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People, Places, and Pandas: Engaging Preschoolers with Interactive Whiteboards

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Cecilia came to school wearing a panda hat. As is typical on most mornings, she first went to the interactive whiteboard where she located her name and photo. Using a special "pointer," she dragged her image so that it joined the collection of faces of children who had already arrived. Her friend, Elizabeth, playing in a nearby center, immediately noticed Cecilia's photo moving up on the large screen and ran to greet her. On seeing the panda hat, Elizabeth suggested, "Let's play pandas!"

Observing and listening to young children's conversations provides an ideal opportunity to track an individual child's understanding of concepts and to identify topics for further investigation. Curious if other children might be captivated by the topic, we asked, "How do you play pandas? What do they do?" Cecilia replied, "They eat bamboo." This tiny conversation sparked our classroom exploration of the giant panda. As the children learned about these fascinating creatures, they used the interactive whiteboard to guide their study. They investigated the physical geography of where the giant pandas live, considered how people's activities have led to the endangerment of this species, and explored how people can help protect the giant panda.

Teaching Challenges

We have explored ways to use the interactive whiteboard to enhance the teaching of preschoolers. The use of interactive technologies aligns with our pedagogical approach, which views children as constructors of projects that help them in the learning process. We look not only at their cognitive capability, but at their overall development. In the University of South Florida's (USF) Preschool for Creative Learning, technology is not placed in a restricted space. Rather, the classroom is designed so that all the learning tools are available to children. For example, the interactive whiteboard is mounted low to the floor so that young children can easily access the surface. A pointer yardstick with a tennis ball attached to its end allows a child to reach any menu function high up on the big screen. It's easy for the children to grasp and slide the round, fuzzy "tip" across the surface of the screen without doing any damage to it. Just as children can reach for paper, scissors, and crayons, they can access the new technology when they want to.

Child-Centric Curriculum

To align with the inquiry approach of our laboratory school, the environment is designed so that children can learn through exploration and individual initiative. The administration and faculty are committed to providing an inclusive, anti-biased, multicultural curriculum that meets the needs and interests of the children and families served.

In this context, the power of high quality social studies curriculum is realized through integrated instruction that actively engages young children in purposeful and dynamic lessons.[1] By engaging in learning firsthand (rather than being told when and how to learn), children develop personal meaning from their experiences and the courage to seek out new learning situations. Age-appropriate activities help them connect concepts with their everyday lives and extend the learning experience to other disciplines. We don't routinely ask these children to gain knowledge secondhand, while listening to someone else telling about a distant place or time. Rather, children are using their hands to take things apart, fit things together, and make new things. They experience things directly and are challenged to make sense of their experience.

In this article, we describe a recent project undertaken in the classroom for four year olds that is connected to our exploration of world cultures and places near and far. We integrate social studies throughout instruction to engage children in learning through free play, storytelling, drama, and problem solving, and the interactive whiteboard is an important tool in the exploration process. However, the content and focus of our studies emanate from the children's own ideas, questions, and interests.

Panda Palace

Back in the classroom, interest in discovering more about pandas extended into our morning meeting, an important community building time when ideas are discussed among the whole

group. We invited the children to the interactive whiteboard to explore questions they had regarding panda bears. We used Internet resources such as the National Geographic for Kids along with a news reports about baby pandas in China and the United States to gain background knowledge and furthered our learning with information from the National Zoo.[2] To observe live images of pandas in action we watched videos of pandas from the Chengdu Research Base.[3]

Within the interactive and participatory culture of the classroom, our panda project tied together various forms of technology to enable the children to more actively participate in interpreting, personalizing, reshaping, and creating learning experiences. In the process of learning about giant pandas, the children reflected, predicted, posed questions, and sought out answers.

