M.A.K.E

Powered by:

Phillips EDUCATION

SCHOOL STUDENTS AS **MANUFACTURING TECH LEARNERS**

Opportunity

India is one of the leading manufacturing destinations in the world and has the potential to export goods worth US$ 1 trillion by 2030.

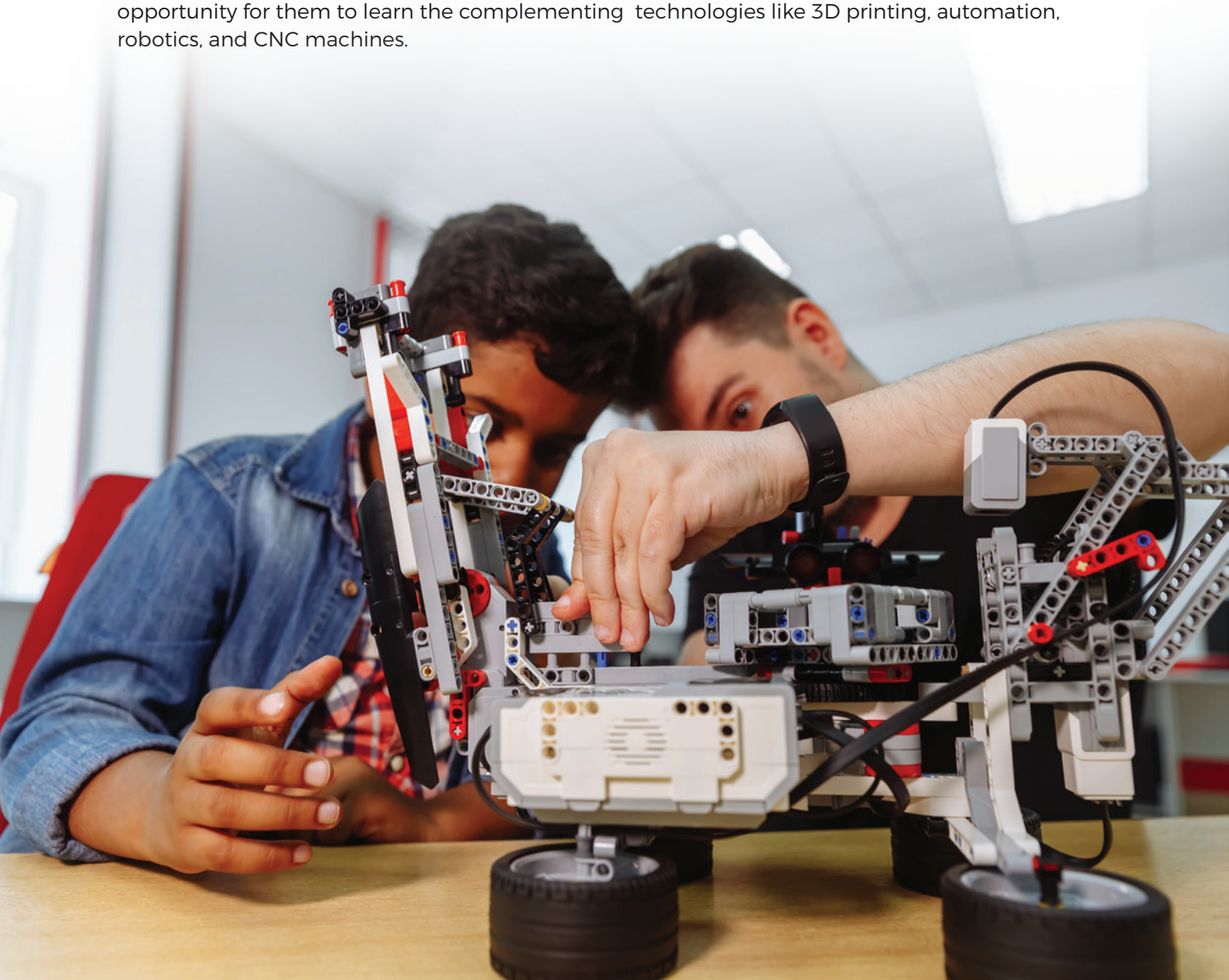
India is now the breeding ground for innovations in manufacturing, with start-ups popping up everywhere and solution finding has become a vocation.

