

Campus Learning Laboratory

Carnegie Mellon University Children's School • Pittsburgh, Pennsylvania

by Sharon M. Carver

While welcoming children in the morning, some of them greet me with a friendly "Hi, Dr. Carver!" Because my name rarely fits their idea of "doctor," they occasionally pause after saying it and ask whether I am a doctor. I tell them that all doctors have a specialty that they use to help people. Some doctors help people stay healthy or give them medicine when they are sick. The doctors in the architecture department upstairs help people design buildings to be strong and beautiful. Other doctors on campus invent robots to help people do dangerous or difficult jobs. Then I say that I am a doctor who helps people learn. For the past 25 years, I have been privileged to help learners of all ages at the Carnegie Mellon University Children's School.



Sharon M. Carver, Ph.D., has been director of the Carnegie Mellon University Children's School since 1993. She teaches courses in child development and educational design and is the associate training director for the graduate Program in

Interdisciplinary Education Research (PIER), funded by the Institute of Education Sciences since 2004. The Carnegie Mellon University Children's School serves as a laboratory for the psychology department within the College of Humanities and Social Sciences. The Children's School has been accredited by the National Association for the Education of Young Children since 2003 and became licensed as a Pennsylvania private academic school in 2014, with a capacity of 72 half-day preschoolers and 24 full-day kindergartners. Read more about the CMU Children's School and access other digital resources at <https://www.cmu.edu/dietrich/about/research/research-centers/childrens-school.html>

Our school has been a laboratory school for 50 years. Founding director Ann Baldwin Taylor patterned the early childhood program after the open classrooms of the British infant schools, with an emphasis on John Dewey's progressive philosophy, including:

- experiential learning appropriate to children's developmental levels,
- extended thematic investigations relevant to children's interests, and
- emphasis on collaboration and critical thinking for everyone in the learning community.

What's unique about laboratory schools is their identity as learning laboratories on college and university campuses. Educators model best practices that promote positive and productive learning for children, families, researchers, undergraduate students, and educators at all levels of

their careers. With this goal in mind, we recruit a diverse team of professionals and a broad cohort of children to provide an enriched learning environment for the children and their families, a broad subject pool for research, varied experiences for university students, and a full range of training opportunities for pre-service and practicing educators.

Learning Laboratory for Children

Our school's primary objective is to design and implement developmentally appropriate, inclusive half-day preschool, full-day kindergarten, and summer camp programs for children ages three to six. Our philosophy has always been based on theories and research in developmental psychology. To meet the Pennsylvania and NAEYC standards, while being responsive to children's interests and needs, we base our program and assessment design on a set of developmental goals in six categories:

- self-esteem and independence
- interaction and cooperation
- communication
- discovery and exploration
- physical capabilities / health & safety



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■ artistic expression and appreciation

We explore monthly themes, such as birds, artists, or transportation, during which educators use a group meeting each day to introduce the relevant concepts and investigation opportunities. The children are active participants in their own learning as they pursue explorations with diverse materials, both indoors and outdoors, reinforcing the learning goals and enriching their thematic understanding. Educators observe and document progress to adjust the program's challenge level, as well as to conference with parents about collaborating to support each child's learning.

Though the specifics have changed over the years, Children's School educators aim to foster children's independent and creative use of tools for learning via explicit teaching, modeling, and coaching. From the beginning, our founder Dr. Taylor promoted a culture of equity by addressing the children as "friends," rather than labeling them by their gender as "boys and girls." We extended that practice by linking it to our #1 behavior expectation, "Be a Kind Friend." This intentional language is a tool to navigate the changing societal landscape by continually prompting us to consider what a kind friend would do.

Our uses of technology tools for learning began with typical early childhood classroom tools, such as blocks, books, and art materials. We included a wood-working center with hand tools and a fully operational kitchen as learning centers in our original design. Then, in the 1970s, our children participated in computer science department projects to program the LOGO robotic turtle. In 1984, we opened the nation's first Macintosh computer lab for preschoolers,



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when personal computers in homes were rare. Then and now, with both our original hand tools and the newest digital media, we choose technology that encourages children to deepen, broaden, and reflect on their learning.

