**THE DEGREE OF USAGE OF DIFFERENT TOOLS AND LEVEL OF SKILLS IN USING WEB 2.0 TECHNOLOGY AMONG STUDENTS**

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**Abstract**

The main objectives of this study are: (1) to identify the degree of usage of different tools of Web 2.0 Technologies among students, (2) to identify the level of skills in using Web 2.0 Technologies among students, and (3) to investigate the relationships between the degree of usage of different tools and level of skills in using Web 2.0 Technologies among students for their learning activities. This study used the quantitative method and experimental research design. The researcher uses non-probability sampling to combine two different techniques: convenience and snowball sampling. This study use questionnaire as the instrument to obtain the data. The data was collected by distributing 320 questionnaires to the 320 respondents, and the data were analysed statistically using SPSS. The questionnaire comprises of four sections of close-ended questions. Section 1 was constructed to identify the students' demographic information, which is related to their gender, courses, and year of study. Section 2 was constructed to identify the access of technology on the location where the online teaching and learning process takes place at home or university and the types of gadgets used for the learning process. Section 3 was constructed to identify the degree of usage of Web 2.0 Technologies' different tools for learning activities. The scale of the items used in this section is (1=never, 2=rarely, 3=sometimes, 4= frequently, 5=every time). Meanwhile, section 4 was constructed to identify the level of skills in using Web 2.0 Technologies for learning activities. The scale of the items used in this section is (1=not at all, 2=basic, 3=intermediate, 4= advance, 5=expert). Descriptive analysis was used to analyse the degree of usage of different tools and the level of skills in using Web 2.0 Technology among students. The analysis shows that the average mean score for the degree of usage of different Web 2.0 Technologies tools is 4.27, which shows that most students are in the frequent stage in using Web 2.0 Technology. Thus, the mean lies on the scale of frequently (4=frequently). Meanwhile, the level of skills in using Web 2.0 Technologies among students shows that the average mean scores are 3.99, which shows that most of the respondents are in the advanced stage using Web 2.0 Technologies. Thus, the mean lies on the scale of advance (4=advance). Pearson correlation analysis was conducted to identify the relationship between the degree of usage of different tools and the level of skills in using Web 2.0 technologies among students. The result shows that r = .543 and alpha = .000 which is smaller than .05. Thus, there is a significant moderate positive relationship between the degree of usage of different tools and the level of skills in using Web 2.0 technologies at the 0.05 level. Based on these findings, the degree of usage of different tools and the level of skills in using Web 2.0 Technology impacts the real scenario in the teaching and learning process among students. Therefore, universities need to prepare and produce more excellent future teachers highly skilled in using Web 2.0 Technology during the teaching and learning process.

**Keywords** Web 2.0 Technologies, Digital Literacy, Information Technology

**INTRODUCTION**

The usage of Web 2.0 Technologies such as blogs, Wikis, social networking, and podcasts make a colossal transformation in the educational setting. On the other hand, it gives opportunities to students of higher education in the learning process during the COVID-19 pandemic. Moreover, most universities implemented information technologies in learning to make sure students can catch up with the learning and lesson during the COVID-19 pandemic. Not only universities in Malaysia but all universities worldwide have strengthened the use of information and technology in learning, especially during the COVID-19 pandemic.

As Campbell (2010) mentioned, the shifts in Web 2.0 Technologies’ usage in higher education institutions act as a ‘new ecology of information’. Therefore, Web 2.0 Technologies, known as information technology, helps students get information, apart from helping students catch up with the lesson and research tools during the pandemic. Other than that, using Web 2.0 Technologies improves teaching and learning in higher education. Previously, learning focused only on classroom activities that make other skills such as digital skills, knowledge building, and information processing hard to improve.

