THE MACHINE GAME AUTOMATIC FOR
READING SKILL USING INTERNET OF THINGS

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Abstract

The machine game automatic for reading skills via the Internet of Things as a self-learning activity has been helping students to read and improve their reading skills. This research aims to find the machine's effectiveness via IoT's overall satisfaction. Thirty students were randomly selected from the 23 school networks. The pretest was their reading skills before introducing the self-learning activity package followed by a posttest and a satisfaction questionnaire. The t-tests were used to analyse the data. E_1/E_2=82.25/81.56 as the hypothesis, the average percentage of study scores (E_1) = 82.25 and the average rate of a posttest (E_2) = 81.56. Analysis results can see in the posttest (M=17.61, SD.=1.55) shows that the reading skills of the students improved significantly from the pretest (M=15.44, SD.=0.89), t (4.07) =17.61, p<.05., and Sig.(2-tailed=0.0025). The total average for the satisfaction of learning disabilities equals 4.80 with a standard deviation equals 0.50. They were satisfied and found the self-learning activity via machine useful.

Keywords: Automatic, Internet of thing, Machine game, Reading skill.

1. Introduction

Most studies published the impact of collaborative learning between educational-support robots and healthy children. But, because the number of children with developmental disorders in primary schools has increased, it is important to develop educational-support robots. Therefore, a recent study develops a robot for teaching children with developmental disorders. But, it was not supported by educational system for children with potential symptoms of a developmental disability (known as "grey zone").

This study demonstrated and evaluated effects of collaborative learning between robots and grey zone children. These children have symptoms similar to Autism Deficit Hyperactivity Disorder and learning difficulties over long periods. The machine game is designed to work with the Internet of Things (IoT) method and interacts with children in real-time. Children with learning disabilities can neither see nor touch the elements of their subjects.

When teachers showed abstract concepts into vocationally based learning, there can be erroneous notions about the concepts taught in class when only traditional materials are available. The classification is similar, distinguishing between cognitive, technical, and behavioral skills. Some of all three skills required for nearly all jobs, the different skills vary across readings [1]. Due to the fewer skills learned, teachers should ensure that their abilities are functional to the student's present and future environments [2].

There are many complex skills that students with intellectual or multiple disabilities may not acquire because of the complexity of the skills. The complex skills can be learned but will take a longer time and effort. Forgetting and recoupment of many students who have received talents will decrease that skill's performance if they do not use it for some time [3]. Most intellectual or multiple disabilities have difficulty transferring or generalizing a skill from one context to another [4]. They may require instructions in each of the environments where the gift will be used. The machine game for reading skills via IoT uses the ESP8266 board to write the code to control the machine game for reading skills via IoT learned in several contexts to use in a new context [3]. The machine game uses an Arduino board and Node MCU 8266 for control in reading. Aptitude to develop reading skills for learning disabilities students will commonly identify the learning and performance characteristics.

The objectives of the study were to find the efficacy of the machine game for students' reading skills development, to compare students' achievement between pretest and posttest on the machine game for the students with learning disabilities, and to assess the student's satisfaction with the machine game. The hypothesis was the efficacy of the machine game for students with learning disabilities reading skills development is E_1/E_2 =80/80. Students studying with the machine game for development in reading skill have higher or lower achievement than pre-learned from the machine game with statistical significance at 0.05. Students' satisfaction level with the machine game is higher.

2. Prediction of the machine game automatic for reading skills via IoT

The mechatronic helps create this machine game via the Arduino code and Node MCU 8266 control. The control theory for mechatronics engineering is related to the synergistic combination of electronics, mechanical, computer engineering, control, and the critical factor being the integration of these areas. The structure of the machine game for reading skills via IoT describes in Fig. 1. The mechatronic control engineering specialization covers the fundamental scientific principles and technologies used in the

design of modern computer-controlled machines and procedures, and also it focuses on the synergies in the design process.
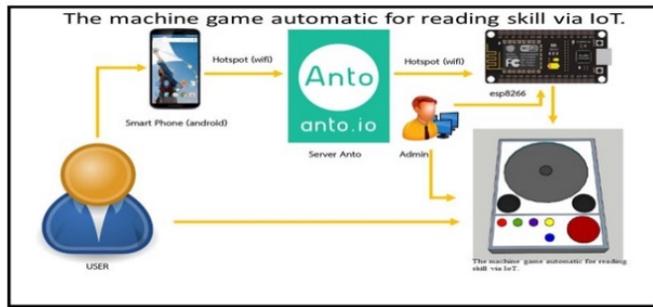

Fig. 1. Structure of the machine game for reading skills via IoT.

