

# Benefits of Hands-On Learning in Makerspaces

*What are the pros and cons of hands-on learning for education and career development? Do the Makerspaces play any role in epistemology? Read more about this!*

AUSTIN, TEXAS, USA, April 17, 2017 /EINPresswire.com/ -- For those of us working in the manufacturing industry, the concept of hands-on learning is a natural way to investigate problems and come up with [creative solutions](#). But for many, hands-on learning has become the exception rather than the rule. Fortunately, the increasing number of [Makerspaces](#) provides exciting new opportunities for hands-on learning, problem-solving, and creative experimentation.



Children Sized Makerspace

If you don't have a lot of experience making things by hand, the habits and vocabulary of those of us with careers in the world of product development, engineering and design, manufacturing and production or [science laboratories](#) might seem very foreign indeed.

“

The wide-ranging maker community is especially welcoming to newbies and wants more and more folks to discover the joy of making things yourself – by hand.”  
*Formaspace*

You may notice a product engineer or a lab manager carrying around a small notebook or doodling on a napkin during dinner to capture ideas. It's likely you'll overhear references to things like concept sketches and ideation, hot glue guns and foam core, CNC machines, STL models, working prototypes, hacked hardware made from breadboards and Arduino shields, software kludges, and frankencode served up on a

Raspberry Pi.

In the world of the creative maker, these terms (and many more) are just part of a perfectly normal daily conversation. But if it sounds to you like creative makers are using a foreign language designed to isolate themselves into an exclusive club, you're wrong!

Quite the opposite in fact. The wide-ranging maker community is especially welcoming to newbies and wants more and more folks to discover the joy of making things yourself – by hand. In fact, if we had our way, every city would have a commercial Makerspace, like the TechShop here in Austin and every science center and every library would have a 3D printer and other Makerspace gear on hand.

## Educators Have Long Recognized the Value of Hands-On Learning

Fortunately, we are not alone.

Across the nation and around the world, more and more educators are proving to be important allies in promoting a revival of hands-on learning, both in the classroom and in Makerspaces.

Why? Thanks to their inherent emphasis on hands-on learning, Makerspaces are an excellent way to improve learning outcomes.

## A Short Lesson in Epistemology, Constructivism, and Constructionism

There's quite a tradition in education for hands-on learning, so let's take a short history lesson going back to the 1920s — to the start of Swiss clinical psychologist Jean Piaget's career at the University of Geneva — which has a surprising connection to the technology used in today's Makerspaces.

Jean Piaget is one of the major figures in the theory of knowledge (epistemology); he developed a theory of human cognitive development based on four distinct mental growth stages (infancy, early and late adolescence, and adulthood.) Piaget also theorized that we learn using abstract mental models, or constructs, which has given us the name Constructivism to describe both his theory and the pedagogic teaching methods that utilize this theory in the classroom.

Piaget's star student and protégé, Seymour Papert, extended Piaget's theory of Constructivism. In Papert's view, the act of learning by doing (e.g. constructing things) has tremendous value in cognitive development; Papert called his pedagogic approach Constructionism.

Do Papert's ideas sound a lot like experimenting in a Makerspace to you? Yes, they sure do. But hold on, there's more to the story.

In the 1960s, Papert came to believe that adolescents should program computers... and not the other way around.

Along with three others, he developed the first programming language, LOGO, designed for children, a language whose descendants include Cricket, LEGO, Scratch, Makey Makey and NetLogo — languages still in use today by many students in schools and Makerspace facilities.

Together with his colleague Marvin Minsky, Papert co-founded both the famous Massachusetts Institute of Technology (MIT) Artificial Intelligence Lab and the MIT Media Lab.

In 1980, Papert wrote the influential book, *Mindstorms: Children, Computers, and Powerful Ideas*, which continues to inspire the maker movement today. In a tribute to Papert's book, the LEGO Company named their revolutionary new line of robotics kits "Mindstorms" — which have also served to inspire a new generation of hands-on electromechanical experimenters and inventors.

Fascinating stuff.

## What Does Research Tell Us about the Benefits of Hands-On Learning for Education and Career Development

With the pedagogy lesson out of the way, let's take a look at some of the research that shows how hands-on learning can help students advance in school, help them choose a suitable field of study, and ultimately achieve success in their chosen careers.

### Pre-School to Elementary School

Let's start with younger students first.

Read more ... [https://formaspace.com/articles/education/benefits-hands-on-learning-in-makerspaces/?utm\\_source=einpresswire&utm\\_medium=content&utm\\_campaign=112816](https://formaspace.com/articles/education/benefits-hands-on-learning-in-makerspaces/?utm_source=einpresswire&utm_medium=content&utm_campaign=112816)

Kelsea Marshall  
Formaspace  
8002511505  
[email us here](#)

---

This press release can be viewed online at: <http://www.einpresswire.com>

Disclaimer: If you have any questions regarding information in this press release please contact the company listed in the press release. Please do not contact EIN Presswire. We will be unable to assist you with your inquiry. EIN Presswire disclaims any content contained in these releases.

© 1995-2017 IPD Group, Inc. All Right Reserved.