ISSN: 2366-1313

DESIGN PRINCIPLES AND BEST PRACTICES IN INTERNET OF THINGS (IOT) IN EDUCATION AND LEARNINGLEVEL OF STUDENTS

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ABSTRACT

This study aimed to explore the factors influencing in teachers' decisions to use the Internet of Things (IoT) in a classroom as a digital system to enhance teaching and learning. Internet of things (IoT) is a smart building IoT that works as a solution in educational or environment, where IoT related devices are placed or installed and connected with internet as to ensure well connected system and collaborative future for education. it provides easy access to the students for everything especially learning materials to communication provisions and channels. it also ensures the teachers ability to forecast students education and learning level and measure progress of students in real time. IoT is comprised of variety of latest technology based tools i.e. computers, laptops, smart phones, smart boards, educational applications, iPod notebook etcThe technology acceptance model (TAM) was used to investigate the effects of using the IoT in an e-learning environment on pre-service teachers' perceived usefulness, ease of use, attitudes toward using IoT, and the influence of such attitudes on students' behavior. It assured IoT and education and learning level of students are associated with each other and IoT has 65.20% contribution in prediction of education and learning level of students. However, their attitude toward the IoT was not influential in their intention to use it. Onthe other hand, its perceived usefulness was the most critical factor in pre-service participants' intention to use or continue to use the IoT in the future. Accordingly, several pedagogical implications for the design and development of teacher preparation programs are discussed. Recommendations for future work are suggested as a result of this study.

Key words: Internet of things, Education and Learning Level of Student, Smart educational learning; higher education System; productive teaching; interactive system.

1. INTRODUCTION

Today, things around us are being alerted by technological innovations that are affecting various industries. However, compared to areas such as home automation and industrial automation, the education sector is not at the forefront of adopting the latest technology. The Internet of Things (IoT) is a process of change in various aspects of our daily lives. Unlike previous innovations, IoT technology is ubiquitous and promotes intelligence and freedom. The development of the Internet of Things is a major strategic technology trend. The Internet of Things (IoT) is a new technological model that has conquered the world by combining different things around. However, as mentioned earlier, the education sector lags behind the use of Internet of Things. But today, this situation is slowly changing as various educational institutions recognize the importance of introducing technology (especially the Internet of Things) into everyday teaching methods. Soon, for a variety of reasons, many schools and universities will include the Internet of Things in their daily activities. This article explains the importance of the Internet of Things and understands that this technology has become an integral part of everyday learning and teaching methods. The ability to bridge the gap between sensors and the physical and mechanical worlds around the world is considered a conceptual framework for new learning models. The idea behind the key paradigm shift is to use machine-to-machine (M2M) communications for sensors in any object, allowing billions of objects / devices to connect to existing Internet infrastructure. The whole real world is happy. Advances in IoT technology can pose many challenges to universities, such as tracking key resources, developing information channels, developing better plans, and designing safer campuses. The IoT system has tremendous potential, attracting and encouraging students and

teachers to make higher education more important and accelerate education. The purpose of this study is to find the impact of internet of things in changing education in higher education,

2. MAIN OBJECTIVES:-

ISSN: 2366-1313

- To analyze the relationship between internet of things and education and learning level of students at higher education institutions
- To forecast the impact of internet of things on education and learning level of students at higher education institutions
- To find out the impact of tablet, laptop, Smartphone and smart on education and learning level of students at higher education institutions.