The manufacturing sector in India does not attract the best talent as, students are attracted to other more glamorous sectors such as Information Technology, Marketing & Finance. They know what to expect in those fields, but manufacturing is an unknown territory for them.

This initiative by Phillips Education wants to make these practical and lucrative opportunities available for the students, so that they can make informed decisions.

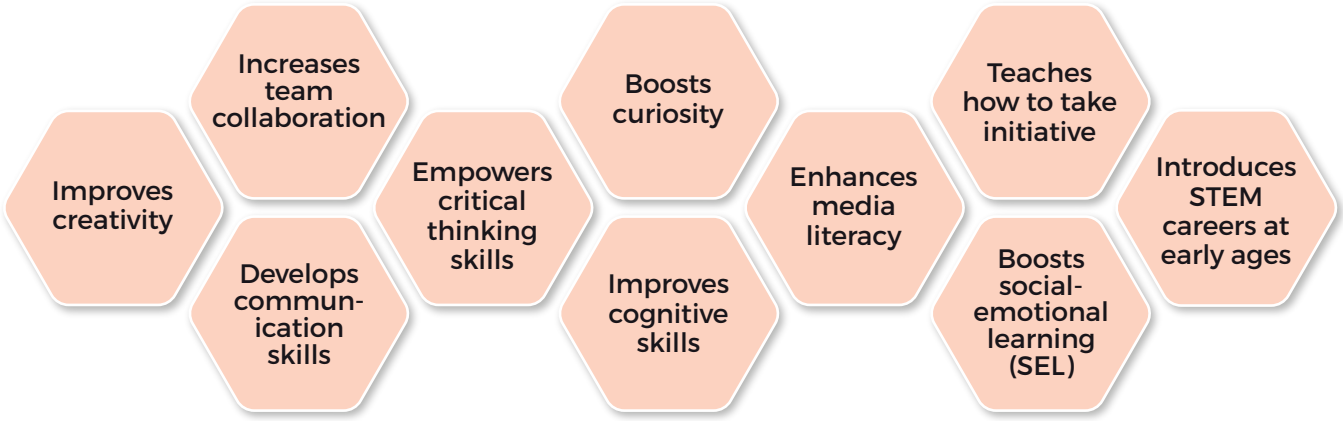
How early is it right?

The age group of 14-18 is an ideal stage to introduce manufacturing technology to young learners. As students learn coordinate geometry, surface areas & volumes, trigonometry, it becomes the perfect opportunity for them to learn the complementing technologies like 3D printing, automation, robotics, and CNC machines.



Importance of STEM

The term STEM (Science, Technology, Engineering and Math) is progressively becoming an important fixture in education and the world economy. STEM education goes beyond school subjects. It gives a skill set that governs the way we think and behave. Merging science, technology, engineering, and mathematics, STEM education helps us to solve the challenges the world faces today. The reason for this is that the careers of the future will most certainly be centered around STEM fields, while also invoking 21st century skills such as critical thinking, creativity, cultural awareness, collaboration and problem-solving. When done well, STEM education complements the development of 21st century skills. Hence, many teachers are starting to integrate STEM in their lessons. Below are the benefits to the kids in general.



