Impact of Robotics on Education

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Abstract: Robotics is the new field of science & technology which produces multiple machines which are called as robots. We use robotics concept in various fields like agriculture, food preparation, military, health care, manufacturing etc.In this paper we discuss what is robotics? , Why there is need of robotics in education? ,its benefits, advantages & disadvantages. In this paper we will also focus on impact of robotics in education

Keywords: Robotics, Need of Robotics, Advantages & Disadvantages of Robotics, Impact of robotics on Education.

I. INTRODUCTION

Robotics is the technique of science, engineering and technology which produces machines called as robots. Robotics is the study of robots. Robots are machines that replicate human actions which can be used to do our day to day jobs. Some robots can do work by themselves whereas other robots work as per the instructions. It is technology that uses various disciplines like mathematics, physics ,biology, mechanical engineering, computer science and automation. Robots can be programmed to carry out some tasks which are complex for humans and repetitive in nature.

II. NEED OF ROBOTICS

Nowadays robotics becoming popular in many schools worldwide. With the help of this technology teachers who administer robotics courses, gets advanced knowledge in programming and other skills. Robotics along with advancement in the field of Artificial Intelligence had great potential to provide huge benefit to students.

A. Creative Thinking

When we love the things we do; our brain take full interest which open the way for creative thinking. This is win-win situation for both students and teaching institution.

B. Engagement

Robotics can teach students in very innovative way. Since we are adapting new way of teaching, students become alert and teacher-student engagement improves.

C. Preparedness

World is changing at great pace. The things which we used to dream are becoming reality. By introducing robotics in school/college will prepare students for technological shift which is going to happen in imminent future.

D. Programming Skills

The day is not far when Artificial intelligence, Internet of Thing will become norm everywhere. Introducing robotics in schools/colleges will prepare them for programming skills needed for these things.

E. Teamwork

Traditional teaching methods concentrate on group teaching but lacks team bonding which is very much needed while working in industry. Robotics can be used to play educations games, quiz, contest which will enhance skill of students to work in team and make them future ready.

III. ADVANTAGES OF ROBOTICS

Benefits of the technology include:

- Robots doesn't have any emotions – which means there is no chance of favors given by teachers. It will provide safe and equal learning environment for everyone
- If you have doubt, you can ask teachers about once, twice or thrice but not more than that. It gets frustrating for teachers to explain same thing again and again. That's not the case of Robots. You can ask the same query 100 times and robots will answer it without getting tired or irritated
- By observing learning pattern of each students, robots can decide teaching pace. By applying different algorithms, we can go to weak points of each student and focus on it.
- Once you understand student learning pattern, robots can ask right question to right student at right time. This will make sure students provide full attention while teaching.
- Robotics make education engaging. The more engaging it gets; more students will take active participation. It will help to develop their positive learning attitude.

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- Data is powerful tool. By applying right logic to the data collected by robots while teaching, teachers can easily track students progress and help them in better learning.
- Introduction of robots in school means students will be very aware of robots, programming and overall robotics ecosystem. This helps "I have been there and done that" confidence in student since they will be working with robots from school.
- How much time and effort we are putting in understanding the correct interest for students? The answer is very less. We don't have strong mechanism in place to identify strength and weaknesses if students. This is huge gap since the career we choose is going to impact our life. By doing right analysis on the data provided by robots – we can easily understand student's interest and he/she can choose the field they are interested in.
- Robots connected to internet can search, analyze and provide right solution of complex issue within minutes which is still a colossal task for teachers.

IV. DISADVANTAGES

- Capital investment on robots is still huge. Not many institutions can afford those capex expenditures.
- The robots need the power(electricity) and timely maintenance which has additional cost.
- Having no human emotions means teacher-student relation cannot be developed.
- Though technical analysis of data is possible by robot – human guidance is not something robot can manage. Human intervention is still necessary and required.
- Teachers which encourage students by personally talking to them is not possible by robots.

V. IMPACT OF ROBOTICS ON EDUCATION

- It is new and innovative technique of teaching using robotics.
- Robotics provides a great way of entertainment and are widely used as interactive toys for children to create new opportunities for learning and experiencing.
- Education around robotics with artificial intelligence is a great option for the upcoming generation.
- Educational robotics gives strength and support to students' skills by developing their knowledge through the creating, designing, assembling and operating of robots.
- The use of robotic equipment expands area within the developed world to replace human involvement.
- Use of robotics in education reduces the cost of human labor, eliminates human error, increases productivity of the system.

VI. RESULT AND DISCUSSION

- Robotics is the part of innovative teaching technique which falls under artificial intelligence.
- It has its own set of advantages and disadvantages. In most cases, use of robotics in the field of education has proved to be more beneficial in long run. The advantages are many which are already listed above.
- In my honest opinion, if we use robotics for preprimary and primary education it will be more successful. Mainly because students enjoy their learning through robots because they consider it as toy.
- In case of secondary/higher secondary students – it may create confusion for them because they were already exposed to traditional teaching methods, also the syllabus gets more and more complex as you climb the education ladder. Machine teaching students can get monotonous and students may lose their interest.
- Controlling and maintaining discipline in class is challenging task for any teacher. One cannot expect it from robots hence teachers are irreplaceable. In such cases – best option is to accompany robot along with teacher.

VII. CONCLUSION

In future robotics will be more popular & it will be used by most of the organizations along with existing resources.

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