3. Method

The research sample involved thirty students with learning disabilities that were randomly selected from the 23 school networks. The students registered for the self-learning activity via machine game. The variables independent are a machine game for students with learning disabilities reading skills development. Also, the dependent variables are the efficacy of the machine game for development in the reading skill of students with learning disabilities, the student's achievement, and students who are satisfied with the machine game for development in teaching disabled students. Data amassment experimented with the researcher. A specific selection chose the sample one group for the pretest-posttest design learning. Statistics and amassment data after the experiment and calculation E_1/E_2 for the mean (x) and then compared. Arrangement for the experimental model by offline and online in the process for students' self-study, the researcher puts some data amassment. Based on cooperation with 23 the school networks, the reading skills for learning disabilities were planned by analysing the course, the course objective, determining the behavioral purposes, and analysing students' condition. Process learning by using the machine game for students with learning disabilities reading skills development conducted in three steps.

3.1. Conceptual framework.

The conceptual framework in this study is divided into two main sections, namely independent and dependent (see Fig. 2).
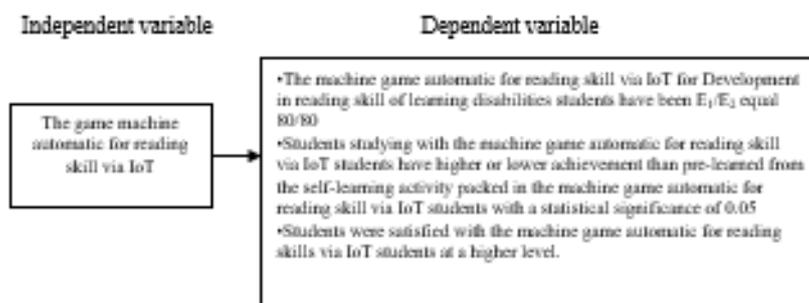

Fig. 2. Conceptual framework the machine game automatic for reading skills via IoT.

3.2. Data analysis.

The statistics used to analyse data to find the efficacy of the machine game for students' development in reading skills by E_1/E_2. To compare the achievement of students, it was scrutinized between pretest and posttest on the machine game of Arduino board via Node MCU 2866. To assess students' satisfaction in the machine game, was conducted using the mean and standard deviation.

4. Results and Discussion

4.1. The efficiency of the machine game in reading skills.

The efficiency of the machine game by Arduino board via Node MCU 2866 can be enhanced by practicing reading skills and developing reading skill for students with learning disabilities. The analysis results are the machine game in reading skill aptitude for learning in developing the reading skill for students with learning disabilities with pretest and posttest. The research found that the machine game in reading skills can be learned, and the development of the reading skill based on the average criteria equals 82.25/81.56. The efficiency of the students after the study is higher than before the course, with the average equal 15.44 and stand vision equals 0.89. The standard after the study equals 17.61 with a standing vision equals 1.55, t-test equals 4.07, which is different significantly on statistics at the level 0.05 and Sig. (2-tailed=0.0025). Students' satisfaction on the machine game in reading skills equals 4.80 with a standard deviation equals 0.50.