Filling the Missing links in Manufacturing

Existing Curriculum		Offering from Phillips		Acquired Skills
• Co-ordinate Geometry Motion, Force and Work	+	• Introduction to Turning and CNC Turning Center • Introduction to Milling and CNC Milling center • Introduction to 3D printing and Printers • Introduction to automation and Robots	=	• Will know how the cnc turning center • Understand concept of CNC Milling center • Understand what is 3D printing • Know about robot functioning
• Trigonometry • Surface areas and volumes • Heights and Distances surface area and speed calculation • Effects of Current	+	• Operating the CNC Turning center • Operating the CNC Milling Center • Operating the 3D Printing machine • Operating the Robots	=	• Can manuallay operate CNC turning center at work shop • Can manuallay operate CNC Milling center at work shop • Can manuallay operate 3D printer at LAB • Can operate a a robot at LAB
• Introduction to three dimentional Geometry • Plane Geometry • Solid Geometry • Properties of Bulk Matter • Work, Energy and Power	+	• Industrial applications of CNC Turning Center • Indsudtrial applications of CNC Milling Center • Industrial applications of 3D printing • Industrial concpets of ROBOTIC operation	=	• Leaning for tooling and component relation for CNC TURNING CENTER • Leaning for tooling and component relation for CNC Milling CENTER • Leaning for 3D printing of components • Programming a Robot for appalication
• Vectors and Three-Dimensional Geometry • Linear Programming • Drawing of Machine parts • Machine Drawing	+	• Expertise in manufacturing on CNC turning center • Expertise in manufacturing on CNC Milling center • Expertise in manufacturing components on 3D • Expertise in material handling using ROBOT	=	• CNC Turner grade 1 certification • CNC Milling grade 1 certification • 3D printer grade 1 certification • Robot programmer grdae 1 certification

Existing Curriculum		Offering from Phillips		Acquired Skills
• Computer science	+	• Introduction to Artificial Intelligence. • Components of Artificial Intelligence. • Use of Artificial Intelligence	=	• Know about Artificial Intelligence concepts. • Know about Various sectors of Artificial Intelligence.
• Manufacturing Industries: Lifeline of Indian Economy	+	• Introduction to Machine Learning. • Computer and Machining Interface. • Impact of Machine intelligence on industry.	=	• Know about machine learning concepts. • Know about the impact of intelligent machine on productivity.
• Statistics & Probability	+	• Concept & understanding of IOT. • Various sectors & examples of IOT application. • Components of IOT learning	=	• Know about IOT hardware kit. • Know about cloud computing. • Know about network & cyber security.

Courses Description

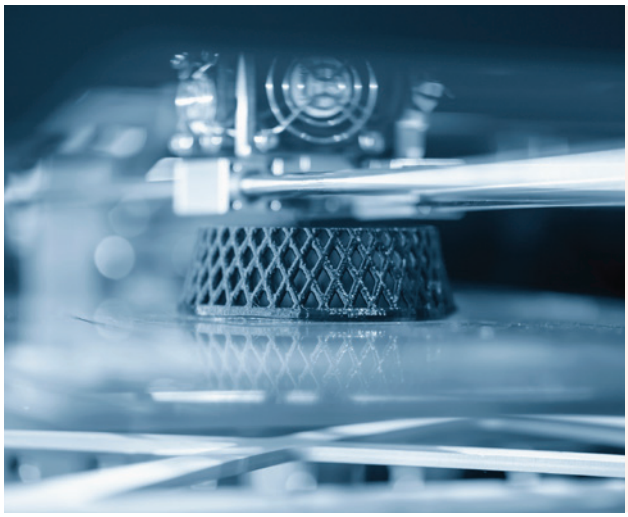
Robotics

We offer project-based teaching demos that are interactive, practical, and interest-oriented, aiming to foster children's logical thinking, hands-on skills, and creativity.

An adequate and widely compatible robotic arm powers immersive application scenarios. They help children better understand how AI and robots work and turn them into problem solvers.

Machining

If there is any chance of igniting interest in trades like manufacturing, students require early exposure to practical instruction with hands-on applications. Companies that offer CNC machining services will seek to hire programmers and operators who are enthusiastic, engaged, and skilled. Students who might be interested in pursuing a career in manufacturing would benefit greatly from hands-on exposure to a CNC machine in the classroom. Phillips Education will make you future ready with the right tools and knowledge!



3D printing

Education and additive manufacturing are a wonderful fit from a tactical and strategic standpoint. Practically speaking, 3D printers are excellent for the high-mix, low-volume manufacturing that is typical of educational institutions; Phillips offers a solution that is both competent and dependable. One of the most in-demand talents in contemporary manufacturing, from a strategic perspective, is knowledge of the fabrication technologies that will drive innovation in the ensuing decades. The most comprehensive, effective, and education-ready platform is provided by Phillips.

