

Cultivate the Scientist in Every Child

Using an Exhibit as a Catalyst for Learning

by Alexandra Cruickshank and Ellen Hall

“Is it utopian to propose that teachers be permitted and expected to learn too?”

Frances Hawkins

“If teachers can join us in mapping paths into subject matter, they are on their way to being able to do so for children.”

David Hawkins



Alexandra “Alex” Cruickshank is the principal conceptualizer, writer, and photographer of the exhibit. For years, Alex has studied Frances’ and David’s ideas, translating their theory and practice into her classroom work. Her 2011 Boulder Ignite

and TEDx presentations gave public voice to Alex’s compelling articulation of very complex theory. In collaboration with the team, Alex designed the conceptual structure of *Cultivate the Scientist in Every Child*, and led the creative components of the project. Alex has taught at Boulder Journey School since 2007, and currently acts as the Hawkins Centers of Learning’s liaison to the school. She also supports the development and implementation of workshops, both in Boulder and around the country.



Ellen Hall is one of Hawkins Centers of Learning’s founding board members. A colleague and friend of Frances and David, Ellen was a frequent guest in the Hawkinses’ home, and often joined the wide-ranging discussions for which they

are famous. Ellen is a founder and executive director of Boulder Journey School in Boulder, Colorado, and of the Boulder Journey School Teacher Education Program in which David’s and Frances’ educational theories are studied and practiced. Her publications and expertise in Early Child Education have earned her membership on many advisory boards, including the World Forum Foundation, Dimensions Educational Research Foundation, and the International Child Resource Institute. She travels to study and to deliver presentations worldwide.

Frigid, Rocky-Mountain-winter temperatures accompanied the opening weekend of the exhibit, *Cultivate the Scientist in Every Child: The Philosophy of Frances and David Hawkins*. Educators from across the country, braving the cold, bundled up and met in Boulder to celebrate. They gathered in the University of Colorado Museum of Natural History Bio Lounge to *mess about* with materials that inspire curiosity, wonder, and engagement: stones of all shapes and sizes, lightbulbs with delightful filaments, balancing blocks and tinker toys, and so many more, found and salvaged from nearby.

Workshop participants began the morning working in groups, with identical trays of sand and a variety of tools, including magnets, tweezers, water droppers, toothpicks, and graph paper. Their instructions were purely: *play*. The end results of their open-ended time looked vastly different. One group dedicated their hour to studying sand and integrating pebbles, using the multiple seriations naturally occurring in grains of sand and pebbles to create intricate, aesthetic patterns. Another dedicated their hour, not to the pursuit of geology, but to the pursuit of physics, using the variety of tools to create a sort of Rube Goldberg machine of toothpicks, water, and sand.

The *messing about* was offered as a companion workshop to the exhibit’s seven panels, highlighting four of the essential ideas from the work of Frances and David Hawkins, a Boulder-based husband-and-wife team of educator and philosopher. Frances was the teacher, whose innate understanding of children’s thinking inspired her husband, David. David was the philosopher, a student of human thinking, who took his wife’s observations and drew broad universalities about teaching and learning. Together, Frances and David articulated the critical need to pair time and space for open-ended play with facilitation and discussion in an optimal learning experience.

The Hawkins’s philosophy on education shone through, not just in their classrooms and writings, but also in their lives. Visitors to their home were invited into their living room to engage in deep, rich conversations about the workings of the world. An essential part of their core belief was that all people, beginning with young children, are motivated to understand the world around them and that all people come into a situation with unique backgrounds and experiences that can contribute to an ongoing learning dialogue.

Following David's death in 2002, colleagues of the pair realized how hungry the world was for their ideas. In response, Hawkins Centers of Learning was formed as a nonprofit dedicated to the preservation of the Hawkins's ideas and to their translation in today's educational culture. Also from this hunger, the idea of an exhibit was born. It was the desire that this exhibit would not only explain big ideas gleaned from the Hawkins's teachings (and published in their writings), but would also act as a traveling living room where generations of educators could gather and develop new inspirations, new ideas, and new actions.

Beginning in 1995, Frances and David were friends and mentors to educators at Boulder Journey School, a school for early childhood education that welcomes 175 families and children, ages 6 weeks to 6 years. The relationship between David Hawkins and Loris Malaguzzi, architect of the Reggio Emilia philosophy, led to the introduction of the parallel philosophies to educators at the school. Educators at Boulder Journey School have been actively involved in the initial vision and development of Hawkins Centers of Learning, including the exhibit project, offering stories to illustrate its big ideas.

Along with three stories from Boulder Journey School, *Cultivate the Scientist in Every Child* uses a story from the Hawkins's Mountain View Center in 1973 to illustrate four big ideas from the combined writings of Frances and David. The ideas illustrated are:

Messing About: the three-phase cycle that takes place in optimal learning, which includes time for open-ended exploration (circle phase), time for choosing a direction to explore (triangle phase), and time for discussion to unpack the meanings of ideas (square phase).

Eolithism: the devotion of energy to the use of pre-existing resources, both physical materials and intellectual interests, rather than the pursuit of resources that are out of reach.

