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Drawing Opens Pathways to Problem Solving for Young Children

“H

e was all gone!” The tale of the Gingerbread Boy ends with a distinct tone of finality. As the book closes, the image of the clever and very hungry fox lingers and the words “snip, snap, snip” echo in the minds of young listeners.

Children experience picture books as a verbal/visual entity. Meaning arrives through both channels as young interpreters unconsciously absorb somebody else’s words and images. And then, something remarkable, but not well understood, happens. This dynamic, intercommunicating force takes on new meaning as children generate artistic and dialogical responses of their own. The process has much to teach us about how children move into literacy.

In a project titled *Portrayals of Escape*, we worked with 4- to 7-year-olds on visual and verbal responses to picture books. As the final page was presented, the teacher set the book aside and said, “Mmm . . . let’s think a minute about what just happened to the Gingerbread Boy. He had a BIG problem. What could he have done to avoid being eaten? Could you draw a picture showing how the Gingerbread Boy escapes?” After a short pause, smiles appear as each listener playfully contemplates an escape plan. Without knowing it, each child accepts the challenge and begins to create images that collectively result in a large number of problem-solving ideas.

What Does the Research Tell Us?

Drawing offers a playing field on which young learners can try out new ideas or perspectives. Children’s fertile imaginations help them rise above the restraints of the physical world and employ magical elements that open paths for solving difficult problems. As children engage in the active process of meaning-making and problem solving, they communicate creative and imaginative thoughts and feelings through a variety of symbol systems.

Most educators would agree that the ability to solve problems is a worthy goal of science programs, but not necessarily of literacy programs. What many practitioners do not appreciate, however, is that young children are natural problem solvers and they are already actively engaged in adapting to novel situations across the curriculum (often, while playing). Children genuinely want to become involved in figuring out solutions through play,

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visual art, and any other available media (Davis, 2005). While problem solving is not a new area of research, children's drawing as a problem-solving strategy has not been fully explored (Lambert, 2006). Experiences with drawing provide opportunities for children to question, challenge, and plan alternative courses of action (Thompson, 2005).

Research demonstrates that children weave together drawing with talk, writing, movement, and sound (Dyson, 1989; Gallas, 1994). In most instances, however, these alternative modes of representation are not highly valued in school settings. At the core of most literacy development paradigms are the literate behaviors traditionally associated with learning to decode and encode print (Roskos, Christie, & Richgels, 2003). The arts remain largely outside the core curriculum, despite their inclusion as a core subject in the No Child Left Behind Act.

In the context of school, children's drawings are considered a connecting force that helps introduce young learners to a more significant graphic code—the written work and the nature of its connection to meaning. Visual imaginations, when activated, typically serve as resources for writing. A shift is occurring, however, and more voices are calling for a multiple literacies perspective that recognizes art, music, dance, and drama as forms of literacy that allow for expanded levels of human emotion and experience (Bearne, 2005; Kress & Jewitt, 2003). Narrow and traditional views of literacy are beginning to give way to broader definitions that include a spectrum of representation (Barratt-Pugh, 2002). The literacy landscape is growing to include images, gestures, music, movement, and other representational modes on equal terms with language. Within this new paradigm, teachers are adopting a more inclusive path, one that does

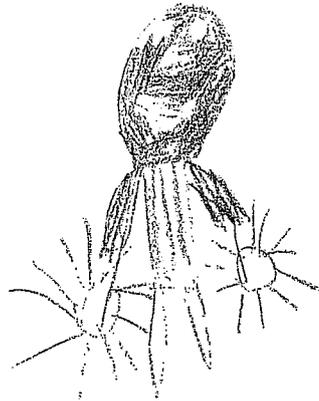


Figure 1

not privilege written language above all other symbol systems in their instructional practices.

