

THE USE INTERNET OF THINGS (IoT) AMONG DIPLOMA GAMES ART STUDENTS OF SELAYANG COMMUNITY COLLEGE

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Abstract: Internet Of Things (IoT) means a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. Internet of Things has advantages such as information transmission, automation processing, data performance, security and time-saving. The use of some IoT applications has gained considerable attention from both industry and academia in recent years. Due to the rapid development of educational technology, IoT is increasingly being used in Malaysian education. In the learning and teaching (PdP) method, the Selayang Community College Diploma Games Art student has been exposed to this technological advancement. Therefore, this study aims to identify the level of IoT usage that has been used in Pdp by the students of the Selayang Community College Diploma Games Art. Overall, the results of the study show that students have agreed on the level of IoT usage used by lecturers for teaching and learning.

Kata Kunci: *Internet Of Things (IoT), PdP*

1. INTRODUCTION

The fast-paced development of the world has turned Malaysia into a digital world, the beginning of the Fourth Industrial Revolution (RP 4.0) is being warmly talked about now. The public and private sectors in the education sector as well as the community as a whole do not miss this trend. In this fourth revolution, many experts see that human duty will be replaced by robotic energy and the use of digital medium will be widespread [1]. As the World Economic Forum's founder and executive chairman, [2], pointed out that RP 4.0 is cyber-physical. In this system, the use of robots continues to increase in line with the development of Artificial Intelligence (AI) and the Multi-Purpose Internet (IPB; Internet of Things - IOT) that depict various devices, software, tools and so on. Hence, digital technology is increasingly seen as dominating today's daily life. It is not a new thing but it is a revolution in communication that controls the world.

Through the rapid development of RP 4.0 and there are some changes in the concept of teaching and learning (PdP) can be seen now. As a result, teaching and learning methods are now heavily influenced by the use of IT that can be seen through the development of digital education online (online). Learning is also not only focused on the lecture hall but can be developed through a virtual platform that serves as a medium of discussion, online forums and fields to conduct formative and summative assessments, [3]. With this, students and educators

need to be prepared and master the skills of using IoT in the PdP process, this also supports the [4].

1.1 PROBLEM STATEMENT

Students' academic excellence is often associated with teaching methods by lecturers as well as student learning styles, [5]. Learning and teaching using less effective methods indicates that students are less interested in learning, [6]. Manual usage and PdP assessment method requires high cost allocation to purchase equipment that is very costly to students. Students also have to spend a lot of time in the classroom to complete the assignment due to less efficient delivery of assignments.

1.2 RESEARCH QUESTION

The study is expected to answer the following questions:

1.2.1 Is the objective of using IoT among students of Diploma Games Art achieved?

1.2.2 What is the frequency of IoT usage among Diploma Games Art students?

1.2.3 What is the level of effective use of IoT among students of Diploma Games Art?

1.3 RESEARCH OBJECTIVES

Guided by the above questions, the objective of this study is to:

1.3.1 Assessing student knowledge on the use of IoT.

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1.3.2 Assess the use of IoT in learning and teaching with students in the classroom.

1.3.3 Assess the effectiveness of IoT usage

1.4 IMPORTANCE OF STUDY

The purpose of this study is to examine the effectiveness of Diploma Games Art students on the use of IoT. This study is expected to have implications for the improvement of the level of teaching and teaching of lecturers at the Selayang Community College for all programs.

2. LITERATURE REVIEW

2.1 Knowledge of IoT

Industry 4.0 covers the discovery of new technologies such as automation, Internet of Things (IoT), analysis and big data, simulation, system integration, robotic and cloud utilization that will spur modern world landscape, [7] Industry 4.0 or Fourth Industrial Revolution, university students must be out of habit. It underscores the importance of the 4C element control of Critical Thinking & Problem Solving, Communication, Collaboration and Creativity at all levels of study, including in ivory towers. If at Higher Level of Thinking Skills (KBAT) school becomes pulse, university students do not want to be silent, [2].

2.2 Frequency Using IoT

The backbone of Information and Communications Technology (TMK) which is a backbone of computer systems and networks has created a learning and learning environment (R & D) using digital learning materials or digital learning materials. It can facilitate the process of delivering information as well as affect the achievement of students. The increase in teaching at universities or educational institutions depends on 'multiple media', which is a fair balance of pedagogical values learned and also through the trust of learning technology, according to [8], Hence, to support the 2050 Transform, through the budget tabled by the Prime Minister has also supported by establishing a center of Science, Technology, Engineering and Mathematics for the purpose of developing the latest learning method.

