyn Joy Bracken

BARBARA HENDERSON

Tech Smarts: Using Technology to Support Young Children's Social and Creative Development

Barbara Henderson, PhD, is a professor of education at San Francisco State University where she co-coordinates the early childhood MA in education program and teaches graduate and credential classes. Her interests are teacher research and children's development in cultural contexts. She is co-editor of *Voices of Practitioners*. barbarah@sfsu.edu

Carlyn Joy Bracken works in a preschool in San Francisco, a city whose workforce and cultural practices make a powerful impact on how the United States and the world use and think about new digital tools. Her school received a gift of two first generation iPads when the iPad first shipped in April of 2010. This generous gift gave the school access to the digital culture beyond the norm for most early childhood settings. At the same time, the school's reluctance to use the devices with young children is squarely in line with the center of our field. Indeed, early childhood education has hesitated to integrate digital technology into our classrooms, and with good reason.

In the most practical terms, early childhood educators hesitate to incorporate technology because the hardware is breakable and because it is too expensive for schools to provide a device for each child. In this case, Carlyn decided to make just one iPad available to the children. A second major concern, as Carlyn emphasizes, is an understanding among professional educators and those in child development about the benefits of limiting screen time in favor of keeping children physically and socially active.

On the positive side of the ledger, the iPad is uniquely situated as a tool for schools because it is an open-ended device that can be connected with a range of other tools, including projectors and external cameras, as Carlyn

describes in her article. The iPad can also be connected to a keyboard, an audio system, external speakers, headsets, external monitors, television screens, printers, and Wi-Fi. Furthermore, there is an ever-expanding selection of apps that allow the iPad to do tasks that range far beyond the imagination of its original developers. Finally, as a simple one-piece tablet computer, the iPad is well suited for young children, and it allows for easy care and maintenance by the teachers.

Background

Carlyn worked with me when she was a graduate student engaged in this teacher research project, and we often discussed how important it was for her to use the iPad in a way that was consistent with the setting and philosophy of her school. The iPad project had to be a social and creative experience in order for Carlyn to deem it a success. In working with Carlyn, I saw how she guided children through the development of three different projects. The one at the heart of her article describes children's creative drawing and dramatization play in what became the iPad room. The class also participated in taking self-portraits for a project she describes in the Appendix. However, Carlyn's very first attempt to integrate the iPad was a project she doesn't mention in her article called "I'll Move My House to School," in which she worked one-on-one with children as they drew wheels, boats, sleds, and freezing ice storms on digital photographs of their homes.

The "I'll Move My House to School" project took place in the regular classroom and arose from an exciting discussion the children had during a circle time early in the school year, when they fantasized about connecting school with their homes. In the iPad project that followed, Carlyn met with one child at a time to use a drawing program on the tablet with the goal of modifying a digital photograph of the child's house. Sometimes a few other children would gather around to watch and comment, but the project did not meet most of Carlyn's goals because it required adult direction, did not allow for group work, and at times felt a bit forced or limiting. Such an experience would have been helpful in a class where children needed to build a bit of comfort with the device, but almost all the children in her class were already familiar with the iPad.

At the conclusion of "I'll Move My House to School," Carlyn sought a project that would allow children to have creative control of the work and that was primarily social. She switched to another drawing application called Brushes, which she was inspired to use after seeing a David Hockney exhibit created entirely from this app. She also made the iPad accessible to multiple children by connecting it with an LCD projector that the school already owned.

Exploring the Brushes app

As Carlyn launched this project, it was apparent how little the project was *per se* about the iPad or its software. She set up the iPad for the children to use for a purpose that was familiar to them (drawing) and that mimicked the way they would use paper and writing utensils. In this respect, Carlyn's implementation of the iPad is similar to recent work by the schools in Reggio Emilia (Dezuanni et al. 2015) in which children use software to draw and an iPad to work with young children in Australia.

In terms of school environment, Carlyn teaches in a school building that used to be an old house. She artfully describes how one of the small rooms afforded a perfect setting for a semipermanent iPad projection space. She also describes furnishing the room so that children would feel welcome there even when they were not interacting with the iPad, creating a social space that allowed the project to flourish over many months. Children played with shadows and light, acted out dramatic play, chased floating dust motes in the projector beam, and drew simple objects like hats on the screen for friends to wear. The source of energy in the project was the space, time, and teacher acknowledgment of the children's social play. Interestingly, in some ways, the externally connected projector was more relevant technology than the iPad itself, although Carlyn would never have thought to give children access to the projector without the iPad as the driver.

In terms of her pedagogy, Carlyn discusses two aspects of the project: the time she allowed for children's gradual progress in gaining competency with the drawing app and her role in helping them revisit their work at whole group time by using the replay function of the app. Carlyn's data show how the children moved from scribbling in just one color using a single brush size to drawing in a range of colors using multiple brush sizes. Children also experimented with the playback feature, watching the screen fill and refill with the drawings they had just created. Soon, their work with the app matched their drawing skills with other media, as they left scribbles behind and moved to drawing representational images. This part of Carlyn's analysis provides an example of how children's development is recursive; the introduction of a new tool causes children to retreat to more developmentally basic approaches until they figure out the new medium and then return to an even developmental profile across the media forms they have mastered.

The other pedagogical move Carlyn made was to allow children to discuss their work on the iPad during group meeting times. The time and focused interest she devoted further signified to the children the value she as a teacher placed upon their creative and social explorations in the newly designated iPad room. This time gave children a space to talk as artists about their drawings and the process that had led them to their products. It also allowed them to share techniques, which increased the whole classroom community's ability with the device.

Drawing comparisons

Carlyn Bracken's teacher research study breaks new ground with its emphasis on preschool children's creative and social engagement with technology. It is also the second study *Voices of Practitioners* has published on the use of digital technology in the early childhood classroom. The previous article by Charity-Ann Baker was published in the May 2014 issue (http://www.naeyc.org/files/naeyc/images/voices/12_Baker_v9-1.pdf) and focused on using digital technology with first-graders. Drawing comparisons between the two studies can suggest some larger lessons for technology use in early childhood and may also suggest what kinds of teacher research studies might follow to help us better understand these issues.

In her first grade classroom, Charity-Ann Baker used skill-learning software (in part), which Carlyn avoided completely. Baker also had much greater focus on teacher-directed and skill-based learning, which is not surprising given the academic standards expected from children in the elementary grades. This difference is also reflected in the research style of the two articles, with Baker emphasizing student outcomes on assessment measures and Bracken keeping her focus steadily on the children's process—with the minor exception of describing how the children became more proficient at drawing with the iPad.

When drawing comparisons, we can see that there are a number of similarities between the articles. Both teachers talk about the value of technology in terms of their selecting primarily open-ended or generic tools. They describe how this kind of technology creates settings for child-directed and real-life problem solving, as in Carlyn's study when the children work together to figure out how to draw crowns in the correct spot over the heads of children standing in front of the projector.

Baker and Bracken also both discuss the social aspect of shared work, as children used a Smart Board and a projector in their respective classrooms, both of which promoted a greater degree of socially shared work. Within this context, the authors emphasize how the technology supports independent learning, although in Carlyn's classroom, it was particularly child-centered creative learning, while in Charity-Ann's classroom the learning was more skill-based, particularly pertaining to gaining literacy.

Finally the social-emotional elements were a clear success for both teachers. The articles discuss how the children in the preschool and primary grade settings felt confident and positive about using the technology in their classrooms. Charity-Ann Baker also talks about peer support during group projects in her first grade classroom, and both teachers acknowledge how technology use helped create a more equitable classroom, where children of different experiences, backgrounds, and skill levels could collaborate productively around the technology.

Implications for future research

In conclusion, both of these teachers want to use technology to build the better nature of the children. They provide helpful examples of early childhood teachers who emphasize an upward gaze away from an individual screen to support collaborative work with technology. Having one device per child, as has been the movement in some technological innovations from the upper elementary grades through high school, is probably not what early childhood teachers need most. Instead, the shared resources—when used well as Carlyn Bracken and Charity-Ann Baker have done—bring the children together and help them focus on the process at least as much as any products.

Future teacher research studies on technology in early childhood classrooms might examine its use in classrooms that are not as rich in resources as Carlyn's—classrooms in communities where the children may have on average fewer opportunities to use open-ended and interactive digital technology at home. Studies might also look at broader scale integration of iPads, across the whole school and with all the teachers supporting their children. As a final suggestion, a more longitudinal study might look at how early experience with technology in a classroom setting might contribute to children's transition to elementary school, particularly as increasingly they will move into classrooms like Charity-Ann Baker's, where a range of digital tools form part of the fabric of the pedagogy. The kind of playful and open-ended experience Carlyn provides, where children use technology as a tool for exploration, is likely to change how they will want to use technology in the primary grades. This playful orientation is also likely to percolate up in terms of children's abilities to use digital devices, particularly if they have not had much or any prior experience with certain devices.

Concluding thoughts

Digital technology has its place in early childhood education, but we need teachers and administrators who see the big picture, use the tools flexibly, look for ways to integrate new materials with existing technology, and provide children with choices and opportunities for leadership. Digital technology is changing the world, and we should embrace its power for the new ways it can support creativity and social interaction (Selwyn 2013). Teacher research provides us with insider teacher knowledge that will let us use these tools in ways that children respond to and that align with our deepest beliefs about how teaching and learning should respect the creativity and social nature of the child.

References

Baker, C-A.J. 2014. "Investigating the Role of Interactive Technology in a Connecticut First Grade Classroom." *Voices of Practitioners* 9 (1): 2–18. www.naeyc.org/files/naeyc/images/voices/12_Baker_v9-1.pdf.

Dezuanni, M., K. Dooley, S. Gattenhof, & L. Knight. 2015. *iPads in the Early Years: Developing Literacy and Creativity.* New York: Routledge.

Selwyn, N. 2013. *Education in a Digital World: Global Perspectives on Technology and Education*. New York: Routledge.

In this article, Isauro M. Escamilla Calan describes effective ways to introduce preschoolers living in an urban environment to the world of nature and gardening in developmentally appropriate and culturally responsive ways. He highlights in particular how sketching, drawing, and painting are powerful media for children's inquiry-based nature learning, and how this process helps young bilingual speakers learn ways to talk about nature with each other and with adults. Escamilla Calan explains how the use of art slows down children's involvement with nature, improves their observational skills, and deepens their symbolic and representation skills in nature exploration and learning.

—Daniel R. Meier

ISAURO M. ESCAMILLA CALAN

Drawing, Photographs, and Painting: Learning About the Natural World in an Urban Preschool

My school, Las Americas Early Education School, is located in the heart of the Mission District of San Francisco and is part of the San Francisco Unified School District. The school reflects the city's cultural and linguistic diversity and provides an environment-based curriculum using the school's garden to connect nature, outdoor learning, and academic success. Until a few years ago, the garden had been neglected and unused, a place where children ventured only by accident and where adults hardly ever set foot. Then, over the span of just a few months and with the help of a mini-grant, the children, my coteachers, and I transformed this unused space into a lively garden.

For me, "science" implies nature and greenery, something alive and thriving—the opposite of what the schoolyard environment offered the children. So I thought it would be a great idea to create with the preschoolers a space to plant, observe, and connect what we grow with some of the foods we eat. In the process, I wanted the children to become acquainted with nature and tap into what Howard Gardner (1999) calls the naturalist intelligence, which too few children in our modern society explore. I had five basic inquiry questions to start my project:

1. How can I improve the science area in my classroom?
2. How can I incorporate science and nature as a daily occurrence in my class?

Isauro M. Escamilla Calan, MA, is a preschool educator at Las Americas Early Education School (SFUSD), in San Francisco, California. He is currently adjunct faculty at San Francisco State University, teaching a class on how to best support English language learners in a multilingual preschool setting. imescamilla@gmail.com

Photos courtesy of the author.

Adapted, with permission, from "Drawing, Photographs, and Painting: Learning About the Natural World in an Urban Preschool," by Isauro Michael Escamilla, in *Nature Education with Young Children: Integrating Inquiry and Practice,* eds. Daniel R. Meier and Stephanie Sisk-Hilton (New York: Routledge, 2013), 194–215.

3. How can I motivate and support the children to create a green space in our school grounds?
4. How can I use the garden as a resource to promote the learning of life science?
5. How can I incorporate my knowledge of teacher inquiry and reflection to improve my science curriculum?

The value of nature education and inquiry for urban preschoolers

The ideas and strategies in this article make visible the benefits of creating, exploring, and studying green spaces with children who live in the city. Most of the children, who range in age from 3 to 5 years old, are bilingual and speak Spanish, Mandarin, or Cantonese as their second language, which are all languages that our teaching staff speak, too. And although most of our conversations are in English, we often use the children's home language to get a better understanding of how their young minds process their nature experiences. As our nature study has progressed, we sometimes take dictation from the children in both languages, and some children are starting to write a few words in English.

When children explore nature in their own communities, they often develop a sense of respect and ownership for these places. They can learn about life cycles, natural phenomena, living systems, and how different parts come together to create a whole—for example, how a trunk, branches, and leaves form a tree. When children play outdoors in green spaces they reconnect with nature and develop a certain awareness of the role that weather, grass, water, plants, insects, or birds play in our daily lives. Whatever environment children are exposed to in their early years becomes the lens through which they perceive the world around them. If we want children to grow up and become stewards of our natural resources, they must first have easy access to environments where they can experience the delights of being in green outdoor spaces to play, discover, and learn.

Because children's science opportunities are often rather limited, "confined too frequently to the passive and secondhand experience of the television or video game" (Chalufour & Worth 2003, 2), it is essential to offer children real-life science and nature experiences. The use of visuals during those experiences to represent scientific observation and learning is a critical option for bilingual children, who are learning to speak and understand science concepts in two languages.

This is why, in our emergent life science curriculum, I emphasize the value of drawing, sketching, and painting, which allow children to produce visual representations to complement their emerging language skills in science and nature study. According to Forman and Fyfe (1998), drawing from observation as done in the Reggio Emilia preschools permits children

to generate and consolidate knowledge and to correct their misconceptions. For Malaguzzi (1998), putting ideas into visual representation helps children understand that their drawings can communicate what they sometimes cannot express solely in words. In this sense, for young children, graphic representation is a communication tool that is simpler and clearer than words, although the act of representation is complex because it requires children to make important cognitive and scientific choices based on their observations and experiences.

As Meier and Henderson (2007) explain, documenting a project-based curriculum through different media is a form of inquiry because it engages children in the inquiry process and helps teachers organize and analyze data to clarify teaching and learning questions. I wanted the children to understand the life cycle of a plant and an insect, and I also wanted to offer them opportunities to become better observers, to take their time experimenting with basic art materials, and to make symbolic representations of their nature observations.

Data collection

My teaching team used the following materials to collect our data:

- Photographs
- Audio recordings
- Teacher journals
- Children's work samples

Photographs of the children's nature learning proved to be one of our most valuable inquiry tools. My coteachers and I constantly used a camera to capture seemingly unimportant moments, only to realize later how many of these photos helped create a visual narrative of the nature project at hand. They helped us see the children's ability to work together, whether they were tending the garden, making symbolic representations in the classroom, or enjoying one of our field trips. We used selected photographs to create display panels to prompt conversations and help children focus on specific aspects of our science inquiry (Chalufour & Worth 2003). These images invited children and teachers to engage in dialogue about past events and encouraged us to make plans about other prospective activities.

Our audio recordings also proved to be valuable tools. I occasionally captured the children's dialogue with an audiotape recorder and would often play back the children's conversations for them at a later date. Reviewing these conversations helped us replay their theories in-the-making and move forward to new ideas. Though time consuming, I listened to the audio recordings several times, trying to capture the harmony and pace of the dialogue, as well as the content of the concepts the children were acquiring. Once I transcribed the children's conversations, I tried to discern why they had said what they said, and how this knowledge was influenced by the

activities we had done in class. Listening to their conversations helped me reflect on my role as a teacher and my responsibility to set up activities in which the children could increase their knowledge and challenge their theories.

My teacher research journal held my notes, descriptions, observations, and preliminary reflections and interpretations. My daily notes and observations gave me an idea of how to plan for activities that would help the children gain a better understanding of specific concepts. I also kept photocopies of drawings made by the children to accompany some of my written observations. Finally, recording some of the children's comments and questions helped me informally assess their science knowledge.

The children's representational work samples also offered a window into their thinking. I spent hours sorting out a vast number of drawings, making photocopies and sorting them all by date and categories so that I could create individual files. With an organizational system in place, I was ready to compare their early drawings with their later drawings to see if and how their understandings developed into new knowledge, especially with those children who made drawings their preferred mode of expression.

Research plan and findings

1. The process of replaying the children's taped conversations helped us determine their theories in-the-making and move forward to new ideas.
2. Representing their ideas through art slows down children's involvement with nature, improves their observational skills, and deepens their symbolic and representation skills in nature exploration and learning.
3. What started as a study of basic science knowledge evolved into a more ambitious study of exploring nature through the outdoors.
4. Slowly, this study tapped into the children's ability to care for and respect all living things, even if they do not fully understand their role in the intricacies of our ecosystem.
5. Capturing all these moments in photographs—combined with the children's comments and drawings and my reflections and interpretations—contributed to a larger view of children as active learners.
6. Documenting these experiences helped me find new meaning in the routine of my daily work as a teacher, making each day different from the one before when seen through the children's eyes.
7. Together we brought a small garden back to life, and we felt very proud of it.

The garden where we planted the first broccoli seedlings was the logical place to start our observations. Equipped with markers and paper on clipboards, the children went into the garden to draw the small broccoli plants, only to discover that someone or something had been nibbling on the leaves. They were determined to protect their baby plants and find the culprit. This is how they began to uncover intricate connections between plants and insects and became interested in the structure and life cycles of living things.

Bringing our garden back to life.

Caterpillars

When the children found several cocoons in the rose bush in the schoolyard, they were already familiar with the caterpillars that were eating the broccoli seedlings they had planted earlier.