Overview of the Project

This article describes a strategy referred to as "Portrayals of Escape," which can be easily incorporated into literacy curricula in the early grades. Preser-

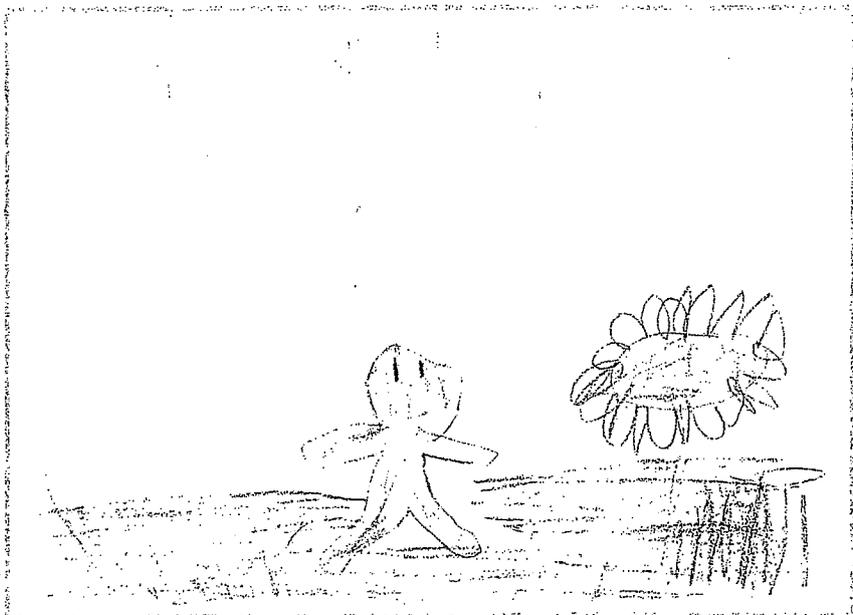


Figure 2

vice teachers from two early childhood classes self-selected various Head Start and early childhood classrooms as sites for their larger child study project. They explored ways that young learners problem solve by examining the children's visual and verbal responses to picture books. After listening to traditional stories with escape themes, such as *The Gingerbread Boy* and *Jack and the Beanstalk*, they asked children to generate their own drawings to show a different ending to *The Gingerbread Boy*.

The student work appearing in this article was selected from a set of drawings produced by a sample of 120 children ranging in age from 4 to 7 years old. Preservice teachers collected these drawings as part of an assignment requirement for an early childhood course on observation and assessment. One of their literacy tasks was to explore young children's responses to and interpretations of picture books. Preservice teachers examined written and verbal expressions, along with children's artistic responses, to gain insight into the nature of young children's problem solving.

Getting Started on the Project

The picture book *The Gingerbread Boy* (Galdone, 1975) was the first in a two-part set of books chosen to extend an instructional unit on the theme of escape. For the duration of this project, each preservice teacher worked with three to four children during a small-group read-aloud session. After showing the cover page and announcing the title and author, the adult

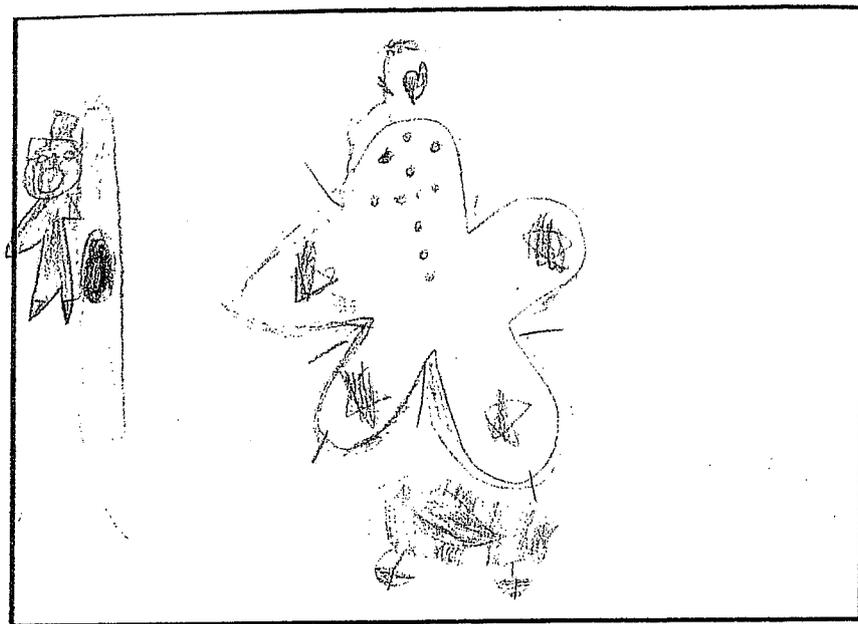


Figure 3

reader held the book to one side to ensure strong lines of vision for viewing the text and pictures simultaneously. The preservice teachers read the book straight through; they did not ask questions, nor encourage child interactions.

