

RTP103

Robotics: Future of Schooling in Bangladesh

Abtahi Noor¹, Tasmia Rahman², Monjur Ahmed³, Opshora Noshin Eshika⁴, Faraz Fardin⁵, Ahshanul Mahbub Labby⁶

¹Department of Computer Science & Engineering, Brac University, abtahi.noor@g.bracu.ac.bd

² Department of Computer Science & Engineering, Brac University, tasmia.rahman.mitu@g.bracu.ac.bd

³Department of Computer Science & Engineering, Brac University, monjur.ahmed@g.bracu.ac.bd

⁴Department of Computer Science & Engineering, BRAC University, opshora.noshin.eshika@g.bracu.ac.bd

⁵BRAC Business School (BBS), BRAC University, fardin.faraz@g.bracu.ac.bd

⁶BRAC Business School (BBS), BRAC University, ahshanul.mahbub.labby@g.bracu.ac.bd

Abstract

Robotics deals with the knowledge of how to design, construct and develop robots. In the present world, technologies are taking over anything because of the efficiency of work over humans. So, children from schools must know robotics to inspire them from childhood to think and develop futuristic technology like robotics. Robotics should be included in the schooling curriculum to influence children to focus on futuristic technologies that will lead the world. Discussing the importance of teaching robotics in school is the main objective of this study. In the present world, robots are taking over anything because of the efficiency of work over human beings. Robotics covers the vast area of knowledge about how to design, construct and develop robots. In the study, the importance of robotics is broadly discussed along with the necessity of the addition of that topic in schooling curriculum.

Additionally, the facts and problems associated with the teaching of robotics in schools will be discussed based on statistical data.

Keywords: Robotics, Technology, Skill Development

Introduction

Don't we see robots everywhere doing anything instead of human beings? Robotics, the future technological marvel, making life easy and all the work efficient. Robotics should be taught and practiced from the schooling period to make children interested in the thing. Robotics is a fascinating topic that would help develop children's brainstorming and problem-solving capacity if they are taught with proper resources and expert facilitators. Experts encourage us to open up all the necessary locks to bring the new robotic era in front of our children. There are many arguments to prove that the necessity of robotics is being taught in our country.(Chauhan, 2022)

Literature Review

According to a report by Prothom-Alo (2022), a robotics training center named "Fabrication Laboratory" has been set up in Comilla under the initiative of the Deputy Commissioner. Also, the country's first robotics school "School of Robotics" was established in Comilla in September last year, where school going students of any age can learn about robotics. The biggest obstacle to teaching robotics at school level in Bangladesh is that there are very few teachers who are skilled in robotics at school level. Also, many parents think about what will happen by studying robotics. They think studying about it is a waste of time. Despite all this, the biggest obstacle for those who want to learn about robotics is the lack of easy access to enough materials. Some are available suddenly which are beyond the reach of ordinary students. Lastly, there are not enough skilled people in our country who can teach the basics of robotics.

Maximum schools abroad are introducing robotics as an educational component in their curriculum. This is because students can learn a lot through it, not only academically, but also develop personally and develop mentally. According to Purdue University, Robotics and simulators affect how kids learn more efficiently when used in education and eventually resulting in the development of a student who is more conversant and well-rounded. But one can know about robotics only when there is a fest or a national competition in our country. But

that too only at the university level. In most cases, what happens is that at the secondary level, students are taught only theoretical reading. As a result, they don't get any idea about the actual usage. As a result, there is no scope to know about robotics. For practical proof of this, a survey has been conducted where it was found that 75% of students do not get any idea about robotics at school level. At present robotics is not taught at the school level in Bangladesh, but recently some schools are being established on robotics in some places.