IOT

The Internet of things curriculum has specially been designed for students to introduce them to the wonders of modern technology. After completing this course, students will have a basic understanding of IoT, home automation and plant health monitoring. The activities in this curriculum, focusing on experiential learning, will help them develop skills such as DIY-ing, problem-solving, critical thinking, creativity, and teamwork.

AI & ML

Children these days are fascinated by Siri, Alexa, Google Home and the like. They think these applications are super smart and have all the information. This course will help students not only understand how AI technology works but also make them feel that they have the agency to teach machines. For instance, as children start to train their own models for facial or gesture recognition, they will begin to understand that AI is not magic. They will understand how recommendations are made by Amazon.com or in Youtube.

Lindsay Cline

Your Partner in Furthering Advanced Manufacturing Education

"From the USA to India, you are all changing the world in so many ways. When you student speak of their experiences pursuing degrees and certificates, they ALWAYS speak of you – their instructors, administrators, advisors and all the people who believed in them. You are each providing your students with skills, knowledge, education, and experience – but you are also giving them something that cannot be measured in test scores and school ratings. You are giving them HOPE."

For the highly sought-after occupations in Advanced Manufacturing, India's economy and companies are looking for the smartest and brightest future entrepreneurs and workers. Will you possess the credentials, training, and education required to land one of these well-paying and extremely fulfilling career opportunities? Phillips is on hand to assist. Each of the following emphasis areas has training programmes available to match students and potential employees with top-notch training partners and companies.

Learning outcomes

- Discover how manufacturing is being re-shaped in Industry 4.0
- Discover how mass customization will enable to create personalized products for people
- Explore how machine learning and artificial intelligence will reduce the operational and maintenance costs
- Explore how additive manufacturing (3D Printing) will reduce the cost of prototypes
- Discover how machining will enable mass manufacturing and understand how different factors affect the performance and characteristics of products

Student certification

- When a student or faculty finishes a training program, they like to receive something that recognizes their accomplishment. Getting a certificate at the end of a program provides proof that they completed the course and learned the required information.
- Normally, the course instructor would hand out the certificate at the end of the course or mail it to the recipient. However, MAKE found a better way to distribute certificates digitally for training and education courses.

Advantage of Digital Certificate

- It is official certificate signed digitally as evidence of completion of course
- Saves Money as no cost of paper and inks
- Physical presence not required
- Easy to share it online (such as LinkedIn)
- Easy to manage as can store it in one place in computer

Please find the below an example certificate that Phillips offers to students & faculty on completion of their training.

Industry Recognised Certificates

E-Learning

- MAKE have developed microlearning modules which is an educational approach that offers the right amount of STEM information to help learners achieve a specific, actionable objective or outcome. This brief, targeted learning tool spans between 2 to 5 minutes and is made available to students via Phillips Machinist App. It can also be used as a part of blended learning or formal training when quick references are appreciated by trainees. This makes microlearning valuable for the training programs.

A study by the Journal of Applied Psychology shows that learning in bite-sized pieces makes the transfer of learning 17% more efficient. It is little wonder that a survey on Learning and Development professionals, found nearly 94% of respondents prefer microlearning to the traditional form of learning.

- Given below are some types of content used for microlearning by MAKE on the Phillips Machinist app:

Short videos

Interactive videos

Animations

Process maps

eBooks

Infographics

Presentations

Learning Activities (such as quizzes and games)

Global Benchmarks

VS

The education system in Germany, Israel, Japan & USA

- **Option to switch**
Students have the opportunity to switch subjects.

- **Education approach**
The German education system follows the modern practical approach to education.

- **Research initiatives**
Research in German universities is funded by leading organisations such as Microsoft and Google, leading to a plethora of research initiatives.

- **Curriculum**
The Curriculum in this system is updated every few years to keep up with the current trends.

The education system in India

- **Option to switch**
Students cannot switch their major subjects while their course is ongoing.

- **Education approach**
The Indian education system follows the traditional theoretical method in education.

- **Research initiatives**
Due to limited research funds, research initiatives in Indian education are restricted.

- **Curriculum**
The curriculum in this system is updated after a long period of time. However, this is slowly changing. In few cases, the curriculum is regularly updated.