3. ARCHITECTURE OF IOT MODEL

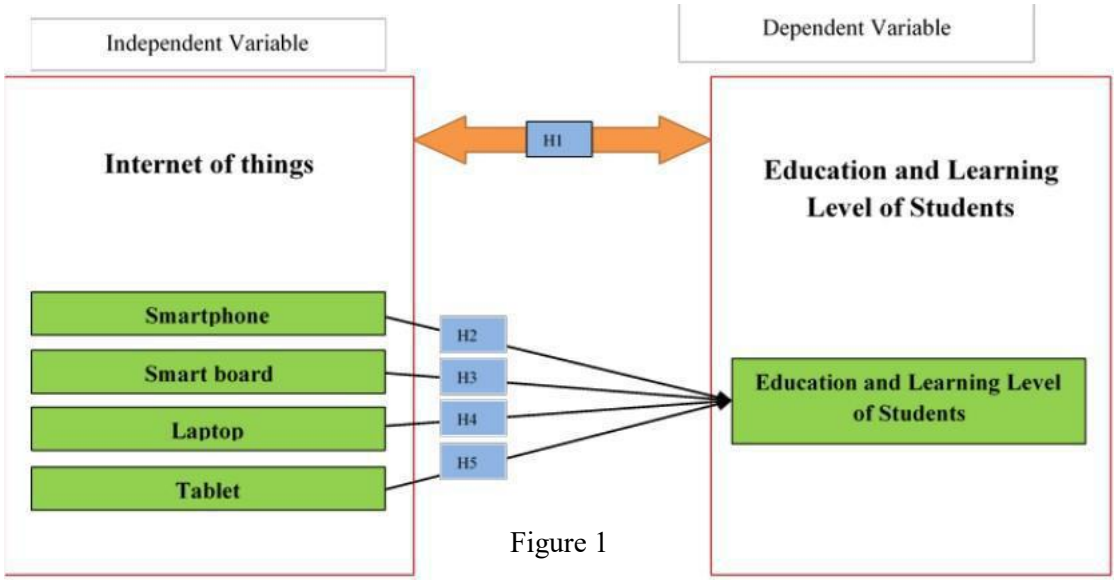

Figure 1

ISSN: 2366-1313

3. Hypothesis:-

- H1There is relationship between internet of things and education and learning level of students at higher education institutions.
- H2There is impact of internet of things on education and learning level of students at higher education institutions.
- H3There is impact of tablet, laptop, Smartphone and smart on education and learning level of students at higher education institutions.

4. ARTICLE REVIEW

The Internet of Things (IoT) is used in various fields. Now because of IoT devices are widespread in schools and educational institutions incorporate the Internet of Things into educational activities. With the increasing use of the Internet of Things In the field of education, it is very important to study how its technology interacts with it. Various functions of the system, such as sensing and decision making, and can support it. Challenge the learning process of all subordinate subjects (teachers, students, etc.) Employees) and all included assets (e.g. libraries, classrooms, and labs) a great contribution was made to the integration of the Internet of Things into the field of education. There are still no firm and consistent views on this matter. That's why we encourage filling the knowledge gap and starting mapping it through available studies.

Internet of things especially laptop enhances and improves the basic skills of students. It enriches, deepens and accelerates the learning skills of students. Further researcher ascribed IoT increases the visibility of future employees. It also connects students with real world. In recent past pen and pencil were important tools for knowledge and nowadays IoT (laptop is major tool for knowledge for education in 21 century.in this context Demski, said technology has opened venues for education so education is powerful model for technical learning in present time and it leads the generations to face competitive world.

Smartphone are also recent development in field of mobile technologies that is development of new devices. nowadays we have programmable phones such as Smartphone it includes built in memory that offer easy in education and learning, Smartphone are like computers that have control unit. It supports students to listen and watch different audios and videos that help them in acquiring knowledge easily. Besides laptop and Smartphone smart board are also important in education.

smart board are interactive board they are increasing 50% and creating quality of education, smart boards are comprised of notebook, software and projectors for interactive learning. In this order images are installed on sensitive white board where they are easy to pair and also provide opportunities for students' interaction. Smart phones and smart boards are collaborative learning software. They are compatible with other software for example power point and MS word etc

Internet of things includes many tools that are easy to pair with internet so tablet are also considered revolutionary platform for education. it provides easiest way to interact with peers.

Tablets are new ways of teaching for teachers and learning for students. Tablets are replacing traditional speaking tools with latest methods and keep students engaged in different activities, while many people have a positive view towards use oftablets in class rooms, in this regard there are many ways to explore teachers' perception for tablet

5. RESEARCH METHODOLOGY

This study was conducted at higher education institutions, where random sampling was used and sample size of 386 respondents all were the faculty members sample was selected by using table. Entire study is quantitative where results are given in statistical formation,

ISSN: 2366-1313

primary as well as secondary data was used here to understand impact of internet of thing on education and learning level of students at university level positivism as a philosophy is used and reality is justified on scientific parameters. This study used reliability statistic, regression and Pearson correlation. Factors Smartphone, smart board, laptop and tablet were computed through SPSS and designed independent variable as internet of things.

ISSN: 2366-1313

6. RESULTS

IOT provides modern instructional perspectives that concentrate on students' application of technology. IOT aims to provide students with holistic learning using state-of-the-art technologies to train them for a future where adaptability is essential. The IoT-IS in smart education utilizes Psychometric methods in smart training resources that improve teachers' communication capabilities in higher education with significant teaching requirements. The IoT-IS uses active learning techniques to enhance students and teachers' cognitive skills using the interactive system. Attention scoring method and student performance calculation to analyze student learning skills and engage in higher education studies. The experimental results show that the technique enhances the student performance ratio of 98.5%, an accuracy ratio of 95.3%, an efficiency ratio of 96.7%, a reliability ratio of 93.2%, and a probability ratio of 94.5% compared to other existing methods.