Observation, conversation, and drawing

One afternoon, I took a small group of children to the back garden to find something that would trigger their curiosity and provoke their thinking. We found a few sticks, a pile of grass, dirt, discarded plants, and empty plastic containers that once held seedlings. It had rained two days before, so the pile of dirt and grass was damp and wet. Poking here and there, we uncovered (in Julian's words) "a family of snakes."

JG: These are not snakes.

Julian: They move like snakes. They are baby snakes.

Teacher: No, they are worms, earthworms.

Julian: Here's another, another one! So many!

JG: Why we never come here?

Omar: Look, here's another thing, but this is not a worm.

JG: Is it a snake?

Omar: No. It has many legs. But it's gone. I need a bigger stick. It's scary.

Teacher: Whatever it is, please, don't kill it.

JG: It is here. It went that way!

Omar: I think it is an insect.

We picked up a few earthworms and placed them in an ant farm to observe. During snack time, a couple of the boys began to wonder about their diet.

JG: Poor little animals, poor little things, they have nothing to eat.

Joshua: What do they eat? Apples? Insects? Paper? Flowers? People?

A few days later, we placed three of the earthworms on a piece of paper in the center of the table for a 30-minute drawing session, during which the children exchanged comments, ideas, and questions. Some of these were,

- Where is the head?
- Where is the tail?
- Why is he bleeding?
- Which one is the boy?
- Which one is the mom?
- Why is this bigger?
- They don't like the light.
- It's peach color.
- It's black inside.

I didn't answer the children's questions because I didn't know all of the answers. I could have gone to the library to research the worms' anatomy, but I wanted the children to lead the inquiry. This is a big shift in defining the role of the teacher, who most of the time is considered the holder of knowledge, the one who instructs and teaches, and the one who provides the information needed.

Another day, when the children had been looking for earthworms, they saw a blooming rosebush. Looking at the roses, they noticed some of the leaves were curled up. Intrigued, Cindy picked one leaf and opened it up. Inside the leaf she found a caterpillar wrapped in what looked like a spider web. They found a few more leaves with very tiny caterpillars inside building their cocoons. The children found no earthworms, but they seemed content with their new discovery.

We took a few leaves along with the caterpillars for closer observation to the light table in the classroom. The light table made the leaves almost see-through. We then placed the leaves in our plastic habitat box, and the children gathered to observe and discuss the newly arrived caterpillars. They used magnifying lenses to check on any new developments inside the habitat box, where the caterpillars were wrapping themselves in silky blankets. The light table and the habitat box served as the initial gathering center that encouraged the children to talk about the caterpillars, make theories, and ask questions. I captured their dialogue with written notes and an audiotape recorder, and I often played back the children's conversations later on for them. This helped us replay their theories in-the-making and to move forward to new ideas.

Observing caterpillars on the light table.

Felix: What is it?

Cindy: Caterpillars. We found them in the garden for the big children.

Felix: They don't move. They're dead.

Cindy: No, they aren't dead. They are sleeping.

Felix: Are they gonna be butterflies?

Cindy: I think so. I don't know. Teacher, are they gonna turn like butterflies?

Teacher: I think so. We'll have to wait and see.

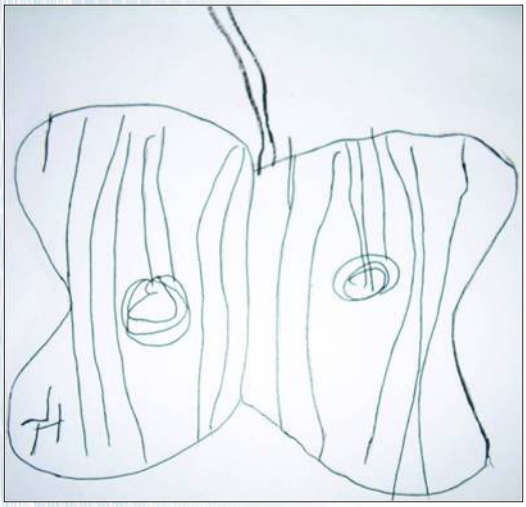
Felix asks a question that Cindy answers ("Caterpillars"), and she offers additional information explaining the location where they were found. Felix observes that the caterpillars are motionless. His observation leads him to *formulate a theory.* If they do not move, it is because they are dead. Cindy contradicts his theory and offers a second possibility. If they do not move and they are not dead, the most logical explanation, according to her experience, is that the caterpillars are sleeping. Felix seems to accept Cindy's explanation. If the caterpillars are alive but sleeping, and not dead as he had assumed in the beginning, Felix wonders if they will transform into butterflies. Cindy, who until then has shown self-assurance in her answers, offers a hesitant "I think so," and turns to me to find an answer to their question, "Will the caterpillars turn into butterflies?" I do not give them a categorical yes or no, but instead offer an invitation to observe and explore further. To maintain the children's interest, we placed the habitat box of caterpillars and cocoons on a low shelf. The children often went there to see if there were any butterflies.

We went to the public library, where we found beautifully illustrated books about nature, garden insects, and caterpillars. Some were nonfiction books with close-up images of caterpillars that allowed the children to see small details that they otherwise would not see on the tiny ones in our room. We invited the children to make representations of the caterpillars.

This drawing activity helped children pay attention to the insects' transformation. Each drawing was a unique interpretation of their observations, and no two drawings were alike. I wanted the children to feel empowered to continue their own graphic representations, and to respect and honor others' perspectives. This is an important social-emotional element in our nature work, which helps solidify us as a community of naturalists, gardeners, and scientists.

Representing the caterpillars.

A few days later, a child yelled for everyone to see the three butterflies flying inside the habitat box. There were three small brown moths, but to the children they were beautiful butterflies. Several children gathered around, surprised by the three small creatures that we hadn't seen emerge from their cocoons. A few children drew the moths while others attentively observed them during a small group activity, observing the anatomical parts of the butterflies and moths and focusing on such features as wings, thorax, legs, and antennae. The children put into practice their knowledge of animal anatomy and mathematics, which included counting, number, and symmetry. Anica drew four legs on each side of the body and counted them all one by one. Lizbeth used a magnifying lens to better observe the details on the wings, and she drew an elaborate and almost symmetrical wing pattern.



Lizbeth's symmetrical moth drawing.

The children soon learned new science vocabulary, such as *caterpillar, cocoon, antennae,* and *habitat.* I overheard Felix explaining to another child the butterfly life cycle using newly acquired vocabulary from one of the books. The children also revisited more familiar words, like *change* and *transformation,* which they related to Transformers, the flexible toys that can be transformed from a car into a superhero or a spacecraft. *Metamorphosis* was still too challenging a word for them, but that did not deter me from using it, remembering the advice of nature teacher Chris Giorni, founder of San Francisco's Tree Frog Treks Program (www.treefrogtreks.com), who uses big words such as *hypothesis* in his preschool nature presentations. He believes that familiarizing young children with science words makes it less intimidating later when they receive more academic science education. Interestingly, many of these new words had the same pronunciation in Spanish as in English, making it easier to persuade the children to use and understand the words in their home language.

Trees

Once the children's following of butterflies and bees became a routine activity in the garden, the children often looked up at the flying insects, watching until they disappeared from view among the plants or tree branches. One morning the children noticed that one tree branch had mostly red leaves while the rest of the branches had green leaves. I thought that this simple observation could lead to a new scientific discovery. The next day I took a photograph of the tree, and two days later I showed the photo to the children. Surrounded by a few children, I passed the photograph around while I asked several questions to hear their ideas and find out what they knew about trees.

Anica: Trees are for the birds to live.

Diego: Trees are big, very big.

Felix: The trees can fall when it rains.

Cindy: But they don't fall. When the wind makes them move, they hold to the floor.

Anica: The birds make a house in the trees.

Diego: Los pájaros hacen nidos. [Birds make nests.]

Felix: But when the rain is very strong and the wind is very strong too, the trees can fall.

As a follow-up activity I asked the children whether they could draw the tree in the photograph. Some children had seen the real tree, but some had not—or perhaps they had, but they had not intentionally observed it. Looking and observing are two different processes, and both are important. Looking is a helpful first step for children in selecting an object in the natural world. Observing entails focusing on that object with intention to discern particular characteristics, traits, and patterns, and children often need plenty of time and support from adults and peers for this process. To help the children become acquainted with the tree, I invited them to go with me and see the real tree in the yard. After a short observation of less than 10 minutes, we returned to the classroom and I asked the children to draw their impressions of the tree. My intention was to contrast the children's drawings from memory with ones from direct observations, which they would do a couple of days later. All the children's drawings were different, and each showed the way the individual child conceptualized and represented symbolically the same object, based on the child's age, ability to use materials, and sense of aesthetics, proportion, depth, and perception.

Diego's Tree Drawings

One morning Diego and Daniel were full of energy, jumping and tumbling on each other. I redirected them toward a more calming activity.

Teacher: How about the drawing table?

Diego: No, I don't know how to draw! (Daniel is behind him and also shakes his head at the idea of drawing.)

Teacher: Come on! It will be fun. (Diego and Daniel look at each other and agree to give it a try.)

Diego: What are we gonna draw?

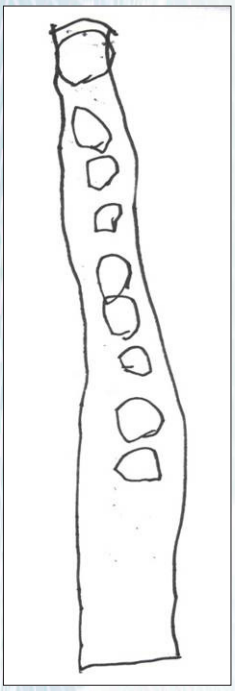
Teacher: You may draw whatever you want, but before you start I have something to show you.

Diego: What is it? (I show them the photograph of the tree.)

Teacher: Could you make a drawing of this or any other tree?

Diego: Okay, that's easy. (Diego answers with confidence.)

I put paper, markers, and the photograph on the table and told them I would return in a few minutes. From across the room I watched Diego and



Diego's first drawing of the tree.

Daniel talk to each other and look at the photo. About 10 minutes later I returned and asked them to show me what they had done. Diego's drawing was a vertical rectangle with small circles representing the leaves, from bottom to top.

Teacher: Does the tree have leaves all the way to the ground?

Diego: No. But I don't know how to make the top.

Teacher: Look at the picture and try again. I'll be back in five minutes. I think you can do it.

I wanted to offer Diego a challenging activity to sharpen his observation and representation skills. I had also noticed that he was having a difficult time tracing the letters of his name. He probably perceived letters as disconnected scribbles with no meaning and had no desire to practice writing his name. Since letters are symbolic representations of language, I wanted Diego to understand the value of communicating a message, idea, or concept through symbols. I offered him activities in which he could try to graphically represent something more concrete—in this case, the tree outside our school.

When I returned, Diego had drawn a new cylindrical shape covered from top to bottom with leaves that looked like small ovals and circles. It looked similar to the first drawing, but in his second attempt the tree leaned to the right.

Diego: I'm finished. I can't do it.

Teacher: Try again. Look, in the photo the leaves are on the top of the tree, not all over the trunk.

Diego: Okay. I'll do it again. I'll make another drawing.

Diego drawing the tree outside.

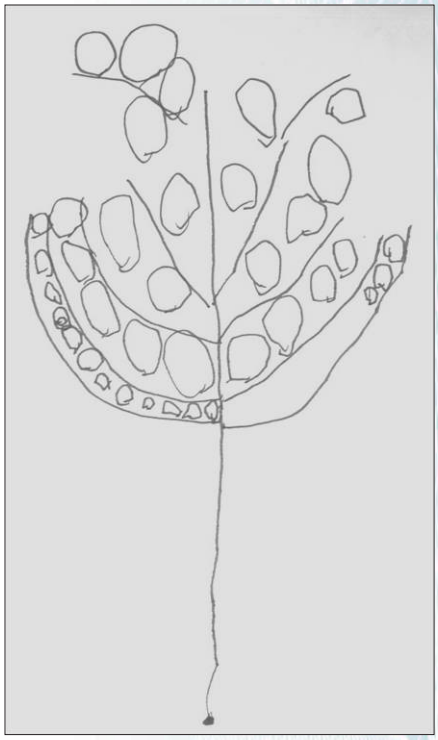
Teacher: I know what we can do. We could go outside to see the tree. Do you want to come?

Diego: Yes, that's a good idea! Let's go, Daniel. (Daniel is his best friend)

Diego, Daniel, and I went outside and looked at the tree. They brought their markers and paper, and I set up a small table a few feet away from the tree where Diego and Daniel sat down to draw. I pointed to the many tree branches, and they noticed that they curved upward and outward. Their eyes seemed to light up and their smiles made me think that they could make a more realistic drawing of the tree based on their personal observations. I again told them I would be back in a few minutes.

In his third attempt, when Diego was outside looking directly at the tree, he drew the tree with a trunk and a canopy. However, he realized that the leaves were not attached to the branches. In fact, he had drawn only two

branches and many leaves suspended in the air. In his fourth and last attempt Diego added several more branches and positioned them to the right and left of the trunk in an upward position toward the sun. He covered all the branches with leaves. The way Diego positioned the branches gave the illusion of multiple layers decreasing in size as they go up the tree. The branches extended symmetrically to both sides from the trunk. At the very top of the tree canopy, Diego added a few smaller branches, placing one on the right side and one on the left.



Diego's fourth drawing of the tree.

Diego's intricate sequence of tree drawings revealed that young children are capable of observing, focusing, and making detailed graphic representations to deepen their understanding of specific aspects of nature. They are also capable of sustained concentration and of drawing new drafts as their observations become more accurate and sophisticated. In this drawing session with a friend, Diego noticed details of the tree's structure. He learned that the trunk is always attached to the ground and the truck extends upward, creating a multitude of branches. He noticed that leaves comprise the heavy foliage on top and that these leaves are attached to branches. In his fourth and last drawing Diego represented the lower branches as thicker and stronger than the branches at the very top. As he added new branches to the tree, Diego made them shorter and thinner. It seems that Diego discovered that the higher the branches are, the smaller they become. He also seemed to know that the tree has main branches and secondary branches. By focusing in on specific parts of the tree, Diego understood how they interconnect and need each other to make a whole, pretty much the same way that specific marks form separate letters that, when put together, can form and represent his name.

Diego's and the other children's drawings helped them focus on small details and enriched and facilitated later discussion on trees. When young children focus their observations and ask specific questions about plants and animals, they are often ready for more extended explorations (Chard 1998). Chalufour and Worth (2003) consider representational drawing a way to help children discover nature's patterns and characteristics; as Diego demonstrated, I would add that drawing offers a developmental bridge from sketching to writing.

Final thoughts

This study of caterpillars, butterflies, and trees started with the mystery of someone or something eating our broccoli plants and ended four months later with the knowledge of the biological interrelationships between butterflies and plants and gardens. An effective life science curriculum for young children does not necessarily emerge from a set of materials purchased from a catalogue, or from preplanned lessons written by experts. Instead, as I strongly believe, children's natural curiosity and their

inquisitive minds can be used as catalysts to learn about the natural world in deep and sustained ways.

Yet, even in an emergent curriculum or a school, these experiences do not just happen. It takes the commitment, organization, collaboration, and understanding of adults in our roles as guides and facilitators to ensure that children's play and ideas about science and nature are focused, studied in depth, and sometimes even challenged. Through our nature studies I discovered that most children have the disposition to learn about science content when provided with unhurried time to observe and reenact and extend their understandings through writing, drawing, painting, constructing, and role-playing. As teachers, we learned to make art materials easily accessible both indoors and outdoors.

These children learned about the life cycle of plants firsthand and patiently watered the seedlings until they became fruit-bearing plants, ready for harvesting. They witnessed the transformation of caterpillars and changed their opinion of bees. At the same time, they started to envision the possibility of different creatures co-existing in the same school garden, each playing an important role in our small, local ecosystem.

I discovered that working with small groups of children gave me the time and space to observe and document the children's explorations and understanding of math, nature, and science concepts. I introduced these open-ended activities as another choice for the children, and more often than not, the activities emerged from the children's innate curiosity and interests. Working with a small group provided ample opportunity for closer social interactions among the children and allowed me to see the evolution of our scientific knowledge as a community. I got to know the children better individually and developed a better understanding of my role in supporting their construction of scientific language and knowledge. For example, one day, while out in the garden with five of the children, I asked them a few questions about gardening, such as "Why is a garden a good idea?" and "What animals and insects do you hope to find in the garden?"

Felix: So that the plants can breathe outside. So that when the bees go looking for the flowers and plants they go outside not inside, and they don't sting us.

Diego: Para que crezcan las plantas. [For plants to grow.]

Felix: It's good to have flowers so we can smell them.

Sharina: It's good to have flowers for the butterflies to eat.

Cindy: Butterflies eat miel de las flores [nectar from the flowers]. Bees, they eat honey, too. Butterflies like to eat the outside part of the flowers.

Felix: Butterflies like to eat the outside part of the plant, the flower (pointing to a petal). One day I saw a butterfly putting her head inside the flower and the bee, too. It went all the way inside.

The children's responses revealed what they had learned throughout our study.

I also more clearly saw how successful nature study for teachers and children is founded on encouraging children to ask questions, observe closely over time, and think about what their observations tell them. An environment that promotes inquiry about science or any other topic uses children's ongoing dialogue, artwork, charts, photographs, artifacts, and panels to communicate to teachers and families the richness of the learning process. This kind of environment also promotes inquiry through social interaction, exchange of ideas, collaboration, reflection with peers, and building on one another's work and theories. After all, nature study is more than knowledge. It is a process of exploration, communication, creation, and discovery with others. This is especially important for young children living in urban environments, and for children who are bilingual and juggling the learning of science vocabulary and concepts in more than one language. For these children, a nature curriculum that integrates drawing and painting and other visual forms of representation is a powerful tool for scientific understanding.

References

Chalufour, I., & K. Worth. 2003. *Discovering Nature With Young Children.* St. Paul, MN: Redleaf Press.

Chard, S.C. 1998. *The Project Approach: Developing the Basic Framework*. New York: Scholastic.