For example, children hypothesized about what life would be like as a panda, and learned to use disciplinary vocabulary as they explored why the panda became an endangered species. The children were introduced to the habitat of panda bears, comparing the eating and sleeping habits of the creatures to their own. They discovered that the activities of people have eroded spaces where the pandas can live and find food. The children imagined how they might create their own panda nature reserve in the classroom where pandas could be protected. In small and large groups, the children brainstormed. Some children used the interactive whiteboard to sketch out ideas and others referred to pictures on the screen to guide their planning as they sought out resources in their environment.

Geography, Plants, and Animals

When the children asked where they could get bamboo, a panda's primary source of food, they discovered that it grows in the mountains of China. Using GoggleEarth to locate the Shunan Zhuhai National Park Bamboo Forest of China, the children concluded that it was too far away to take a trip there. We suggested they use paper and scissors to create bamboo. The children wrapped the bottom of our loft with brown butcher paper in order to provide a background for the bamboo. They took turns holding the paper and attaching the tape. Once the paper was hung, we passed out pieces of wood-printed paper and directed the children in cutting strips for the stalks of bamboo. Meanwhile, a child retrieved a few pieces of green construction paper to create the leaves, drawing ideas from his firsthand experiences on the class's digital field trips to the

National Zoo and the Chengdu Research Base. At this point, several children had joined the construction of the panda bear reserve. They shared scissors, glue, and tape as they crafted bamboo stalks.

The next day, Ruby brought in freshly cut bamboo from her backyard to add to our panda reserve. She recognized it from the images projecting on the large screen throughout the previous day and excitedly enlisted her mother's help to add authenticity to the panda reserve. A small group of children eagerly began arranging the bamboo along the loft frame. They again took turns using the tape and negotiated where each piece of bamboo should go. "Hey, Ruby, where do you think this piece should go?" inquired Jace. "Well, if we put it here than we can have it for our door," Ruby answered. The loft area was filled with excitement and wonder. We captured photos as we worked so that we could later use the interactive whiteboard to dictate narrative and reflect on our experience through digital storytelling.

Jude did not want to be a panda. "I'm going to be a tiger," he said. "But you will eat us!" exclaimed Kara. "Don't worry, I'm a tiger that only eats fish," he replied. After he finished cutting the bamboo leaves, he began constructing fish. The children named their creation a "panda palace" and talked about what they would like to do in their home.

Studying through Daily Observations

Getting updates via the streaming video cams of the baby pandas at play became a daily event. The children took great interest and cared about the well being of the pandas. "Where are the baby panda's eyes?" Lucas asked. Winston responded, "They have eyes. They just don't see when they are born." As we gathered information about panda bears and observed their growth, children responded with ideas on how they could become more like them. "Ooh, those babies are so cute," Maya responded when seeing how small the pandas are when they are born. "Look at their little paws! I'm going to make paws for my panda costume," Ruby said. She and a couple others soon headed to the art center to craft their paws. The interactive whiteboard became an extension of the dramatic play center as the real live panda reserve created an immersive backdrop of sights and sounds along with the classroom artifacts and props that the children used to role-play.

By asking questions and seeking answers using the interactive whiteboard, the children responded with deeper, more meaningful play. The interactive whiteboard allowed children to zoom in and out to see details of photos from *Smithsonian Magazine* online.[4] Paying close attention to the coloring of the panda bear, the children created masks and began acting as baby pandas in the panda reserve. Some of the children created black paws to wear on their hands as well. They pretended to eat the bamboo just as they had seen the pandas eat. A few children began to notice that there were adults who had jobs (i.e., scientists, zoo workers, conservationists) helping to care for and protect the pandas, and this learning extended into their dramatic play. Two children, dressed as pandas, were curled up and lying very still on the carpet. As others approached the carpet to ask about the pandas, the child playing the zookeeper said, "Be quiet. The baby pandas are sleeping."

Interdisciplinary Connections

As children become immersed in the study of social studies related topics, interdisciplinary connections can help students in the transference or application of knowledge across subjects. Throughout the project, the children experienced a variety of activities using the interactive whiteboard. For example, they used Google Earth to find the mountain ranges in Central China where the giant panda originates and recognized it as the same far away country where their classroom friend Jieriu goes every summer to visit his grandparents.