7. CONCLUSION AND DISCUSSION

In this study it is concluded that IoT is necessary to move along with digital world in all sectors. IoT is new technology based tools that have connected variety of devices around us and it has made world as a global village. Computers, laptops, Smart phones, tablets, white boards and many other tools are became easy way of communications that save our time in doing different things nowadays. We are connected with world. IoT are not only devices but that have done ease in work and handling various issues. Even in education sector IoT has made revolutionary change and universities are equipping themselves with IoT to provide easy safe and fast education to the people. For this quantitative approach of study was adopted where descriptive, reliability, regression and Pearson correlation techniques were applied. Laptop, smart phone smart board and tablet were computes under the title of IoT variable later its impact, variance and relation was seen. Sample of 386 teaching staff was selected to acquit data; all hypotheses were accepted as shown in above results. Teaching staff encouraged the prime mister laptop scheme and shown their opinion on it. They told laptop has brought effective change in enhancing education and learning level of students, they also shown their concern regarding smart board. The study ascribed that there is need to equip university with latest technologies as to foster the education.

Thousands of students enroll in universities each year. However, only half of these students are graduating. Therefore, the majority of students want to leave. If this trend continues, millions of students could drop out each year, disrupting their careers. As a result, teachers are looking for alternatives to traditional teaching methods to place students in institutions. Educational institutions can use state-of-the-art technologies such as IoT to provide an interactive learning experience. The Internet of Things is basically a network of different software, electronic devices and multiple devices that are interconnected with a variety of network-based connections, exchanging and compiling all kinds of information. Smart classrooms powered by the Internet of Things will be realized in the near future. Smart classrooms can integrate many IoT sensors and gadgets to improve the quality of education. For example, wearable devices can help students determine if they are tired or out in the classroom. Based on these statistics, teachers can decide whether to summarize or rewrite the speech. The use of Internet of Things education also contributes to the development of the Whiteboard Internet of Things. These whiteboards can be connected to a computer and provide an interactive display that you run with your finger, pen, or stylus. Such a whiteboard also records all notes recorded in class. In addition, the classroom may include a smart microphone to indicate that the professor has announced his homework and updated the student planner based on the deadline.

ISSN: 2366-1313

Routine tasks (such as keeping track of student attendance) can be part-time. With the advent of the Internet of Things in education, professors can be aware of automatic presence. You can use IoT devices to search for students in the classroom and notify parents if they are not present. With the help of these devices, teachers can use their smart phonesto see how many

students are in the classroom. These IoT solutions can also be integrated with internal systems to update attendance records in real time. In this way, teachers can automatically maintain attendance records, and remove barriers to human error.

Educating students with disabilities can be a complex task. However, the use of the Internet of Things in education helps teachers to understand students with disabilities. For example, hearing-impaired students may wear gloves on their laptops and smart phones. These gloves and your Smartphone can work together to translate sign language into sound. In this way, teachers can improve communication with students and get feedback on their teaching methods. In this way, teachers can provide their students with the best sign language education. Many students travel abroad for better education and professional opportunities. However, not all students who want to study abroad have the resources. These students have to compromise for their education. In addition, many developing countries cannot offer academic and professional opportunities in courses such as astronomy, quantum mechanics, and artificial intelligence.

The Internet of Things has the potential to be an important educational driver for students around the world. Students can relax at home and interact with teachers and other students around the world. Digital highlighters and smart whiteboards can transfer class notes to smart phones, laptops and desktops. Thus, the introduction of IoT in education can make many curricula and many educational opportunities more accessible.

School shootings are not uncommon in Pakistan. Many students and their parents are upset at school and college. Educational institutions must ensure the safety of students before the government can come up with effective solutions to prevent school shootings.

The Internet of Things helps educational institutions implement more effective security protocols. With the help of smart cameras in collaboration with the Internet of Things, you can monitor suspicious activity on school or university campuses 24 hours a day, 7 days a week. If the camera encounters malicious activity, it will notify school and university staff and law enforcement. Smart cameras can also use facial recognition to identify strangers. For this reason, institutions need to collect photographs of all students, faculty, staff and professors. Smart cameras use this data to detect potential intruders and protect the park.

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