4.2. The PID term is achieved with gain, and respectively.

The PID algorithm guarantees all control sensors and controls the sign of the word and sound. Node MCU controls via Wi-Fi. The process is the machine's set point knowing which word to stop when they see the sensor and take timing when students push the stop button, and students can control themselves. Students were in secondary education. PID parameter will control the D.C. motor position via an encoder. The automatic machine game for reading skills via IoT is used and the block diagram [5]. The PID term is achieved with gain and respectively as displays in Fig. 3. The PID term is achieved respectively.
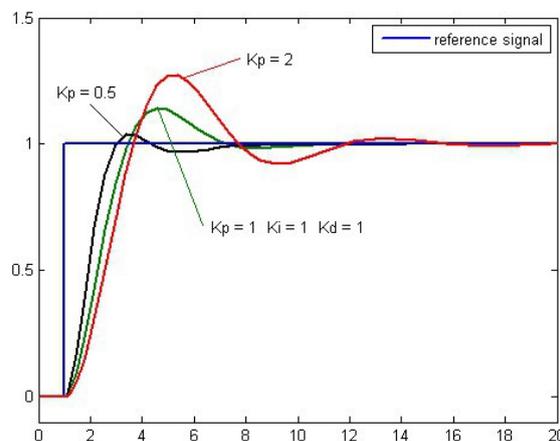
Fig. 3. The PID term is achieved with gain and, respectively, of the machine game for reading skills via IoT.

The equation that forms this circuit explant to Kp, and it will change the proportion of the error value. The proportional response can be achieved by multiplying the error value by a constant. Ki is an integral extension. It is proportional to the error's size and the duration of the error. Kd is the rate of change of the process error and is calculated from the slope of the error.

4.3. The block diagram of the machine game for reading skills via IoT.

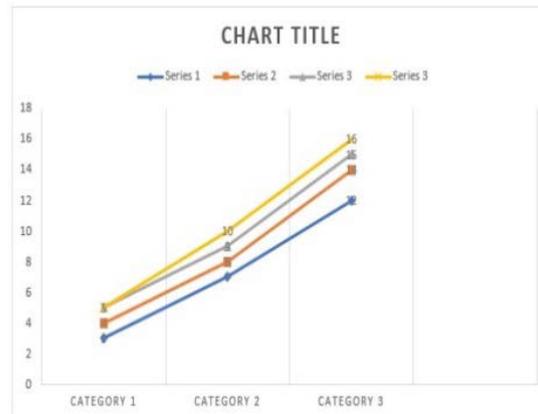Chart diagram of the automatic machine for reading skills via IoT is shown in Fig. 4

Fig. 4. The block diagram of the machine game for reading skills via IoT.

The precision from the calculations and the results were compared to available data in the structure of the machine game automatic for reading skills via IoT, as shown, and are selected for this purpose.

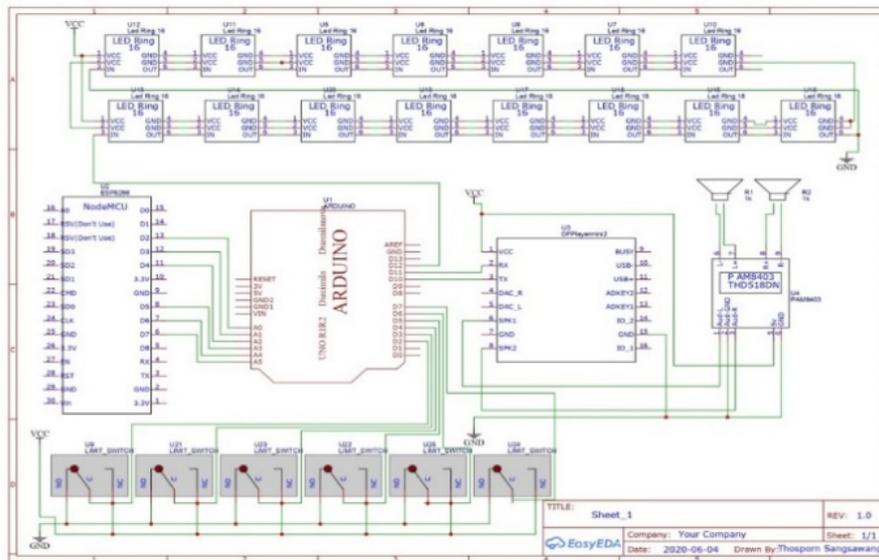### 4.4. Plant of the machine game automatic for reading skills via IoT.

The fundamental reason for applying IoT is predictive maintenance to manage your assets. Figure 5 describes the analytical methods and design charts used to predict the plant of the machine game automatic for reading skills via IoT.