2.3 Effectiveness of Iot Use

Throughout the last decade, traditional learning processes are increasingly gaining momentum with evolving current world development through the use of technology. The revolution in learning and application of computer education as well as the use of computers in education is still new and evolving from day to day so ultimately the technical guiding concept of ELearning is introduced to provide

educational knowledge to students in an effective way, [9]. The study also showed that deaf students were also more easily communicated using padlets, one of the mediums in IoT, [10] Computers and Internet technologies help to enhance individual learning and development capabilities. Online learning and multimedia projects can provide everyone with the opportunity to continue teaching and learning activities in various ways. In fact, this method helps the society towards a wider range of information sharing systems, [11].

3. RESEARCH METHODOLOGY

The focus of the research methodology is to discuss the research approach. Generally, this study is quantitative and findings from the survey will discuss the data analysis method and the results obtained from the distribution of survey forms conducted by researchers. It started with the distribution and collection of survey forms, data analyzer procedures, respondents backgrounds (demographics) and question analysis to respondents. All the data obtained were analyzed using SPSS version 22.0 software.

3.1 Population and Sample of the study

Population and sample study consisted of 35 students of Diploma Games Art at Selayang Community College.

3.2 Question Item Construction

The questionnaire was distributed to the students using the nominal scale of the Ya or No choice and 5 likert scale as the instrument of study. The nominal scale and likert scale are used to determine the level of validity of the items constructed and to ensure the respondents have the right choice of answers with the questions raised. All the items contained in this questionnaire are constructed by researchers based on the fact of past study and the relevance of the title. The questionnaire distributed was divided into four sections, ie the respondents' background, knowledge of IoT, frequency of IoT and the effectiveness of IoT usage, which covered 33 questions as a whole. Table 1 refers to the relationship between factor and number of items.

Table 1 The Relationship Between Factor And Number Of Items

| Part | Factor | No. item | Gauge |
|------|----------------------------|----------|-----------------|
| 1 | Demographics | 2 item | Percentage |
| 2 | Knowledge of IoT | 12 item | Nominal Scale |
| 3 | Frequency using IoT | 11 item | Likert Scale1-5 |
| 4 | Effectiveness of using IoT | 10 item | Nominal Scale |

4. ANALYSIS AND FINDINGS

Generally, the whole data obtained from the survey form was analyzed using descriptive analysis by finding the frequency, percentage and mean that was adapted from [12].

A total of 35 respondents of the students were analyzed. The following is an analysis of the respondents' background analysis (table 2). Respondent selection is among the students of Diploma Games Art who are still active at Selayang Community College. Respondents aged between 15-20 years old were the most respondents in the study, which consisted of 18 (51.4%), 17 (48.6%) representing 21-25 years.

4.1 Part 1 Analysis: Respondent Background

Table 2: Analysis of Respondents Background

| Profile | Category | Frequency | Percentage |
|---------|--------------|-----------|------------|
| Age | 18 - 20 year | 18 | 51.4% |
| | 21 - 25 year | 17 | 48.6% |
| | Total | 35 | 100% |

4.2 Min Score and Percentage Analysis

The findings were from the survey form which was conducted to the respondents. The mean score analysis was used by researchers to answer the questionnaires presented in sections

2, 3, and 4. The data obtained were analyzed to obtain the mean value of each part. The results of the analysis show the overall mean score and percentage for each of the factors that influence the effectiveness of IoT use among students.

4.2.1 Table 3 Total Descriptive Interpretation For Every Factor

| Part | Factor | N | Min (M)/percentage | Level |
|------|--------------------------|----|-------------------------|-------|
| B | Knowledge of IoT | 35 | Yes, 74.3% No, 25.7% | High |
| C | Frequency using IoT | 35 | 3.90 | High |
| D | Effectiveness use of IoT | 35 | Yes, 83.7% No, 16.3% | High |

Table 3 shows the total number of descriptive interpretations for each of the factors involved in the survey form. The analysis found that all the factors involved had a mean value

of 4.30 against the frequency using IoT and the percentage agreed that more than 74% of respondents had IoT exposure, and 92% agreed with the effectiveness of IoT usage.

4.2.2 Table 4 Descriptive Analysis for Knowledge Factors on IoT

| No. | Item | N | Percentage | |
|-----|---|----|------------|--------|
| | | | Yes | No |
| 1 | Features a personal computer / laptop | 35 | 94.3 | 5.7 |
| 2 | Using smarphone / smartphone | 35 | 100 | 0 |
| 3 | Using a browser (ex: google chrome, Mozilla, bing, internet explorer) | 35 | 100 | 0 |
| 4 | Have early exposure on Iot before going to college | 35 | 60 | 40 |
| 5 | Use the cloud application (online storage) on the internet | 35 | 68.6 | 31.40 |
| 6 | Use google docs for data storage | 35 | 60 | 40 |
| 7 | Using padlets for data storage | 35 | 71.4 | 28.6 |
| 8 | Ever had a problem with Iot for data storage | 35 | 0 | 100 |
| 9 | Using Iot in classroom learning | 35 | 100 | 0 |
| 10 | Know to use IoT | 35 | 82.9 | 17.1 |
| 11 | Use one of the cloud or collaboration learning (padlets) in the classroom | 35 | 82.9 | 17.1 |
| 12 | Answering quiz questions by using google form online | 35 | 71.4 | 28.6 |
| | Average Min | 35 | 74.30% | 25.70% |

Table 4 shows the findings obtained by students' exposure to IoT are very high with a percentage value of 74.30%, through

this finding that respondents have been exposed and know the objective of IoT use for classroom learning methods.