According to Owen et al. (2006), the shifts in educational settings’ landscape using Web 2.0 Technologies can develop skills to support learning throughout life. Most of the skills can support the knowledge and continuous learning process. Web 2.0 Technologies make students more active in learning, giving them more learning experience and improving lots of the skills. It is suitable for students to align and parallel with the new study environment, mostly the technologies.

Thus, most universities from all over the world are aligning with Industrial Revolution 4.0 (IR4.0). Thus, the education sector responded to the needs of IR4.0, where people are aligned to technological advances. As eloquently stated by Fisk (2017), the new era of learning promotes students to learn skills and knowledge needed and identify the sources of learning by using technologies advance. Hence, students should be an expert in using information technologies to improve their skills and knowledge when using the information technologies.

**PROBLEM STATEMENTS**

On 30th January 2020, the World Health Organisation (WHO) declared that COVID-19 is a health crisis worldwide (Cucinotta & Vanelli, 2020). According to Boo S.L. (2020), by 5th April 2020, there were 3,662 cases and 61 deaths in Malaysia caused by COVID-19 virus. Therefore, the Malaysian government is taking early precautions to prevent its widespread by implementing screening tests for high-risk individuals and isolating their close contacts (Ministry of Health Malaysia, 2020). This shows that Malaysia is one of the first countries that take precautions to protect and prevent its citizens from being infected with COVID-19. Therefore, educational institutions nationwide, especially higher education institutions, have to close due to this pandemic. As mentioned by the New Straits Time (2020), the Ministry of Higher Education stated that the learning method for all students in Malaysia would be implemented via online distance learning (ODL) until 31st December 2020 (New Strait Time, 2020).

Different studies have shown that most schools and higher learning institutions utilise online distance learning. Most of it focused on the use of information technologies for learning among students. Previous research which focused on the virtual teaching environment during COVID-19 pandemic using Web 2.0 Technologies in schools and higher learning institutions among students can be successful (Sintema, 2020). Based on the previous studies on the case of English language teaching and learning using virtual distance learning environment, the findings show that the online environment allows students to manage a world that includes everything they need. Thamarana (2016) said simulation, interaction, and collaboration contribute to a positive learning environment when the students use Web 2.0 Technologies.

The landscape of education has changed with the advancement of information technology where the school and higher learning institution has the responsibility to prepare students with knowledge and skills. Therefore, to prepare students with a new environment with various skills, educators must have good knowledge about the 21st-century learning skills and also must have self-efficacy to deliver it to the students (Chu et al., 2017). Thus, educators must familiarise themselves with an online learning environment to develop digital problem-solving skills, digital content creation, information and data processing skills, and digital communications skills.

Jones, Ramanau, Cross & Healing (2010) focus on social network usage, since every day, about 31% of the research participants used and visited social networks. According to Suartama (2010), Web 2.0 Technologies' usage for learning purpose is better than using the textbook. It is because digital advancement provides a clear structure of the lesson that helps students understand the topic. Students could revise and get information using ICT with various applications related to their needs. In the textbook, elaboration of the content is too detailed, including several theories that hard for the students to understand. Thus, Web 2.0 Technologies is the best learning tools for students.

There will be a gap of interaction between teacher and students if Web 2.0 Technologies is not used in the class. The traditional learning method is not suitable to students in the current situation due to the focusing on the set of the time table. Blasco-Arcas et al. (2013) stated that students who were not engaged with one another are the biggest problem in the traditional learning method that made them passive in class. According to Draper (2004), the learning process' critical pedagogical issues are a lack of interaction between the person and the teacher. Therefore, using Web 2.0 Technologies in learning will increase the degree of engagement in the classroom.

**OBJECTIVE**

The purpose of this study has been following specific research objectives, which are:

1. To identify the degree of usage of different tools of Web 2.0 Technologies among students in their learning activities
2. To identify the level of skills in using Web 2.0 Technologies among students in their learning activities.
3. To investigate the relationships between the degree of usage of different tools and level of skills in using Web 2.0 Technologies among students in their learning activities

**METHODOLOGY**

In this research, non-probability sampling was used due to selective samples that have specific characteristics. Piaw (2016) mentioned non-probability sampling used to select samples when the subjects in the population do not have equal chances to be selected as research respondents. Therefore, the sampling of this study involves only 320 students of all the seven courses. They are chosen because they have learned using information technologies, especially Web 2.0 Technologies during COVID-19 pandemic.