Within the Panda project, connections to children' interests in the diet of the Panda led to opportunities to not only explore the physical geography where pandas live in the wild, but also to learning experiences in math and science. Using the drawing pad application on the interactive white board, the children manipulated various basic shapes to create their own versions of pandas. They also kept track of a panda's activities using the live panda cam and tallied what they saw. Some children were curious about how much food they would need to take care of the pandas in their class zoo, and used observations to estimate the quantity of bamboo eaten by the Pandas within a certain time span (day, week, month, year).

Manipulating and "Measuring"

The class learned to estimate using both concrete and virtual manipulatives (from nlvm.usu.edu) on the interactive whiteboard. By the age of five, young children are beginning to develop an understanding of the relative magnitude of quantities.[5] Connections to science can also be made, as children conduct month-long investigations on how bamboo grows. By varying the substances in which the plants grow, students can investigate which kind of soil works best. Children can measure heights of plants (in standard or nonstandard units) and plot these data on a line or bar graph.

Integrating the use of the interactive white board as a means to engage in both spatial transformations as well as visual comparisons, we uploaded images of real pandas to the board. From here, pictures of the children also were uploaded and placed adjacent to those of the pandas. Through the use of the technology, we transformed the two-dimensional pictures of students and pandas into three-dimensional images. Children could now manipulate the three-dimensional representations of each object by rotating the images. They have compared the relative size of each part of the panda to their respective parts. For example, Kara and Maya compared their height and width to that of the panda, and even rotated the panda and themselves to see which had a greater circumference.

Students also became interested in environmental stewardship, They learned how to use the terms "habitat" and "preserve" in spoken sentences, and they saw photos of concerned Chinese and American scientists who work together to preserve panda habitats in the wild. Students imagined ways to protect the pandas' habitat and to help them reach nearby mountains (to get additional bamboo to eat) without needing to enter the valley below (where they would likely encounter humans). As children designed ways to facilitate panda movement from one mountain to another, they utilized the interactive whiteboard to create illustrations and blueprints of their plans. Development of plans involved consideration of a panda's size, the distance between mountains, shapes that would be beneficial in the construction of their bridge, and spatial strategies related to the project.

Some children opted to use their plans to construct models with materials found in their environment, testing and revising their plans as needed. In the end, children presented their plans to classmates and began working on the creation of digital movies and stories to promote panda advocacy and awareness. The interactions between science, technology, and society became apparent in this preschool setting.

Expanding Children's Capacity for Learning

In the classroom described above, the interactive whiteboard is an enhancement to the project-based traditions of learning. In addition to the knowledge and skills delineated in the Pre-Kindergarten standards and NCSS themes,[6] the children learned that the process of inquiry involves the formulation of investigable questions, planning ways to find out answers to the questions, and communicating what was learned. They explored a variety of ways to represent thinking (e.g., speaking, drawing, writing, and 3-D modeling). They learned to look more closely at their environment, gained a sense of what happens behind the scenes, and gained a stronger understanding and appreciation of the world around them. The project strengthened the children's dispositions to persist at a task over time, make revisions to improve work, seek solutions when encountering problems, collaborate with others, and to take risks and try new things.

To summarize, these activities show how an interactive whiteboard

- Facilitates multimodal learning that supports visual-spatial, auditory, and kinesthetic experiences to accommodate diverse styles for exploring and communicating ideas.
- Supports young children's preference for physical involvement and movement in learning as they touch, manipulate, and reposition objects on a screen
- Enables young children to engage in meaningful firsthand

Exploring Pandas with an Interactive Whiteboard: Recommended Resources

Chengdu Research Base of Giant Panda Breeding, **www.panda.org.cn/english**

iPanda, **en.ipanda.com/live**

Smithsonian National Zoological Park, Giant Panda Curriculum Resources, **nationalzoo.si.edu/animals/giantpandas/pandaeducation/curriculumguides/cg_k-4.cfm**

