

# HOW LEGO EDUCATION BECAME PIONEERS OF STEAM LEARNING

SINCE ITS LAUNCH IN 1980, LEGO EDUCATION HAS BEEN LOOKING FOR WAYS TO HELP STUDENTS BUILD CONFIDENCE AND OTHER SKILLSETS TO HELP THEM SUCCEED IN SCHOOL AND BEYOND. DR JENNY NASH, HEAD OF EDUCATION IMPACT IN THE US, REFLECTS ON HOW LEGO EDUCATION BECAME PIONEERS OF STEAM LEARNING 40 YEARS AGO, BEFORE THIS APPROACH TO LEARNING HAD A NAME



## Why are you passionate about STEM/STEAM?

It's exciting to see a child figure something out, even if they fail at first. Allowing a child the opportunity to explore

and discover through meaningful hands-on experiences not only teaches the child about that one thing, but also teaches them how to learn. I am so excited that I get to help bring these experiences to students around the world, where they get to experience subjects like math and science integrated together rather than in isolation, and learn skills that will be useful across any discipline.

## Which is your favourite LEGO theme and why?

As a previous middle school teacher, I am most excited about our newest STEAM learning solution for middle school: LEGO Education SPIKE Prime. There is so much opportunity to integrate learning from all areas of STEAM with SPIKE Prime so that students can really experience the application of the content they are exploring.

## WHEN WAS LEGO EDUCATION LAUNCHED AND WHY?

We are celebrating our 40th birthday this year! In 1980, LEGO saw the natural need for an education division when it noticed teachers were using the popular LEGO bricks in classrooms to engage students through hands-on learning. Building on the LEGO Group's belief in the learning potential of the brick, LEGO Education was formed. For the past 40 years, LEGO Education has helped pioneer innovative STEAM education solutions that build confidence and the skills that will help students succeed in school and beyond, including collaboration, problem-solving and computational thinking.

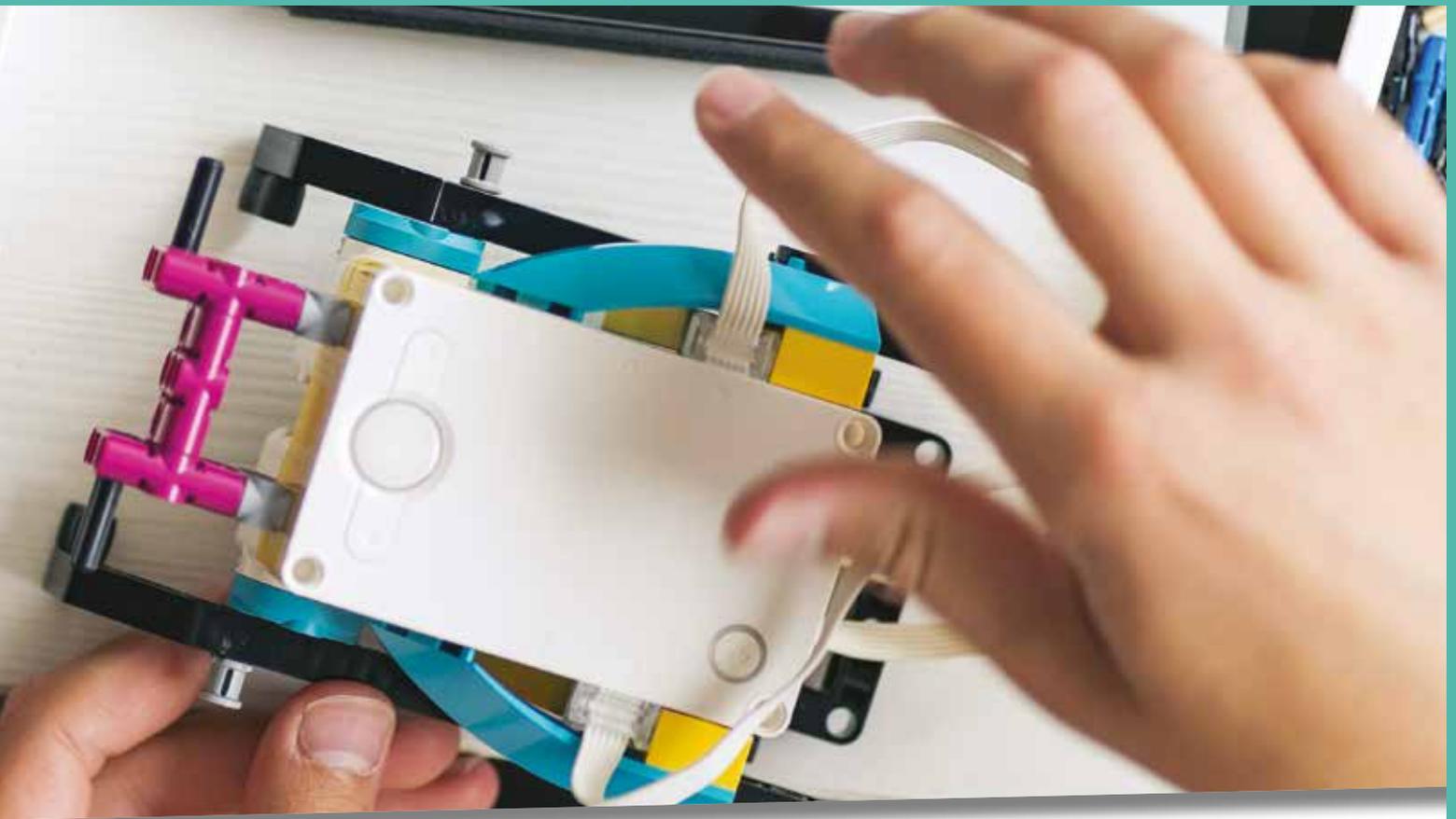
## MANY OF THE RESEARCHERS WE WORK WITH SAY THEY PLAYED WITH LEGO AS A CHILD AND THIS, IN PART, INSPIRED THEM TO GO ON TO ENJOY A CAREER IN SCIENCE, TECHNOLOGY AND ENGINEERING. DOES THE TEAM AT LEGO RECOGNISE THE POTENTIAL TO INSPIRE CHILDREN ALL OVER THE WORLD IN THIS WAY?