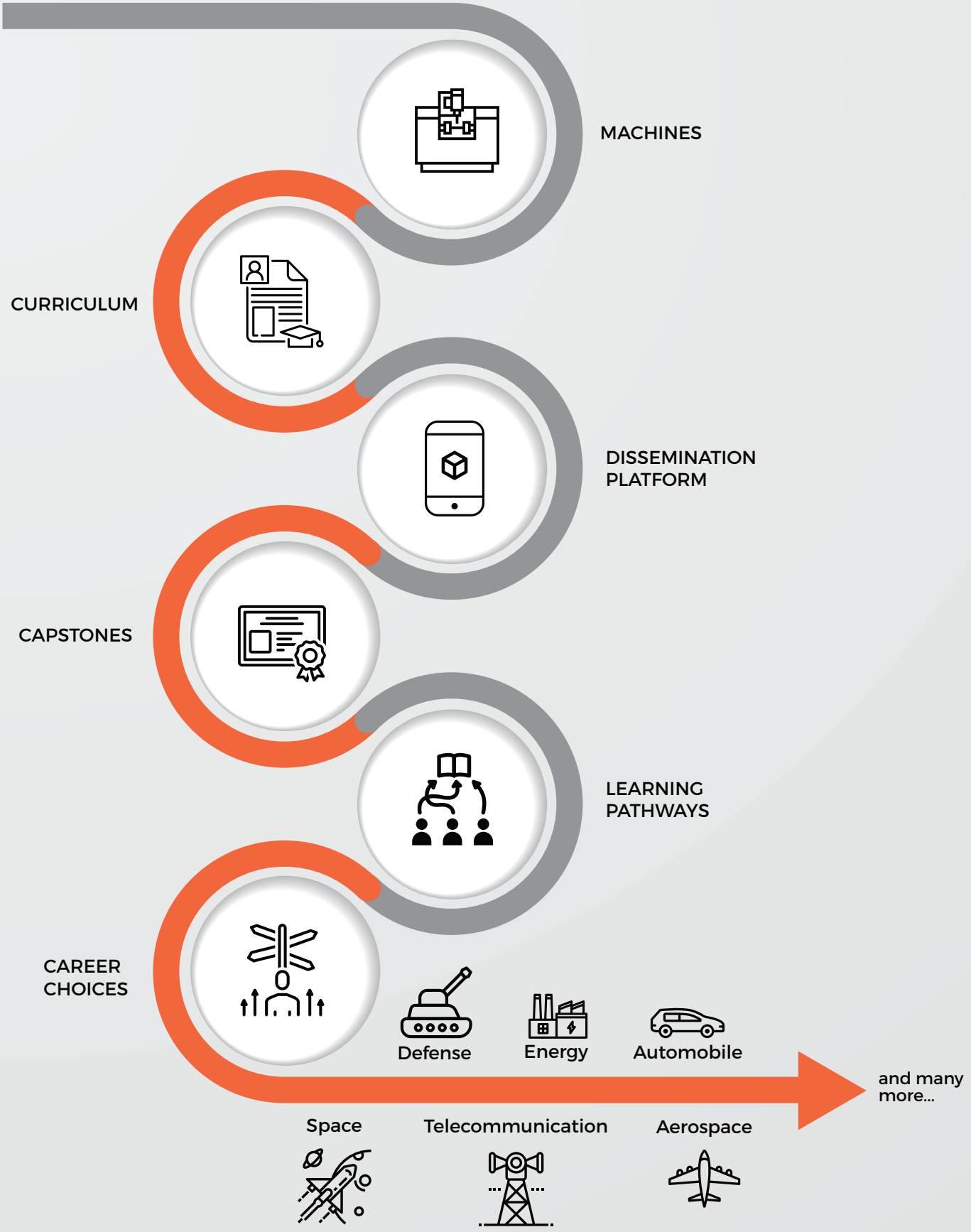
In innovation led countries like Germany, Israel, Japan, or USA, the formal education system includes practical programs in their official compulsory education. In India, we are still behind, but we need to start somewhere, and hence, we at Phillips Education are here with the first step for the manufacturing vertical. We want to be a part of the education revolution that is inevitable and make sure that we give our kids that edge globally as well.