Arguments & Analysis

Bangladesh lags behind other countries in terms of providing robotics instruction or developing project ideas that would assist students in learning and implementing what they have learned in the real world. Firstly, there aren't enough resources available to use or teach children. There are no robotics-related curriculum or knowledge-sharing possibilities in our country's schools and colleges. While attending university, students mostly have the chance to do research and learn about these topics. Universities typically have the resources to aid students in learning, exploring, and thinking about these technologies. Secondly, there aren't always facilities available. For instance, learning opportunities, much like the introduction of robotics study, are limited in rural locations. Furthermore, many schools in cities are unable to provide regular studies correctly, but these complex topics are more difficult to make easier for students to comprehend (Rahman, 2020). A survey has been made from students of different schools regarding the need of a robotics workshop in their respective institutions. Most of them were students of Primary and Secondary level. The reports are provided below-

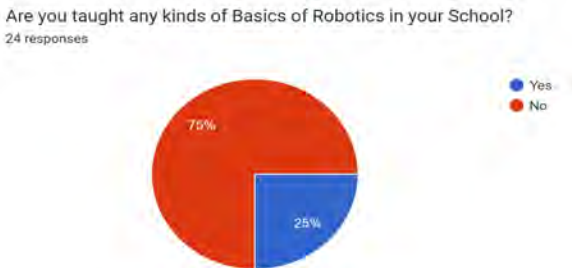


Figure 1: A pie chart showing a statistics of students response. From the above figure 1.1, it is observed that three-fourth of the students responded that they are not taught any kind of basics of

robotics in their respective institutions. Only 25% of the students know a little about robotics and its applications.

Do you want your school to add basics of Robotics course as an optional subject? N.B- You don't need to appear any exams don't worry!
24 responses

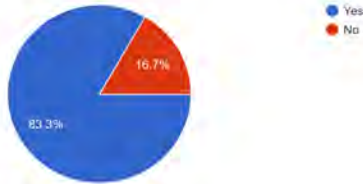


Figure 2: A pie chart showing the interest of students in learning robotics

From the figure 1.2, it is observed that the majority of the students want their schools to add the basics of robotics course as an optional subject. Around 83.3% of primary and secondary level school students want their school to have a robotics course as an optional subject.

Your Age
24 responses

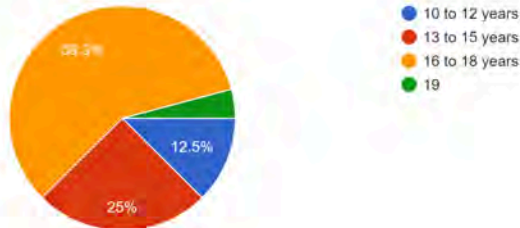


Figure 3: Age range of the correspondents

According to Figure 1.3, the age of most of the respondents are teenagers, mainly ranging from 16 to 18 years old. Thus we can observe that the younger generations are highly interested in learning robotics apart from their academics.

Solutions & Counterpoints

In this era of modern information and communication technology, there is no alternative to robotics to keep pace with other countries. Bangladesh is far behind in the robotics sector compared to other countries, which can be solved only by adopting specific methods. Firstly, some skilled people are required who are interested in robotics and who are ready to contribute in all fields, from education to industry. As people in this country still have very little understanding of robotics, guidance from pioneers will accelerate robotics to greater success (Jonas, 2021). Secondly, Investment in the robotics sector should be increased and everyone should be given the opportunity to participate here (Rahman, 2022). In a developed country like Bangladesh, where people are unable to meet their daily needs, spending money on robotics is still considered a luxury by many, but it is wrong. Because in keeping with the times, if people still choose primitive methods for their sustenance, then nothing new will ever be started in the country. One of the biggest reasons why this sector is lagging behind is that robotics is still not discussed in the education system of our country. Therefore, there is still not much understanding among the children about this matter, so there is a need to be aware of the big changes it can bring later. The first thing that needs to be done is to include the basics of robotics in textbooks so that everyone has more or less knowledge about it (Paul, 2021). Also, we need to focus on this matter so that students can focus more on learning robotics rather than getting good grades on exams. If they have a clear understanding of robotics issues from childhood, then later they will be able to solve complex problems very quickly without starting from scratch. In this case, along with children's books, Olympiads and extracurricular activities, robotics can be popularized among students. In this way, the students of Bangladesh will also be able to showcase their talent in front of everyone on the world stage. How much profit can be brought by using robotics and AI in industries that can lead to further development in a country like Bangladesh is beyond imagination. Because a few years from now, everything will be automated with machines instead of humans. As a result, unemployment will skyrocket if we don't keep up with the times and familiarize ourselves with robotics. The amount of research on robotics in Bangladesh is very less because Most university students and researchers lose interest or go abroad for higher education due to the lack of adequate research facilities. As a result of this, we are losing thousands of talented students every year, so labs, equipment and sufficient resources for research must be arranged in the country.