Scholastic, "Hello, Baby Panda!," **teacher.scholastic.com/commclub**

Panda Kindergarten, **docs.roundrockisd.org/modules/ShowDocument.aspx?documentid=26742**

Draw and Color a Panda, **www.unclefred.com/draw/panda/panda1.html**

Panda Jigsaw Puzzles, see **www.dailyjigsawpuzzles.net**; **www.thekidzpage.com**; and **thejigsawpuzzles.com**

Switch Zoo, **www.switchzoo.com/default.htm**

learning by taking the initiative and making choices and decisions
- Encourages creative and collaborative forms of interactions, contributing to a space where children can develop socially through working, playing, and interacting with both peers and adults

Remember that the whiteboard can be combined with other teaching resources in the classroom. Teachers and children can use tangible objects (e.g., a globe, map, bamboo leaves, a Chinese silk scarf) to augment visual information for engaging whole group instruction, small group work, and individual constructions.

We have found the interactive whiteboard to be a tool that aligns well with a classroom focused on process over product, in which the value of children's learning is interwoven into experiences that foster deep interaction with concepts and ideas.[7] The technology expands the capacity of children to revise and transform through play-based experiences and investigations. This situated form of learning necessitates a focus in the classroom on digital literacy to hone the skill sets young children need to become active producers and participants in diverse digitally enhanced environments. The goals are to foster technological fluency and support multimodal literacies while preparing competent, responsible, and critical learners and participants in an increasing open and globalized world.[8] Not only do the digital tools assist in achieving these goals, but also they serve as instructional enhancements that facilitate engagement, active learning, creativity, and social experiences in a learner-centered environment.

Notes

1. Ilene R. Berson, Linda Bennett, and Dorothy Dodson, "Powerful and purposeful teaching and learning in elementary school social studies." *Social Studies and the Young Learner* 22, no. 1 (2009): 31-33.
2. Online resources available from kids.nationalgeographic.com/kids/animals/creaturefeature/panda/; www.bbc.co.uk/news/world-asia-china-24223721; www.usatoday.com/story/news/nation-now/2014/01/06/bao-bao-panda-baby-zoo/4349353/; and nationalzoo.si.edu/animals/giantpandas/
3. Live webcams are accessible at www.panda.org.cn/english/ and en.ipanda.com/live.
4. See www.smithsonianmag.com/smithsonian-institution/get-close-and-personal-bao-bao-amazing-new-photos-180948002.
5. Filiz Varol and Dale C. Farran, "Early Mathematical Growth: How to Support Young Children's Mathematical Development," *Early Childhood Education Journal* 33, no. 6 (2006): 381–387.
6. Florida Department of Education Office of Early Learning, "Florida Early Learning and Developmental Standards for Four-Year-Olds" (Tallahassee, FL: Florida Department of Education, 2011): www.floridaearlylearning.com/sites/www/Uploads/files/Providers/VPK%20Curriculum/feldsfyo.pdf; National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment (National Council for the Social Studies, 2010): www.socialstudies.org/standards/strands
7. Ilene R. Berson and Michael J. Berson, eds., *High-Tech Tots: Childhood in a Digital World* (Charlotte, NC: Information Age, 2010); See also NAEYC & Fred Rogers Center for Early Learning and Children's Media, "Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8, Joint Position Statement"(Washington, DC: NAEYC; Latrobe, PA: Fred Rogers Center for Early Learning at Saint Vincent College, 2012), www.naeyc.org/files/naeyc/file/positions/PS_technology_WEB2.pdf
8. NAEYC and Fred Rogers Center for Early Learning and Children's Media, www.naeyc.org/files/naeyc/file/positions/PS_technology_WEB2.pdf; See also National Council for the Social Studies. "Technology: A Position Statement of National Council for the Social Studies," *Social Education* 77, no. 3 (May,/June 2013): 160–162, www.socialstudies.org/positions/technology.

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