I, Thou, It: the reciprocal relationship between learner, teacher, and content, through which the learner and teacher can inform each other about the content and the content can inform the learner and teacher about each other.

Teacher as Learner: the understanding that teachers are lifelong learners and that professional development is most effective when it actively engages teachers in hands-on, open-ended interactions that mirror the learning processes of their students.

The stories are told through photographs and narratives, one per panel, to comprise four of the seven panels of the exhibit. The other three include an introduction, an invitation to action, and a contextual panel, describing the parallels between the philosophy of Loris Malaguzzi and the philosophy of Frances and David Hawkins.

The design of the exhibit itself, both physical and graphic, was crafted by interns from University of Colorado Boulder's Children, Youth and Environments Center for Research and Design. Lisa Kornblith and Christy Horber, supported by their mentor Marcel de Lange, immersed themselves in the writings of the Hawkinses and used the Hawkins philosophy to design a structure that, with its clean lines and simple wooden pieces, is both aesthetic and intuitive. Resembling a wooden puzzle, the exhibit is designed to assemble and disassemble in under an hour. Many of the pieces are eolithic in nature and can be easily replaced by a trip to the hardware store. The whole design, as with the philosophy of Frances and David, is complex in

nature, elegantly portrayed, so as to be accessible.

This takes us back to that bitterly cold weekend when the exhibit opened. In the development of the exhibit, the importance of workshops to accompany its travels had been acknowledged, but it was during that weekend that we realized the power of the partnership between the two. We observed educators engaging as learners in all four of the big ideas outlined on the panels. Time was provided for play, for research, and for dialogue. The Hawkins's living room was truly coming to life.

After several months of traveling, the exhibit was contracted to spend six months near home in Denver. This was the longest stay on its journey to date, and afforded us the opportunity to try a new approach to professional development: a series of workshops, attended by the same participants, which dove deeply into each of the four big ideas, rather than skimming the surface of each. By the end of the series, we had explored the philosophy of the Hawkinses along with the content areas of geology, literacy, visual arts, engineering, and psychology.

One afternoon found us messing about with technology. An option for the afternoon was to use iPads and video editing software to create a stop-action animation to document the rest of the workshop. Erica Knox, a Denver teacher, became the director of animation, despite protests at first that she was frightened of technology. By the end of the afternoon, her confidence with the technology was strengthened, and she was showing other people how to use the software.

When we met at an impromptu gathering months after the series had ended, Erica shared that when she returned to her classroom, her messing about experience with technology —

Photograph by the authors



simply playing without the possibility of failure — gave her the courage to support her students in doing the same. One child in her class was following a path that involved storytelling through movies. Prior to the hands-on experiences of messing about with technology, Erica said she probably would have gently guided this child to a different media, one she felt more comfortable using. Now that she had made the leap, she understood that the worst that could happen from exploring with this child would be that their project would turn out differently than they were anticipating — an experience that is familiar to seasoned technophiles! Together, she and the child messed about in the classroom, their combined excitement drawing in the rest of the class. By the end of the school year, they had a long-term investigation that encompassed many different modalities, interests, and personalities.

We wondered whether we could continue to offer messing about workshops without the exhibit's presence. Boulder Journey School offered to host this experiment, providing space and materials as a source of professional development both for Boulder Journey School educators and for educators from the surrounding community. Additionally, because this series is taking place inside a school, teachers not only have the opportunity to mess about as adults, but also to engage with children in the

same space with the same materials, and to revisit both children's and adults' work with children and colleagues.

The Messing About with Teaching monthly professional development series was launched last fall. Cardboard was selected as the first material to explore

because of its largely eolithic nature; it can be found everywhere! It is also an incredibly open-ended material that lends itself naturally to construction, design, dramatic play, mathematics, sound-exploration — the list is never ending. The school was flooded with cardboard of all shapes and sizes.

We began by graphing all the possibilities we could imagine for the cardboard (see Figure 1).

This was our triangle phase, with threads that we might follow. We documented how the teachers engaged; the first part of our circle phase. We saw teachers construct giant cardboard landscapes, compose 3-dimensional compositions, design interactive games, and treat the cardboard as a vehicle for engaging in dialogue.

When the children came into the space the following day, we observed similar interactions. Additionally, the children used the cardboard as drums, as cozy spaces, as tools for exploring mathematics, as tools for social play, and as backdrops for the explorations of other materials, including fabric, wood, and paint (see Figure 2). The children invited the teachers to join them in their explorations.