All the curriculums are designed by experts from the industry, and it will be made sure that it is safe and easy to understand. Gathering interest in the manufacturing industry is one of our primary goals and to make sure that happens we make the complex parts seem easy to understand.

Subjects or disciplines like Automation, 3D printing, Robotics, and Metalworking will be included in this initiative to ensure that our kids are running on an equal footing on the global market.

How does it work?

The Confluence of Smart Industry & Learning



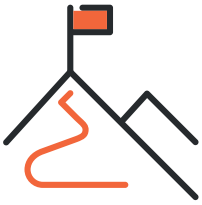
Phillips Education ecosystem helps create unlimited opportunities

60+
Years
of creating legendary value for manufacturing communities

600+
Schools
globally in Phillips Education network

6000+
Installations
in school networks

60000+
Students empowered
with cutting edge skills



Mission

To partner with thought leaders and creators providing the needed know-how and machinery to transform human society in ways that makes life immeasurably better.

Vision

To accomplish our mission by creating a Phillips Community where we learn to live great lives by being the best in the industry by every measure. Each one of us must be on the path to virtuosity.

At Phillips, we're on a mission to make life immeasurably better.

Alan Phillips
President, Phillips Corporation

Our Value Proposition

Relationships with over 800+ institutes worldwide and the number of partners we have serving on local advisory committees with 9 technical centres in India

