Getting future ready: Introducing Robotics to school students

By : Editor Published On : 1 Oct, 2019 08:00 AM IST

- Monica Malhotra Kandhari -

Robotics as a career choice is gaining popularity among the current generation of students. Robots are machines that can either independently or on command carryout a series of operations and functions. Robotics is as a branch of engineering involves the design, construction and operation of robots. From moving goods around on a production floor to performing complex medical procedures and being on space exploration missions, robots are fast becoming an important part of our lives. Coupled with advancements in others areas such as artificial intelligence, robotics will play an increasingly integral role in our way of life.

India is still at a nascent stage when it comes to the rise of robotics. As per a global report in 2017[1], there are only three robots per 10,000 employees in India. This is clearly insufficient to support the country's industrial growth targets for sustained growth. Interventions therefore must be made in our education system to prepare the young students for the future by introducing robotics early on. Learning through robotics can be more effective in engaging the students and also instill scientific temperament in them. Technology is what drives the world today and students must be adept with the latest developments to be a productive member of the society.

In a job market that is dominated by STEM (Science, Technology, Engineering and Mathematics), demand for candidates with qualifications in robotics has seen a near 200% growth. This trend is likely to sustain for the foreseeable future as the demand-supply gap stabilizes. By introducing robotics in schools as part of the educational curriculum, student's interest in the field can be nurtured early on. Learning robotics also encourages the development of higher-order thinking capabilityand problem solving skills to produce highly qualified and productive talents for the future.

Robots are being developed and deployed in an increasing number of roles across different industries. With increasing sophistication of robots, robotics calls for greater collaboration and communication in inference drawing, model construction, testing and controlling of a robot. With students exposed to robotics from a young age, they also learn valuable life skills in teamwork, communication and even community participation in the process.

Introduction of robotics in schools will therefore deliver benefits on multiple fronts. Ironically, schools despite being centers of learning and education are startlingly resistant to change. Even today, schools are largely dependent on teacher led instruction despite the demonstrated benefits of theoretical learning. However with rising awareness and in-parts due to increasing demand, schools are making headway in adopting new technology and introducing new courses such as robotics.

With cost of acquiring starter kits or advanced robotic kits falling, affordability concerns which once was a stumbling block in the mass adoption on robotics in the curriculum is now resolved. Basic concepts of robotics can also be taught cheap with a little creativity and DIY approach. Students propelled by their interest and aided by creativity and common sense have been known to assemble working prototypes using nothing more than cardboards and other such household items.

In this regard, Govt has established Atal Tinkering Laboratories (ATLs) in schools across Indiawith an aim to foster curiosity, creativity and imagination in young minds. It also helps in inculcating skills such as design mindset, computational thinking, adaptive learning, physical computing etc.

Under this initiative, young children gets a chance to work with tools and equipment to understand the concepts of STEM (Science, Technology, Engineering and Math). ATL contains educational and learning 'do it yourself' kits and equipment on – science, electronics, robotics, open source microcontroller boards, sensors and 3D printers and computers.

MBD Group, as a leading light of the education industry has pioneered the introduction of Robotics in school education. With an outstanding expertise and accumulated resources spanning decades, MBD's 'Robotics for School Education' consisting of training modules, workshops and robotic kits draws from the vast experience of the group to design experiments and infuse creative solutions. Available for Grade 6 till Grade 12 the modules and experiments are aimed at delivering hands on learning and fostering creativity through brainstorming and collaboration.

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