Learning Laboratory for Families

We partner with families in nurturing and educating their children, particularly as family challenges arise and developmental difficulties emerge. Our families are diverse in race, ethnicity, religion, culture, family structure, home language, and socioeconomic level. Most of our families are from outside the CMU community, though some previously earned degrees here or attended The Children's School when they were children.

In addition to the typical parent communication, handbook, conferences, and newsletters, we offer workshops on educational topics, such as math or handling parenting challenges. Each fall, we host a panel discussion on school choice to support the elementary school transition, and each winter we conduct a seminar so parents can explore our Whole School Theme and plan to extend the learning at home. We offer opportunities for caregivers and children to interact in the school context during fall open houses, a winter family festival, and a spring celebration picnic. In many



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cases, these events spark family interests, such as starting a bird-watching hobby after our study of birds or trying composting and gardening after a workshop on "Worms to Beans" (Bird, 2010).

Learning Laboratory for Researchers

We play a key role in supporting interdisciplinary research related to developmental psychology. The Children's School follows detailed policies approved by the university's institutional review board to ensure ethical research conduct, while also requiring that all studies align with our philosophy. Children eagerly participate in "special games" with researchers, and our teachers and parents receive summary results of current studies.

Since the mid-1970s, Dr. Robert Siegler and his graduate students have investigated children's developing number sense. Detailed analyses of children's counting, number identification, number

comparison (i.e., which is more, 6 or 8?) and estimated placement of numbers on number lines led Siegler's team to develop simple linear board games with specific strategies for teachers' facilitation, such that children's number sense improves dramatically, even after a few brief sessions (Siegler, 2009). Children's School educators have incorporated this research into our practice by including more game play to reinforce key concepts and rehearse essential skills, particularly in mathematics.

Dr. Anna Fisher's team studies essential early learning mechanisms. In one series of studies (Fisher, Godwin & Seltman, 2014), graduate student Karrie Godwin monitored kindergartners' attention while listening to science stories in small groups, either in rooms with bare walls or with walls decorated like typical classrooms. On average, the children's attention was higher without the distraction of the décor, and there was a significant correlation between attention levels and scores on age-appropriate comprehension measures. Fisher's team has launched a new line of research to determine how the pictures and text in books for emergent readers can be optimally tailored to young children's attention regulation abilities. They have also begun a longitudinal investigation using a child-friendly neuroimaging method, called functional Near InfraRed Spectroscopy (fNIRS), to map children's brain activity while they engage in free play versus tasks that require more focused attention. These research findings have prompted us to more intentionally consider the distractions in our environment. We now reduce clutter

and emphasize visual displays related to thematic studies and key learning objectives.

Occasionally, our educators collaborate with researchers on innovative product design and testing. For example, robotics researcher Dr. Illah Nourbakhsh developed a system for children to take digital photographs at school and send them with an audio message to their families as a way of priming their conversations later in the day. The team learned about young children during conversations with educators and field tests of prototypes, which progressed from a bulky "Message from Me" kiosk to a tabletop model to an iPad application. Educator Linda Hancock then spearheaded the curriculum development and piloting for sharing MFM with 30 early childhood programs. These research experiences yielded access to the latest MFM technology, of course, but they also raised our awareness of other ways we can support children's communication with their families at the end of the day. Each teaching team now posts a blog outlining key elements of the school day to facilitate conversation when families reunite in the evening.



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Learning Laboratory for Undergraduates

Every semester we support undergraduates studying child development theory, research, and practice. Principles of Child Development students conduct observations to compare and contrast the developmental levels of preschoolers

and kindergartners. Students taking Research Methods in Developmental Psychology practice collecting data for a whole class project and then conduct original research with child subjects in small groups.



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Because CMU degree programs have a strongly applied emphasis, we support courses in many disciplines. For example students in design department studio courses have a real-world client whose task may involve designing products for children. One year, the Crayola Company commissioned the students to design art materials for young children with physical disabilities, so they created easy grip brushes, non-slip art surfaces, and tables to accommodate wheelchair access. In another case, an engineering class partnering with the Children's Museum of Pittsburgh designed a lending library of science kits for families. For both projects, the undergraduates visited the school repeatedly to observe children and test multiple prototypes.