We have a Customer Net Promoter Score of 70

Capability Driven by 60 Years of Experience

Be Future Ready

Gain Competitive Advantage

Global Education Benchmarking

Technology Driven Solutions

High Return on Investment

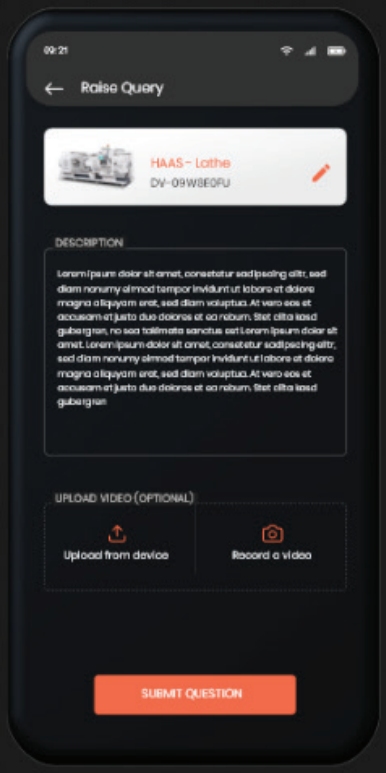
Higher Productivity & Performance

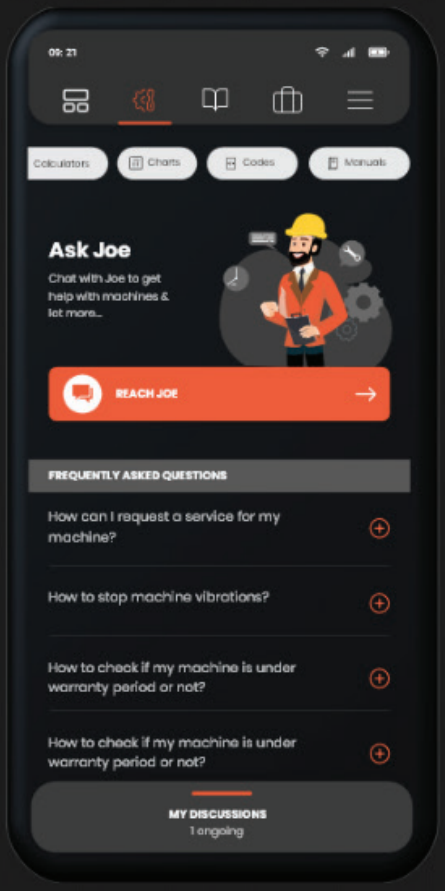
Education powered by technology

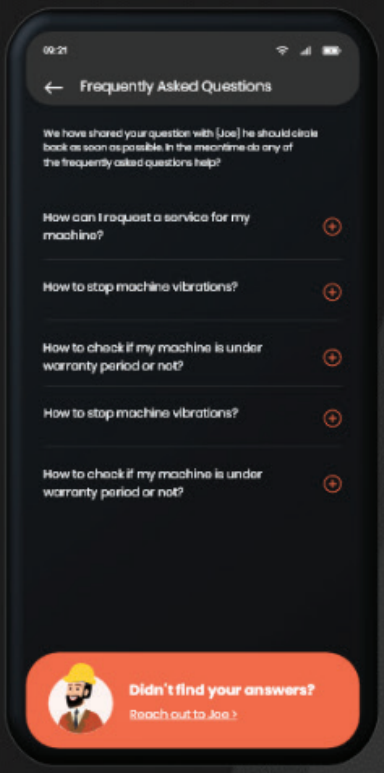
THE PHILLIPS MACHINIST™

Mobile App

- Learn from anywhere, anytime
- Track your/students progress
- Manage M/C fleet
- Library of calculators and charts
- Interact with manufacturing communities
- Get hired/post jobs







Command Centre

The MAKE Command centre, located at the Phillips EDUs Pune facility, serves as the training hub for Phillips teachers to support on the same equipment used by teachers in the classroom. Scheduled on-site visits for demonstration are available as well as remote troubleshooting and tech support can be made easily in this centre. MAKE programs will be used for other broader purposes to benefit the community, industry and educational partners.

Equipment

- CNC Mill PEM-220
- CNC Lathe – PET-210B
- 3D Printer – Phillips Adventurer 4
- Phillips Dobot Magician Lite Kit

Services

- On-site training
- Remote troubleshooting assistance
- Remote training and tutorials
- Recorded tutorials and resources

CNC Mill

Phillips PEM-220

Technical parameters	
X axis travel	220 mm
Y axis travel	120 mm
Z axis travel	200 mm

Optional Accessories

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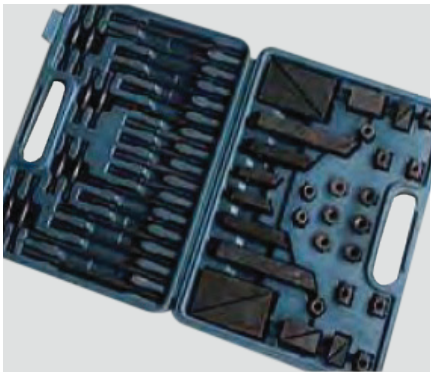


Clamping ki

Quick vice

Carbide end mill 5 pieces set

Fluts HSS end mill

Anti-magnetic edge finder

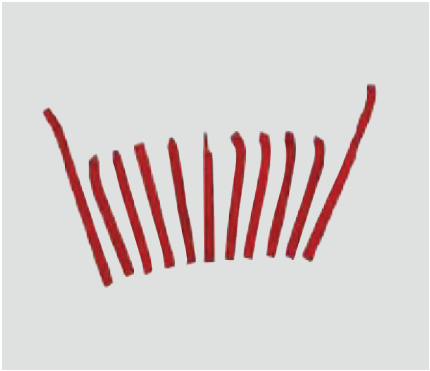
CNC Lathe

Phillips PET-100

Technical parameters	
Swing over bed	210 mm
Chuck diameter	100 mm
X travel	80 mm
Z travel	290 mm

