Internet of Things (IoT): Web learning for smart school system

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Abstract. The Internet of Things (IoT) which is known today has grown rapidly, the integration of each object can be connected via the internet. With the sophistication of the IoT system also has an impact on the world of education which is currently still using manual systems, smart technology owned by IoT has changed the existing system. The purpose of this paper is to analyze and collect data about IoT that is currently developing at school. IoT can be used as a learning management system where web-based learning is the main focus. The method used is a literature review from journals related to IoT, web learning for smart school systems. The findings obtained are the integration of IoT with web-based learning, namely administrative services, service management, data analysis and learning services. These results can be used in education.

1. Introduction
IoT is the interconnection of everyday objects in a network that is provided with a colossal level of intelligence. IoT has increased the use of the Internet massively by integrating every object for interaction through embedded systems that end up in a network of devices that are highly spread communicating with humans as well as electronic devices that support the web [1].

IoT has emerged as the next big thing on the Internet. It is estimated that billions of objects or physical objects will be equipped with various types of sensors and actuators and connected to the Internet through heterogeneous access networks made possible by technologies such as sensing and embedded movement, radio frequency identification (RFID), wireless sensor networks, real-time web services and semantics, etc. [2]. IoT is not a single technology; Can be the convergence of heterogeneous technologies associated with different Engineering domains that will be used to connect all objects through the Internet for remote sensing and control [3].

The learning management system does not provide special tools for teachers to track and grade students as a whole, all activities carried out by students to assess the structure and content of learning materials as well as concerns in the learning process [4-6].

2. Method
This study uses a systematic review that aims to help the writer map the study systematically. Systematic reviews are valuable information, where the authors must summarize and analyze scientific literature reviews that can be used as a reference for further research [7,8]. Literature search is limited to search engines such as Google Scholar, IEEE, scanned with the keywords internet of things, web learning and smart systems. Articles collected consist of a range of years 2012-2019.
3. Result and discussion
The results obtained from this literature review that the integration of IoT with electronic-based learning is widely used on technology platforms. Such as big data structures, learning management systems, databases, etc. are then connected with IoT equipment consisting of hardware and software components, learning components and sensor networks. Internet of things (IoT) supports connectivity for smart space that comes from dynamic discovery and interaction between smart objects and the resources available in them [9-11].

There are additional features included in the learning management system. From this framework can help students who have visual limitations to learn easily within the scope of the learning management system [12]. Following is the IoT-based smart school system scheme:

![Scheme IoT with e-learning platform](image)

Figure 1. Scheme IoT with e-learning platform [13].

In Figure 1. is an IoT integration scheme with an electronic based learning platform, where the e-learning platform consists of the use of a learning management system, database, identification management which is then integrated with the Internet of Things infrastructure including sensors, actuators, microcontrollers [13]. The IoT platform must include a variety of services that can be developed, this integration allows gathering information about students and schools and using these services in various contexts.

Learning management systems are basically cloud or server based software applications. Platform that includes management control, data analysis, web learning, virtual based learning services [14]. An efficient learning management plan based on cloud computing for learning can advance student interaction.

Learning management systems provide a different look and feel with access control, in some applications adjust to existing procedures, databases, and interactive learning [15].

4. Conclusion
It can be concluded that the use of IoT in education can be done in various ways, the emergence of IoT is able to bridge the machines that produce data by utilizing sensors, in mobile devices and other smart devices to collect information in real time. All data collected will be analyzed and used to make decisions and develop relevant services.
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