After a month of exploring the cardboard with the children, the teachers met again for a second workshop. This time, they brought ideas that had been percolating, inspired by their play with the

Figure 1 — Possibilities with Cardboard

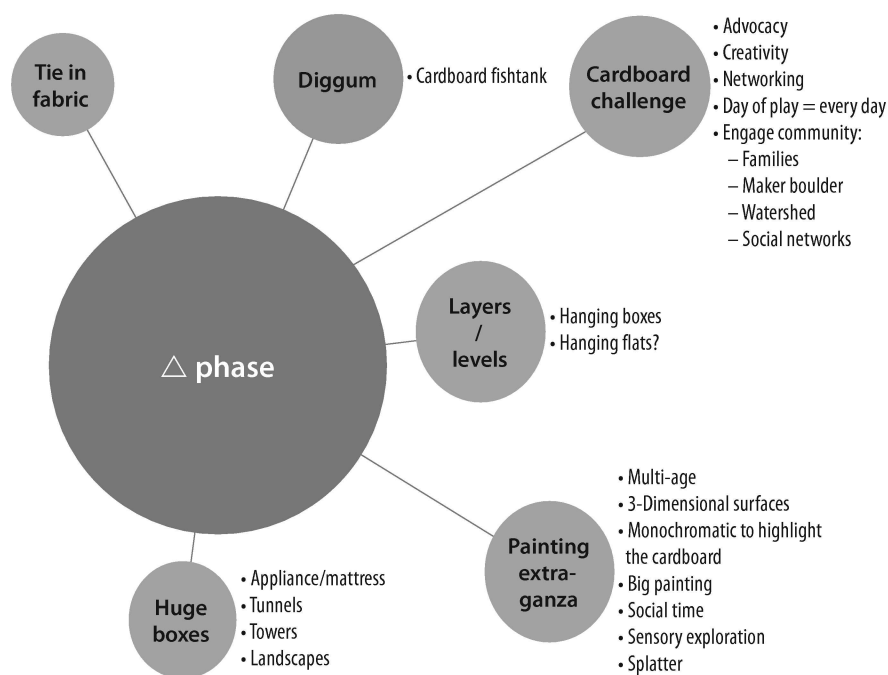
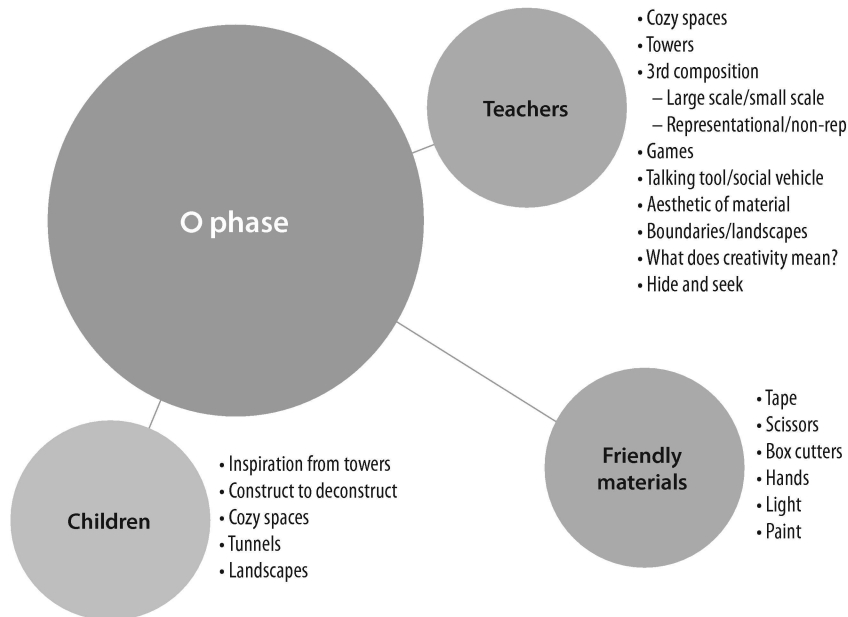


Figure 2 — Possibilities with Cardboard



children. Teachers now had the opportunity to mess about and find new avenues to expand the work. Teachers could build something to bring back to the classroom to continue work already started, such as a cardboard drawbridge to extend an exploration of transportation. And, teachers could answer burning questions that had arisen, such as how changing the length of a tube of cardboard (a process that requires a hacksaw) might alter the way children use it. This second cardboard workshop offered valuable time for extending thoughts that were already shaping.

The teachers gained confidence in exploring with the children, both through messing about in the workshops and through messing about with the children. The cardboard spread through the school to reside in a majority of the classrooms. The discussions among teachers and children, our square phase, led to understandings of physics, balance, and the properties and affordances of cardboard as a material. More than merely understanding the science, the workshops supported connec-

tions among teachers, among teachers and children, and among people and materials.

Having the opportunity to spend time with the exhibit, *Cultivate the Scientist in Every Child*, strengthened Boulder Journey School's approach to weaving the ideas of Frances and David Hawkins into the daily life of the school. After the exhibit's departure, educators resolved to keep the spirit of the exhibit present, although the physical structures continue to travel. The presence of the exhibit offered a blueprint for a living room, and educators at Boulder Journey School chose to incorporate the living room into their own school through the implementation of a regular workshop series. It is our hope that every exhibit venue will find a way to construct their own living room to support learning, in the spirit of Frances and David Hawkins.

References

Hawkins Centers of Learning. (2013). *Hawkins Centers of Learning*. Retrieved from www.hawkinscenters.org

Hawkins, D. (2000). *The roots of literacy*. Boulder: University Press of Colorado.

Hawkins, F. P. (1974). *The logic of action: Young children at work*. New York: Pantheon Books.