Absolutely! It's right in our mission to inspire and develop the builders of tomorrow, enabling every student to succeed. Most students will go into jobs that don't even exist today, and many of those will be in STEAM or use STEAM skills, so all of our educational solutions are designed to inspire interest in STEAM subjects and help develop this skillset, as well as confidence in learning.

In fact, we were pioneers of STEAM learning before it had a name. In 1998, we created one of the first products that combined physical and digital learning when we announced LEGO MINDSTORMS. This was revolutionary at the time because most classrooms didn't have "makerspaces" or any hands-on way to teach kids about technology and engineering – in fact, it would be another three years before the term 'STEM' was coined.

We knew then that we were onto something, and we continue to create solutions that combine the physical LEGO bricks that kids know and love with the digital to teach them the 21st century skills they need to go into and thrive in STEAM careers.

## RESEARCH SUGGESTS THAT BOYS' EXPOSURE TO CONSTRUCTION TOYS LIKE LEGO PUTS THEM AT AN



## ADVANTAGE WHEN IT COMES TO EMBRACING STEM CAREERS. WHAT IS LEGO DOING TO ENCOURAGE GIRLS – AND PARENTS OF GIRLS – TO INTERACT AND ENJOY LEGO IN THE SAME WAY?

LEGO Education solutions are designed with every student in mind, no matter their gender, learning level or age. Hands-on learning is the best way to build student confidence, which means they will be more likely to try new things and keep trying even when they don't get it right on the first try.

Middle school is when we often see girls becoming less interested in STEAM subjects, which is why we created LEGO Education SPIKE Prime for middle schoolers with everything in mind – from the size of the bricks to the number of components to the colours designed – to inspire kids who aren't necessarily STEAM enthusiasts to try, test and build their confidence. Additionally, we consider the experiences and challenges that we present students through our lesson plans to ensure the themes are engaging and relevant to all students.

FIRST LEGO League is another great way to promote diversity and inclusion in STEM/STEAM. Not only are participants exposed to potential career paths in the season theme, but the global robotics programme also brings together students from different backgrounds, languages and interests, teaching respect and how to embrace our differences. We even see all-girls teams participate, which helps show that STEAM is for everyone.

## ARE ALL OF LEGO'S EDUCATION INITIATIVES GLOBAL OR ARE THERE NATIONAL INITIATIVES, TOO?

Our goal is to reach as many students as possible, and so we work hard to make programmes available around the world. FIRST LEGO League has over 480,000 participants in over 110 countries. The LEGO Education Master Educator Program first launched in the United States in 2018, and

## JENNY'S TOP TIPS FOR STUDENTS

Become a confident learner. Learning is a journey that never stops, and students should take every opportunity they can to try something new. Whether it's learning to code, understanding the chemistry behind baking, or using math and physics to design a building.

Be a creative problem solver. Kids have an innate sense of curiosity, and it's that curiosity, willingness to jump in and innovation that will help them rebuild the world for the better.

has since expanded to the UK, Russia and Australia, with ongoing efforts to add additional countries in the future.

LEGO Education offers over 400 free lessons and resources for teachers, which are developed to be cross-curricular and align with local and national standards, including NGSS, CSTA and Common Core.