Non-probability sampling was used to select samples using two different techniques: convenience and snowball sampling. By using snowball sampling, the data was collected without recruiting the population. Thus, the snowball sampling technique is a suitable method that can be used during COVID-19 pandemic. This study's target population is the undergraduate students of the Faculty of Education in Universiti Teknologi MARA (UiTM). The Faculty of Education of UiTM has seven undergraduate students’ courses: B. Ed. (Hons.) TESL, B. Ed. (Hons.) Art and Design, B. Science Education (Hons.) Mathematics, B. Science Education (Hons.) Biology, B. Science Education (Hons.) Physics, B. Science Education (Hons.) Chemistry, and B. Ed. (Hons.) Physical and Health Education.

Total undergraduate students of the Faculty of Education of Universiti Teknologi MARA (UiTM) is 1900 students. Moreover, all of them use technologies in learning during the COVID-19 pandemic. Thus, they are suitable to be respondents in this research. The instrument used in this study is a questionnaire. According to Chua (2016), the questionnaire is the most appropriate instrument to be used compared to the interview since the sample size is large. As Chua (2016) stated, the questionnaire will standardise the responses answer to the study's objectives. Other than that, using questionnaires is a more objective and most effective way to collect quick information from a large number of populations. Thus, it is suitable for quantitative research that includes a large size of populations. A questionnaire is the best instrument to obtain responses from a large sample size.

**RESULTS**

**Findings for Research Questions 1: What Is the Degree of Usage of Different Tools of Web 2.0 Technologies Among Students for Their Learning Activities?**

**Table 1.1**  Descriptive Statistics of The Degree of Usage of Different Tools of Web 2.0 Technologies (N=320)

| **Variables** | **Item number** | **Mean score** | **Std. Deviation** | **Average mean** |
| --- | --- | --- | --- | --- |
| Information and data processing | 1) I use the web for web conferencing in online class (e.g. using a webcam for Google Meet and Zoom) | 4.31 | .820 | 4.39 |
| 2) I use the web to look up reference information for study purposes, research or writing assignments (e.g. Google Scholar, Research Gate, Academia) | 4.41 | .617 |
| 3) I use portal of learning course or Learning Management System to create, share or upload content of learning (e.g. Student Portal, e-Book, Google Classroom) | 4.47 | .613 |
| Digital communication | 4) I use Social networks to extend and share ideas with my friends (e.g. WhatsApp, Facebook, Twitter) | 4.54 | .541 | 4.33 |
| 5) I use email to send/receive my documents and assignments to my lecturers and friends (e.g. Yahoo, Gmail, Hotmail) | 4.23 | .668 |
| 6) I use web conferencing or video call to communicate and collaborate with my friends | 4.23 | .669 |
| Digital content creation | 7) I am able to share my educational video with my friends via (e.g. YouTube, Google plus, Blog, Portal) | 4.13 | .778 | 4.23 |
| 8) I am able to create or design graphics/video content for learning by using online free application (e.g. Canva, Powtoon, Powerpoint) | 4.25 | .673 |
| 9) I use digital media in my presentation video or video hosting for learning (e.g. Image, MP3) | 4.32 | .647 |
| Digital problem solving | 10) I use the latest digital technology to integrate knowledge in my learning | 4.15 | .663 | 4.12 |
| 11) I adapt with various application/technologies used to build meaningful learning | 4.10 | .746 |
| 12) I use the same application/technologies with my colleague to maintain the interaction in learning | 4.11 | .567 |
| **Total average mean score** | | **4.27** | | |

