4. Internet of Things: Applications in Education Sector

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Abstract

Today the objects around us are getting connected with each other in 'Smart' ways. Our home, office, industries etc. are connected with each other with the help of latest technologies. Internet of Things is one such technology which is connecting our surroundings very easily. In spite of the successful intervention of IoT in our home automation, office automation, industrial automation etc., the education sector is somewhere laid behind. The educational institutions are very slowly starting understanding the importance and effectiveness of IoT. Use of IoT in daily teaching can completely revolutionize the ways of teaching and learning. The present article emphasizes upon the concept of IoT and how it can very efficiently restructure our traditional education and learning methods.

Keywords: Internet of Things, IoT in Education Sector, Augmented Reality

Introduction

The 21st Century is witnessing a drastic change in the education sector due to the continuous technological innovations which facilitate critical thinking amongst the students as well as the teaching community. Irrespective of the grades they teach, teachers are exploring different ways in which education can be imparted to the students in a much better acceptable manner. The teaching community is trying to shift itself from traditional chalk-n-board teaching to modern education trends like use of ICT applications/tools viz. PowerPoint presentations, smart board, use of laptop/ tablets, use of Educational Apps, implementation of Learning Management Systems (LMS), Microsoft Educational Tools etc. Teaching community is applying all these tools/applications to support their syllabi/curricula. The ease with which different file formats of text (.doc/x, .pdf), audio/video (.mp4, .mp3, .vlc, .avi), images (.jpg/.jpeg, .bmp) can be used in the ICT applications/tools make them popular across the community. All these tools however deal with the physical world.

'Internet of Things' is one of the newly evolved concept which deals with the combination of both virtual and physical worlds. The unimaginable development of technology has made it possible to connect each and every thing around us to the Internet, to create Internet

of Things. Kevin Ashton of Proctor & Gamble (P & G) coined the term 'Internet of Things' in 1999. Ashton linked P & G's Radio Frequency Identification Device (RFID) to Internet of Things so that computers can manage all the individual things.

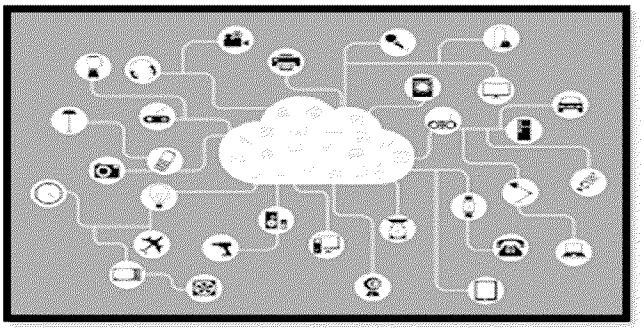

Fig. 1: Internet of Things (Source: Google Images)

Definition of Internet of Things (IoT)

According to Oxford English Dictionary, it is "a proposed development of the Internet in which everyday objects have network connectivity, allowing them to send and receive data."

Webopedia defines Internet of Things as "the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems."

The IoT has made a considerable impact in areas like Medical and Health Care, Transportation, Building & Home Automation, Agriculture and Industrial Applications. However the impact is less in Education Sector.

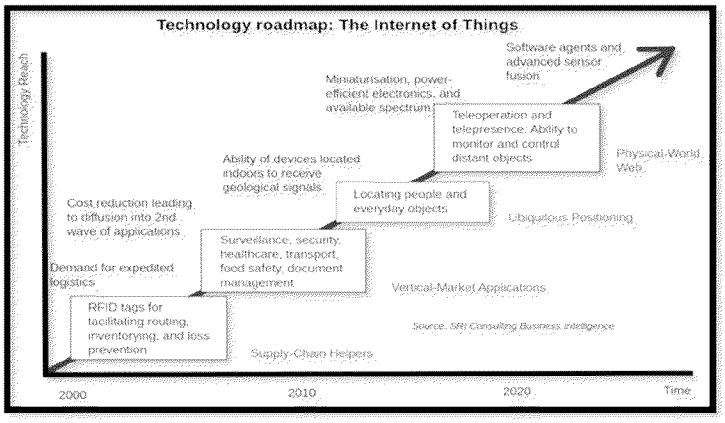

Fig. 2: Technology Roadmap showing the increase of applications of Internet of Things (Source: Google Images)

IoT Applications in Education Sector

1. Facilitate Networking among Students and Teachers

Students can interact with teachers, educators across the world with the help of interactive boards and share their ideas, thoughts and views breaking the boundaries of time, space and money.

