



## Projects, passion, peers and play



### ACADEMIC

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**Short Bio:** Mitchel Resnick, Professor of Learning Research at the MIT Media Lab, develops new technologies and activities to engage children in creative learning experiences. His Lifelong Kindergarten research group develops the Scratch programming software and online community, the world's largest coding platform for kids. His group also collaborates with the LEGO Group entities on the development of new educational ideas and products. Resnick co-founded the Computer Clubhouse project, an international network of 100 after-school learning centers for youth from low-income communities. He is author of the book *Lifelong Kindergarten: Cultivating Creativity through Projects, Passion, Peers, and Play*.

Twenty years ago, as the year 1999 rolled into 2000, I was asked to participate on a conference panel where we discussed the most important people and achievements of the past 1000 years – and our hopes and dreams for the next 1000 years. At one point, we discussed the greatest inventions of the previous 1000 years. Some people argued that the printing press was the most important invention; others argued for the steam engine, the light bulb, or the computer.

My nomination for the greatest invention of the previous thousand years? Kindergarten.

That choice might seem surprising. Most people do not think of kindergarten as an invention, let alone an important invention. But kindergarten is a relatively new idea (less than 200 years old), and it represents an important departure from previous approaches to schooling. When Friedrich Froebel opened the world's first kindergarten in Germany in 1837, it wasn't simply a school for younger children. It was based on a radically different approach to education, fundamentally different from schools that came before.

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Although Froebel certainly didn't know it at the time, he was inventing an approach to education that is ideally suited to the needs of the 21st century – and not just for five-year-olds, but for students of all ages. I'm convinced that kindergarten-style learning is exactly what's needed to help all students develop the creative capacities that are needed to thrive in today's rapidly-changing society.

Think about a traditional kindergarten classroom. In one corner, children are building towers and castles with wooden blocks. In another corner, children are creating pictures with finger paint. In the process, children are learning many things. As they stack blocks, they learn about structure and stability. As they paint, they learn how colors mix together.

But most important, the children develop as creative thinkers. They engage in all aspects of the creative process: they come up with ideas, create projects based on their ideas, experiment with alternatives, collaborate and share with friends, and iteratively adapt and revise their ideas and projects over time.

Unfortunately, after kindergarten, most schools shift away from this approach. Students spend much of

their time sitting at desks, filling out worksheets, and listening to lectures. Too often, schools focus on delivering instruction and information rather than supporting students in creative learning experiences.

As the pace of change continues to accelerate around the world, the kindergarten approach to learning is becoming more important than ever before. Success in the future – for individuals, for companies, for communities, for nations as a whole – will be based on the ability to think and act creatively. Kindergarten gets children off to a good start. We need to extend the kindergarten approach, so that people of all ages continue to develop as creative thinkers.

How can we do that? In my research group at the MIT Media Lab, we've developed four guiding principles for supporting kindergarten-style learning. We call these principles the Four P's of Creative Learning.

**Projects.** When children work on projects, they learn new skills and ideas in a meaningful and motivating context. They don't just learn disconnected facts and concepts, but how to put knowledge to use. They don't just learn how to solve problems, but how to find new problems, to shift goals, and to develop new strategies.

Children working together on a project  
Photo Credit: Michel Resnick







**Passion.** When children work on things that they care about, they are willing to work longer and harder, and persist in the face of difficulties. Many adults think that children want things to be easy. That's not the case. Children are willing to work hard – indeed, eager to work hard – as long as they are working on things they really care about.

**Peers.** People get the wrong idea when they look at Rodin's famous sculpture *The Thinker*. Most creative learning doesn't happen when individuals sit by themselves, in deep contemplation. Creative learning is a social activity, with people sharing ideas, collaborating on projects, and building on one another's work.

**Play.** Swiss psychologist Jean Piaget famously said that "play is the work of childhood." I like to think of play not as an activity, but as an attitude, a way of engaging with the world. When children are playful, they are constantly experimenting, trying new things, taking risks, testing the boundaries – and learning in the process.

In my research group, as we develop new technologies, new activities, and new learning environments for children, we're constantly asking ourselves: how can we provide children with opportunities to work on projects, based on their passions, in collaboration with peers, in a playful spirit.

For example, these Four P's of Creative Learning guided our design of Scratch ([scratch.mit.edu](http://scratch.mit.edu)), which has become the world's most popular coding community for children. Unlike most coding sites, Scratch isn't organized around puzzles or problems for children to solve, but rather around tools to help children create their own projects. Since different children have different passions, we made sure that children can use Scratch to create a wide range of different types of projects: stories, games, animations, simulations, and more. We integrated the Scratch programming language with an online community, so that children can share their projects with one another – getting feedback, suggestions, encouragement, and inspiration from their peers. And Scratch encourages a playful approach to coding, making it easy for children to tinker with their programs, experiment with new ideas, and remix other people's projects.

We also apply the Four P's to our own learning environment at the MIT Media Lab. We like to think of the Media Lab as a big kindergarten. Of course, the graduate students and researchers at the Media Lab use more advanced tools than in kindergarten – more laser cutters and microcontrollers than crayons and finger paint. But the style of work is the same. Media Lab students and researchers are constantly working on projects, based on their passions, in collaboration with peers, in a playful spirit. And we think that's why the Media Lab has become one of the world's most innovative research labs.

The Four P's of Creative Learning work in kindergarten and at the MIT Media Lab. Shouldn't we try to apply them to the rest of the educational system?

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