Optional Accessories

Cutter set (tip replacement) 8x8 mm



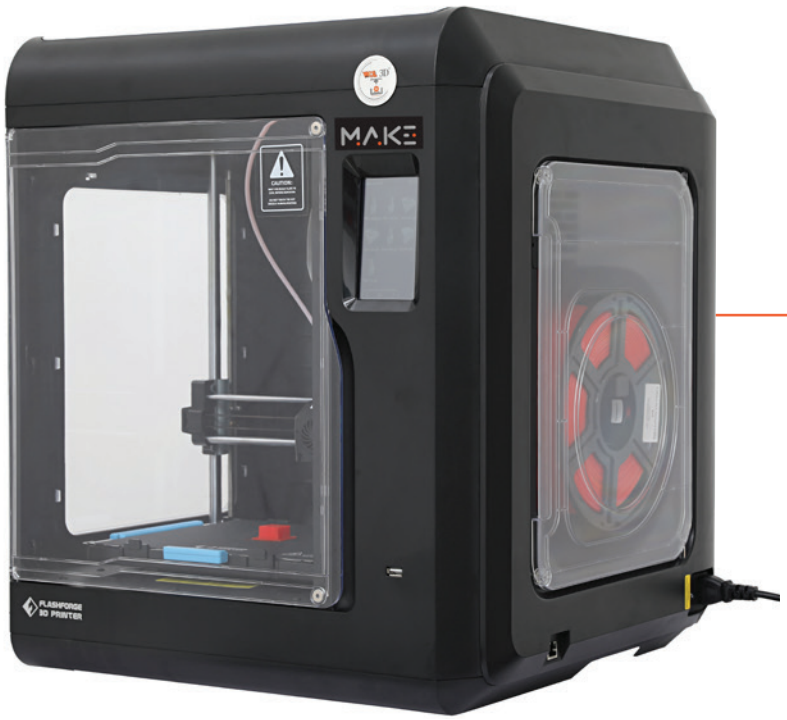
Cutter 11 pieces set

Rolling center

Tailstock chuck

4-jaw chuck (independent) with flange

3D Printer



Phillips – AM 4

1 kg Filament Spool
No need for external bracket, No need to change materials frequently

HEPA13 Air Filter
Filter dust and odours

Resume Printing
Resume printing after recovering from power failure

Built-in-camera
3D printing process can be remotely monitored through a built-in-camera

265 °C Quick
Release Nozzle Patented buckle design replacement only takes 3s

Specifications

Printing	
Extruder Quantity	1
Nozzle Diameter	0.4mm (default), 0.6/0.3mm (optional)
Maximum Extruder Temperature	265 ˚C (509 ˚F)
Print Speed	10-150mm/s
Maximum platform Temperature	110 ˚C (230 ˚F)
Filament Compatibility	PLA, ABS, PC, PETG, PLA-CF, PETG-CF
Filament diameter	1.75mm (0.069IN)
Print Volume	220*200*250mm (8.67*77.87*8.84IN)
Layer Thickness	0.1mm-0.4mm
Print Precision	+-0.1mm (test of 100mm cube)

Robotics & Automation kit

COBOT

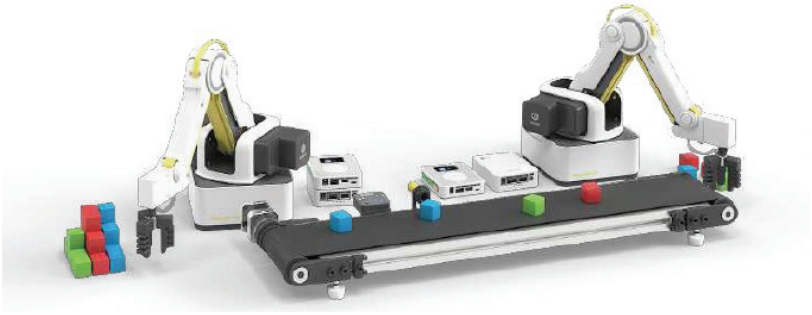
Key Specifications

What's in the package?

Hardware	**Magician Lite**	**Magic & Power Box**	**Gripper**	**Suction Cup**
	Pen Holder	**Camera**	**Block Set**	**Tool kit & Cable set**
Software	**DobotBlock**		**DobotLink Development Software**	
Our service	**Technical support**	**1-year warranty**	**Step by Step Guide**	**Video Demo**

Conveyor Belt Kit

The conveyor kit features adjustable speed and length and color sensor, making it perfect for creating mini automated assembly line to educate students on how smart automation system works in real world.



AI Teaching Kit

AI Teaching Kit includes 4 packages of accessories for 4 AI application scenarios including commodity storage (OCR), smart grocery store (image recognition and image segmentation), smart shop assistant (voice recognition and face recognition) and smart garbage classification (image recognition and voice recognition).

With this AI Teaching kit, students can experience real-world AI scenarios, engage in a series of hands-on activities and be inspired to prototype their own AI solutions.

Manufacturing reimagined for a better tomorrow

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