Forman, G., & B. Fyfe. 1998. "Negotiated Learning Through Design, Documentation, and Discourse." In *The Hundred Languages of Children: The Reggio Emilia Approach—Advanced Reflections*, 2nd ed., eds. C. Edwards, L. Gandini, & G. Forman, 239–50. Westport, CT: Ablex.

Gardner, H. 1999. *Intelligence Reframed: Multiple Intelligences for the 21st Century.* New York: Basic Books.

Malaguzzi, L. 1998. "History, Ideas, and Basic Philosophy: An Interview With Lella Gandini." In *The Hundred Languages of Children: The Reggio Emilia Approach—Advanced Reflections*, 2nd ed., eds. C. Edwards, L. Gandini, & G. Forman, 49–97. Westport, CT: Ablex.

Meier, D.R., & B. Henderson. 2007. *Learning From Young Children in the Classroom: The Art and Science of Teacher Research*. New York: Teachers College Press.

Worth, K., & S. Grollman. 2003. *Worms, Shadows, and Whirlpools: Science in the Early Childhood Classroom.* Portsmouth, NH: Heinemann.

Preschool teacher Ying Liang grew up in mainland China where she experienced a highly teacher-directed education. Even as a young child, she bristled against these schooling practices that so strongly limited her self-determination and voice. Ying currently teaches in the United States, working in a Mandarin immersion school with 4- and 5-year-old children. The school's philosophy is traditional, expecting teachers' primary approach to language instruction to be through direct translation, with the children immediately repeating the teacher's model. Instead, Ying recognized the opportunity to share power in the teaching and learning exchange. Thus, she focused a large portion of her Mandarin language instruction around the children's own creative writing, which was done through dictation, the co-construction of stories through drawing and dramatic play, and eventually some scaffolded writing using Chinese characters. In this article, Ying traces the developmental progress of the children as authors and communicators in Mandarin. She also explores the topics the girls and boys chose to write about to analyze what these stories tell about the children's developing self-identities and language abilities.

—Barbara Henderson

YING LIANG

A Journey of Journals: Promoting Child-Centered Second-Language Acquisition in Preschool

Adam: This was a big tornado. It went around and around and around. And there was an airplane flying here but then crashed because the tornado just hit it.

Ying (translating Adam's dictation): 從前有一個龍捲風, 它在轉啊轉啊轉啊, 然後有一架飛機要飛過, 可是龍捲風打到它, 所以它掉下來了。然後呢?

Adam: And then the tornado . . .

Ying: 然后那个龍捲風 [That's the tornado] 就是龍捲風, 龍捲風怎麼了。[Tornado is tornado. What happened to the tornado?]

Adam (pauses for three seconds): 完结了 [The end.]

It was afternoon in my Mandarin immersion preschool classroom, and children who were done sleeping went to the table to start drawing and writing in their journals. Half an hour later, we allowed the children to take turns sharing their journal stories in circle time for 15 minutes. This was the afternoon routine that I had developed at the beginning of the school year, with the goal of supporting children's developing creativity and encouraging them to speak publicly in Mandarin. Adam, a 5-year-old East Indian boy, was describing his drawing by telling a story about a tornado, but he lost interest in speaking after I reinforced that he should repeat my words in Mandarin.

I understood how Adam was feeling because I had received teacher-directed education when I was his age. At that time, I felt no passion for classroom activities because all I was doing was following teachers' instructions. Even as a 4-year-old, I already had many questions about why we had to listen to the teacher and do what she told us. How did she

Ying Liang, MA, is a preschool teacher at International School of the Peninsula, in Palo Alto, California. Growing up in China and being a teacher in the United States, she has a special interest in children's bilingual development and multicultural education. yingliangyl@gmail.com

Photos courtesy of the author.

know what she did was what we needed? I wanted to grow up because I had a dream: I wanted to be the one who had the power. Now I am a teacher, I became the one who has the power, but reflecting on my classroom practices I find that they are far more similar to what I experienced as a child than I would have imagined. This study has led me to realize that my teaching methods, despite my best intentions, were still limiting children's power in their learning process.

In part, my teaching practices result from my teaching context, which is a Mandarin immersion school embracing a theme-based curriculum and providing strong Mandarin-focused activities. I wanted to follow the school's approach, but I also felt the importance of giving children opportunities to express their ideas and explore their interests, even when they were using English to communicate. I found it was difficult to decide whether I should support children's ideas even when they spoke in English, or if I should reinforce the Chinese by having them repeat my translation right away. I wanted to do something that would allow children to have more power in the learning process but at the same time ensure that they were learning Chinese. Thus, I arrived at my teacher research question: How can I give the children power over their learning while at the same time supporting their Mandarin acquisition?

I used teacher research for this study because, as Meier and Henderson (2007) observe, it allows teachers to challenge their own beliefs, to deconstruct and reform their educational approaches and philosophies through carefully planned and systematic actions that change and improve their daily practice. Through teacher research, teachers find their own voices and find a way to make their voices heard. What's more, by presenting children's learning and thinking to the public, teachers amplify children's voices. According to Ballenger, "Teacher research lets the children, whoever they are, teach you—both about themselves and about their view of the domain you are jointly studying—while you are teaching them" (1999, 9). In conducting teacher research in the classroom, teachers position themselves as learners and receive a parallel inquiry experience as they inquire into how children think.

Review of literature

Like the air we breathe, we sometimes take written communication for granted. We read and write to communicate with other human beings, to connect with one other. Gadzikowski emphasizes, "Stories and storytelling help us build relationships, share culture, explore our identities, and in some cases, reconcile difficult emotions" (2007, 8). Stories are particularly important in multicultural classrooms because, through stories, children are exposed to different cultures. "Stories are a culture's coin and currency" (Bruner 2002, 15). Thus, when stories are integrated into second-language teaching, children will not only become bilingual but also bicultural.

We don't need to teach young children how to read and write word by word, but by supporting them to develop their own stories, they learn how words can represent meaning. Children are actually creating stories in their everyday play. Play and narrative are closely intertwined in young children's experience and development. As Paley says, "Fantasy play is the glue that binds together all other pursuits, including the early teaching of reading and writing" (2004, 8).

Corsaro (2013) says that children's social and language skills are the bridge to children's success in formal schooling. Agreeing with him, I believe language teaching should focus on more than just language skills. Attention should be placed on how children use language to fulfill their social needs and on how language is supporting children's development in other learning domains.

Gee (2004) argues that children learn a language best through what he calls "the culture process," wherein words and sentences are immersed in daily social interactions. He believes the traditional skill-driven method of teaching language lacks connections to children's social context. Gee's argument led us (myself and my assistant teacher) to rethink our current language teaching approaches. I began to question whether we were overemphasizing second-language acquisition. Might that have blinded us from seeing children's development in other areas? Sometimes we put too much focus on teaching children how to pronounce a word in the target language (Mandarin, in the case of our school), and we forget about children's other learning needs. When this becomes our emphasis as teachers, learning a second language becomes teacher directed, and children lose motivation.

I use journals to help children develop their comprehension and storytelling abilities because, in my opinion, a personal journal provides a space where children can learn to tell a coherent story, even when that process begins through drawing. These journal stories may lack structure and grammar, but they give children freedom to imagine and create. Furthermore, when teachers take dictation from children to document children's storytelling, both teachers and parents have a visual tool that allows us to enter into and reflect on children's worlds.

Methods

Participants and setting

I conducted this teacher research in my own classroom in a Chinese immersion school in San Francisco. During the 2013–2014 school year, I taught 20 children ages 4 to 5 years old alongside my assistant teacher, who has been working in this program for seven years. The children all had varying cultural backgrounds, preschool experience, and levels of Mandarin exposure. From September to May, every afternoon after nap time, I would provide a journal book, some provocation pictures and Chinese characters, and writing tools on the table for children to draw in their journal.

Research plan

Although I have used journaling before (albeit with a younger group of 3-year-olds), this was my first time introducing journaling with the 4- and 5-year-old group. I implemented the following techniques to be more intentional about journaling as a means of second-language acquisition:

1. As I described earlier, I had the children journal on a daily basis, following a consistent pattern at the same time each day.
2. I added some provocations, such as Chinese character prints on the journal paper, to encourage children's use of the target language.
3. In addition to having the children share the stories they created through their drawings at circle time every day, I added other related activities, such as dramatic play. We also helped the children create their own storybooks.

Data sources and collection methods

Throughout the school year, I collected four major kinds of data:

- Children's journal samples
- Audio recordings and storytelling transcripts
- Photographs
- Teaching journals

I collected children's journal samples every week, along with my story dictation. Sometimes I included audio recordings of children telling their stories. I took pictures of children working on their journals, which captured them drawing and speaking. I kept a teaching journal to jot down questions and thoughts, and this writing was my main source of reflection.

Findings

Through this study, journaling developed a child-centered Mandarin climate in our classroom. The school year began with us encouraging children to draw stories in their journals and ended with children eager to share their journals. It began with pushing children to tell stories in Chinese and ended with children naturally and confidently dictating their stories to us in Chinese. The children's interest arising from their stories became the main power for bringing new Chinese vocabulary into the classroom as they asked us for words in Chinese.

Beyond language acquisition, I found other important social and cultural dynamics embedded in children's stories. These were more valuable findings because language and culture are entwined. The environment that children are surrounded with will affect the way they use a language. Reflecting on this insight, my teaching journal provided the following findings:

1. Copying—both from books and their peers—was an effective tool for helping the children learn drawing and language skills and for building peer relationships
2. Girls became powerful by playing teachers in their drawings and dramatized stories
3. Boys became powerful by talking about school taboos like shooting, fighting, and dying
4. Children used stories as a way to address their social and emotional needs

"In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself" (Vygotsky, as cited in Rogoff 2003, 298). Similarly, I found that through storytelling, the children spoke and acted differently than they did in their daily lives; it was like they were creating another self in their stories.

1. Copying—both from books and their peers—was an effective tool for helping the children learn drawing and language skills and for building peer relationships

One morning during circle time, I read a book translated as *Nana the Young Duck*, written by Jincheng Zhengzi. The story was about a mommy duck who wanted to take her ten ducklings to bathe in the river. The smallest duck was playing around on the way, which brought a lot of trouble to the mommy duck. In the afternoon's journal, Tracy (top drawing) and Leanne (bottom drawing) both told a similar story about ducks. Tracy told me the following story.

Tracy: 有一天，有一個鴨子媽媽和鴨子小孩子們。 [One day, there was a mommy duck and baby ducks.]

Ying: 有幾個小孩子呢? [How many baby ducks?]

Tracy: 1,2,3,4, 我寫了在這裡, 所以大家知道" [One, two, three, four. I wrote it here.]

Ying: 他們要去做什麼啊? [What are they doing?]

Tracy: 她要去找那個彩虹, 她不知道彩虹在哪裡? [She's looking for the rainbow, she doesn't know where it is.]

Ying (Looking in her eyes and nodding my head): 她要去找那個彩虹, 可是她不知道彩虹在哪裡? [She's looking for the rainbow, *but* she doesn't know where it is.]

Tracy (acknowledging and applying the difference in my wording): 所以媽媽就跟小鴨子叫呱呱呱'。 然後她走走走到彩虹了。可是有一個大風在彩虹旁邊。所以她到家裡了。 [The mommy duck says, "Quack, quack, quack," then she walks to the rainbow, but there's a big wind next to the rainbow, so she arrives home.]

Ying: 所以鴨子們被吹到家裡了. [The ducks arrive home because they were blown by the wind.]

Tracy: 所以鴨子們被吹到家裡了。可是沒有關係，因為他們到家裡吃東西，小鴨子很高興。完結了。 [The ducks arrive home because they were blown by the wind. It's okay because they can eat. The ducks are happy. The end.]

Leanne's story was about a mommy duck playing ball with her baby ducks. Noticing that her drawing was very similar to Tracy's, I asked her where she got her idea. She answered, "I saw Tracy draw it, and I copied her." Tracy responded to Leanne's copying positively, saying, "I can show you how to draw a mommy duck and a baby duck."

Both Tracy's and Leanne's drawings contained some elements from the story, but they also added their own ideas. I saw that *Nana the Young Duck* served as a platform in the girls' storytelling process. They copied the beginning of the story, borrowed ideas from other parts of the story, and then extended it with their own ideas.

At times, children would work together to co-construct a story, as the pictures to the left show Sasha and Lauren doing. They discussed how the story would go while they drew, borrowing ideas from each other throughout the process.

Copying was an effective tool for the children to learn and build relationships with their peers as they learned from and with each other. By copying their friends, they learned more about how to draw and also how to say more words in Mandarin. The one who was being copied developed self-esteem because she felt proud to be teaching others. The one who was copied felt that she was cared about and loved by her friend.

2. Girls became powerful by playing teachers in their drawings and dramatized stories

Because my goal was to give children power over their own learning, I paid close attention to the types of situations that gave children a sense of

power. As a general rule, these situations proved to be different for girls and boys. As the school year progressed, the girls began to incorporate the idea of being a teacher into their stories. Although both boys and girls began to copy my words in their daily conversations—especially my instructions to "be quiet," "please sit down," and so on—it was the girls who expressed power in pretending to be a teacher through their stories and dramatic play. Kathy dictated the following story to me from her journal.

> 有一天, 有一個人在推小朋友, 小朋友哭了。我說: "我靜婷是排隊小隊長。你們可以插隊嗎? 還有你們不可以講傷害別人的話。你們講話要舉手, 我就會選你發言。"完結了。[One day, a child was pushing another child and made her cry. I said: "Kathy is the leader for today, can you cut the line? We can't say things that hurt people's feelings, and if you want to speak you need to raise your hand, and I will pick you." The end.]

After Kathy read her story, we had the following conversation.

Ying: 我看到靜婷把中文字圈起來了, 為什麼呢? [I saw that Kathy circled the words. Why?]

Kathy: 因為這樣我知道今天是星期二。[That's how I know today is Tuesday.]

Ying: 我看到你写数字在小朋友的头上, 一, 二, 三, 四, 五, 六。[I saw that you wrote numbers on top of the children's heads: one, two, three, four, five, six.]

Chris: 我也會 [I can write numbers. too.]

Rosanne: 我也會 [I can write numbers, too.]

From Kathy's drawing, I could see that she was aware of Chinese characters because she circled them. She also wrote English numerals above the children's heads. This idea might come from our class story times. When I read to children, I point to the Chinese characters in the book so children can recognize them later during other activities. Kathy's drawing showed me that children develop their early literacy understanding from reading books. As I described her drawing to other children, I raised their awareness of print in journaling, too. When I read out the numbers in the journal, I was introducing them to the function of writing, which is to share information.

The girls' desire to act out the role of teacher was also apparent in their dramatic play, which is another effective way for children to develop language and literacy skills through storytelling. In the following exchange,

Kathy, Leanne, and Rosanne were playing teachers.

Kathy: 你和欣欣是新闻报道员，你们可以用这个手手指字，我是老师我要跟小朋友唱歌。[You and Rosanne are the news reporter, so you can use the pointer to point to the characters. I am the teacher, so I will sing songs with children.]

Leanne (flips the three minute timer): 你可以做三分鐘，然後到我，然後到欣欣。[You can be the teacher for three minutes, and then it is my turn, and then it is Rosanne's turn.]

Rosanne nodded her head. Kathy looked at the carpet, pretending there were children sitting there.

Kathy: 準備好了嗎? 一，二，三。[Are you ready? One, two, three.]

I started the music, and Leanne and Rosanne pointed to the words on the lyrics poster. Kathy looked at the words and danced.

In both their journals and their play, the girls enjoyed expressing power in their role as the teacher. In both examples I shared, the girls showed confidence to use my words fluently as they took on the persona of the teacher, acting out or writing my words in a meaningful context. They also copied my tone, seeming to understand that certain words became powerful when spoken with a firm tone.

While the "I am the teacher" theme tended to be popular among girls as a way of becoming powerful, the boys were interested in talking about school taboos.

3. Boys became powerful by talking about school taboos like shooting, fighting, and dying

Andrew (shooting with fingers): Chui, chui.

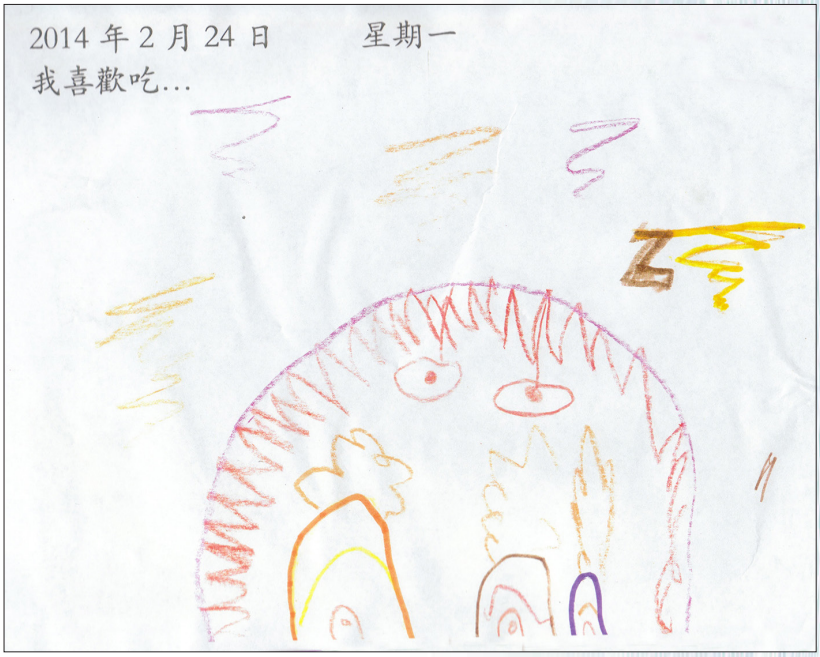
Don: Ying Laoshi, Andrew is shooting!

Ying: Andrew, do you see that your friend feels uncomfortable about what you are playing? That's why we don't play it at school.

Shooting, fighting, and dying: these are taboo topics for preschoolers. At our school, we forbid children to talk about these topics because we think that children are too young to understand death. We stop children from playing shooting and fighting games because we worry this type of play may cause aggressive behaviors. We are trying so hard to make this content

disappear in the children's physical world, but I found that these topics are highly popular in the boys' journal entries. Here is one example from Chris's journal (pictured below).