2. Interactive Learning: Today learning is not limited only to texts and images available in course books. The concept of Augmented Reality (AR) has come up as a boon in the digital era. A student's learning environment is enhanced with the digital information. It offers less expensive educational materials which have the capability of replacing or supporting textbooks, manuals, handbooks to a greater extent. AR makes learning fun and easy to remember. Students can learn/discuss a topic from various points of views. With minimal training of the AR technology it enables teachers and students to get a deep understanding of the concept thereby making it more interactive in nature.

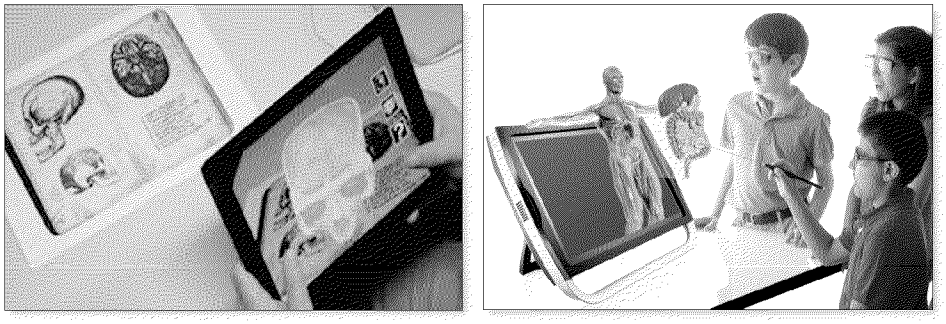

Fig. 3: Examples of Use of Augmented Reality in Education Sector (Source: Google Images)

3. Ease of Accessibility: The virtual educational content can be accessible anytime, anywhere therefore students need not stick to the age old principle of taking up one course at a time. Numerous educational websites offer free courses to which the students can just enroll and start studying at their own ease.

4. Increase Level of Safety: Changing time has its pros and cons. Nowadays parents are more inclined towards safety of their students wherever they go, whether its school, school buses, field trips, picnics etc. With the increasing number of students, it becomes difficult for schools to keep manual safety check of each and every student. Present day educational institutions need Smart Security which can be very easily provided with the help of IoT. Due to the presence of technologies like 3D Positioning, Intelligent Camera Visions, Alarm system… students can be monitored round the clock and their whereabouts can be reported whenever required. IoT applications help parents to track the movements of their pupil on their way to school as well as during field trips.

5. Increased Teaching Efficiency

Schools and Colleges waste a lot of teaching time every period/day in taking the attendance of their classes. This issue can be solved with the use of IoT. With the help of IoT enabled devices, such tasks can be directly connected to the main office of the institute which will take care of students' attendance. Being connected through cloud, teachers can understand the efficiency quotient of each student in the topic, thereby providing them extra guidance whenever required.

Conclusion

The Internet of Things (IoT) is slowly but steadily making us feel its strong need and presence in Education Sector. It can surely be termed as one of the biggest 'Boons' of 21st Century. According to the International Data Corporation (IDC), the market for IoT solutions worldwide is expected to reach USD 7.1 trillion by 2020. Instead of keeping it in a confined state, more and more people should start making use of IoT in education sector to make learning more interactive, interesting, easily accessible and cost-effective.

References

1. Aleksandrova, M. (2018). Augmented reality in education. Retrieved from https://dzone.com/articles/augmented-reality-in-education (Retrieved on 3.1.2019)
2. Ashton, K. (2009). That 'Internet of Things' Thing. Retrieved from https://www.rfidjournal.com/articles/view?4986 (Retrieved on 2.1.2019)
3. Mehta, R. (n.d.). Five ways the Internet of Things is changing for education and learning. Retrieved from http://customerthink.com/five-ways-the-internet-of-things-is-changing-for-education-and-learning/ (Retrieved on 2/1/2019)
4. Ralhan, B.D. (2017). 6 ways the Internet of Things is transforming the education sector. Retrieved from https://www.indiatoday.in/education-today/featurephilia/story/internet-of-things-transforming-education-958095-2017-01-31 (Retrieved on 2.1.2019)
5. Savaram, R. (n.d.). Role of IoT in education. Retrieved from https://www.kdnuggets.com/2018/04/role-iot-education.html (Retrieved on 3.1.2019)
6. Stroud, F. IoT-Internet of Things. Retrieved from https://www.webopedia.com/TERM/I/internet_of_things.html (Retrieved on 31.2019)
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