Motivation And Learning Outcomes Through The Internet Of Things; Learning In Pesantren

by Chusnul Muali

PAPER · OPEN ACCESS

Motivation And Learning Outcomes Through The Internet Of Things; Learning In Pesantren

To cite this article: Agus Syakroni *et al* 2019 *J. Phys.: Conf. Ser.* **1363** 012084

View the article online for updates and enhancements.

Motivation And Learning Outcomes Through The Internet Of Things; Learning In Pesantren

Agus Syakroni[1], Zamroni[2], Chusnul Muali[3]*, Hasan Baharun[3], Muh Zainuddin Sunarto[3], Bisri Musthofa[4] and Muallim Wijaya[3]
[1]Faculty of Tarbiya, Institute of pesantren Mathali'ul Falah, Pati, Indonesia
[2]Faculty of Tarbiya, IAIN Samarinda, Borneo, Indonesia
[3]Faculty of Islamic, Nurul Jadid University, Probolinggo, Indonesia
[4]Postgraduate Program, State University of Malang, Indonesia

*yayahdaddy@gmail.com

Abstract. This research began with the G´omeza concept in 2013 which offered the development of IoT in learning. In 2016, it was continued by Amin Bakri who designed the concept of IoT in learning for students in Indonesia. The researcher brings both concepts in the domain of religious education which is commonly applied in Islamic boarding schools. In accordance with the purpose of this study, knowing the significance of motivation and student learning outcomes in learning in boarding schools. In this case, the researcher chose Nurul Jadid Islamic boarding school as the object of research with the consideration that information and communication technology had become part of the pesantren. The subjects in this study were Nurul Jadid boarding students from all levels of education. The results of the study show the significance of changes in motivation and student learning outcomes after being subjected to learning with the IoT concept.

1. Introduction

Technology and education are two things that are not separated. In the implementation of distance education, learning material does not use paper anymore, and transformed in electronic form, such as HTML and PDF, and then presented online. This is due to allegedly multimedia technology to improve the quality of learning because it has a principle interactive, attractive, and capable of providing motivation to learn [1]. Therefore, a lot of research is developed with the aim that technology can provide benefits for the implementation of learning.

Learning with technology, such as e-learning and m-learning, has provided many benefits and conveniences in learning, including effectiveness, flexibility, consistency in delivering material standards, and so forth [2]. However, there are limitations. Research shows that the use of technology assistance in learning requires the user's understanding of technology, expensive technology access costs, and other problems [3].

This paper proposes the potential of the Internet of Things (IoT) in the context of education and learning through a literature study of some literature on IoT, along with opportunities to be implemented in education in Pesantren. Although labeled religious education, pesantren also have the same learning. At present, Pesantren are religious education institutions [4], have accepted the development of modern

technology in the learning process. The discussion in this paper is intended to identify the potential possessed by IoT technology, especially those related to the use of technology in education in Pesantren. The results of this discussion are expected to provide inspiration in developing effective and efficient educational technology in education in Pesantren.

2. Experimental Design

The concept in this study was tested on students at the Nurul Jadid Islamic boarding school in East Java Indonesia. This experiment was carried out for six months, with the plan that has been designed by teachers. This activity is selected for the students trouble understanding the material taught in schools. The purpose of this study was to determine the learning with the IOT have a significant impact in the form of motivation and learning outcomes of the material taught in the boarding school. Evaluating this change, students were divided into two groups with 25 students in each group, a control group consisting of students with conventional learning and an experimental group that worked with IoT.

The researcher designed two different tests consisting of questions about cognitive goals as described previously. The average is obtained in tests, ranging from 0 to 5, which reflects the knowledge gained by students. To measure improvements in learning, researchers provided the same tests for both groups. The first test, the pre-test, evaluates the prior knowledge of the student (before entering the learning unit) and the second test, the post-test, is used to evaluate students at the end of the unit.

3. Results and Discussion

3.1 Internet of Thing; an Opportunities in Education

IOT is a revolution that represents the future of information and communication technologies. Stage of development depends on the dynamics of innovation in various fields, from wireless sensors to nanotechnologies. This technology is designed to connect various types of objects and devices in a large network and database. Objects and devices are identified with technology, such as RFID (Radio-frequency identification). Each object is embedded into the intelligence system to empower the power of the network by processing the information needed. The entire system is minimized using nanotechnology, allowing various types of objects in this world to be intelligently connected.

Intelligence technology transforms each object into a 'smart object' that can make its own decisions to respond to its environment networked. This technology will produce a variety of intelligent devices and equipment. IoT will realize the vision of a network environment that is fully responsive and interactive. The following picture adapted from Bakri shows the scheme of realization of IoT ideas starting from ideas and research to turning into products and penetration into the market [5].