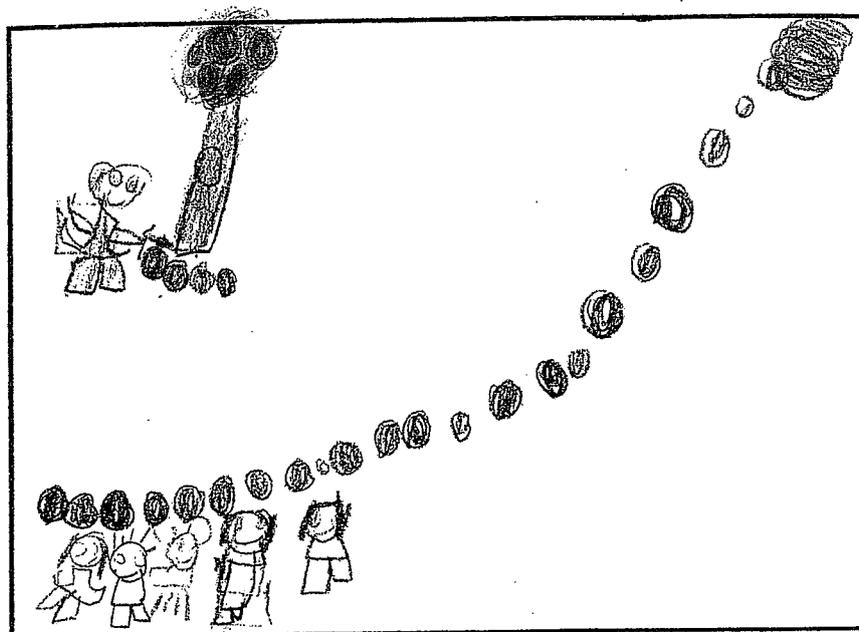


Figure 4

Following the small-group read-aloud session, the student teachers asked the children to visually represent their responses to each picture book. The first prompt was, "Let's think about what's happening to the Gingerbread Boy. He has a BIG problem. What could he do to avoid being eaten? Draw a picture showing how the Gingerbread Boy escapes." The children received minimal directions with respect to completing their drawings, and no small-group discussion transpired about what the children might draw. Participants did not have access to the picture books when the drawing activity was in progress, but they could see each other's pictures and talk freely among themselves.

After all the drawings were finished, a second prompt was given: "Can you write about what is happening in your picture?" The preservice teacher observed closely and took notes on writing behaviors. The final step was to prompt the children with an opportunity to expand their thinking: "Is there anything else you would like to tell me about your picture?" The resulting oral responses were recorded by the adult.

During a special on-campus display session at the end of the semester, the preservice teachers added their children's drawings to the larger class collection, resulting in over 120 images of escape. The drawings were analyzed descriptively and, in some cases, comparatively to examine children's developmental stages. Two books by well-known art educators were used to guide the preservice teachers' understanding of children's art development (Golomb, 2004; Kolbe, 2005).



Figure 5

What Did the Children Produce?

The initial drawing prompt, "What could the Gingerbread Boy do to avoid being eaten?," revealed a rich outpouring of ideas. The children were eager to record their immediate responses—in effect, to construct their own ending to this story. Problem solving came easily, as evidenced by an abundance of visual output, all actively portraying ideas of escape. These youngsters were quite adept at using