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### **Findings for Research Questions 2: What is the Level of Skills in Using Web 2.0 Technologies Among Students for Their Learning Activities?**

**Table 1.2**  Descriptive Statistics of the Level of Skills in Using Web 2.0 Technologies (N=320)

| **Variables** | **Item number** | **Mean score** | **Std. Deviation** | **Average mean** |
| --- | --- | --- | --- | --- |
| Information and data processing | 1) I use the web for web conferencing in online class (e.g. using a webcam for Google Meet and Zoom) | 4.18 | .804 | 4.07 |
| 2) I use the web to look up reference information for study purposes, research or writing assignments (e.g. Google Scholar, Research Gate, Academia) | 3.97 | .781 |
| 3) I use portal of learning course or Learning Management System to create, share or upload content of learning (e.g. Student Portal, e-Book, Google Classroom) | 4.06 | .817 |
| Digital communication | 4) I use Social networks to extend and share ideas with my friends (e.g. WhatsApp, Facebook, Twitter) | 4.29 | .827 | 4.23 |
| 5) I use email to send/receive my documents and assignments to my lecturers and friends (e.g. Yahoo, Gmail, Hotmail) | 4.23 | .732 |
| 6) I use web conferencing or video call to communicate and collaborate with my friends | 4.16 | .710 |
| Digital content creation | 7) I am able to share my educational video with my friends via (e.g. YouTube, Google plus, Blog, Portal) | 3.82 | .954 | 3.87 |
| 8) I am able to create or design graphics/video content for learning by using online free application (e.g. Canva, Powtoon, PowerPoint) | 3.93 | .921 |
| 9) I use digital media in my presentation video or video hosting for learning (e.g. Image, MP3) | 3.88 | .850 |
| Digital problem solving | 10) I use the latest digital technology to integrate knowledge in my learning | 3.75 | .958 | 3.81 |
| 11) I adapt with various application/technologies used to build meaningful learning | 3.84 | .949 |
| 12) I use the same application/technologies with my colleague to maintain the interaction in learning | 3.85 | .785 |
| **Average mean score** | | **3.99** | | |

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### **Findings for Research Questions 3: What Are the Relationships Between the Degree of Usage of Different Tools and Level of Skills in Using Web 2.0 Technologies Among Students for Their Learning Activities?**

**Table 1.3** Relationships Between the Degree of Usage of Different Tools and Level of Skills in Using Web 2.0 Technologies

| Correlations | | | |
| --- | --- | --- | --- |
|  | | **Degree of Usage** | **Level of Skills** |
| Degree of Usage | Pearson Correlation | 1 | .543\*\* |
| Sig. (2-tailed) |  | .000 |
| N | 320 | 320 |
| Level of Skills | Pearson Correlation | .543\*\* | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 320 | 320 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). | | | |

**DISCUSSION**

### **Research Questions 1: What is the Degree of Usage of Different Tools of Web 2.0 Technologies Among Students for Their Learning Activities?**

This study’s first research objective is to identify the degree of usage of different tools of Web 2.0 Technologies among students for their learning activities. Based on **Table 1.1**, the result shows most of the students frequently used Web 2.0 Technologies for their learning activities. Most of the items in each variable show a mean with an average of 4.00 and above. Therefore, the average mean score lies on the scale of ‘frequently’, which is scale 4.

The findings revealed that most of the students frequently used Web 2.0 Technologies for their learning activities. It is supported by a case study by Uzunboylu, Bicen, and Cavus (2011) focused on integrating Web 2.0 Technologies tools into the educational setting and also asks about students’ opinions on the positive impacts of Web 2.0 Technologies in learning. The case study results showed most students were excited about using Web 2.0 tools in their learning. It can be seen when the mean value of the test result for the pre-experience test was at the 2.00–3.00 level (disagree). This is because students had not experienced Web 2.0 technology lessons, while the post-experience test results showed that the mean value of opinions is between 4 and 5 (agree). Therefore, the use of Web 2.0 Technologies in teaching and learning processes will improve test scores.