The interrelationships between research and development, production stages, and markets, that are the place for the commercialization of products as well as the drivers of sustainable research.
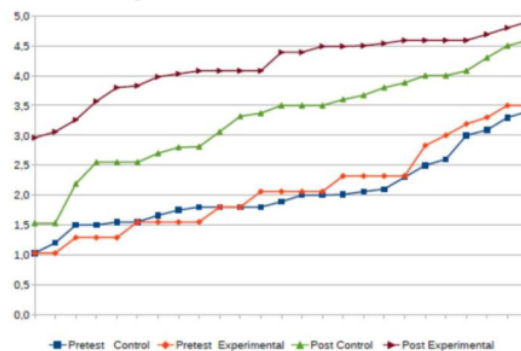

Figure 1. Score of Control and Experiment Groups [6]

Based on this, IoT will create a new atmosphere for change. The internet has triggered the information revolution, will expand massively [7]. Real-time communication is unlimited, anytime and anywhere. Education as an important sector in life has become the field of application of the Internet of Things. Information and communication technology (ICT) has a positive impact on education, especially in terms of improving the quality of learning. ICT is considered capable of improving learning to be dynamic, interactive, and display interesting content. ICT also has the potential to accelerate, enrich, and deepen skills; motivate and inspire learning; help institutions manage learning; improve employee competency; and assist educational institutions in a relationship with the outside world [8].

The idea of connecting intelligent networks managed through the web and interaction with humans is in accordance with the evolution of e-learning, m-learning, and ubiquitous learning technology. IoT can be applied to support the learning process by optimizing communication and interactivity. Opportunities for IoT applications to improve the quality of learning and education are the fields of mobile learning, smart object, gamification, and virtual world. With the concept of IoT, the implementation of mobile learning will have a better ability to interact with learning objects, anytime and anywhere. Likewise, the concept of gamification and virtual world-based learning will be more alive and real, so the learning process will also be more effective, challenging, and fun.

The concept of IoT began to be applied in education. Include learning in pesantren, interactive with sound and visual sensors to capture student pronunciation. According to Wang, the Internet has motivating and pleasant characteristics, as well as teaching students according to their respective talents. Teachers can choose teaching materials according to student characteristics, and students can learn according to ability, they are not limited by a learning program that must be followed by all. In general, IoT makes students learn in ways that are better, interacting and fun with other learning media [6].

Based on the results of a review report on the integration of technology in institutions in America, Yusuf, Culp, Honey and Mandinach (2003) propose three reasons for the use of ICT in education, namely; (1) tool; (2) agents of change; and (3) strength in economic competitiveness. ICT has the capability in terms of dissemination, management, and support for effective learning processes, especially useful for audiences spread over a very wide geographical area, and related to complex data. ICT has become a catalyst in changing methods, content, as well as various improvements in the quality of learning, oriented towards the constructivist-inquiry learning approach. ICT provides an opportunity for institutions to develop IT-based leadership and management strategies, to produce efficiency and improve quality, through ICT-based research and development integration [8].

3.2 Transforming Education in Pesantren
In addition to historical aspects, Pesantren have an important role in efforts to increase human cognitive abilities. At the time appeared, it is an institution with a pattern of open learning, the teacher read, translate, and explain and students listen. This learning is focused on the evaluation of the success of the system used, to determine student mastery on the teacher's knowledge. There are differences in student time. This evaluation model has been applied for many years.

Pesantren have made innovations in learning. Islamic boarding schools in the era of globalization are pesantren that can modify the needs of the community with the aim of pesantren as a fostering and empowerment institution for the people. To realize, the pesantren must contradict the paradigm used and make updates on its shortcomings [9]. There are three major paradigms of knowledge. First, the paradigm of science, knowledge gained by reason and senses such as *Fiqh*; second, the logical paradigm is knowledge with abstract objects such as philosophy; and third, the mystical paradigm obtained by taste. During this time the pesantren only provided students with the first and third paradigms. For this reason, Islamic boarding schools today incorporate a logical paradigm so that knowledge can be given to students.

Characteristics of pesantren in the future, integration of science and technology, competitive, moral and pluralism. Pesantren are ideally active towards the development of science, competitiveness, even though maintaining moral formation is a great achievement of pesantren. If this concept is carried out, the pesantren will be more developed and credible in the community [10].