有一天，有一個大灰狼，在洞洞裡面，然後它把人家弄死掉。然後有六個龍捲風。因為大灰狼在用力地走，然後就會有龍捲風，然後人全部都死掉了。你看不到人，因為他們全部都在泥土裡面，完結了。[One day, there was a big wolf, inside the cave. He killed all the people. Then there were six tornadoes. Because the wolf walked with super strength, it made the tornado, and people all died. You can't see the people because they are buried under the ground already. The end.]



Fighting is another popular taboo topic at school. Our school's belief is that stopping children's talk about fighting is a good way to stop them from forming aggressive behavior and that forbidding children to say words such as *hit, shoot, hurt,* and *punch* makes it clear that fighting is unacceptable behavior. However, I've found that the more I try to gloss over or squelch these words, the more they appear in children's journals and their dramatic play. Andrew played out the following story from his journal (pictured on the next page) during circle time. He rolled some paper to create a spike and a shooting machine and asked Don (his best friend), Chris, and Evan to participate in the play.

Andrew: 有一天，有一個房子，在旁邊有一個忍者. [One day, there was a house. And there was a ninja on one side of the house.]

As Andrew told the story, Chris, who pretended to be the ninja, moved to stand next to the table.

Andrew: 在另外一個旁邊，有兩個士兵. [Two soldiers were on the other side of the house].

Don and Evan moved to the other side of the table. All four children were smiling continuously as the two teams hid from each other.

Andrew: 有一個機器人在發射東西。有爆炸，還射出火箭。有一個火箭打中一個士兵，那個士兵拿著一個長釘武器。然後爆炸了。有一個小朋友站在墻上，他在控制那個機器人。還有。。。。。機器人在射太陽，完。[The robot was shooting, an explosion on the rocket ship. The rocket ship was shooting the soldiers, and the spike on one soldier's hand. It made a small explosion. There was a child standing on the wall, he was controlling the shooting robot, the robot was also shooting the sun. The end.]

When Andrew said that the robot was shooting and creating explosions, Chris shot Don with the paper machine and Don fought back with the paper spike.

Chris: Chui, chui.

Don: Chui, chui, chui, chui.

Evan was pretending to control the robot and moved his arms like a windmill. The audience was very excited to witness this scene, and they were using their fingers to pretend to shoot. All of a sudden, the classroom was filled with the sound of "chui, chui, chui" as other children joined in their dramatic play.

What interested me most from the examples above was that the children were all able to tell stories about fighting and dying fluently in Chinese. Because these were taboo topics, most of the words the boys used to tell these stories—for example, 龍捲風 [tornado], 爆炸 [explosion], and 忍者 [ninja]—were words that they might have heard only once from me, but they remembered them right away. This finding tells me that children learn words faster and better when they have an interest in them, and it inspires me to think about improving my teaching by incorporating children's interests into language learning. For example, in the example above, I could relate Andrew's story to an animal theme by prompting questions such as, "What are your favorite animals? What do you think they will do when they fight with each other?"

4. Children used stories as a way to address their social and emotional needs

I realized when the boys used their stories to talk about topics that are taboo in our classroom that the children were using stories as a way to address their social and emotional needs. Certainly, children had been exposed to fighting and dying through media such as television, movies, and fairy tales, but their need to talk about it was not being met in our classroom activities except when drawing journal stories. Stories gave children opportunities to talk about and act out taboo topics in a socially accepted

context. In stories, children were free from the limitations of the physical world, and they could do whatever they wanted without worrying about being criticized. Stories motivated children to learn the vocabulary that they wanted to know and also enabled them to use the vocabulary that they had already known.

Discussion and implications

From learning a language to learning through a language

I was pleased to meet my goal of giving children power over their learning while at the same time supporting their Mandarin acquisition, as the children clearly became more confident in their use of Mandarin as the school year progressed. Taking dictation was a crucial component of giving children power over their learning because not only did it show children the use of literacy, but it also showed them my respect for their ideas and their efforts to use Chinese. As Edwards says, "'Listening' means being fully attentive to the children and, at the same time, taking responsibility for recording and documenting what is observed and then using it as a basis for decision making shared with children and parents" (2012, 151). My role switched from instructor to facilitator as I partnered with the children in their decision making.

This study also made me aware of how our simple daily responses and actions prior to the study were negatively affecting the way children were building up the image of themselves in the target language. As children are learning a new language, they are also developing a new self-image. They are internalizing who they are from the language a teacher uses to describe them. For example, a child may think that he is 粗魯 [rough] if he often hears this word from the teacher. As Bruner stated, "the images and stories that we provide for guidance to speakers with respect to when they may speak and what they may say in what situations may indeed be a first constraint on the nature of selfhood" (1986, 66). Thus, I want to advocate that language teachers should always reflect on and reexamine their practices; we want to be careful of the way we deliver language. We want to give children the tool (the surface structure of the target language), but we don't want to regulate their minds with this tool. We accomplished this in our classroom by valuing children's interests.

Appreciating children's interests

Oftentimes we found ourselves asking children to stop when they behaved outside of our expectations. We stopped them when they used silly words, we punished them when they played roughly; we were just like police officers making sure that children were not making trouble. But really, what is this trouble? What is our understanding of this trouble? Are we taught to see these behaviors as trouble? Or do we simply feel annoyed?

Corsaro urges teachers to "develop a better appreciation of the complexity of kids' cultures by remembering that they arise out of the highly diverse and complex adult cultures and societies in which they are embedded" (2003, 194). School taboos proved to be one area where I needed to learn to value children's interests. The children spoke to me because they were curious about topics related to death. Not being able to get the information from teachers and being forbidden to talk about it had made the children even more eager to learn. Naturally I wanted to respect my school's philosophy on this point, but I also wanted to provide a safe and acceptable outlet for children to discuss and learn about these topics that so interested them. When journaling provided that outlet, children repeatedly jumped at the chance to talk about what truly interested them. As Paley says, "We have forgotten what is like to be a child; therefore we must begin to watch and to listen to the children" (2004, 3). Through these observations, we must develop an understanding and an appreciation for children's interests before we think about how to teach them. We are not teaching children to be what we want, but we are nurturing them based on who they are.

Boy power versus girl power

In our society, boys are generally considered to be aggressive, while girls are considered to be obedient. Yet I found through my study that both genders made choices to exercise control and gain power. Girls chose to imitate teachers to gain this power, while boys chose to use fighting and other dramatic stories. The practices were different, but their intentions were the same. We should be careful of this gender bias in the form of accepting girls' behavior while condemning boys' behavior. Children are influenced by others' attitudes about gender behavior, and this influence will affect how they develop self-identity (Derman-Sparks & Edwards 2012). Teachers of young children should not let society shape the image of children in our minds, and we should not let our perspectives overly influence the way children look at themselves. There is nothing wrong with boys' intention to have power; it is the teachers who need to create socially acceptable contexts for them to express this intention—through opportunities such as journaling and dramatic play.

Recommendations

In light of this teacher research, I want to make the following recommendations for teachers, parents, and administrators working in the field of second-language education.

1. **Implement classrooms with low child-teacher ratios.** Language learning requires a lot of conversations to take place between the teacher and children. Acquiring the target language cannot happen if teachers are not using the language with the children.

2. **Respect your children's culture.** Know that when we are teaching a language, we are also introducing a culture that is entwined with the language. This is a very complicated process for children while they are still at the early stages of figuring out how the world around them works. Therefore I suggest that teachers should have not only language teaching skills, but also an understanding of child development.
3. **Relationship building.** If I don't know you, why should I talk to you? If I don't like you, why should I talk to you in your language? Language is a tool of communication, and effective communication is based on relationship. Building up relationships with language learners is the foundation of making learning happen.
4. **Use inquiry language to foster children's thinking.** Whether in their first language or second, inquiry-based language is helpful to support children's thinking skills. In second-language acquisition, helping children to think in the target language is a stepping stone for children to develop a new self-identity in the target language.
5. **Use storytelling and story dictation.** Stories are essential to young children's language acquisition, but in order to see results, storytelling and dictation require time and consistency. This is why I strongly recommend having children keep journals in every language environment. At the same time, I advocate that teachers keep these activities fun and motivating for children; it is crucial for making adjustments accordingly to meet children's needs. Only when learning meets children's interests will learning be meaningful for them; otherwise it will just be rote knowledge and memorization.

Future thoughts

My study may have formally come to an end, but given my education and convictions, this is not the end of my research on children's second-language acquisition. Language learning is a long-term process, and as I teach the same children for only one school year, I understand that many of the things I do throughout the year are just like planting a seed. I can't see into the future, but I want to know how this journaling activity will influence the children in my class in the long run as they continue to learn Chinese. In the future, I hope to conduct a study of children's second-language acquisition over a longer period of time to find out more about the effectiveness of narratives.

References

Ballenger, C. 1999. *Teaching Other People's Children: Literacy and Learning in a Bilingual Classroom.* New York: Teachers College Press.

Bruner, J. 1986. *Actual Minds, Possible Worlds.* Cambridge, MA: Harvard University Press.

Bruner, J. 2002. *Making Stories: Law, Literature, Life*. Cambridge, MA: Harvard University Press.

Corsaro, W.A. 2003. *We're Friends, Right? Inside Kids' Culture.* Washington, DC: Joseph Henry Press.

Derman-Sparks, L., & J.O. Edwards. 2012. *Anti-Bias Education for Young Children and Ourselves.* 2nd ed. Washington, DC: NAEYC.

Edwards, C. 2012. "Teacher and Learner, Partner and Guide: The Role of the Teacher." In *The Hundred Languages of Children: The Reggio Emilia Experience in Transformation,* 3rd ed., eds. C. Edwards, L. Gandini, & G. Forman, 147–72. Santa Barbara, CA: Praeger.

Gadzikowski, A. 2007. *Story Dictation: A Guide for Early Childhood Professionals*. St. Paul, MN: Redleaf.

Gee, J.P. 2004. *Situated Language and Learning: A Critique of Traditional Schooling.* New York. Routledge.

Meier, D.R., & B. Henderson. 2007. *Learning From Young Children in the Classroom: The Art and Science of Teacher Research*. New York: Teachers College Press.

Paley, V.G. 2004. *A Child's Work: The Importance of Fantasy Play.* Chicago: The University of Chicago Press.

Rogoff, B. 2003. *The Cultural Nature of Human Development.* Oxford: Oxford University Press.

DANIEL R. MEIER

A Teacher's Own Multilingualism and Literacy Connections: "A Journey of Journals"

Daniel R. Meier is professor of elementary education at San Francisco State University. Daniel teaches courses on language and literacy education, narrative inquiry, teacher research, and international education. He is the co-editor, most recently, of *Educational Change in International Early Childhood Contexts: Crossing Borders of Reflection* (Routledge). dmeier@sfsu.edu

As we move toward greater inclusion of multiple languages in many early childhood settings in the United States, we are playing catch-up to the long-standing inclusion of multilingualism at the global level. Teacher research in early childhood education, as so carefully and sensitively carried out here by Ying Liang in her "A Journey of Journals: Promoting Child-Centered Second-Language Acquisition in Preschool," has the potential to increase our awareness of multilingualism at the policy, curricular, instructional, and research levels. Furthermore, we are well placed in the United States to take advantage of the varied cultural and linguistic backgrounds of early childhood practitioners so as to promote multilingualism for young children and their families.

As Mandarin (and other languages) expand globally, Ying's teacher research project is particularly valuable for us as teachers, researchers, teacher educators, and policy makers. Teachers like her—who grew up speaking Cantonese in Guangzhou, China, and later learned Mandarin in preschool and finally English in third grade—are in the vanguard of promoting multilingualism in early childhood education. In her article, Ying masterfully connects her multilingual background, her American graduate school training in teacher research and early literacy, and her current work as a teacher at a Mandarin immersion independent preschool in the San Francisco Bay area.

Melding the personal and the professional

Ying's project reveals the personal and professional value of looking at one's own schooling as a springboard for teacher reflection within the teacher

inquiry cycle. A teacher's upbringing and schooling can be a valuable touchstone for observing, documenting, reflecting, and sharing observations and findings (Stremmel 2002). This kind of reflection can also be valuable for examining one's conceptualization of what counts as knowledge and effective teaching (Sun 2015). Ying writes,

> I understood how Adam was feeling because I had received teacher-directed education when I was his age. At that time, I felt no passion toward classroom activities because all I was doing was following teachers' instructions.

The process of comparing her childhood memories of school with the data in this project yields valuable insights for Ying:

> I find that they [my classroom practices] are far more similar to what I experienced as a child than I would have imagined. This study has led me to realize that my teaching methods, despite my best intentions, were still limiting children's power in their learning process.

This is a critical realization for Ying and for all teachers interested in reflecting on their teaching: seeing oneself as a lifelong learner, and finding new ways to empower young children in the learning process.

From stories to dictation and early writing

Ying's project also links important elements of dictation, stories, early writing, and Mandarin use, which is just the kind of multidimensionality necessary to see the transformative possibilities of linking literacy and multilingualism. Her use of personal journals connects powerful elements of drawing (Baghban 2007), story dictation (Paley 1981, 1990; Gadzikowski 2007), early use of symbols and composing strategies (Clay 1975), and multilingualism and literacy (Gregory 2008). The children in Ying's class draw on a range of resources and talents in creating their journal entries. For example, Kathy drew several figures of children and wrote numerals above their heads, an idea that Ying believes came from Kathy's interactions with storybooks. Elements of the children's journal writing and drawing also came up in the children's dramatic play, such as their interest in playing the role of teacher and repeating Mandarin phrases Ying used in the classroom.

The power of free choice

Ying's project shows the value of using motivating and engaging activities, like keeping journals, for multilingual learning. The children's interest in drawing and creating stories and their freedom to select topics of their choice were important motivators for their Mandarin dictation and writing. The journals provided a developmentally accessible and engaging forum for using Mandarin vocabulary and writing Mandarin characters. The

journals as conceptualized and tinkered with by Ying provided a low-anxiety environment (Krashen 1982) that gave her children access to both basic interpersonal communication skills (BICS) and cognitive academic language proficiency skills (CALPS) (Cummins 1979). Ying's research helped her discover that the children's Mandarin oral and written language use deepened from some unexpected sources. For example, several children found inspiration from popular media and other sources outside the classroom. Ying discovered that "most of the words the boys used to tell these stories—for example, 龍捲風 [tornado], 爆炸 [explosion], and 忍者 [ninja]—were words that they might have heard only once from me," which showed her "that children learn words faster and better when they have an interest in them" and inspired her to reflect on "improving my teaching by incorporating children's interests into language learning." Vocabulary development is a powerful influence on early literacy (Neuman & Wright 2014) and multilingualism (Genesee 2010; Gregory 2005), and Ying has managed to connect both in her use of journals.

Tools for reflection

Ying's project showcases an effective integration of the essential tools of teacher research—documenting teaching strategies and materials, audiotaping and writing down children's conversations, collecting children's work samples, and taking photographs of children at work and play. Ying depicts the children's journal entries as lively and engaging, full of drawings, numerals, English words, and Mandarin characters and vocabulary. All the content is meaningful and attractive to her preschoolers. The documentation of their journal engagement serves both as a record of the children's language and literacy growth and of Ying's language and literacy strategies as they result from using her tools for documentation, reflection, and sharing. As Ying notes,

> Furthermore, when teachers take dictation from children to document children's storytelling, both teachers and parents have a visual tool that allows us to enter into and reflect on children's worlds.

This kind of documentation is a visual gift for children, teachers, and families (Edwards & Rinaldi 2009).

In closing, "A Journey of Journals: Promoting Child-Centered Second-Language Acquisition in Preschool" shows us a particularly fruitful avenue for using teacher research to understand how multilingualism and literacy can reconnect teachers to their own language roots, empower young children to become engaged and creative learners, and inspire others to use the mix of documentation and reflection tools that Ying has used so well here.

References

Baghban, M. 2007. "Scribbles, Labels, and Stories." *Young Children* 62 (1): 20–26.

Clay, M. 1975. *What Did I Write? Beginning Writing Behaviour.* Portsmouth, NH: Heinemann.

Cummins, J. 1979. "Cognitive/Academic Language Proficiency, Linguistic Interdependence, the Optimum Age Question, and Some Other Matters." *Working Papers on Bilingualism* 19: 121–29.

Edwards, C., & C. Rinaldi, eds. 2009. *The Diary of Laura: Perspectives on a Reggio Emilia Diary.* St. Paul, MN: Redleaf Press.

Gadzikowski, A. 2007. *Story Dictation: A Guide for Early Childhood Professionals.* St. Paul, MN: Redleaf Press.

Genesee, F. 2010. "Dual Language Development in Preschool Children." In *Young English Language Learners: Current Research and Emerging Directions for Practice and Policy,* eds. E.E. Garcia & E.C. Frede, 59–79. New York: Teachers College Press.

Gregory, E. 2005. "Playful Talk: The Interspace Between Home and School Discourse." *An International Journal of Research and Development* 25 (3): 223–35.

Gregory, E. 2008. *Learning to Read in a New Language: Making Sense of Words and Worlds.* Thousand Oaks, CA: Sage Publications.

Krashen, S.D. 1982. *Principles and Practice in Second Language Acquisition.* Oxford: Pergamon Press.

Neuman, S.B., & T.S. Wright. 2014. "The Magic of Words: Teaching Vocabulary in the Early Childhood Classroom." *American Educator* 38 (2): 4–13.

Paley, V.G. 1981. *Wally's Stories.* Cambridge, MA: Harvard University Press.

Paley, V.G. 1990. *The Boy Who Would Be a Helicopter: The Uses of Storytelling in the Classroom.* Cambridge, MA: Harvard University Press.

Stremmel, A.J. 2002. "Nurturing Professional and Personal Growth Through Inquiry." *Young Children* 57 (5): 62–70.