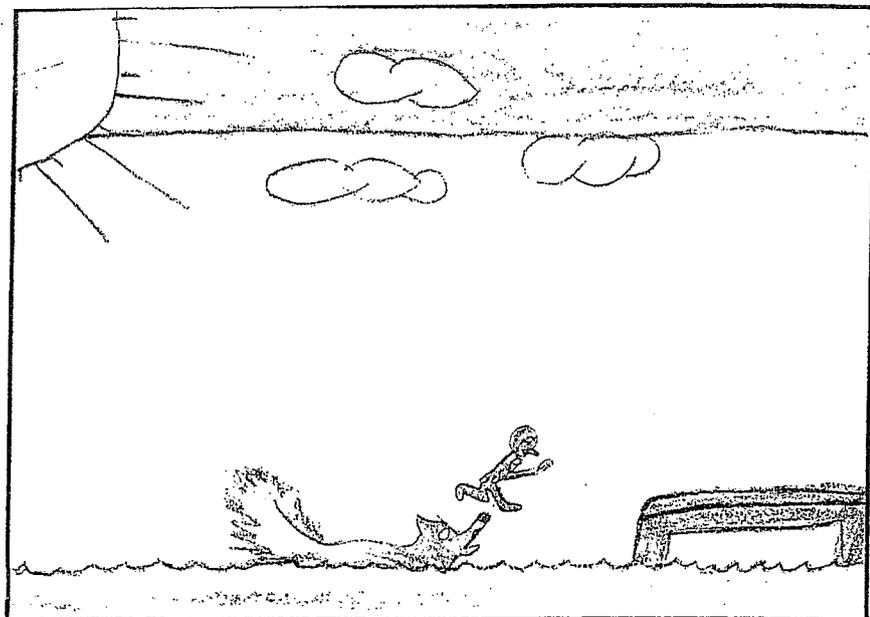


Figure 6

art to communicate their unique perspective; in the process, they readily produced their own imaginative and problem-solving scenarios.

The collective set of children's drawings revealed an interesting mix of problem-solving ideas. We were amused by the sight of so many little gingerbread creatures moving frantically to hide in gardens or holes in trees, or using skateboards and scooters to accelerate toward safe havens. Closer examination revealed unique individual solutions. For example, one boy drew the Gingerbread Boy with seven legs so he could outrun all earthly beings, while another child portrayed his character escaping with bundles of fireworks strapped under his arms, ready to explode and propel him forward. If portrayed in a water scene, the Gingerbread Boy took to speed swimming, riding surfboards, or commandeering boats, rafts, and vessels to the shore. In addition to land and sea settings, the participants drew airplanes, robots that transformed to winged fighters, and other aerial images of power and speed as they cultivated their fantasy ideas to develop high-risk, lifesaving adventures.

Understanding Children's Drawings

The following section includes information on helping teachers make sense of children's drawings. The artwork of six participants demonstrates how children reveal their understanding or reasoning about a difficult situation.

Portrayals of Escape—Preschool Children. Four-year-old Sammy explained, "He fell asleep and he ran out his mouth." Figure 1 shows her Gingerbread Boy in a simple frontal view positioned along the skyline, under a beaming sun. The noteworthy feature is the hands, depicted as a circle with radiating lines. They are a basic visual feature of Sammy's growing graphic repertoire. Jessica, also 4 years old, drew the Gingerbread Boy in action, moving to hide in the flower garden, which is represented by a single large flower, a structural equivalent for a flower garden (see Figure 2). In her final oral statement, she said, "This is the Gingerbread Boy running away so no one eats him." She captured the essential basic visual components needed to convey an idea. Neither child included the fox or other contextual details, but both youngsters clearly solved the problem through visual and oral modes. Neither preschool child attempted to write a response.

Portrayals of Escape—Kindergarten and 1st-Grade Children. Five-year-old Lindsay clearly has much to teach us about how children problem solve and develop literary awareness. Observation of her work session and drawing shows how young learners select parts of what they've seen and heard in picture

books and integrate them into their own experiences and meaning-making processes.

Figure 3 illustrates Lindsay's most telling visual markers, small circular shapes signifying buttons and facial features and the rounded limbs so characteristic of a gingerbread cookie. She surrounded the contours of the Gingerbread Boy with shading, a technique used skillfully by the adult illustrator to show a three-dimensional object in a two-dimensional representation. Additional decorative touches give a very stylized appearance and shed light on how Lindsay personalizes her creation through color and organization. Heart motifs adorn the Gingerbread Boy's hat and skateboard, while ornamental stars appear on the four appendages. Lindsay is a discriminating reader of images and a very capable artist.