Information and data processing recorded the highest value of mean score compared to other variables, which is 4.39. This showed that most of the students used information and data processing in their teaching and learning process. It is aligned with the finding from Salehe (2008) investigating the use of Web 2.0 tools for facilitating collaboration in higher education. The study’s findings show that students always use and aware of the benefits of Web 2.0 tools such as wikis, blogs, and podcasts as application tools in education. Thus, most students used information and data processing such as wikis, blogs, and podcasts in their learning exercises.

Digital communication recorded the second-highest value of the mean score, which is 4.33. The finding shows that most students used digital communication to connect and extend their knowledge for the teaching and learning process. This is also supported by an article from Dell (2012) on Web 2.0 Technologies’ capability to develop students’ cognitive engagement, communication, creating new content, and various learning methods. Therefore, Web 2.0 Technologies also develop students’ active participation, creativity, and innovation among both students and lecturers in the teaching and learning process.

Digital problem-solving recorded the lowest mean score, which is 4.12. This shows that some students are having a problem using Web 2.0 Technologies for their learning activities. Salehe (2008) stated on the use of Web 2.0 tools. The findings reveal that some students lacked skill and knowledge on using some Web 2.0 tools that are useful in learning. Some of the students find it hard to solve and complete the task using Web 2.0 Technologies. Meanwhile, observations from Jacobs and Castek (2018) state that Web 2.0 Technologies can handle various online applications to achieve goals and complete various tasks in the teaching and learning process. This is due to the involvement in the usage of skills, techniques, and mindsets needed to navigate digitally in daily environments, including the library, and the use of novel materials, software, and interfaces in effective and versatile ways to achieve personal and professional goals.

### **Research Questions 2: What is the Level of Skills in Using Web 2.0 Technologies Among Students for Their Learning Activities?**

The second research objective in this study is to identify the level of skills in using Web 2.0 Technologies among students for their learning activities. Based on **Table 1.2**, the result shows most of the students are in the advanced stage in using Web 2.0 Technologies for their learning activities. Most of the items in each variable show a mean with an average of 3.00 and above. Therefore, the average mean score lies on scale advance, which is scale 4.

The findings revealed that most of the students are in the advanced stage of using Web 2.0 Technologies for their learning activities. Therefore, most of the students have skills in using Web 2.0 Technologies. Based on the findings, digital communication skills recorded the highest mean score, which is 4.23. This is due to the frequent use of digital communication in Web 2.0 Technologies to teach and learn among students. It is supported by Tynan and Barnes (2012) stated that Web 2.0 technologies enhance the participation and communication of students through various styles of images, video, text, and audio. Students can also create and define other concepts or theories when using wiki, websites, and social networking sites. Moreover, Web 2.0 technologies engage in a two-way interaction between lecturers and students, and vice versa. Thus, students were able to use web 2.0 Technologies to communicate with each other during Online Distance Learning.

Information and data processing skills recorded the second highest mean score, which is 4.07. Most of the students answer (2) basic, (3) intermediate, (4) advance, and (5) expert on the scale. This shows that most of the students have various stages of skills in using Web 2.0 Technologies. This is due to the use of web conferring such as Google Meet, Webex, and Zoom for attending online classes during the pandemic COVID-19. It is supported by the findings from Purwanto and Tannady (2020) stated that most of the respondents use Google Meet for online meetings and online class and reveals that the perceived ease of use has a significant effect on the mindset of using Google Meet. Before the university starts using Google Meet as an online learning platform, students are retained. However, as they use it and understand the simplicity of using the platform, there is a new perspective and an optimistic view of the platform. It shows that the ease that Google Meet provides for its users creates a positive attitude toward this platform. Thus, Google Meet is one of the platforms frequently used in the teaching and learning process.