Sun, F. 2015. "Cultural Consciousness: A Chinese Immigrant Teacher's Understanding of Culture and Culturally Responsive Teaching in the United States." In *Educational Change in International Early Childhood Contexts: Crossing Borders of Reflection,* eds. L.R. Kroll & D.R. Meier, 53–68. New York: Routledge.

The benefits of building with blocks are well known. But what if the block play in your classroom is lackluster? This was the problem Lena Marie Pankratz confronted in her kindergarten. The block play of her 29 kindergartners was unfocused, and the block area was surprisingly unpopular. Seeking solutions, Pankratz sensibly asked the children about blocks and discovered that they had had little experience with the material, either at home or in preschool. She also learned that one girl had received the message that blocks are only for boys.

Pankratz decided to leverage her children's love of stories to engage them in block play. She read picture books and modeled how the stories can inspire construction. The popularity of the block area soared, and it was not long before boys and girls were using blocks in more complex ways (though Pankratz observes it was dramatic play that drove children's interest in using blocks).

Pankratz's study is a strong example of how the observation and reflection embedded in teacher research can expand teachers' understandings of their practice and improve the learning environment for children.

—Benjamin Mardell

LENA MARIE PANKRATZ

Building With Blocks: Incorporating Picture Books to Motivate and Guide Block Play in Kindergarten

Countless early childhood education experts have expounded on the cognitive, physical, social, and emotional benefits that occur when young children play with blocks. While it may be surprising that an activity as seemingly simple as block play can allow for such instrumental development to take place, it becomes clear after even a brief period of observation that block play can affect and foster each domain of development.

Yet block play is disappearing from many early childhood programs to the detriment of children. My decision to conduct a teacher research project centered around block play was motivated by years of observing unenthusiastic patterns of behavior within the block center in my kindergarten classroom. In my previous five years of teaching, I have witnessed children either ignoring the block center altogether or engaging in brief and unfocused play. When children did play there, they often built a structure only to knock it down, lose interest, and move on to a different play center. Also, I rarely saw girls playing with blocks. I knew that the patterns had to exist for a reason, and I decided to develop my role as a facilitator to see what I could do to reverse those patterns.

My main goal for this project was to foster more collaborative, imaginative, and sustained play within the block center. I first hoped to motivate my young learners to engage in block play so that they could take advantage of the proven developmental benefits. I also wanted my kindergartners to enjoy building with blocks and to feel proud of what they had accomplished. I hoped to see boys and girls building together, using block play to further their developing peer relationships, solidifying the sense of community we had been working to build since the first day of

Lena Marie Pankratz, MS, is a Spanish–English bilingual kindergarten teacher in Chicago Public Schools. She incorporates block play into her daily routine, ensuring that the developmental benefits of play aid her young students in their overall development as well as in their academic success. lmpankratz@cps.edu

Photos courtesy of the author.

class. I wanted children to want to use the blocks and to use their grand imaginations. But, how? What could I do to change the unfocused play patterns and disinterested, dismissive attitudes toward the blocks that I'd noticed, class after class?

Fred Rogers said it poignantly: "Play is often talked about as if it were a relief from serious learning. But for children, play is serious learning. Play is really the work of childhood." Knowing that blocks are such a proven, powerful tool for aiding children's development, I had to figure out how to create an opportunity for block play to become part of the "work of childhood" in my classroom.

It seems hard to believe that blocks—one activity, one tool—could do so much to facilitate children's growth within each domain of development. Yet for my kindergartners to be able to maximize those benefits, I had to figure out how to encourage them to use the blocks to their full potential. Ultimately, I decided to accomplish this by introducing another tool. Inspired by the children's excitement toward books, something I had observed daily during story time, I decided to incorporate some of the children's favorite picture books into the block center, to encourage the development of both play and literacy skills. I hoped that the children's love of stories would translate to the block center and that they would realize the possibilities for play were endless. As I began my research, my primary question was this: How can picture books act as a tool to foster imaginative, collaborative, and sustained play within the block center?

Review the literature

In his approach to learning and cognition, Vygotsky emphasizes the difference between what a child can do by himself and what he can do with the guidance or help of an adult. His concept of the "zone of proximal development" explicitly refers to the gap between a child's current performance and potential performance (DeHart, Sroufe, & Cooper 2004). I knew that my kindergartners were able to physically use the blocks during playtime; however, they seemed to be at a loss as to how to use the blocks beyond building a structure and promptly knocking it down. I saw their current block-building performance as limiting and became interested in supporting the development of their potential performance.

As I tried to define my role as facilitator and guide by discovering how I could encourage my kindergartners to reach their full potential, I read and reread research describing the multiple benefits that building with blocks provides to young children. Church and Miller's "Learning Through Block Play" (1990) describes many physical and cognitive benefits. Block play promotes the continued development of fine motor skills and sensory perception, oral language skills, problem solving, and mathematical concepts such as numbers, spatial relationships, ordering and comparing, and classifying and sorting, just to name a few.

Block play has also been shown to foster social and emotional competencies such as self-reliance, self-esteem, and relationship skills (Brown & Briggs 1988). As teachers, we hope that our approach to instruction lays the foundation for learning to take place, but the formation of peer relationships can be just as vital and, to some children, more important than what we as adults can do for them. Peer relationships greatly affect children's school performance, particularly how they view themselves in relation to others (DeHart, Sroufe, & Cooper 2004). Through block play, children learn the art of cooperation, sharing, and negotiation; in short, children acquire skills that teach them how to interact with one another and navigate those peer relationships (Church & Miller 1990). Social relationships are vital in the life of any child, but they become even more important in preschool and kindergarten when children begin to form true friendships.

Furthermore, the social skills fostered by block play also enhance children's cognitive development (Brown & Briggs 1988). In the field of early childhood, we often talk in terms of domains—physical, cognitive, social, and emotional—but the reality is that these domains often overlap, and should. As an educator of young children, I am continually trying to further learning and growth overall, within all facets of development. Play is crucial to development in early childhood, but sadly, kindergarten in the United States has become increasingly focused on academics, and play is slowly being replaced with more formal education. Academic success and play are often viewed as different entities (just as learning domains are often viewed as being independent), but one propels the other, and in kindergarten, they need to work in tandem for a child to be successful.

Literacy, of course, is one domain that takes center stage in kindergarten learning, and it was a domain that was central to my teacher research as I began introducing picture books into block play. In the United States, it is expected that kindergarteners should be able to read and write independently by the end of the school year. Block play could act as a bridge to connect play and what is considered formal literacy education. The ability to understand that an object can stand for something else (using a block as a telephone, for example) is an important concept that leads to the development of literacy skills (DeHart, Sroufe, & Cooper 2004). The development of symbolic representation begins in toddlerhood but continues to develop as the child grows. Research shows that children from households and communities with low socioeconomic status develop academic skills more slowly compared to children from groups with a higher socioeconomic status (Morgan et al. 2009), which is all the more reason to advocate for and encourage block play. As NAEYC says in its position statement on *Learning to Read and Write,*

> In home and child care situations, children encounter many different resources and types and degrees of support for early reading and writing (McGill-Franzen & Lanford 1994). Some children may have ready access to a range of writing and reading materials, while others may not; some children will observe their parents writing and reading frequently, others

> only occasionally; some children receive direct instruction, while others receive much more casual, informal assistance. What this means is that no one teaching method or approach is likely to be the most effective for all children. (IRA & NAEYC 1998, 3)

Finally, I wanted to research the gender divide I had noticed in previous years to offer an explanation for why so few girls had been choosing to play in the block center. Black and Hazen (1990) find that girls lean toward more cohesive play and use collaborative speech, while boys are more likely to change topics frequently and use more controlling speech. Could it be that girls were staying away from the blocks in an effort to avoid confrontation or feeling frustrated? I hoped that my modeling the use of picture books as a tool within the block center would motivate the girls to play with the blocks just as much as the boys.

Methods

Setting and participants

The study took place in my full-day, transitional bilingual (English–Spanish) kindergarten classroom in a Title I elementary school located in Chicago, Illinois. This urban school serves many children, ranging from Head Start (3- and 4-year-olds) to eighth grade (13- and 14-year-olds). The overall student population is predominantly Hispanic (58 percent) and African American (37 percent), and 97 percent of the total families are considered low-income. There is a transitional bilingual program available for the Spanish-dominant students, which begins in my classroom, at the kindergarten level. There is one teacher for each classroom; teachers are all highly qualified, holding at least a bachelor's degree, and most have completed a graduate degree.

This year in my classroom, there were 29 children—15 girls and 14 boys. Eighty-seven percent of my kindergartners had attended a preschool or Head Start program prior to entering kindergarten. The majority come from families with low-incomes, many of whom have emigrated from Mexico. These factors likely had affected the children's initial experience with blocks and with play in general. The children's initial attitudes toward and experiences with block play were greatly influenced by their home environment, which I had to recognize and value before I could begin the project and expect progress to be made. My study focused on the children who chose to play in the block center, and the specific children changed daily. I stocked the block center with blocks I purchased my first year of teaching—blocks of various sizes, made of cardboard and foam, stored in large plastic containers. Due to a limited school budget, we did not have the wooden blocks that are most typically found in early childhood classrooms.

Design of the study

Phase 1: Collecting baseline data

For six weeks I collected baseline data that would guide my implementation of the picture book lessons I would create in the second phase. I needed to observe my kindergartners as they played in order to discern what guidance they needed.

I collected five sources of data during this phase:

- Interviews with the children
- Staff surveys (a fellow kindergarten teacher, our school's speech therapist, and a classroom volunteer)
- Biweekly anecdotal records
- Biweekly event recordings to track the number of boys and girls playing in the block center each time I wrote anecdotal notes
- Photographs of children playing in the block center

[Note: Interview questions and a sample of the staff survey are provided in the Appendix.]

To kick-start the project I conducted interviews with the children that aimed to gauge their attitudes toward play (and toward blocks in particular) and to assess their prior experience with block play, factors which naturally were intertwined. Before I conducted the interviews, pulling children aside to speak with them one by one, I had taken the children's experience with blocks for granted and assumed that block play had been a familiar activity. Through these interviews, however, I discovered that, of my 29 kindergartners, only 7 (24 percent) reported having blocks at home. This low percentage can be attributed to many factors, including but not limited to socioeconomic, cultural, or personal factors. When asked whether she had blocks at home, one child responded with, "Yes, but they are my brother's." Although it was the response of only one child, I paused to think about the fact that the children visiting the block center up until that point had been predominantly boys.

The photograph on the previous page (taken during the baseline data collection phase), documents one of many instances when the block center was inhabited primarily by boys and also shows one of many times they were unfocused in their play.

To conduct the staff surveys, each staff member came to my classroom on a different day during our regular play time, once at the beginning and once at the end of my project. The speech therapist and classroom volunteer were both there while I was in the classroom. In order for my fellow kindergarten teacher to come and record her observations, however, we switched classrooms.

Phase 2: Incorporating picture books

I incorporated picture books into the children's block play for eight weeks. Using my interviews with the children, staff surveys, and biweekly anecdotal records, I began to develop and implement weekly lessons with the goal of modeling for children how to incorporate familiar picture books into the block center. These lessons took place once a week during the first five weeks of this phase. I also had a different objective for each week related to the children's block play. (See the Appendix for a list of the books we read each week and my accompanying objectives.) I introduced a "block book bin" into the block center, where after each week's lesson I added the book we had read so that children could have access to the books as they played, if they so desired.

During each lesson I either read or reviewed the story and followed that with an informal discussion that allowed children to review the story's characters, the setting, their favorite part of the story, and so on. With the story fresh in our minds, we sat in a circle on the carpet and brought the blocks over. After reading or reviewing the book, I would flip through the story, thinking aloud about which part of the story I most liked and wanted to recreate. Sometimes I would come up with a plan; sometimes I asked the children for suggestions. Using the blocks to build and recreate the setting of a story or a particular scene was how I generally began, as I believed it was the easiest tactic for children to attempt on their own. I emphasized the freedom I had to move the blocks at any point—when I changed the setting or storyline—and focused on how I could continue to use the blocks to accompany my new ideas by changing my physical surroundings as I went. The first week, something as seemingly obvious as removing the lids to the containers and setting them aside had to be taught.

Through my biweekly observations and anecdotal records, I let the children's block play guide me in what I needed to model for the following week. For example, I made a note of the fact that the children were using the story without being open to the idea that they could change or add to what happened in their play. Then the following Monday, when I modeled my next lesson, I asked the children to suggest other characters or a setting that wasn't included in the text to illustrate that we could use our imaginations to

introduce new ideas into our play. Adding a new story every week built on the momentum I was seeing to further excite the young learners.

For the last three weeks of this phase, I no longer modeled weekly lessons. Instead, I allowed the class to vote for the book they wanted to add to the block book bin each week, in hopes that their momentum and motivation would continue to grow.

Throughout this phase, I continued to record biweekly anecdotal records and to track the number of boys and girls using the blocks with the event recording method of data collection. I also took a few photographs each week to visually record changes in children's play.

Phase 3: Collecting final data

To complete my research project, I again interviewed the children and administered staff surveys (using the same questions as when I began) so that I could compare their changes in responses, attitudes, and behavior. By noting the differences in the responses provided by the kindergartners (the ones directly affected by this project), the responses provided by other colleagues (who offered another adult perspective), and my personal observations (changes I had noted and the reasons I thought those changes were taking place), I was able to create a more comprehensive view of my project outcomes. As I concluded the formal data collection phase, I created graphs to demonstrate the undeniable positive outcomes I had helped to facilitate within the block center.

Findings

Through this project, I was able to meet all three of my initial goals: to foster more collaborative, imaginative, and sustained play within the block center. I believe that the overall success of the project can be largely attributed to the time spent gathering contextual information. As Jones and Reynolds so aptly note, "In the early years, effective teaching is based on observing" (2011, 20). I observed my kindergartners as they played in the block center before I formally began the project, as I began to implement the lessons, and I continue to observe their play even now. While the project has technically come to an end, I continue to learn and grow as an educator, partly due to the time taken to observe the children in my classroom, allowing their actions to guide my responses and future instruction.

I believe another key to this project's success was choosing books that I already knew my kindergartners enjoyed. Their familiarity with the books brought a motivation all its own. Knowing the characters' names and being able to identify the various settings and storylines motivated the children to jump in and use the blocks to guide their recreation of the stories. That recreation often acted as a stepping stone to more imaginative play, as children expanded on and changed what happened next in their play.

Results from the first lesson

As I began my observations and started taking anecdotal records of the children's behavior in the block center, I paid special attention to how children initiated their play there, as well as who chose to play. I wondered if my personal love of the block center, which I hoped had shone through in my modeling lessons, and the selection of familiar books would influence the girls' attitudes toward the blocks in any way.

After conducting my first lesson, during which I had read the beloved story *¡Salta, ranita, salta! (Jump, Frog, Jump!)* and modeled using the blocks to recreate the setting, I was anxious so see if anything had stuck. Would anyone choose the block center today? Would any girls be interested? Would the children use or reference the story? Was it too soon to expect any kind of change? These questions raced through my mind as I set the timer for 30 minutes, our end-of-the-day playtime allowance. What follows is an excerpt from my records on that first day (names have been changed):

> Three boys and two girls selected the block center. All five children brought the blocks over and took off the lids. Samantha yelled, "We have to put the lids over there!" as she pointed behind the boys to a space that was off the carpet. The children discussed and decided to build a city. Julio suddenly yelled, "¡Salta, ranita, salta!" and stated he was the frog that lived in their city. Alex took the book from the bin and flipped though until he found the scene with the fly. The girls were busy using the blue blocks to make the water for the frog to jump into. Julio lost interest and started using the blocks to make a house, but when he noticed everyone gathering blue blocks to make a lake, he abandoned his house and joined in.

Taking into account that this was what I observed after the first lesson, I was excited! The girls, speaking mainly with each other, were still a part of the group dynamic, working toward a common goal of creating a lake for the frog, as they had seen in the story. I also noticed that the children began by building a city—something that was not in the story—which I took as a positive sign that they were taking initiative to make the story their own. For the first time that school year, all the pieces were coming together; on a daily basis the block center was at capacity, boys and girls were playing together, and the children there were engaging in focused and sustained play (all five children played in the block center until the timer rang).

Anecdotal records

The analysis of my 25 anecdotal records revealed four findings: there was significant improvement in the block center's 1) popularity, 2) focused (imaginative) play, 3) sustained play, and 4) gender distribution.

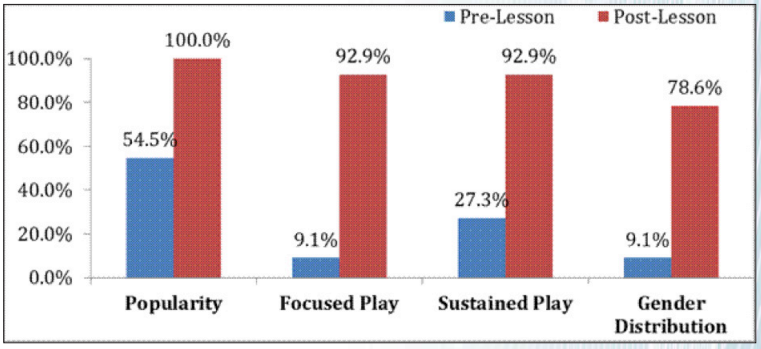
1. Popularity. The popularity of the block center (based on the number of times that it was at its capacity with five children) nearly doubled after the implementation of the lessons, moving from 56 percent to 100 percent. When the time came for children to choose a play center each day, there were always at least five hands that shot up, at least five children who chose the block center over another center.

2. Focused (imaginative) play. The children's play had moved from unfocused (making towers out of blocks and immediately tearing them down) to focused (creating complex, imaginative structures). Before the implementation of the first lesson, children were engaging in focused play just 9 percent of the time, compared to 93 percent after the lessons began.

> Three girls and two boys were in the block center, using *La verdadero historia de los tres cerditos (The True Story of the Three Little Pigs)* to guide their play. Together they decided there would be four little pigs instead of three, and then they used the blocks to build a police car (which was not in the story), spending time using blocks of various sizes to add details to the car, such as wheels and a steering wheel.