Conclusion

To sum up, the basics of robotics in school curriculum can be optionally added despite having some barriers. Since our survey opines that the majority of the students actually want these courses to be included in their academic curriculum, the concerned authorities should take steps in assisting the educational institutions for adapting the newest additions to the curriculum.

References:

1. Chauhan, S. (2022). *Robotics curriculum in schools*. <https://timesofindia.indiatimes.com/blogs/voices/robotics-curriculum-in-schools/>
2. CoderZ Team. (2022). *Why every school should have a robotics curriculum*. <https://gocoderz.com/blog/every-school-should-teach-robotics/#:~:text=Kids%20will%20gain%20Problem%2DSolving,to%20solve%20the%20specific%20challenge>
3. Jonas. (2021, December 15). *Why robotics is important? How it is changing the world?* <https://jonasmuthoni.com/blog/robotics-importance/>
4. Paul, M. (2021, May 31). *Educational robotics for childrens in schools improves learning- ORCHIDS*. Orchids. <https://www.orchidsinternationalschool.com/blog/child-learning/robotics-in-school-education/>
5. Rahman, A. (2020, August 3). *Future of Robotics Engineering in Bangladesh* | Ewrite Hub. <https://en.ewritehub.com/future-of-robotics-engineering-in-bangladesh/>
6. Ryan. (2021). *Robotics in education—Advantages, benefits & importance for kids*. <https://www.idtech.com/blog/educational-benefits-robotics>
7. Valenzuela, J. (2021). *Incorporating Robotics Across the Curriculum*. <https://www.edutopia.org/article/incorporating-robotics-across-curriculum/>

Authors' Biography:

Abtahi Noor is a robotics enthusiast, and he is currently pursuing a Bachelor of Science in CSE at Brac University. He completed his HSC from Notre Dame College, Dhaka, and SSC from Bangladesh International School & College, Dhaka. He has been fascinated by robotics since he was a child and has always been interested in exploring the possibilities that this field has to offer. In pursuit of his passion, he is involved in various robotics projects at Brac University, such as BracU Dichari, where he is using his expertise to develop cutting-edge robotics technology. His ultimate goal is to create robots that can help make the world a better place by improving efficiency and solving complex problems.



Monjur Ahmed was born and raised in Dhaka, Bangladesh. From an early age, he showed an interest in technology, which later inspired him to study Computer Science & Engineering. He has completed his school education from Ideal School & College and went on to attend Notre Dame College for his higher secondary education. At present, he is studying in the CSE department at Brac University. Aside from his academic pursuits, he has a passion for cycling and photography. He enjoys spending time outdoors, exploring the beauty of nature, and capturing stunning images with his camera. In his free time, he can be found reading storybooks or browsing through various articles on the internet to stay updated on the latest devices and technology.

Tasmia Rahman Mitu is a science enthusiast and is currently studying CSE at Brac University. She has a passion for discovering new things and is always looking for ways to explore the unknown. Her passion involves keeping up with the newest scientific studies and breakthroughs.



Opshora Noshin Eshika is currently studying at Brac University in the CSE department. In addition to being a full-time student, she has a passion for creative endeavors like writing. Her writing style is known for being detailed, expressive, and observative. Apart from her academic pursuits, she enjoys listening to music, reading books, and watching movies.

Fardin Faraz is currently pursuing a Bachelor in Business Administration at Brac University. He has completed his SSC and HSC from Dhaka Residential Model College. He is a sports enthusiast and has a deep love for traveling. His vision is to create impactful events and research works in our society that will contribute to the betterment of our nation.



Md Ahshanul Mahbub Labby is a highly accomplished young professional and entrepreneur with a proven track record of success in public relations, communication, and business. As a third-year student at BRAC University, He has taken on a range of significant responsibilities, including former consulting at 10 Minute School, former head of marketing at Lucent and Digital Sikkhok, and current communication manager at

Laughing Elephant. He is an accomplished writer and translator and he has a vision of establishing a prosperous, poverty-free Bangladesh.