At the same time, digital problem-solving recorded the lowest mean score, which is 3.81. The findings for this research question are the same as the findings of research question 1. This is due to the students having a problem using Web 2.0 Technologies for their learning activities. Therefore, it will affect the level of skills in using Web 2.0 Technologies in learning activities. Salehe (2008) stated on the use of Web 2.0 tools, the findings reveal that some students lack the skills and knowledge using Web 2.0 tools that are useful in learning. Some of the students find it hard to solve and complete the task given by using Web 2.0 Technologies. Meanwhile, observations from Jacobs and Castek (2018) stated that Web 2.0 Technologies could be used to handle various online applications to achieve goals and complete various tasks in the teaching and learning process. This is due to the involvement in the usage of skills, techniques, and mindsets needed to navigate digitally in daily environments, including the library, and the use of novel materials, software, and interfaces in effective and versatile ways to achieve personal and professional goals.

### **Research Questions 3: What Are the Relationships Between the Degree of Usage of Different Tools and Level of Skills in Using Web 2.0 Technologies Among Students for Their Learning Activities?**

The third research objective is to investigate the relationship between the degree of usage of different tools and skills in using Web 2.0 Technologies among students in their learning activities. The relationship between the degree of usage of different tools and the level of skills in using Web 2.0 Technologies was analysed using Pearson correlation test. Based on **Table 1.3**, the result shows that r = .543 and alpha = .000, which is smaller than .05. Thus, there is a significant moderate positive relationship between the degree of usage of different tools and level of skills in using Web 2.0 technologies at the 0.05 level.

It can be seen when the degree of usage of different tools of Web 2.0 technologies increases, the level of skills in using Web 2.0 technologies also increase. This also reveals that most students have awareness in using Web 2.0 Technologies for teaching and learning process. Thus, the findings show the moderate positive relationship between the degree of usage of different tools and skills level. This means that the higher the usage of different tools of Web 2.0 Technologies, the higher skills in using Web 2.0 Technologies for teaching and learning process.

Tsoni (2014) studied improving students' ICT skills via online courses, found that students have a strong degree of ICT usage skills, but there is also a need for more improvement. It is apparent that students use more information technology in their everyday lives than for educational purposes. About 90.3% use the Internet on a regular basis for amusement, but just 23.7% use it every day for course-related subjects. This clearly shows that the use of information technology in teaching and learning can improve students' ICT skills.

In line with Israel's (2014) finding, the Pearson Correlation value for ICT skills and use of the Internet is of 0.468 at 0.00 alpha level. This implies that there are significantly week positive relationships between the ICT skills and use of the Internet. The research concludes that the respondents possess ICT skills and make fair use of the Internet. However, the research has shown that undergraduates' ICT capabilities do not affect or forecast the practical usage of the Internet. Therefore, students should always use information technology, especially Web 2.0 Technology, to improve their ICT skills.

**IMPLICATION OF FINDINGS**

The research's respondents come from undergraduate students from the Faculty of Education, Universiti Teknologi MARA (UiTM). This study's findings show that most of the students frequently used Web 2.0 Technology in the learning process. The level of their skills in using Web 2.0 Technology is in the 'advance' stage. This study's findings may impact the real scenario in the teaching and learning process among lecturers and students of the degree of usage of information technologies. Therefore, it is vital for universities to prepare and produce more excellent future academicians who are highly skilled in using information technologies during the teaching and learning process. Universities can also implement information technologies in education to increase the quality of the future teacher.

Moreover, students can improve their skills in using information technology for their teaching and learning process. Teaching and learning will be more effective and conducive if students use various types of information technologies. Integration of information technologies in teaching and learning process gave positive impacts to the educational system. Students can also align with the Industrial Revolution 4.0 (IR4.0) when using all the technological advancement in their daily routine. Hence, students should be expert in using information technologies to hone their skills and knowledge.

**CONCLUSION**

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