3. Sustained play. While children had quickly lost interest in the block center before I began implementing the picture books, after implementing the lessons, children were engaging in increased sustained play, selecting the block center and remaining there for the duration of the 30-minute playtime. Sustained play increased from 27 percent to 93 percent.

> Three boys and two girls were playing in the block center, using *La noche de los muñecos de nieve (Snowmen at Night)*. The children had finished building a table, stove, and refrigerator when the timer rang, signaling that it was time to clean up. "Noooooooo!" yelled two boys and one girl in unison.



4. Gender distribution. The number of days that boys and girls played together increased dramatically after the implementation of the lessons, moving from 9 percent to 79 percent.

> Four boys and one girl had chosen to play in the block center, but the girl was playing by herself initially, stacking blocks on top of one another. One of the boys called out, "Hey, Judith! Come over here. We're making the Laundromat. Here," he said, handing the block to Judith.

Interviews with the children

It was clear from comparing my interviews with the children from the baseline data collection phase and the final data collection phase that the children's attitudes toward the block center and their awareness of how they could use it changed dramatically over the course of the study. Below are responses from three of the children (names have been changed) when I asked them, "What can you do in the block center?"

During the baseline collection phase in November, they had this to say (responses have been translated from Spanish to English):

Diego: You can make a house.

Samantha: You can make a house.

Francisco: You put blocks together, and you can make a house.

During the final data collection phase in March, they had this to say:

Diego: It's really fun because you can make a lot of things like cars, houses, buildings, people. It's fun because there are so many blocks, and there are books, too.

Samantha: You can make houses, castles, a kitchen...and lots of other things.

Francisco: We can build things like houses, castles, people. And we can read books and act out the stories with blocks.

Staff surveys

The staff surveys also reflect a significant difference from the baseline collection phase to the final data collection phase. Below is a sample of the answers provided by my fellow kindergarten teacher to the question: "What do children appear to be doing in the block center? Write down whatever behaviors you observe. Be specific."

In November, she wrote the following:

Five boys built a barn for one of the boys who pretended to be an animal. One of the boys directed the construction while the others followed his instructions. After it was built, the boy (animal) climbed out and knocked it down. After that, the blocks were mostly stacked up, knocked down, abandoned. They boys left the center.

In March, she wrote the following:

Three boys and two girls are working together to build a structure while referencing a book. They built a bed and took turns laying down. One of the girls approached the boys and assigned them characters: police officer, a dog, a dad. They played until it was time to clean up.

Reflection, implications, and conclusions

Conducting teacher research is not the same as leading an experiment or formal study. I struggled a bit with the idea that I did not have control of variables and that the data derived from my anecdotal notes were subjective, knowing that my biases could confuse what I was seeing with what I hoped to see. In moments of internal conflict such as these, I had to stop and remember that teacher research isn't conducted for anyone else besides the person leading it. We share our findings, yes, and hope that others are affected in some positive way, but the reality is we are simply trying to address a struggle that we have observed. Teacher research is for us as practitioners to reflect on and benefit from, intended to positively affect our future teaching practice.

When I began this teacher research project, I knew little of the process and didn't quite realize all the steps that would have to take place for it to be effective, or in other words, to see change occur. I felt a certain uneasiness knowing there were no guarantees that what I implemented would propel any sort of transformation within the block center. Yet the fear of children remaining stagnant or static in their block play motivated me, and I charged ahead. A great advantage of teacher research is the freedom to change course, to modify already laid plans, to realize that the results you are

observing may not be what you intended and that you have the option to go back to the drawing board. (As teachers we are nothing if not flexible!)

I set out to determine whether I could use picture books as a tool to foster more imaginative, collaborative, and sustained play within the block center. Did the children access the books and use them to motivate their play? Yes. Did I observe a great change in their imaginative, collaborative, and sustained play? Yes. Did I begin to see the gender divide disappear, with boys and girls playing together? Yes. Proud as I was to have seen such positive change in the span of a few short months, something was still bothering me, something I would work to address after the project formally concluded.

During those final days of data collection, children were engaging in focused play, working together and pleased to be doing so. However, the structures they were creating were no longer complex. The children were laying the blocks flat, creating more of an outline for a structure and stacking only a few. They were no longer using blocks in a way that offered them the full advantage of the mathematical and cognitive benefits of block play.

I realized then that the block center had begun to transform into a dramatic play center, with the blocks taking a backseat. Children continued to be motivated by the picture books, but they were less focused on using the blocks. I do not mean to imply that my project had taken a turn for the worse. It was simply an interesting turn of events, something I had not foreseen when I began to implement the picture book lessons. I realized that I had used story retelling and other literacy strategies for story comprehension as I modeled block play, but I was still surprised when I realized that the children seemed to be focusing more on the stories. Thrilled at the children's collaboration and the excitement they displayed when choosing to play in the block center, I had nearly lost sight of how blocks themselves were being used. I now had to ask myself a different question: What could I do to redirect some of the play within the block center to the blocks themselves?

Expanding the project

During those last few days of the project's final phase, I created a plan of action to persuade and encourage children to keep the blocks as their main point of focus. On the days when I did observe children creating complex structures, I took their picture and posted each of the photos on the wall, next to the carpet where block play takes place. The children were still engaging in dramatic play, but there was also a focus on the blocks themselves. By displaying the photos, I hoped to motivate the children and provide them with guidance or ideas when choosing the block center.

During the next school year I plan to expand on the block book bin, broadening its contents so that the children have more resources at their disposal. In this way it will evolve into more of an "idea bin." The bin will

continue to hold books that the children vote on, but I will also introduce photographs of various locations to provide additional ideas for settings and will offer props such as wooden traffic signs, cars, people, and so on. I look forward to the next school year when I can present these materials in stages and, again, use the power of observation to allow my kindergartners to show and tell me what support they require to maximize their block play.

I have been asked: "Why devote so much time to observing and focusing on block play? Why blocks?" I could recite the research detailing the numerous benefits to block play, but the truth is that this project was never just about blocks. It was about children and how to best foster their learning in all domains of development. It was about providing support to my kindergartners, guiding their social interactions with one another, encouraging boys and girls to play together to promote a true sense of community within the classroom, allowing children time and opportunity to work through stress and gain confidence, encouraging children to use their imaginations, and most of all, promoting learning in all domains through the power of play. If all of this can be accomplished by using blocks as a tool, then instead of asking, "Why blocks?" I ask, "Why not?"

References

Brown, D., & L.D. Briggs. 1988. "What Block Play Can Do for Children." *Texas Child Care Quarterly* Spring: 12–17.

Black, B., & N.L. Hazen. 1990. "Social Status and Patterns of Communication in Acquainted and Unacquainted Preschool Children." *Developmental Psychology* 26 (3): 379–87.

Church, E.B., & K. Miller. 1990. *Learning Through Play: Blocks*. New York: Scholastic.

DeHart, G., L.A. Sroufe, & R.G Cooper. 2004. *Child Development: Its Nature and Course*. 5th ed. New York: McGraw-Hill.

IRA & NAEYC. 1998. "Learning to Read and Write: Developmentally Appropriate Practices for Young Children." Joint position statement. Young Children 53 (4): 30–46. www.naeyc.org/files/naeyc/file/positions/PSREAD98.PDF

Jones, E., & G. Reynolds, G. 2011. *The Play's the Thing: Teachers' Roles in Children's Play.* 2nd ed. New York: Teachers College Press.

Morgan, P.L., G. Farkas, M.M. Hillemeier, & S. Maczuga. 2009. "Risk Factors for Learning-Related Behavior Problems at 24 Months of Age: Population-Based Estimates." *Journal of Abnormal Child Psychology* 37 (3): 401–13.

Appendix

Child interview questions

1. What can you tell me about the block center? What can you do in the block center?
2. Who plays in the block center?
3. Do you like the block center? Why or why not?
4. Do you have blocks at home?

Staff survey questions

1. What do children appear to be doing in the block center? Be specific. (Write down whatever behaviors you observe. How are they using the blocks? Are they building, and if so, what are they building? Are they throwing the blocks? And so on.)
2. Who is playing in the block center? Write down the number of boys and girls using the blocks.
3. Focus on the conversation and body language of the children. Do they appear to be working together? Having a dialogue? Is one child directing the activity? Be specific.

Weekly picture books and lesson objectives

Week One

Book: *¡Salta, ranita, salta! (Jump, Frog, Jump!)* by Robert Kalan & Byron Barton (illus.)

Lesson objective: I identified the main setting of the story (the pond) and used the blocks to recreate a specific scene, using the book as a reference. I used the book as I modeled block play during the lesson, but I made it clear that using the book was not mandatory. It was merely an option if children felt they needed guidance.

Week Two

Book: *Un bolsillo para Corduroy (A Pocket for Corduroy)* by Don Freeman

Lesson objective: I used the blocks to recreate a specific setting (the Laundromat), using the book as a reference. I then encouraged more imaginative play by suggesting to the children that they could use last week's book *(Jump, Frog, Jump!)* in combination with *A Pocket for Corduroy.* In my modeling, I told the children that a green block was the frog and said that he was going to join Corduroy at the Laundromat so that they could do laundry together. I then asked the children what the frog and Corduroy should build next with the blocks, and the children helped me build washers, dryers, and so on.

Week Three

Book: *La verdadera historia de los tres cerditos (The True Story of the Three Little Pigs)* by Jon Scieszka & Lane Smith (illus.)

Lesson objective: Before we began building, I asked three children to volunteer to play the role of the three little pigs and assigned myself the role of the wolf. Each of the children who had volunteered began to build their own houses, and once the structures were complete, the children and I retold and acted out the story. To encourage them to use their imaginations, I then asked the class to suggest other characters we could include (who weren't listed in the story), and we incorporated them as well.

Week Four

Book: *Clic, clac, plif, plaf (Click, Clack, Splish, Splash)* by Doreen Cronin & Betsy Lewin (illus.)

Lesson objective: I focused on using the blocks to create a particular scene. I was not retelling the story but using the setting as an inspiration for the children to create their own story.

Week Five

Book: *La noche de los muñecos de nieve (Snowmen at Night)* by Caralyn Buehner & Mark Buehner (illus.)

Lesson objective: I focused on using as many blocks as possible to recreate the various scenes and settings from the story and then assigned children to be the characters. I emphasized that the blocks didn't have to stay where they were first placed, but when someone had a new idea, the blocks were there to support them and could be used in a new way.

Weeks Six Through Eight

I no longer modeled weekly lessons but led a vote each week for the class to choose the book they would add to the block book bin, in hopes that their momentum and motivation would continue to grow. The children voted to add *Tili y el muro (Tillie and the Wall)* by Leo Lionni, *¡No te comas a la maestra! (Don't Eat the Teacher!)* by Nick Ward, and *Si le das una galletita a un ratón (If You Give a Mouse a Cookie)* by Laura Numeroff.

Todd Wanerman has been teaching young children for 25 years. For most of his career he has worked in a school that deeply embraces the creative play potential of all children, including those with special needs. In this article, Todd explores the emotional meaning making of 2-year-olds by focusing on a project springing from the children's experiences with Lunar New Year celebrations. The children were enchanted yet frightened by a lion mask that was used by lion dancers who had come to the school to perform, and which remained as a decoration in the school's foyer. The mask created renewed separation anxiety for some children when they said their morning good-byes. Rather than removing the mask or excluding these young children from the celebrations, the teachers combined their normal responsive play-based curriculum with the project approach to develop a multistage experience centered on helping children gain autonomy and self-regulation in addressing their fears. Todd also describes how the project unexpectedly allowed these young children to become active participants in their school's cultural world.

—Barbara Henderson

TODD WANERMAN

Points of Intersection: Using Teacher Research to Integrate Individual Support and Group Curriculum in a Toddler Program

Today I am comforting a child from our classroom of 2s and 3s who is having separation difficulty. As the last of the family members say good-bye to their toddlers and exit the classroom, I join one teary little boy and his mother near the front door. He accepts my offer to hold him while his mother says good-bye and departs.

I carry him over to look out the window to the lobby to wave good-bye to his mom, as he is accustomed to doing each morning. However, as we pass by the window, before we see the boy's mother, we are confronted by the face of a lion! It glares at us with wide-open eyes and bared teeth. The boy in my arms cries out and buries his head in my shoulder. He can hardly turn around to respond to his mother's knocking at the window. Later his mother and father report to us that their son expresses fear of the lion regularly at home and has even had trouble falling asleep from thinking about it.

This event inspired the direction of my teacher research study: an exploration to integrate individual support plans with project curriculum for toddlers. I and the two other teachers in the classroom were inspired to undertake our study during January and February, when celebrations for the Lunar New Year took place in our school and in our larger community of San Francisco.

The lion in the window was, in fact, a mask. Celebrations for the Lunar New Year—a very important holiday in San Francisco—had begun, and an important part of those celebrations is the lion dance, during which

Todd Wanerman, MA, is an early childhood educator in San Francisco, California, and lecturer at San Francisco State University. He taught preschool for 25 years and is the author of books on inclusion and project-based curriculum.
www.toddwanerman.com
tmwanerman@gmail.com

Photos courtesy of the author.

Adapted, with permission, from "New Dimensions in Thinking and Constructing" in *From Handprints to Hypotheses: Using the Project Approach With Toddlers and Twos,* by Todd Wanerman (St. Paul, MN: Redleaf Press), 91–127.

the dancers wear a lion mask like the one in the window. It was placed there because the entrance area of the school also serves as a communal gathering place, and as a result, this area is often used to display some of the older children's explorations around cultural themes and other school projects.

The boy in my arms in the above anecdote had depended on this separation routine throughout his immersion into the program and had begun to show joy and excitement through his tears at the prospect of seeing his mother appear on the other side of the window. To support children and their families in learning to separate, we have guided families through this still-evolving routine since the beginning of the school year in September: greet each other, spend a few minutes touring the room and easing into activities, and finally, say good-bye to family members. When family members say good-bye to their children, they come around to the window and blow kisses and wave. The children can then see them exit the building, which supports their understanding that their parents have left and the teachers are now responsible for their care.

By January, when the lion mask appeared in the window, the children were just beginning to achieve some mastery over separation. Some children had learned to complete this transition without outward signs of emotional stress and with little or no adult assistance or comfort. Others continued to show signs of sadness, anxiety, or protest, but they accepted our comfort and assistance. A few still showed lingering signs of separation challenge after their parents' departure. Many of them, however, like the boy in my arms, began to show renewed anxiety about separation after the sudden appearance of the lion mask. Partly because of its location—in a prominent place where they were accustomed to seeing a comforting face—and partly because of what it was—a symbol of a fierce creature—many children expressed a significant degree of anxiety and fear about the mask.

Prior to these events, our school hosted a celebration for families that included professional lion dancers. We noticed that many of the children in our class seemed overwhelmed by the intensity of the lion mask as well as the loud, intense nature of the lion dance. We could have advocated for the mask to be displayed elsewhere and for toddlers to be excluded from the celebrations. However, since attaining autonomy and agency are such core learning themes at this age and in our program, we decided instead to implement a research project to learn how to help our toddlers address their fears over this aspect of the school's community life.

At the same time, we as toddler teachers had begun to take an interest in project-based curriculum as described in *The Project Approach* by Katz and Chard (2000) and the literature surrounding the programs of Reggio

Emilia (Gandini & Edwards 2001; Edwards, Gandini, & Forman 1998). We wondered how much of the usual structure and strategies of these inquiry-based curriculum models toddlers could pursue: articulating topics of interest, assessing and compiling existing knowledge, brainstorming and planning, research, representational studies, collaboration and negotiation, culminating documentation and presentation.

We decided to address these questions by setting up a teacher research study focused on the children's engagement with the lion mask and exploring their simultaneous participation as toddlers in project-based curriculum. We wanted to help the children master their fear of the mask and the commotion of the lion dance in a way that advanced both their intellectual growth and their acumen with project curriculum, and which also would promote our development as project-based teachers. Through this project, we set out to answer the following questions:

- How could we as teachers best help children overcome their anxiety of this symbolic object?
- How can project-based curriculum and plans for supporting individual toddler development support each other?
- What aspects of project-based curriculum can toddlers explore?
- What is the teacher's role in supporting very young children as they pursue this inquiry curriculum?

Literature review

When we began our teacher research, the body of literature addressing whether project work was appropriate for children under 3 was slim. In their benchmark work, *The Project Approach,* Katz and Chard (2000) explicitly identify age 3 as the minimum for formal project work. (Although after this study was concluded, the authors, joined by Yvonne Kogan, issued a third edition in 2014 that offered an expanded discussion of project work with children under 3.) However, we did find a few key examples of countervailing research that offered encouraging findings.

Kantor and Whaley (1998) described an extended exploration of glue in *The Hundred Languages of Children,* which drew upon the Reggio-derived concept of projects as a language, where materials act as units of vocabulary. During this exploration, teachers allowed children to follow their natural developmental impulses to test and observe the sensory motor qualities of glue, without any expectations of outcome, for several sessions. Reusing many of the surfaces on which the haphazard glue exploration had taken place allowed the toddlers to observe and engage with previous steps without requiring the teachers to plan or organize ahead of time. Introducing new materials and tools one at a time also proved beneficial, so that children could discover the potential for collage in a flexible and evolving way. Through this exploration, the authors established that 2-year-olds were able to pursue sequential experiments with materials over a significant period of

time when provided with an effective teacher framework.

LeeKeenan and Edwards (1992) drew important parallels between toddlers' emerging social and emotional agency and their ability to work together. They emphasized evolving, systematic sequences of exploration that "spiraled" in cycles of observation, planning, and revisiting, rather than moving forward in a straight line. This process-based approach argued for creative manipulation of materials as the center of a curriculum for the very young.

In *Bambini: The Italian Approach to Infant/Toddler Care,* Musatti and Mayer (2001) observed toddlers' explorations of carefully chosen and presented materials and concluded that, even before children possess the ability to hypothesize or predict, they are able to sustain intellectual inquiry over time. Likewise, in a different chapter of the same book, Bove (2001) emphasized the fundamentally collaborative nature of very young children's discovery, despite the absence of organized negotiation or planning skills.

