App provides new direction for researchers examining how children learn from nature

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A new iPad application is showing promise in examining how young children learn through their interactions with nature. Cathy Maltbie and Katie Steedly, both research associates for the University of Cincinnati's Evaluation Services Center, will present details on this new evaluation tool for the 21st century on Oct. 18, at the 27th Annual Conference of the American Evaluation Association in Washington, D.C.

The app is part of a National Science Foundation-supported project to examine preschool-age children's learning and interest in science through their explorations in natural settings, such as PlayScapes. The study locations are the intentionally designed PlayScapes nature environments set on UC's campus and at the Cincinnati Nature Center.

Working in partnership with the Evendale-based company, Kinetic Vision, the UC researchers designed an iPad application to assist them in a research technique known as behavior mapping—a technique Maltbie says that that until now, required some level of pen-and-paper to record observations of children in specific settings. The fully digitized app allowed the researchers to identify and record behaviors of children that indicated science learning in specific locations of the PlayScapes.

Victoria Carr, a UC associate professor of education and director of UC's Arlitt Child and Family Research and Education Center, is principal investigator on the PlayScape research project. "We originally proposed using tablets to collect data, but decided the iPad provided the most user-friendly platform. We knew what data we wanted to collect,

but when Cathy made the connection to folks who could build the app for us, the research expanded to evaluate the use of the app itself as a unique tool for behavior mapping," says Carr.

"The app helped us pinpoint popular areas in the PlayScapes, such as what the children were doing at the water features at both the UC/Arlitt PlayScape and the Cincinnati Nature Center PlayScape," says Maltbie.

"We tracked how the children used various aspects of the PlayScapes, particularly with regard to the materials they used," says Steedly.

The app allowed researchers at PlayScape observation points to electronically record patterns of interaction, movement, engagement and probable science learning around different points that the researchers were mapping in the PlayScapes, as well as whether the children were interacting with their peers, hanging out by themselves, or if they were with an adult. Researchers also could record how the PlayScapes enhanced fine motor skills (such as touching a plant, removing gravel) and gross motor skills (running, jumping, climbing).

The app recorded behaviors with manufactured or natural materials, fixed (such as tree stumps) or loose parts, such as mulch or tree "cookies"—round, flat pieces of wood that children are using for stacking, rolling and other forms of play. The app has checkpoints for observers to record and code interactions with water, rocks, sticks, soil, sand, mulch, plants, leaves, wildlife (birds, butterflies), tree cookies, gravel, logs, bark and other objects that the researchers can write in.

"We wanted to create a program that will plot the dots for us, to map out where the children are using the PlayScape the most," says Maltbie. "We have up to 1,000 points recorded on each location."

Individual observations were then sent via e-mail. Maltbie says that

although there were occasional issues with connectivity, the app could not delete data. Future research will involve further tweaking on how to save the data through the iPad, as well as further analysis of the iPad app data recorded by the researchers.

Maltbie says the project involved seven data collectors observing 64 preschool-age (aged 3-to-5) children at the two PlayScapes, beginning in April 2012 through June 2013.

Provided by University of Cincinnati

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