4.5. Application IoT for control of the machine game via IoT.

This research also concentrates on machine game automation through IoT. This system is advantageous mainly in reading skills, word category, reading practices self-learning. The machine game can change memory cards and more word categories. It can be integrated into learning in the English word category and count numbers in Mathematics. Figure 5 describes the IoT application for control of the machine game via IoT. The communication via IoT will is infinite, and hence we get to control the devices from anywhere in the classroom. The internet-enabled microprocessor obtains data from the cloud, and the data is transferred from the android game.

The automatic machine game for reading skills via IoT uses the ESP8266 board to write the code to control the machine game automatic for reading skills via IoT [6]. The machine game uses the Arduino board in reading skills to develop the reading skill for students with learning disabilities. The respective data will be obtained, collected, and

transferred to the cloud services. Thus, the microprocessor can access this data, and the appropriate signals were sent to the appliances to match the Internet of Things (IoT).

Fig. 5. **Analytical methods and design charts used to predict the plant of the machine game automatic for reading skills via IoT.**

The research found that activities given gradually to develop the reading skills for students with learning disabilities results in learning and increases students' interest and enthusiasm in their studies. After the study, the student's efficiency is higher than before with the average equal *to* 15.44 with a standard deviation equals *to* 0.88. The average after the study equals *to1* 7.61, with a standard deviation equals *to* 1.55. The t-test analysis between before and after learning is equal *to* 17.61, which is different significantly on statistics at the level 0.05 and the satisfaction of the students towards the machine game by Arduino board in is in the average of 4.80 at the significant level.

The students have a high level of satisfaction, with an average of 4.07. Students have improved knowledge and enjoyment, including taking action and being willing and enthusiastic about their studies, and performing their work correctly. They were more organized in the workplace because everyone has practiced it, which helped them to learn as well as being able to learn independently. There is also a mutual exchange of knowledge that allowed students to develop according to their potential by having teachers plan, encourage, challenge, encourage, and guide the way to find the right knowledge.

When students learn with the machine game, they will get the metacognition, gain learning strategies, and become active students. It empowers them tremendously because they understand that thinking and learning are processes that they can control. The machine game is a learning strategy that helps the learner engage with, process, remember, or apply information. The machine game helps the learner engage cognitively. They can remember the word and have reading skills. IoT technology is utilized to incorporate information technology and network image processing to create a monitoring and warning system for collecting field information. The machine

game automatic for reading skills via IoT should be managed by following the constructivism theory.

The development of multimedia games in utilizing sign language for deaf children is the systematic development of instructional specifications. Then, to ensure instructional quality, they use learning and instructional theory. Now, the functionality of it has been shifted to electronic control as a machine game with electronic control features [7]. It is the process of analysing learning needs and goals and developing a delivery system to meet those needs. It includes instructional materials and activities and tries out an evaluation of all instructional and learner activities. The machine game automatic for reading skills via IoT should be according to Constructivism theory when using sign language should facilitate Self–Discovery Learning [8].

Game instruction is one of the solutions to overcome problems that occur in learning activities. Therefore, the machine game can be categorized as very good both in terms of material and media. The results of student response test results showed an average value of 79.35%, which means that the students are interested in the game developed, games can be used independently by students, and can increase learning motivation and students' learning outcomes [9]. The achievement cannot be separated from a collaboration between regular machine games and students. They play a role in conveying instructions to be simple and concrete. The educational media can make students with learning disabilities be more focused. During the learning activities, it is beneficial because the characteristics of students with learning disabilities are more likely to have short-term memories [10,11]. The machine game automatic for reading skills via IoT uses the ESP8266 board, writes the code to control the machine game automatic for reading skills via IoT. Transfers new knowledge such as the Tyndall effect in the colloidal system to them [12].

5. Conclusion

Automated game machines for reading skills through IoT as a self-learning activity have helped students to read and improve their reading skills. Comparing students who improved between pretest and posttest on machine games with mechatronics help make this machine play through Arduino code and reading skills of the MCU 8266 Node control. Broadly speaking, students were satisfied and found self-learning through machines beneficial.

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