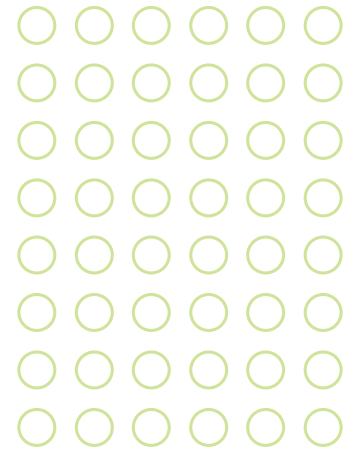


THE IMPORTANCE OF A PLAYFUL APPROACH TO

EARLY CODING



“ It’s much like learning a language. You have to know how to put it all together for it to make sense. It feeds into so many developmental areas and it’s great for developing creativity as well as problem-solving and motor skills.

- Rosie, preschool teacher, UK

“ I used to want to play (app) games when I grow up. Now I want to make them.

- Nico, 6

In every corner of Rosie’s classroom and the adjoining corridors, there are instructions. “They used to be Rules with a capital R – do this, don’t do that,” Rosie says. This has changed since the school introduced a “coding hour” in the youngest classes. Now the posters are written and displayed visually, like programming strings.

“We introduced programming and the idea of algorithms by having the children dress a teddy bear and make a perfect cup of tea.” Rosie used this activity as a starting point to reinforce the importance of accuracy, repetition, and routine. “When we do a task, we might forget the sugar in the tea or put the shoes on the bear before the socks. We taught the children that while a computer or machine might look like it performs tasks perfectly, it has to be told exactly what to do and in which order. A small mistake will break the routine, much like forgetting the poor bear’s underwear!”

After this playful introduction to basic concepts, Rosie encouraged the children to play with digital devices and other programmable preschool toys, and apply some of the things they had learned.

Then they went back to playing with traditional toys and learning resources. They spent a term looking at the sequencing of numbers and colors, and looking for patterns. They took apart mosaic pictures and brick models and then tried to put them back together again. Using this method, Rosie was able to teach the basics of organizing, decomposing, and pattern recognition. The children were clearly beginning to understand how their digital devices and programmable toys worked.

The following term, the class read story books and Rosie asked the children to identify the problems the characters were having. She had the children consider the challenges presented in the story and talk about how they might solve these challenges if they happened in their own lives. “Picture books were an important tool. I knew I wanted to introduce the concepts of predicting and debugging but they seemed to be very complicated ideas. Using picture books, the children were able to play around with these concepts without me ever having to use the words.”

The instructions adorning Rosie's classroom walls highlight the need to try and try again; to experiment in order to find a suitable solution. One set of instructions prompting the children to line up sensibly for lunch had five steps. Originally, it had six. One of the children pointed out that the second step ("Keep hands to yourself") was crossed out in red because it was no longer a necessary step. "Step one already said, Stand up straight and fold your arms," she explained. They didn't need step two because they were already doing it in step one. "That's abstraction!" was the chorused response from several children.

This group of five- and six-year-olds knows exactly what coding is and can even use key vocabulary because of the playful and meaningful way their teacher has introduced each coding concept. The "coding hour" has naturally spilled out into other learning areas. There's a possibility to touch on coding anytime numbers, colors, or routines are mentioned.

WHAT DOES THE RESEARCH SAY?

Although it's still a developing research area, there are key reports around early coding. Some suggest the need to teach it like a language, highlighting the importance of narrative. "Just as writing helps you organize your thinking and express your ideas, the same is true for coding. We think coding should be for everyone, just like writing," says Mitch Resnick of the Lifelong Kindergarten research group at MIT. Others see opportunities for it to become a natural part of the dialog in math and science related activities. Marina Bers, in her book *Coding as a Playground*, focuses on engaging children in increasingly playful ways, always with an emphasis on experimentation and self-directed play.

The book suggests that coding should be integrated into other areas of the curriculum, not taught as a stand-alone set of problems to solve. This approach will help children to develop a host of other vital skills, including:

- Collaborating with peers
- Learning to share
- Thinking creatively
- Confidence and resilience

Learning to code isn't just about children becoming better app consumers or even app designers. Understanding how things are programmed is just one part of coding. It's also about interacting with things, imagining and designing, predicting and solving problems, and expressing ideas.

WHAT TEACHERS SAY

“It's great hearing the children use the words. As teachers, we all have to teach the key vocabulary but its great to hear them use words they might not ordinarily know. Teaching coding as part of their play and our normal classroom routine has really helped to embed those words, and they know what the words mean, which is also important!”

- Rosie
(in her second year of playfully teaching early coding)

REFERENCES:

Bers, Marina (2018) *Coding as a Playground: Programming and Computational Thinking in the Early Childhood Classroom* (NY, USA: Routledge)