Through CMU's undergraduate research program, students engage in research apprenticeships with faculty support, access to small grants, and an opportunity to present at an annual research symposium, Meeting of the Minds. Psychology and architecture senior Ben Howe designed, constructed, and tested a set of wooden magnetic blocks strong enough to build outward from a metallic wall. He created a curriculum about magnetism and then assessed the children's conceptual change before and after their experience with the curric-



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ulum and blocks. Currently, cognitive science senior Lauren Yan is testing ways to teach memory strategies to children by modeling them, with or without adding prompts to cue the children to use the strategies, to see if she can improve their performance on traditional memory games of finding matches, remembering hidden objects, and so on.

mission. In addition, we organize professional development for our own and other educators, as well as sharing resources with practicing educators locally, nationally, and internationally. Our closest professional communities are the National Coalition for Campus Children’s Centers and the International Association of Laboratory Schools. We also participate in the NAEYC and *Exchange* communities via publications, conferences and leadership opportunities.

In 2016, we partnered with the four other local campus learning laboratories to found the Pittsburgh Alliance of University Schools. We collaborate to expand the professional development we offer to the 200 educators across our five centers. Our school recently

hosted an evening event for educators to explore inquiry learning, there is a book club currently reading “Eight Essential Techniques for Teaching with Intention” (Lewin-Benham, 2015), and another group is practicing mindfulness for educators.

Learning Laboratory for Pre-Service Teachers

Despite having no department of education on campus, our educators mentor students exploring careers in early childhood, elementary education, and related fields. We collaborate with local high schools, community colleges, and universities to serve as a field placement site for interns, practicum students, and student teachers. Since 2011, we have partnered with Duksung Women’s University in South Korea to offer a two-week practicum for their students. About a dozen Carnegie Mellon undergraduates from varied majors also do

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Learning Laboratory for Practicing Educators

Laboratory school educators are immersed in professional development because of their daily contact with the research, undergraduate teaching, and mentoring aspects of the school’s

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their work/study jobs with us. The diverse talents of these students enhance our children's learning, while their involvement here strengthens their interest and experience with children.

For CMU undergraduates, we offer a practicum in child development each semester for a half-dozen students who work six hours per week alongside an experienced educator, while engaging in weekly reflective discussions. These students have a general interest in children but are exploring potential careers. For example, Lisa Don Trask and Barrett Trask both did internships with us, and Lisa also did a thesis comparing kindergartners' gestures when their listeners could see them versus when they could not (Alibali and Don, 2001). Lisa then became an early childhood special education teacher while Barrett became a software engineer.



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Becoming a Learning Laboratory Leader

The Children's School is an energizing place to lead because I am continually challenged to learn more myself as I embrace my role as "a doctor who helps people learn." My tenure has been long enough to support a kindergartner who later took my undergraduate child development course and did her honors thesis at the school before entering graduate school. One of my honors students became a professor and returned to CMU to receive an early career award in psychology; another returned to CMU as a computer science professor who then supported our educators' professional development by offering a "Bias Busters" workshop. Still others follow varied career paths and return to the school with their own children.

As The Children's School celebrates 50 years of laboratory school excellence and innovation, we encourage all early childhood educators to adopt an identity as learning laboratory leaders. Though you may not have access to the resources of a university, there are many community assets that can be leveraged in similar ways so that you, your children and your families could both benefit from and contribute to others' learning in reciprocal ways.

Here are some ideas that you could apply to your own setting:

- Learn about the research highlighted here and consider applications for your own children and families. Contact Katie Gullone (katie@tryingtogether.org) if you are interested in that digital communication."
- Open your program to researchers and children's product designers to help them better understand the realities and challenges in our field and, thereby, encourage them to focus their investigations on issues that matter

most and share their findings in ways that are useful to educators.

- Offer to showcase your program in local child development courses or invite students to observe your teaching so that their experience is richer than textbook learning.
- Approach neighboring early childhood educators to form a book club, to visit each other's programs, or to share your best ideas digitally.
- Check with local schools with field placement requirements to recruit interns who would both enrich your program and benefit from your mentoring.

In whatever role you find yourself—director, researcher, teacher, designer, or support specialist—and whatever your title may be, may your efforts to maximize the creative and constructive learning of others be filled with the same energy and intentionality that we seek to embody at The Children's School.

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