## ARE THERE ANY CULTURAL ISSUES THAT THE LEGO EDUCATION TEAM HAS TO BE MINDFUL OF? FOR EXAMPLE, ARE THERE ANY INITIATIVES THAT WORK WELL IN ONE COUNTRY BUT NOT IN ANOTHER?

As a global organisation, we are mindful of global and regional trends and standards in education and put this knowledge and consideration into everything we do, from design to curriculum development. While STEM skills have become increasingly important for the future of work, different countries and cultures are embracing these skillsets at different rates.

For example, the Japanese government recently mandated coding and computer science curriculum for all public schools. Meanwhile, for the US, we map our curriculum to NGSS and CSTA standards. We work closely as a global team to ensure our products, curriculum and resources



are both accessible and relevant to what educators are teaching students around the world.

### **ARE THERE ANY NEW LEGO EDUCATION INITIATIVES IN THE PIPELINE? IF YES, WHAT ARE THEY?**

We don't comment on future releases, but we are excited about our latest award-winning STEAM solution for middle school students, LEGO Education SPIKE Prime. SPIKE Prime brings together colourful LEGO building elements, easy-to-use software and the block-based coding language to engage students through playful hands-on learning, allowing them to think critically and solve complex problems. As a new school year starts for many students, we are excited to continue to offer and expand our resources for teachers that want to bring playful and hands-on STEAM learning into their curriculum.

### **CAN YOU GIVE A GENERAL SENSE OF THE BREADTH OF STEM SKILLS REQUIRED AT LEGO? FOR EXAMPLE, WHAT TYPES OF ROLES ARE NEEDED TO TURN A LEGO IDEA INTO A REALITY?**

STEAM is a broad term that includes technical skills like coding and programming, as well as soft skills like collaboration, communication and creativity. Underlying all of these is the confidence and resilience to keep learning, try new things and embrace meaningful failure. When students become lifelong learners, they not only find success in the

classroom, but also throughout their lives as family members, friends and employees. We can only predict what the jobs of the future might look like, but it's up to today's students to create and define them.

At LEGO Education, we have product designers, marketers, former teachers, engineers, sales leaders, and so much more. Speaking personally, I worked as a classroom teacher and then in higher education before joining LEGO Education. In my role here, I've brought together the best of both worlds to work with teachers and administrators to design and implement STEAM curriculum. I think working for LEGO is a dream job for so many, and I am continually impressed by the range of experiences and skillsets of my colleagues across the company.

### **WHAT DOES LEGO EDUCATION WANT TO ACHIEVE, ULTIMATELY? WHAT IS THE TEAM'S DREAM FOR CHILDREN ALL OVER THE WORLD?**

Our goal is to reach as many children as possible to build the confidence they need to succeed in the future, the confidence to try and fail and learn and try again, no matter what's ahead. The best way to do this is through playful hands-on learning.

STEAM curriculum needs to be centred on building this kind of confidence and LEGO Education is leading the way. We are excited to continue building on and expanding our offerings to provide the tools and resources for all students to experience the joy of hands-on learning and ultimately become lifelong learners.



# PLAYFUL LEARNING

JENNY DESCRIBES SOME OF THE INITIATIVES THAT LEGO EDUCATION HAS DEVELOPED FOR SCHOOLS, TEACHERS AND THEIR STUDENTS TO HELP MAKE LEARNING “FUN AND IMPACTFUL”

For more than 40 years we have been working with teachers and educational specialists to deliver playful learning experiences that bring subjects to life in the classroom and make learning fun and impactful. With our complete product continuum for PreK-12, we help teachers bring hands-on learning into their classrooms with free online lesson plans and curriculum material, assessment tools, and teacher training and support.

In response to the changing education landscape this year, we have created resources and guidance to ensure learning still happens – whether in-person, virtually or a hybrid of the two. You can find these resources online, including lessons, hygiene guidelines and classroom management tips.

We also recently launched a digital community to connect educators from around the world, giving them the place and space to connect, support, and learn from one another, as well as find and share inspiration, especially now when it's never been more important to stay connected and engaged.

The LEGO Education Master Educator Program brings together some of the brightest teachers who share our passion for using LEGO Education solutions to help students learn through play. Not only do we get the opportunity to learn from the Master Educators, but they connect with one another as a community of educators to share best practices. Our Master Educators have led by example in adapting to new ways of learning and continuing to teach STEAM from anywhere.

For over 20 years, we've partnered with FIRST to establish a guided, global robotics programme to help students and teachers build a better future together. FIRST® LEGO® League introduces STEM to children ages 4-16 through fun, exciting hands-on learning. FIRST® LEGO® League guides youth through STEM learning and exploration at an early age. Through three age divisions, students will understand the basics of STEM and apply their skills in an exciting competition while building habits of learning, confidence and teamwork skills along the way.