Internet of Things in Education

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Abstract: *Today we found technology everywhere. It has changed the way we work.. The large amount of data available on education and new technologies has made us to think how students are taught and educational institutions . The way IoT in educational environments supports educators can influence how we as a society collaborate, communicate and operate. There are two aspects to look into here, firstly how students are taught and finally how educational institutions can bring in IoT to improve system. Because of Internet of things in education we can easily coonect to the physical world and environment. A smart school has the facilities to function smoothly that provides higher level of personalized learning. The smart devices that are used in the campus make us to use Wi-Fi network to send data and receive instructions. A computational Internet of Things nervous system for schools and learning centers helps to create smarter lesson plans, keep a track of important resources,improve access to information, design safer campuses and much more.*
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I. Interduction

An educational environment that is focused on student learning and with IoT as an auxiliary tool can be quite advantageous. IoT[1] can connect academia all over the world to provide a deeper learning experience for students to gain knowledge. It also helps students relate theory to practical applications. For instance, weather patterns can be understood through real time data from weather sensors all over the globe. In addition, teachers can focus on individual students for a more personalised learning experience. Students can learn at their own pace and it provides an easier medium for student-teacher communication. It can change how student success is measured and communicated. This is a dramatic change for both teachers and students, to be able to look at real time data rather than focusing only on text book content. The improved learning opportunities can decrease the time to master concepts while still being able to motivate and engage students. It can also increase teacher creativity as they can focus more on the curriculum. Some of the current technologies implemented in smart schools are smart boards, tablet computers and 3D printers.

The main issue of a full fledged IOT [2] package in learning is for us to first understand how the human brain learns new concepts and dealing with the inherent complexity of human behavior. Therefore, the software engineers who work in education projects must be thoughtful of how learning occurs.Today's smart schools have an infrastructure that can develop and progress into digital learning centers as more and more IoT devices are deployed frequently.Educators can keep track of students, staff and resource to improve operational efficiency and reduce costs. Although IoT in education is still in its infancy, many schools are now adopting new technologies to track student attendance, transport and oversee security systems. For example, RFID (Radio Frequency Identification Device) installed in ID cards or wearables can monitor attendance and track young students' whereabouts in schools. Real time information of devices can also help maintenance departments quickly repair or replace devices to avoid disruption in classrooms.

Educators are always looking to make their campuses more secure and safe as it is a high priority for all stakeholders in the education sector. Simply being able to track school children and staff can increase safety on multiple levels. School buses fitted with GPS transmitters can help parents easily track the location of their child anytime and anywhere. All this data coming in from several devices helps in the decision making process of staff during emergency situations and to notify the appropriate authorities.
Following are the applications of IOT in Education

1.1 Poster Boards Evolved into IoT enabled board
It is actually very difficult to compare the old generation teaching boards with today's multimedia posters[3]. Because of web tools we can easily create the virtual posters consisting of images, audio, video, text and hyperlinks. This innovation allows to share them electronically with others and monitor the activity of the

student very easily. These digital posters can then be shared with classmates and teachers via email or simply accessed through the poster's URL address and posted on class blogs.
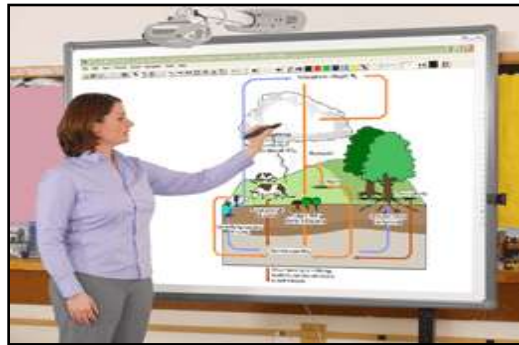

Fig1: Poster Boards Evolved into IoT enabled board

1.2 Interactive Learning

Learning today is not limited to the combination of texts and images but beyond that. Most of the textbooks are paired with web-based sites[4]that include additional materials, videos, assessments, animations and other materials to support the learning. Because of this students can learn new things with better understanding. The educational institutions are bringing the real world problems in the classrooms and allows students to find their own solutions.

1.3 Mobile Devices and Tablets Educational Apps

iPad is a powerful learning tool which is truly changing the way to teach and learn. Because of ipad students and teachers can easily create videos and animations and gives the ability to take notes.Now a days educational app is more appealing to the students than ever before.It has many features including teachinf learning process.This technology gives best to learn easily and efficiently.

1.4 eBooks providing a better way to Learn

Ebook is always in electronic format which allows the students to carry library of hundreds of books with them with greater ease.We can easily download and use it efficiently[5].Now most of the mobile devices can hold hundreds and thousands of data easily so we don't require physical storage of book.Ebook gives oppourtunity to the students to expand the learning process.

Fig2: Books providing a better way to Learn

1.5 Other Learning Sources

Tools such as google app has extensive storage of data which helps students to learn many new things.Wordpress tool hels all students and teachers to create individual online video and make it available on the internet because of which needy people gets the advantage for the learning.Advance technology makes students to think and do innovation in the world.

1.6 Evolution of Communication

Technology helps the students to communicate with the teachers using different modalities. It helps the teachers to keep a proper track on each of the students and assign them with home works through different online tools and track their performance[6]. Teachers remain connected with the students all the time and removes any gap of communication between them. Communicative use of technology helps the students to take

on several roles and bear their own responsibility for learning. It also gives them freedom of speech and action in a modern and safe environment.

1.7 Wireless door locks

With the use of wireless door lock any person can remotely lock and unlock the door or share the access with others using mobile apps.Wireless door lock is remotely lock and access to your door from smart phone.Smart door lock system offers many features to any home or business.Due to wireless lock all the doors of the school and education centers well integrated.This provides security to the schools.

Fig3: Wireless door locks

1.8 Education at anytime and anyplace

Advance technology play a vital role in monitoring the progress of the students which helps in the education.IOT gives platform to stay connected via different means.If if we are not in class room students can easily contact with the teacher and get their doubts clear.This is a very powerful platform and provides safe network and full privacy.IOT also allows students to store and share ideas via Internet of things which helps in technological development.

1.9Attendance tracking systems

Attendance tracking system enables tracking attendance of the student with accuracy using RFID.This system allows security to the educational institutions and can help in many ways.It helps the teacher to input the data related to the student directly in to the computer.This increases the efficiency of the work.It can help to track the number of times a student has reported to the class.

Fig4: Attendance tracking systems

II. Conclusion

Internet of things in education is limitless feature and we are observing it in many schools and colleges today.IOT in education improves the efficiency of the work and also reduces the time to do any work related to the college or school. In long term, data collected by IOT devices can help and improve the safety and gives a platform of innovative learning for the students.IOT not only provides better learning process but also reduces the operational cost.

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