4.2.3 Table 5 Descriptive Analysis for Frequency Factor Using IoT

| Bil | Item | N | Min |
|-----|---|----|-----|
| 1 | Frequently using IoT | 35 | 3.9 |
| 2 | Uses IoT for data storage | 35 | 3.8 |
| 3 | Using IoT to facilitate learning | 35 | 4.1 |
| 4 | Can download task questions via IoT | 35 | 3.8 |
| 5 | Interact with lecturers via IoT for job assignments | 35 | 3.6 |
| 6 | Use IoT for job assignments and projects. | 35 | 4.3 |
| 7 | Advanced to use IoT for learning | 35 | 3.9 |
| 8 | IoT helps a lot in learning | 35 | 3.9 |
| 9 | Optimal use of IoT | 35 | 4.0 |
| 10 | Use collaborative learning by using Iot | 35 | 3.8 |
| 11 | Answering quiz questions using the IoT method | 35 | 4.2 |
| | Average Min | 35 | 3.9 |

The descriptive analysis of the frequency factor of IoT use in table 5 shows the entire item obtaining a min score which is at a high level with an average value of min 3.9. The high mean

value achieved is through using IoT for job assignments and projects of 4.30. Overall findings show that respondents agree and frequently use IoT for job assignments and projects.

4.2.4 Table 6 Descriptive Analysis for Effective Use of IoT

| Bil | Item | Min | | |
|-----|--|-----|------|------|
| | | N | Yes | No |
| 1 | IoT's method of use can help in learning | 35 | 88.6 | 11.4 |
| 2 | This Iot exposure helps you to easily interact with the lecturer | 35 | 88.6 | 11.4 |
| 3 | Internet / ICT facility facilities at your college help you to use IoT effectively | 35 | 94.3 | 5.7 |
| 4 | The use of this IoT can save paper usage for job assignments | 35 | 100 | 0 |
| 5 | The use of this IoT can store your data storage space if you use USB | 35 | 94.3 | 5.7 |
| 6 | Using IoT causes your data to be safely stored online | 35 | 88.6 | 11.4 |
| 7 | Using IoT causes your data to be easily accessible (download or upload) online | 35 | 88.6 | 11.4 |
| 8 | Using IoT makes it easy for you to answer exam questions (eg quizzes) easily | 35 | 100 | |

| | | | | |
|----|--|----|-------|-------|
| 9 | The use of this IoT greatly facilitates me in terms of time savings, data storage space and so on | 35 | 88.6 | 11.4 |
| 10 | You are interested in using IoT for other uses such as for online purchases, public transport services and so on | 35 | 88.6 | 11.4 |
| | Average Min | 35 | 83.7% | 16.3% |

Table 6 shows descriptive analysis of the effectiveness of IoT usage and high score of 100%. It shows the respondents agree that the use of IoT has a great impact on learning and teaching.

5.0 DISCUSSION

This study has led to the discovery of factors that influence the effectiveness of IoT usage among Diploma Games Art students. Knowledge use factor of IoT, IoT usage frequency and IoT usage efficacy are factors that influence and impact on respondent's experience. From these factors, the analysis showed that the respondent's effectiveness factor on the use of IoT had the highest percentage with respondents agreeing to 83.7% followed by the students having knowledge with the use of IoT with a percentage of 74.3%. While the frequency factor of IoT usage among respondents shows the mean average mean findings of 3.90. This finding coincides with the study conducted by [13] of the 21st century students who are more keen to learn new technology-related skills. [14] also noted the use of the Internet in seeking information, patterns and frequency of students on the Internet in the learning process, identifying the problems faced by the student's Internet use. Through Higher Education Development Plan 2015-2025, the ministry has prepared the elements of the Industrial Revolution 4.0, [15] in line with the findings from the effectiveness of IoT use among Diploma Games Art students.

6.0 CONCLUSION

This study was conducted to determine the effectiveness of IoT use among Diploma Games Art students. The findings confirm that this student agrees with the exposure provided by lecturers during teaching and learning. Awareness of the very high level of knowledge among the students on the use of IoT is very encouraging. Students are seen to receive this IoT exposure effectively. Students are also aware that they often use IoT for learning purposes. Through this study it is hoped that in the future the students will be exposed to more elements to the concept of "Smart Classroom", which may later be classes without a lecturer,[16].

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