Lindsay's drawing is a visually stunning and imaginative construction of a unique idea. This kindergarten child effectively combined the knowledge and technical skills needed to convey the image in her mind's eye into a representation, one that suggests action and narrative sequence. At the most basic level, it's a cute and colorful rendering of the Gingerbread Boy riding to safety on a skateboard. Technically, it is a very sophisticated piece of work. This young participant created a drawing that depicts movement and a sense of liveliness. The Gingerbread Boy's legs are spread in an active skating position, with the left leg tipped forward over the rolling platform. The figure beside the tree has an open mouth and appears to be shouting, "Stop, stop, little Gingerbread Boy!" emulating the verbal behaviors of the succession of characters in the book. Furthermore, the Gingerbread Boy's hat, although drawn in contrasting colors, is the same style as worn by the scarecrow in the field and the threshers and mowers who run after him. Lindsay incorporated elements from the visual texts of the illustrator into her own visual text. In the process, she intuitively absorbed the understanding and practices of others, combined them with her own familiar frames of reference from her environment (e.g., the skateboard), and produced an original idea to show how the Gingerbread Boy escapes. What a powerful mode of communication!

Visual and verbal modes are in full swing as Lindsay worked, moving her toward high levels of engagement with the problem-solving task at hand. We recorded this evidence of verbalization in field notes taken during the observation: *Lindsay shows an intense focus on her drawing. She can be heard talking to herself as she decorates the Gingerbread Boy, but the words are muffled in the midst of other classroom activity. As her drawing nears completion, her sing-song phrase is loud and clear: "Skate, skate, skate, catch me if you can, I'll outskate you like I did the old man."* Lindsay has imaginatively en-

tered the world of the Gingerbread Boy through her drawing and she joyfully composes lyrics, using the rhyme and rhythmic pattern of the author's verbal text. Humor and creativity flow from her immersion, as visual and auditory modes converge.

The snapshot of this one child is a compelling example of the extent to which children bring an all-encompassing mind-body presence into their meaning-making process. Lindsay's prior knowledge and experience as a sign-maker became a resource for her project at hand. Her ability to perceive visual and verbal detail and to generate the raw materials for a story line typifies the processes and strategies many children use for their narratives. As researchers, we admire not only her realistic portrayal of the Gingerbread Boy, but also her visual representation of action, two- and three-dimensionality, and the contextualization of characters—features rarely present in the work of younger children. We think that the drawing of this child, and of countless others, can help teachers to better appreciate their students' constructions of literacy.

The next drawing shows the innovative problem-solving techniques produced by a 6-year-old child. Cassie used a graphic layout as part of her compositional structure. Figure 4 illustrates how Cassie represents her knowledge through the design on her page. She made an apple trail into her imaginary land of adventure, where the Gingerbread Boy tricks the fox. Cassie is a very creative and verbal kindergarten child who easily articulates her thoughts through images. While she was drawing, she rehearsed a private inner dialogue by naming each color and counting the apples. She also identified each figure by name, using the same repetitive pattern, "This is the fox, this is the Gingerbread Boy, this is the cow, and this is the mouse." Some characters were invented along the way. Her short written comment is revealing, "He's happy he is hiding behind a tree." This one-sentence caption reflects the writing style displayed by many of the children in this study.

When asked if she wanted to share anything else about her picture, Cassie grasped the opportunity to provide a unique and unabridged explanation of her drawing. First, she provided a succinct overview: "The Gingerbread Boy is tricking everyone because he is hiding behind a tree." Then she described the events experienced by the main character in her pictorial narrative. She explained, "These circles are apples and the yellow one is the sun. This is the Gingerbread Boy and he is hiding behind the tree and no one sees him. He chooses an apple tree because he was hungry. He puts the apples in a line so the people would follow the apples and not find him. He throws apples at the people and a lot at the fox. They follow the apples up

and away and he runs free." The full depth of Cassie's problem-solving abilities is revealed through verbal descriptions. Her interest in visual order and pattern-making is clearly evident in her graphic layout. Paying attention to the ways that children verbally frame ideas enables teachers to clearly see the extent of their mental processes at work. It will not be long before Cassie will be able to articulate these ideas in writing.