Each of these examples reassured us and suggested that project-based curriculum need not be viewed as a model that is out of children's reach until they obtain certain developmental plateaus. Instead, we could view it as a continuous approach that toddlers could not only access in stages, but which could also support developmental progress across ages and stages. Above all, our speculation about toddlers' potential to work together on group projects was inspired by the preponderance of research confirming the interdependence of learning and development (Vygotsky 1978; Rogoff 1990; Nicolopoulou 1993).

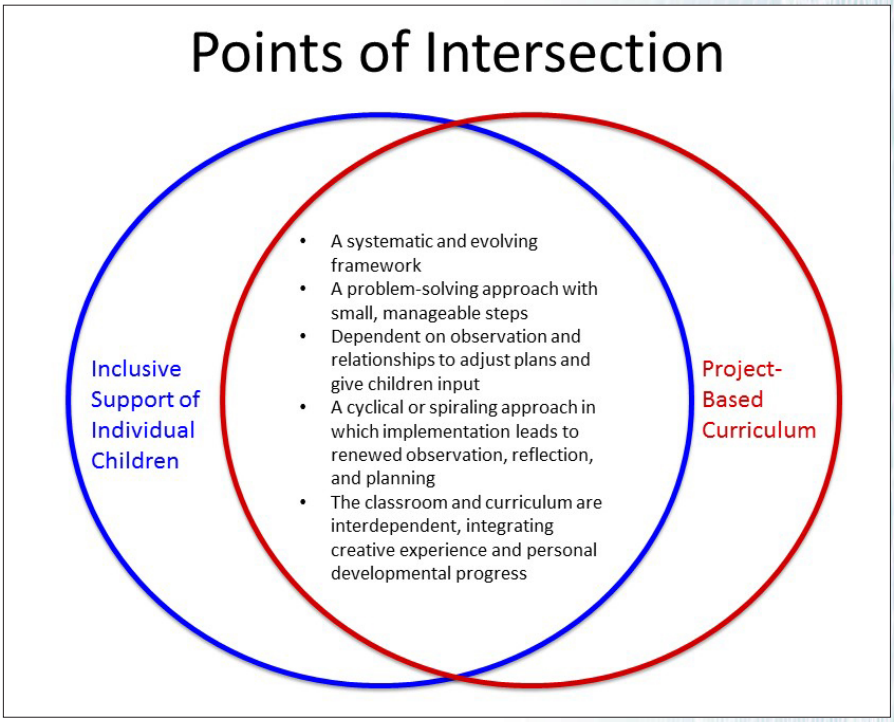
As we explored the literature on toddlers and project-based curriculum, we couldn't help noticing points of intersection with our own book on creating support plans for individual children, *Including One, Including All* (Roffman & Wanerman 2010). In it, we described a systematic cycle of inquiry the faculty at the school developed to create plans of support for children with special needs.

The cycle involves three steps: engage, reflect, and plan.

1. **Engage.** Teachers observe and interact with children to build trust while collecting pertinent information about their personalities and learning styles.

2. **Reflect.** Teachers organize and compare their observations and information to recognize patterns and connections between various observed behaviors and identify the most important and potentially effective goals needed for children to master challenges and thrive in the school setting.
3. **Plan.** Teachers distill reflections down to integrated goals and strategies for promoting children's developmental, intellectual, and behavioral progress.

It was when we saw graphic representation of curriculum inquiry cycles that we first noticed the elements we had developed as part of effective individual support plans also played a key role in successful inquiry curriculum with toddlers and young preschoolers. The "points of intersection" between these two (as illustrated in the "Points of Intersection" figure) include the following:



1. Creating and providing a systematic and evolving framework, within which children can pursue both individual growth and intellectual exploration over time
2. Adopting and modeling a problem-solving approach, which guides young children through ongoing processes by presenting small, manageable steps
3. Using observation and relationships to adjust plans and processes and give children input
4. Adhering to a cyclical or spiraling approach to inquiry in which implementing plans leads to renewed observation, reflection, and planning
5. Emphasizing the classroom and curriculum as interdependent, integrating creative experience and personal developmental progress in a holistic environment

Our discovery of these similarities reframed our project's focus and purpose by highlighting the potential to address young children's individual needs for nurturing and autonomy through emerging inquiry curriculum.

Methods

Setting and participants

The study occurred at The Little School, a part-time private preschool in San Francisco that focuses on inclusion of children with diverse learning styles and needs. The study was conducted in a class of children ranging from 2 to 3½ years of age and took place from late January to mid-February. I was one of two main teachers of the group, with a third teacher providing support. At the time of the study I had been teaching the 2s and 3s class for 20 years.

Research plan

Phase I: Making the mask

To begin our project, we discussed with the children at group time that, as a class, we were going to make our own mask, stage our own lion dance, and, when we were done, the lion dance and mask would be "not so scary."

Drawing upon the common threads of our research base, we designed our project around relationships. Our hope was that the nurturing relationship between teachers, families, and children would contribute to the children's growing emotional control over fear. The connection between teachers and children would provide a cognitive framework while the collaboration between the children, carefully structured and facilitated by adults, would further their social, intellectual, and emotional growth.

We deliberately chose to make the project more structured and teacher-directed than we would have with a more mature inquiry curriculum because our primary goal was to reassure the children emotionally. Similarly, we framed the outcome of the process—a completed lion mask—more explicitly than we would have if we had been teaching older children. We wanted to have a finished product in order to complete the process of emotional resolution and also to be able to go on to the second phase of the project—exploring the lion dance. Since we were new to project work with toddlers, and because we were attempting to integrate support and curriculum, we wanted to take a firm hand in framing and guiding the project.

However, we did not want to omit child choice or guidance altogether. Our experience developing curriculum for toddlers had taught us that they thrive on open-ended processes. At each step of the way we wanted to allow the children—both individually and as a group—to explore and create in whatever way they chose, without any pressure to meet adult expectations around outcome. So although the overall outcome of the project was proscribed (we wanted a finished lion mask that the children could use), we wanted individual decisions to belong to the children.

To that end, we chose an ordinary cardboard box as the base of our mask so that the children could create their symbolic object out of something mundane and familiar, but we allowed the children the freedom

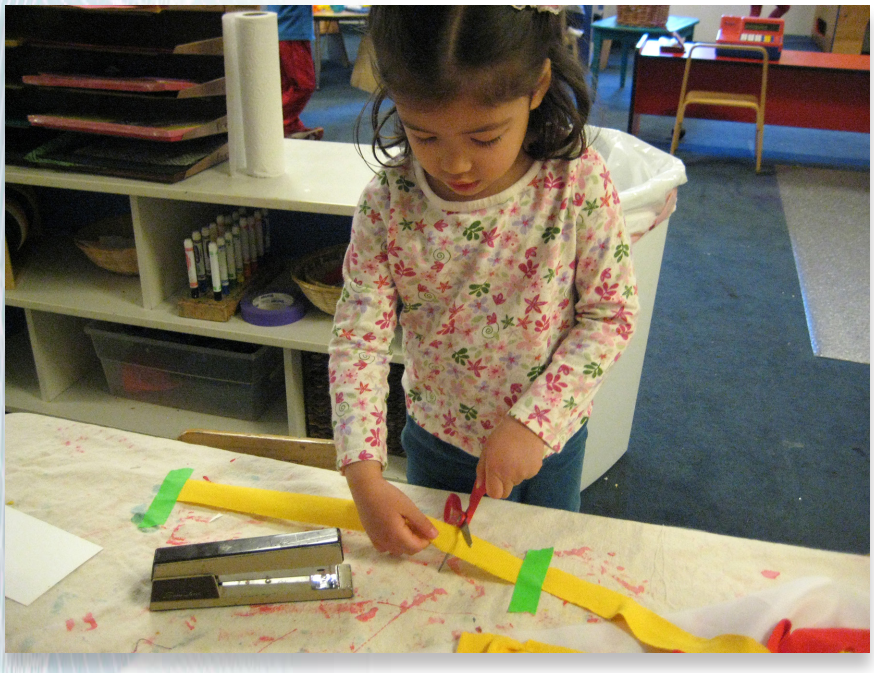
to explore multiple artistic avenues for transforming the box into their lion mask. In this first art phase, we offered the following materials for children to explore at length:

- Colored glue and paint, which lend themselves to exploring texture and consistency (i.e., wet, dry, sticky, slippery) as well as color and shade
- Paper, which can be cut, torn, pasted, folded, and crumpled
- Three-dimensional objects (i.e., pom-poms, corks, etc.) that could help children assemble a representation of a lion head

We left the box of materials in our art area for several days. At first we provided only colored glue and brushes of various sizes. As we had learned from Kantor and Whaley (1998), children could "discover" the process of collage through the opportunity to explore individual materials one at a time, in sequence, without any specific expectations or instructions. We gathered feedback from the children through observation and dialogue as they worked, and through more formal discussion during our short group times. Based on the different styles and preferences the children expressed, we would then vary the tools as needed—adding spoons, for example.

While the children were accustomed to having access to the same materials for a week or more at a time, we were in the habit of putting the results of the children's work up to dry each day and then placing them in their cubbies to send home, rather than leaving the artwork out for the children to add to each day. It was our hope that this change would inspire the children to make their art exploration ongoing, and also to collaborate on how to create the mask.

After the children had explored glue and paint for several sessions, we added traditional elements of the Lunar New Year (in particular, the red envelopes that are used to present gifts of money and the banners that appear in shops and restaurants around the city during the holiday). As with the paint, we invited the children to do whatever they pleased with these—cut, tear, crumple, or fold—whether or not they added them to the lion mask. At the children's request, we introduced scissors and set the paper items at a separate table adjacent to the box and glue. The children experimented with paper manipulation with sustained interest for three or



four sessions before they began to think about how to make the mask "a face." At that point, we introduced the three-dimensional art supplies.

We brought the professionally made lion mask into the classroom several times during this phase to examine it with the children, allowing them to try it on and to survey what kinds of materials had been used in its construction. We hoped that seeing this concrete object would provoke the children's thinking about next steps and materials without dictating a scripted process.

Phase II: Recreating the dance

During the second phase of the project, we used our group time to continue promoting short, simple decision making and discussion. We wanted to draw upon children's existing understanding to help them work together to enact their own version of the lion dance. We speculated that the opportunity to use the finished mask in a group setting would act as what Katz and Chard (2001) described as a "culmination," which would deepen, extend, and codify their learning while also allowing them to become more comfortable with the spectacle of the lion dance celebration.

To that end, we explored recordings of the traditional lion dance and worked together to develop rhythm patterns with sticks. We also asked the children for input on some key ideas:

- What do you remember about the lion dance?
- Can you show us how the dancers moved?
- How will we hold the mask and dance?
- How can we make the mask move like a lion?
- How many children can use the mask together?
- How long should each dancer's turn last?
- What will you do or say when the lion comes close?

The last question, perhaps, was most important of all.

We also used books to further our exploration. Some, such as *Lion Dancer* by Kate Waters and Madeline Slovenz-Low (1991), depict children participating in the traditional lion dance. This gave the children clear imagery and information about the lion dance while also grounding the ritual in a positive family and community experience—a key concept in

helping them to overcome their fears. Other books, such as *Go Away, Big Green Monster!* by Ed Emberley (1992), provided the children with a more general model of how to master active control over similar symbolic imagery.

Data collection and analysis

We regularly reviewed the project to assess how the children were attaining both emotional control over the symbolism of the lion mask and a sense of cohesion and continuity. We used the following methods of data collection and analysis during the four-week duration of the project:

- Photographs
- Reflection journal and teacher discussions
- Anecdotes
- Record of individual and group contributions to the mask and dance

Photographs

Photographs were our main source of data collection and analysis. We began by reviewing photographs of the school-wide lion dance celebration, analyzing them for evidence of how the children were feeling. Later we used photographs to gauge how the children were responding to the early stages of the project. We also displayed photographs for the children's benefit, returning representations and records of the children's work to them. We posted them in the art area while they were making the lion mask and on the dry erase board in our group time area during the lion dance phase. A few children were using dry erase markers to recreate images they observed in the posted photographs. The pictures served not just to help teachers and children analyze the course of the project, but also as field research to help extend the children's reflection and representation.

Reflection journal and teacher discussions

Keeping in mind the importance of observation, reflection, and exploration in the various inquiry models that inspired the project, we wanted to step back regularly and assess the project as it progressed. To this end, I kept a reflection journal over the duration of the project. Notes from this journal acted as a source of personal reflection and analysis, and also as a means of organizing discussions and decisions among the two other teachers.

We also exchanged verbal observations and notes in the classroom, and I was sometimes able to jot down a few of these. We would then revisit our observations during our daily afternoon planning meetings and record them in greater detail. During this time we were also able to upload and review photographs, and analyzing the notes along with the photos gave us a deeper and more organized understanding of how the project was unfolding.

Anecdotes

We used anecdotal data from our interactions with the children to supplement the photographs and analyze children's thoughts and feelings.

Record of individual and group contributions to the mask and dance

The lion mask itself acted as a crucial source of data. By noting the different kinds of individual and group experiments the children were undertaking as they created the mask, we were able to record their emerging planning and motor skills, as well as their ability to put together early sequences of inquiry. As the project proceeded, the status of their work on the mask helped us form new questions or suggestions for next steps, which supported our scaffolding of the children's choices and actions.

We wanted our own process of stepping back and systematically reflecting on the project to act a as a model for the children to themselves step back and reflect. We used all of these data collection and analysis methods both as a means of tracking and guiding the process, and also to help the children achieve some of the basic elements of these inquiry cycles:

- Repetition
- Revisiting
- Reflection
- Extension

Findings

The key findings of the study are as follows:

1. Toddlers' individual emotional challenges can be addressed by interdependent group curriculum
2. Toddlers' capacity for thinking and their emergent ability to plan are enhanced by emotional engagement and investment
3. When teachers frame projects with scaffolded problem-solving sequences and take small steps in both group and individual curriculum, very young children's independent explorations, initiative, and self-regulation are advanced
4. The act of sharing the creative process and its outcomes gives toddlers, the youngest children who are often spectators in the cultural life of the school, an active and prominent role in the community

5. Teachers of toddlers can base project topics for group curriculum inquiry on their emotional needs

1. Toddlers' individual emotional challenges can be addressed by interdependent group curriculum

Before the study, we viewed the process of providing individual support to children as a precursor or parallel track to group curriculum. We were in the habit of using drawing, writing, books, and dramatic play to help children process and manage their separation anxiety, but we tended to view this as a responsive act that grew out of one-on-one teacher–child interactions. We did not connect it to ongoing curriculum.

Through the study, however, we established a goal of addressing individual toddlers' fears through a group curriculum. We hoped that by making their own lion mask, the mask would become "not so scary." As the children worked together to recreate the symbolic mask from many ordinary objects, they began to manage their fear of the lion. Instead of continuing to respond with tears and anxiety to the appearance of the lion mask, the children expressed a rising degree of enthusiasm as they began to create, think about, and develop their own construction. My journal entries reflected this.

> Three children returned to the art table today, laughing and chatting as they experimented with the mouth of the lion. They remained for several minutes, discussing the pretend teeth they want to design.

The children were beginning to address their individual fears through group work.

2. Toddlers' capacity for thinking and their emergent ability to plan are enhanced by emotional engagement and investment

Just as the use of creative group curriculum seemed to lessen the children's fear of the lion, their emotional investment in the aims of the project—achieving comfort—seemed to enable them to pursue a sustained process of inquiry. While the children were cautious at the outset of the project, using the glue to start creating their lion mask with only brief, sensory-based exploration, by the end of the project they were able to take on a planning role based on both the symbolic function of the lion mask and their own sense of how it could be used, as the following journal entry illustrates.

> One child asked today to make a tail for the lion. She and (teacher) discussed using fabric or crepe paper, and she chose crepe. She and (teacher) worked together to figure out how to fasten the crepe paper to the table with tape and measure lengths to cut.

We recognized how much ownership the children had taken of the project during the lion dance phase. After having used the mask, rhythm sticks, and a recording of lion dance drums to recreate the dance they had

observed at the Lunar New Year celebration, the children spontaneously began to alter the steps and meaning of the ritual. In the traditional context, the rhythm is intended to encourage the lion (a symbol of strength and luck at the start of a new year) to approach and interact with spectators. Now the children came up with the idea that drumming on the floor with the sticks or clapping them together signaled to the lion to back off when it got too close.

Together the children developed their own steps for the dance. The children operating the mask and the tail behind it would approach two or three children gently, and then the "spectators" would clatter their sticks and the lion would back off. At one point, a group of children moved a table over so that they could form a particularly loud drumming corps! In this way, the children claimed the power to engage with the lion on manageable terms—a few steps forward, a few steps back. Their version of the dance became a symbolic enactment of their own process of taming their fear of the mask.

3. When teachers frame projects with scaffolded problem-solving sequences and take small steps in both group and individual curriculum, very young children's independent explorations, initiative, and self-regulation are advanced

The children's ongoing engagement with the transformation of a cardboard box into a symbolic object not only helped them regulate their fears but also advanced their sustained involvement in inquiry through repetition. Furthermore, witnessing the gradual transformation from box to mask helped our young explorers "assemble" these single steps into a coherent process.

Teacher scaffolding played a key role in guiding children to move from learning to manage their fear to pursuing an extended line of thinking and exploring. We framed the goal, outcome, and sequence of the project, which allowed each step to be open-ended with wide latitude for variation. Each child was able to engage in the project at his or her own pace, in his or her own way, and at his or her own level of development.

Teacher scaffolding instigated a key turning point in the process when we moved from painting and adorning the box to asking the children how it could become a lion mask. We asked them the following questions:

- What does our mask need to look like a lion's head?
- How shall we make its face?
- What do we need to add?
- What do you see on your own face?

To help answer these questions, we studied the professional mask, used small mirrors to help the children study their own faces, and read books about faces and animals. These resources helped the children to respond with their own ideas:

"It needs eyes. Mad eyes."

"The teeth are sharp."

"Its mouth goes open and shut."