Islamic boarding schools in the era of globalization must be able to design curriculum based on market needs to produce outcomes that are easily absorbed by employment and able to answer the challenges of the times. The most severe challenge of modernity is the shift in values and morals that stem from the flow of globalization and the high number of consumerism and community dependence on modern technology products. Modern Islamic boarding schools have at least several characteristics, including: the explosion of science and technology, based on strengthening religion and morals, as well as tolerance and pluralismsme.

3 Conclusion

With the advancement of information and communication technology, the Internet of Things has great potential to be utilized in supporting effective learning processes, including learning in pesantren. The characteristics of the Internet of Things (IoT) capable of increasing interactivity and intelligent response between objects, are sufficient capital to contribute to the teaching and learning process, especially in increasing interactivity between learning participants and learning objects, among fellow learning participants, and between learning objects. The research conducted by G´omeza at.al successfully demonstrated that the use of internet objects in a learning process was able to provide a significant increase in motivation and learning outcomes. Further research is very likely to be done, especially in optimizing learning in pesantren through simulation, virtual, mobile, and gamification with the help of the Internet of Things.

References

[1]   M. D. Sankey, D. Birch, and M. W. Gardiner, "The Impact of Multiple Representations of Content Using Multimedia on Learning Outcomes Across Learning Styles and Modal Preferences," *Int. J. Educ. Dev. using Inf. Commun. Technol. (IJEDICT), 2011,* vol. 7, no. 3, pp. 18–35, 2011.

[2]   S. Z. and S. U. Vera Septi Andrini, Punaji Setyosari, "The Effect of Flipped Classroom Model through Handout and Virtual Approaches on Learning Outcomes for the Students of Universitas Terbuka Who Have Different Level of Motivation and Learning," *Glob. J. Pure Appl. Math.*, vol. 13, no. 7, pp. 3145–3156, 2017.

[3]   C. Muali, S. Islam, M. El, and I. Bali, "Free Online Learning Based On Rich Internet Applications ; The Experimentation Of Critical Thinking About Student Learning Style Free Online Learning Based On Rich Internet Applications ; The Experimentation Of Critical Thinking About Student Learning Sty," *J. Phys. Conf. Ser.*, vol. 1114, pp. 1–6, 2018.

[4]   M. Ilyasin, "PENINGKATAN KUALITAS MANUSIA MELALUI KNOWLEDGE SHARING AND CYBER COMMUNITY," *J. Pedagog.*, vol. 05, no. 02, pp. 180–192, 2018.

[5]   M. A. Bakri, "STUDI AWAL IMPLEMENTASI INTERNET OF THINGS PADA BIDANG PENDIDIKAN," *J. Electr. Electron.*, vol. 4, no. 1, pp. 18–23, 2016.

[6]   G. Jorge, J. F. Huete, O. Hoyos, L. Perez, and D. Grigori, "Interaction System Based on Internet of Things as Support for Education," in *The 4th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN-2013)*, 2013, vol. 21, pp. 132–139.

[7]   S. Islam, H. Baharun, C. Muali, and M. I. Ghufron, "To Boost Students ' Motivation and Achievement through Blended Learning To Boost Students ' Motivation and Achievement through Blended Learning," 2018.

[8]   M. O. Yusuf, "Information and Communication Technology and Education : Analysing the Nigerian National Policy for Information Technology," *Int. Educ. J.*, vol. 6, no. 3, pp. 316–321, 2005.

[9]   M. S. Suib, "SINERGITAS PERAN PONDOK PESANTREN DALAM PENINGKATKAN

INDEK PEMBANGUNAN MANUSIA (IPM) DI INDONESIA," *J. Islam Nusant.*, vol. 01, no. 02, pp. 171–191, 2017.

[10] A. Fauzi, H. Baharun, A. Mundiri, and U. Manshur, "E-Learning in Pesantren : Learning Transformation based on the Value of Pesantren E-Learning in Pesantren : Learning Transformation based on the Value of Pesantren," *J. Phys. Conf. Ser.*, no. 1114 012062, pp. 1–6, 2018.

Motivation And Learning Outcomes Through The Internet Of Things; Learning In Pesantren

ENVIRONMENTAL VARIABLES IN URBAN
AREAS"", Procedia Computer Science, 2017
Publication

8   bmcmededuc.biomedcentral.com
    Internet Source   <1 %

9   eudl.eu
    Internet Source   <1 %

10 infonomics-society.org
    Internet Source   <1 %

11 A. Staneva, T. Ivanova, K. Rasheva-Yordanova,
    D. Borissova. "Gamification in Education: <1 %
    Building an Escape Room using VR
    Technologies", 2023 46th MIPRO ICT and
    Electronics Convention (MIPRO), 2023
    Publication

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	On		