The final two drawings feature advancement in representation and fuller contextualization, skills evident in the work of many 6- and 7-year-olds. Norah wrote, "He hid in the ground in a secret house." The fox is illustrated in the background, lurking in the tall grasses; the smiling Gingerbread Boy is positioned in the foreground, about to enter the safe haven of an underground house (see Figure 5). A horizontal line of brown soil separates the two worlds. Patrick, another 7-year-old, illustrates the upper range of sophistication in drawing skills with his profile perspective of the fox and the Gingerbread Boy (see Figure 6). He writes, "The fox is swimming him across the lake and Gingerbread Boy jumped off the foxes nose onto the bridge." While the baseline and skyline are still prominent, Patrick has clearly progressed in perspective taking, attention to detail, and ability to use art to solve problems outside of the traditional narrative episode.

What Did the Preservice Teachers Learn?

A simple instructional strategy—asking children to supply a new ending to an old story—can provide prospective teachers with an enlarged viewing field in which to observe children as they think about and share their feelings and perceptions. The preservice teachers participating in this program quickly realized that looking closely at the art in conjunction with the children's talk gives insight into where the learning happens. Children and their mentors share in extended meaning-making processes when post-drawing talk transpires. One child, for example, remembered the bird that was present in the picture book and then sketched one in his own drawing. He elaborated on this with his adult partner, saying, "That's a bird for the fox so he doesn't eat the Gingerbread Boy. He'll drop that worm down the fox's mouth, he will open wide, and the Gingerbread Boy will swim away. That bird is going to trick him." Many partial narratives were generated. A kindergarten boy explained how an alligator was going to surface, nose-to-nose, and scare the fox, but not the brave Gingerbread Boy. Such a strategy would allow the little runaway to pop out of the fox's mouth, scurry down the alligator's back, and jump to safety. Some emergent attempts to mimic the prominent cumulative patterns in the book were noted. One girl said, "He can run to the playground, jump over the house, and hide in the

dumpster, and then he can run . . . jump . . . and hide . . . run . . . jump . . . and hide all over again until he gets back home."

The preservice teachers identified intertextual weavings in the children's work. One preventive tactic that was offered could be traced back to another folktale, *One Fine Day* (Hogrogian, 1971). The child said, "Those mowers should have cut off the fox's tail so that he would feel too shy to talk to the Gingerbread Boy. That way he could go home with the old lady and the man." Other narratives had striking similarities to themes from Biblical stories (e.g., the Book of Jonah) and even aspects of the classic Pinocchio story. One child told the adult listener that the fox falls asleep and the Gingerbread Boy gets spit out of its mouth and lands safely on shore. The following piece of advice was clearly related to media influence: "He should be like Sponge Bob, just stick his toe in the river, suck in lots of water, and then become so large that he scares the fox away."

Our favorite narrative was the following: "The Gingerbread Boy should have stayed in the oven. The family (Old Man, Old Woman, and Gingerbread Boy) would live happily ever after because they would take him out and keep him up high on the shelf. They would bake more gingerbread boys and keep a bunch of them up high on the shelf like trophies. Then when the old man and woman went to bed, they could drop down and do battle." The college students enjoyed a light moment as they envisioned a troop of gingerbread boys plunging into the murky depths of the kitchen floor and charging into intense strategic battles. This technology-influenced generation had made a connection between storybooks and video games, and realized that all-important connection between imagination and engagement. Thus, they were poised to continue the narrative process that their younger counterparts had initiated.

Final Thoughts

A quality picture book has the power to stimulate children's imagination and aesthetic understanding (Kiefer, 1995). All six children in this study were able to think flexibly, creatively, and with focus about the knowledge they absorbed from picture books and from experience. In addition, the children presented information through multiple modalities that were both complex and dynamic. Clearly, attention has been paid not only to core reading, writing, and speaking skills, but also to visual expression—to experiencing emotions and exploring aesthetics. Children brought their own unique thoughts, perceptions, and feelings to their creative work.

As teachers help young children enter the world of symbol systems, they must ensure that various

forms of representation (e.g., talking, reading, writing, music, visual arts, and movement) are afforded equal emphasis and importance. Teachers must understand language and visual processes well enough to help all children advance in different ways. Children need to be better prepared for a world of visually oriented modes of technological literacies, and their early literacy instructors need to accept artistic responses as legitimate intellectual expressions of meaning. The time has come to open pathways by promoting drawing as a unique mode of learning for problem solving, expressive, and aesthetic purposes.

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