Once the children communicated their ideas, we were able to help them achieve their plans by offering or adding elements of the appropriate shape, size, and color. When the children made clear design choices (for example, deciding on the shape and color of the eyes), we were willing to help them with fine motor tasks needed to carry through with their plans. In particular, the children expressed great interest in how to make the lion's teeth. We encouraged them to sketch shapes for the teeth on large pieces of poster board and to cut out many different possible models. In this way, we found that the children were able to experiment with representation as they assembled their mask, and each step acted as a preliminary study.

As the children directed and intentionally implemented steps to create the mask with our guidance where needed along the way, they demonstrated initiative, planning, and reflection. They also showed an understanding of parts to a whole, as they constructed and offered independent pieces to add to the larger project.

4. The act of sharing the creative process and its outcomes gives toddlers, the youngest children who are often spectators in the cultural life of the school, an active and prominent role in the community

Toward the end of our project, after having taken some control of the steps and meaning of the lion dance, the children demonstrated further initiative when they decided that they wanted to replace the professionally made lion mask in our communal entry space with their own. They took great pride in explaining to family members and children from other classes that it was a "pretend mask."

"It's not real," one toddler who had been particularly frightened of the original mask explained to his mother. "It can't hurt you."

This act of sharing their mask acted as an unanticipated "culminating event" (Katz and Chard 2000) and further demonstrated to us that the children could integrate and extend their thinking and learning. In addition, it served the unexpected purpose of giving the youngest children, who are often spectators in the cultural life of the school, an active and prominent role in the community celebration and ritual.

5. Teachers of toddlers can base project topics for group curriculum inquiry on their emotional needs

One of the more challenging aspects of project work is the question of how teachers can identify effective topics, and how to help children articulate what they want to learn. This element was particularly daunting to us as we set out to explore inquiry curriculum with 2-year-olds. Topics in project work often come as teachers observe children's intellectual or cultural interests—aspects of the physical, natural, or cultural world that they include in their play or conversation. Through this project, we learned that there are a variety of ways to "listen" to toddlers. Because they are largely occupied with developing autonomy, their response to developmental challenges and their bids for nurturing can be cues as to what they want to learn about the world around them.

In the case of our project, the children's cues indicated to us that we needed to respond with plans to support children in overcoming their fear of symbolic objects. This determination is a product of the "engage" phase of our cycle of individual support: to combine observation and interaction to simultaneously determine and address children's needs.

Largely because their fear revolved around an object in our midst, we were able to conceive of a curriculum-based plan of support (exploring

and demystifying the object) and to recognize that the children could make the most satisfying progress in building their confidence if they worked in a group. We began making connections between the "engage" phase of our own methods and the beginning phase of project work.

This project helped us begin to understand how to induce intellectual exploration from toddlers' need to be nurtured and also from their more concrete style of exploration.

While our children did not seem quite able to articulate in advance what they wanted to know about the outside world as older children do, they sent us clear cues about what aspects of the classroom environment they would benefit from understanding further.

Conclusions

Teaching toddlers is a busy and complicated job. Over my two decades of working with 2-year-olds, I have often felt pulled in several directions at once. I was drawn to inquiry-based curriculum because it seemed to offer a more holistic (not to mention efficient and rewarding) framework for integrating the many ways teachers support toddlers. As an extension, I was hopeful that project work could also create a more integrated, richer, and deeper process of learning and development for the children themselves.

While there was some conclusive literature to confirm that toddlers could pursue inquiry with teacher support (LeeKeenan & Edwards 1992), I wanted to create a systematic research framework to determine to what extent their ability to work together over time might integrate their processes of self-regulation, social development, and habits of learning and discovery.

The reflective process—information collection, ongoing analysis, and teacher discussion—helped us conceive of how to guide these young children through a process that yielded illuminating and valuable results. We saw them progress from a disregulated state in which they were fearful of a community ritual to a place of autonomy and confidence. At the same time, we saw their ability to conceptualize and pursue a long-term sequence of inquiry make major advances. In addition, we as teachers were able to advance our own habits of supporting toddlers' development through relationships and curriculum.

All children are largely learning how to conceive of themselves in broader and more diverse contexts and settings. For toddlers who are just starting school, this process involves establishing a sense of autonomy in the school setting. The connection between school and home, and the child's emerging sense of self in both settings, is a key aspect of the curriculum. Through this process we discovered how much teachers and peers can support one other in using this theme to begin constructing the seeds of project-based curriculum.

References

Bove, C. 2001. "Inserimento: A Strategy for Delicately Beginning Relationships and Communications." In Gandini & Edwards, 109–123.

Edwards, C., L. Gandini, & G. Forman, eds. 1998. *The Hundred Languages of Children: The Reggio Emilia Approach—Advanced Reflections,* 2nd ed. Westport, CT: Ablex.

Gandini, L., & C.P. Edwards, eds. 2001. *Bambini: The Italian Approach to Infant/Toddler Care.* New York: Teachers College Press.

Kantor, R., & K.L. Whaley. 1998. "Existing Frameworks and New Ideas From Our Reggio Emilia Experience: Learning at a Lab School With 2- to 4-Year-Old Children." In Edwards, Gandini, & Forman, 1998, 313–34.

Katz, L.G., & S.C. Chard. 2000. *Engaging Children's Minds: The Project Approach.* 2nd ed. Westport, CT: Ablex.

LeeKeenan, D., & C. Edwards. 1992. "Using the Project Approach With Toddlers." *Young Children* 47 (4): 31–35.

Musatti, T., & S. Mayer. 2001. "Knowing and Learning in an Educational Context: A Study of the Infant-Toddler Centers of the City of Pistoia." In Gandini & Edwards, 167–80.

Nicolopoulou, A. 1993. "Play, Cognitive Development, and the Social World: Piaget, Vygotsky, and Beyond." *Human Development* 36 (1): 1–23.

Roffman, L., & T. Wanerman. 2010. *Including One, Including All: A Guide to Relationship-Based Early Childhood Inclusion.* St. Paul, MN: Redleaf Press.

Rogoff, B. 1990. *Apprenticeship in Thinking: Cognitive Development in Social Context.* Oxford: Oxford University Press.

Vygotsky, L.S. 1978. *Mind and Society: The Development of Higher Psychological Processes.* Cambridge, MA: Harvard University Press.

Supporting Teacher Research

ANDREW J. STREMMEL

Repositioning Teacher Education: Teacher Research as Professional Development

Andrew J. Stremmel, PhD, is a professor and department head of teaching, learning, and leadership at South Dakota State University, Brookings. His writing and research focus on inquiry-based early childhood teacher education and Reggio Emilia-inspired practice. He is also on the editorial board of *Voices of Practitioners*. andrew.stremmel@sdstate.edu

Teaching is an incredibly complex and challenging activity. No amount of theory can substitute for the experience of "doing" teaching and then reflecting on one's teaching (Dewey 1933; Schön 1983). The importance of effective teacher education has never been greater, with proposed federal teacher preparation regulations threatening to undermine the progress of current teacher education program reform efforts (see statement released by the American Association of Colleges for Teacher Education on November 26, 2014). Although teacher education continues to focus on whether teachers have the necessary skills to succeed in the classroom, we know that learning to teach involves more than mastering a set of skills, techniques, or competencies (e.g., Feiman-Nemser 2012). To really understand teaching one must study it. Moreover, teaching is a developmental journey, a process of becoming that involves continual inquiry and renewal (Ayers 1993; van Manen 1991).

In this article, I maintain that an important goal for teacher education is to help preservice teachers develop and sustain a positive attitude about lifelong learning across their professional lives. Specifically, I emphasize that learning to teach takes a lifetime and is nurtured by developing the attitude and skills of inquiry that enable teachers to reinvigorate and reinvent themselves again and again. I make the claim that engaging in teacher research, the intentional and systematic study of teaching and learning by teachers themselves, whether individually or collectively, is essential to building a grounded theory of what teaching actually is—what it involves, how it is learned, and what it means. Furthermore, teacher education, which is only one small fragment of the sustained and lifelong professional

development of all teachers, requires a shift from a view of teaching as the development of technical skills and expertise to teaching as the development of understanding through inquiry (see Hoban 2002; Loughran 2006).

Teaching as a developmental process

The journey of becoming a teacher begins long before students of teaching start their formal teacher preparation. They come to us with a rich history of experiences that form personal theories (tacit understandings) that are tenacious and powerful, and which influence their beliefs about what it means to teach. In his seminal work *SchoolTeacher,* Dan Lortie called this period prior to formal teacher education, "the apprenticeship of observation" (1975, 61). In teacher education prospective teachers filter formal knowledge gained through their coursework and field experiences through their own value and belief systems, sometimes accommodating new ideas with previous understandings, sometimes restructuring new information to fit existing beliefs. Often, however, as a result of experiences that confirm previously evolved conceptions (e.g., modeling experienced teachers), personal theories go unchanged (Stremmel, Cherian, & Martin 1991). It is precisely at this point of the journey, during teacher education, that prospective teachers must critically examine their previous experiences and understandings, and carefully observe, reflect on, talk about, question, and intentionally study teaching in order to develop a fuller understanding of it. As I will discuss below, teacher research is essential to this process. In fact, it is the cornerstone of teacher education because it creates opportunities to engage in reflective practice, authentic conversation, and professional dialogue, and to theorize one's lived experience in the classroom.

Once teachers enter the field, they continue to develop. Others have written about the stages teachers go through as they begin their professional lives (e.g., Fuller & Brown 1975; Ryan 1986). Robert Carlson (in Lindley 1993) has suggested that teachers go through at least three stages in their teaching lives. The first is focused on "survival." Initially teachers are concerned primarily with becoming comfortable in a room full of children, having a sense of control of the classroom, and getting children to like and respect them. According to Lindley, this is such an intensely emotional time that any real teaching—or learning for that matter—is purely accidental or serendipitous. In the second stage, teachers are concerned with developing competence, mastering the curriculum, and learning the procedures and strategies that will make them effective. Lindley suggests that some teachers stay in this stage their whole professional lives. I would argue that much of teacher education is geared to addressing the needs of teachers at this stage of their development, especially when those outside our classrooms and schools set the expectations for what the curriculum should be, how

children should learn, how learning is assessed, and whose knowledge is of most worth. In stage three, teachers are no longer merely teaching a set curriculum, but now feel creative and innovative, having developed a unique self and a pedagogical orientation with the children that enables them to learn. As Lindley points out, this is a time of making connections between teaching and one's life journey. The goal no longer is to teach well but to create possibilities for children and oneself to learn and grow. Teaching becomes an extension of one's whole being.

Reframing teacher education as teacher development

Programs that prepare teachers and the schools that hire them often assume that students of teaching should be ready to hit the ground running when they graduate, with the technical skills needed to be successful. If they are fortunate, prospective teachers have been inspired by a few excellent teachers who served as their mentors or cooperating teachers, some of whom may have reached the third stage. More often than not, however, prospective teachers have identified with, and want to be better than, the many mediocre teachers who have likely stayed in the second stage—those who have gone through the motions and followed the curriculum, with little motivation or energy to change their methods or improve their practice.

The reality of teaching, however, is that it is more than content and skill mastery. It is far more than what we see happening in the classroom between a teacher and a group of children. To really understand the complexity of teaching is to tune in to the thoughts, feelings, questions, and assumptions contained within the teacher, and to develop an orientation toward children based on critical reflection on the meaning and significance of teaching-learning experiences (Dewey 1933; van Manen 1991). Teaching involves movement between poles of certainty and uncertainty, knowing and not knowing, joy and sorrow, triumph and failure. When one considers how incredibly complex and intellectually challenging teaching is, one wonders if any amount of preparation can ever be enough. In order to understand teaching, prospective teachers must become learners in their own classrooms. They must become students of their thinking and practice, reflecting on what they believe, the decisions they make, and the reasons underlying what they do. Rather than implementing a prescribed curriculum or following the methodologies of others, teachers must eventually become the source and creator of the theoretical basis of their own teaching techniques. In this way, knowledge of teaching and learning originates in teaching that is grounded in research (see Stenhouse 1975).

Loughran (2006) claims the goal of teacher education should not be to develop teaching expertise or good teaching (whatever that is), but to foster genuine and ongoing professional learning. This starts with embracing a stance of "student teacher as researcher," and the view that teaching and learning to teach are inherently connected to learning to inquire (Borko,

Liston, & Whitcomb 2007; Loughran 2006). Student teachers demonstrate the notion that teaching is an inquiry process when they reflect on and give voice to their questions and dilemmas, systematically and critically investigate their own practice using methods consistent with everyday teaching (e.g., observation, document collection, journaling, discussions), and generate data that cannot be captured by traditional methods of research.

Cochran-Smith and Lytle (2009) have called this a "stance" or way of thinking and being in the classroom. Adopting an inquiry stance means learning to question or challenge what happens in the classroom. It means helping our students pursue their own questions and take their inquiries seriously, as well as working with others to generate knowledge and understanding of what it means to teach and learn. In fact, it is difficult to understand how teaching might be improved or how curriculum can be developed and evaluated without teachers researching their own practice.

Viewed this way students of teaching can move beyond a focus on the technical toward a richer understanding of what teaching is and what it means, as they learn from their own experiences, investigate their own pedagogical problems, and engage in conversations with their mentors and peers about their questions, assumptions, and newly constructed insights and understandings. Moreover, if we consider the notion that learning to teach is a developmental process, then it can be enhanced through learning opportunities for which prospective students are actually ready. Inquiry aimed at addressing those issues and concerns of importance to prospective teachers—teaching procedures and strategies, maintaining control of a classroom, feeling respected and liked, and developing a better understanding of who they are in relation to the children they teach—can help them come to understand themselves and others. This is at the core of learning to be a teacher (Feiman-Nemser 2012; Loughran 2006).

We simply cannot provide prospective students with everything they need—content or pedagogy—to be a teacher by the end of four or five years of formal teacher education. What we *can* do is help them understand the importance of being knowledge producers and lifelong learners of teaching, through opportunities to engage in professional dialogue, reflective practice, theorizing lived experience, and teacher research (Feiman-Nemser 2012).

However, our work should not end there. If we adhere to these ideas about teacher development, our mission is not merely to prepare students to be teachers, but to provide sustained professional development to all teachers—those beginning to teach and those already teaching. Seasoned teachers need to become more intentional and aware of their decisions and actions, confronting issues as they emerge in their lives, interrogating their situations carefully, and responding thoughtfully to what they uncover and discover in the classroom. Teacher research can enable teachers to be self-determining, to be self-authoring, and to take some responsibility

for themselves and their actions (Stenhouse1975). By adopting a research stance, teachers can escape from the outside control and scrutiny to which they are increasingly accustomed and be more proactive in critically assessing their situations. In this way, teachers engage in meaningful professional development and learn to become more autonomous in their judgments on their own practice.

In sum, teachers need access to a continuum of support and professional learning opportunities across their entire professional lives. Seeing teacher education as teacher development, not simply preparation, and making teacher research the foundation is a means to help teachers understand that teaching is a journey, a continual process of inquiry and renewal. It is also a way of conveying the idea that teaching matters. Despite the current obsession with accountability testing, it is a myth to believe that teachers alone can be held responsible for their children's performance or that improving teachers' technical skills will single-handedly improve children's success on assessments (Alexander 2010). Providing opportunities for teachers to participate in authentic conversation and professional dialogue about their practice and work together in intellectual and practical ways through reflective inquiry can open up new ways of seeing children and classrooms and conceiving possibilities for self-initiated collective change (Loughran 2006). When teachers can test their ideas, make sense of their work, improve themselves as teachers and persons, and make stronger connections with children, they may indeed be reenergized and reinvigorated in ways that contribute to improved student learning. Moreover, it may improve teacher status and build a more comprehensive and realistic view of what teachers can know and do as professionals.

References

Alexander, P. 2010. "Through Myth to Reality: Reframing Education as Academic Development." *Early Education and Development* 21 (5): 633–51.

American Association of Colleges for Teacher Education. "A Cause for Concern: AACTE Urges Scrutiny of Newly Released Federal Regulations for Teacher Preparation Programs." AACTE press release, November 26, 2014. AACTE website. https://aacte.org/news-room/press-releases-statements/483-a-cause-for-concern-aacte-urges-scrutiny-of-newly-released-federal-regulations-for-teacher-preparation-programs

Ayers, W. 1993. *To Teach: The Journey of a Teacher.* New York: Teachers College Press.

Borko, H., D. Liston, & J. Whitcomb. 2007. "Conversations that Renew." *Journal of Teacher Education* 58 (4): 263–68.

Cochran-Smith, M., & S. Lytle. 2009. *Inquiry as Stance: Practitioner Research for the Next Generation.* New York: Teachers College Press.

Dewey, J. 1933. *How We Think.* Lexington, MA: D.C. Heath and Co.

Feiman-Nemser, S. 2012. *Teachers as Learners.* Cambridge, MA: Harvard Education Press.

Fuller, F., & O. Brown. 1975. "Becoming a Teacher." In *Teacher Education: The 74th Yearbook of the National Society for the Study of Education,* Part 2, ed. K. Ryan, 25–52. Chicago: University of Chicago Press.

Hoban, G. 2002. *Teacher Learning for Educational Change: A Systems Thinking Approach.* Philadelphia, PA: Open University Press.

Lindley, D. 1993. *This Rough Magic: The Life of Teaching.* Westport, CN: Bergen & Garvey.

Lortie, D. 1975. *Schoolteacher: A Sociological Study.* Chicago, IL: University of Chicago Press.

Loughran, J. 2006. *Developing a Pedagogy of Teacher Education: Understanding Teaching and Learning about Teaching.* New York: Routledge.

Ryan, K. 1986. *The Induction of New Teachers. Fastback 237.* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Schön, D.A. 1983. *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.

Stenhouse, L. 1975. *An Introduction to Curriculum Research and Development.* London: Heinemann.

Stremmel, A., M. Cherian, & D. Martin. "Self-Evaluation and Reflective Thinking among Pre-service Early Childhood Teachers." Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL, 1991.

van Manen, M. 1991. *The Tact of Teaching: The Meaning of Pedagogical Thoughtfulness.* Albany, NY: SUNY Press.