

Digital Literacy Impact on Students' Performance

Wan Nor Haliza Wan Mokhtar¹, Norhayati Hussin^{2*}, Shahrul Nadzmi Mohd Shahari³

^{1,2,3}*School of Information Science, College of Computing, Informatics and Mathematics, UiTM Selangor Branch, Puncak Perdana Campus, 40150 Shah Alam, Selangor, Malaysia.*

ARTICLE INFO

Article history:

Received 1 July 2024
Revised 15 August 2024
Accepted 1 September 2024
Online first
Published 1 October 2024

Keywords:

digital literacy
social influence
technology tool skill
students' performance
information management

ABSTRACT

This paper discusses on the transmission of the learning session from face to face to online learning. The study reveals the digital literacy level among students besides some of them still not aware of the importance of online learning that could help in their academic performances. There were issues where students face difficulties when searching for information effectively. The study was conducted to identify digital literacy among UiTM students in seeking the information they need for their studies from the electronic databases. The study sets out to examine the digital literacy level among students and to determine the relationship between the effect of digital literacy and student performance. Using survey data from students of UiTM, the study found out that effort expectancy, social influence and technology tool skill have a positive interaction effect on the outcome variable. The paper has fulfilled the objectives of the study which is related to the digital literacy level among UiTM students.

INTRODUCTION

New technology has been evolved since the beginning of time. In the twentieth and twenty-first centuries, technology has progressed at a tremendous speed. Technology, according to Budhwar (2017), is a critical component of today's world. Every day, a new piece of software or equipment is introduced to improve our lives in some way. Every subject is influenced by technology, and education is one of the most visible areas where it has had the most impact. Technology also has a significant impact on education. The growth of online databases has risen in tandem with the expansion of technology. People, particularly

^{2*} Corresponding author. *E-mail address:* yatihussin@uitm.edu.my

students, need to know how to use that system in order to discover information. According to Raja and Nagasubramani (2018), when it comes to how today's students choose to utilize technology and how technology influences their learning, the utilization of new equipment, technology, and tools enhances students' learning and participation. Furthermore, according to a research, technology may have an impact on their performance. Knowing how to use technology in particular indicates that you have digital literacy abilities. Digital literacy increases students' skills, which are required for effective learning as digital technology impacts our surrounds, according to Techataweewan and Prasertsin (2018). Traditional, paper-based learning materials are more difficult to obtain than massive digital information resources. Students with poor digital literacy may encounter difficulties and have fewer employment opportunities. Digital literacy development is becoming one of the most significant aspects of many people's everyday lives, particularly for students working on assignments and projects. To begin, the most obvious part of digital literacy is access to the internet. In our day, the internet is no more a supplementary tool, but rather a need (Rahmah, 2015).

LITERATURE REVIEW

Digital Literacy Towards People Performances

In modern era, knowing how to use information technology has become one of the most important things that everyone should know about accessing information. Digital literates are those who know how to find information on the internet. What is the definition of digital literacy? Digital literacy, according to Santos and Serpa (2017), is a set of competencies required for full participation in a knowledge society, and it includes skills, knowledge, and behaviors related to the effective use of digital devices such as tablets, laptops, smartphones, and desktop PCs for expression, advocacy, collaboration, and communication.

Another past research by Asnawati et al. (2023) has defined digital literacy as the capacity to use information and communication technology (ICT) to analyze, utilize, locate, create, and communicate with information or material using either cognitive or technical methods. They also stated that digital literacy is required to maximize the good effects of the internet.

Furthermore, according to Yildiz et al. (2020), digital literacy is defined as the ability to create information using digital technology, and it is one of the most significant abilities that persons should possess in our day. Apart from that, it is the capability to uncover and access information using digital means, and to be digitally literate, individuals must possess high-level critical thinking abilities such as investigation, inquiry, problem solving, and decision making (Duran & Ozen, 2018).

Digital literacy has become one of the most important things to have and having it skills has a positive effect on everyone. The relevance of digital literacy was highlighted in research by Bolaji (2019). He stated that the introduction of digital literacy is critical in fostering the abilities of communicating, locating, and generating digital material to improve the quality of instructional content and to encourage the incorporation of emerging technologies into instructional delivery. This is very crucial for the students' performance who are part of digital literate community.

METHODOLOGY

This study used a quantitative research approach. Quantitative research is a research method that involves explanation of an issue of a phenomenon through gathering data or numbered data and can be analysed with the aid of mathematical methods in particular statistics (Aliaga & Gunderson, 2002). A set of questionnaires were distributed as the data collection method because it covers a broad range of topics

whilst being simple to understand. The format is familiar to most people and can be completed at the respondent's convenience (Bryman, 2008). Next, through this method the reliability of the study was achieved because of the endured uniformity.

Population and Sampling

There were campuses in Malaysia with more than 500 academic programmes and with the total of more than 150 thousand students. This study, only covers four (4) UiTM campuses which are UiTM Puncak Perdana, UiTM Puncak Alam in Selangor and UiTM Rembau and UiTM Seremban 3 in Negeri Sembilan with a total of student around 29,066. Hence, with the calculation made from Raosoft Calculator, 380 copies of questionnaires are targeted to be distributed among all the students in those four (4) campuses. The questionnaires were distributed through Google Form via email and WhatsApp application to these campuses' students.

Instrument

In the context of this study, the questionnaire is developed based on the proposed framework and past research. Throughout the questionnaires, three section were divided based on section A,B,C,D,E and F. Section A in the questionnaire focused on the demographic profiles which consisted of gender, age and the name of UiTM campuses. Meanwhile, section B until F are discussing on the variables and its relationship towards the increases of student performance such as effort expectancy, social influence, and technology tool skill.

Data Analysis

The main statistical technique was used in this research. It is used to analyze the data and the result is obtained.

1. Analyzing the respondent's profile for descriptive statistics.
2. Inferential analysis: It allow to test the hypothesis or assess whether the data is generalizable to the broader population.
3. SPSS was used as set of statistical techniques as it is measuring and analyzing the relationships of observed and latent variables.

Table 1: Objectives, Hypothesis and Analysis Type

OBJECTIVES	HYPOTHESIS	ANALYSIS TYPE
1. To examine the digital literacy level among UiTM students	-	Descriptive analysis
2. To determine the relationship between the digital literacy performance and UiTM students' performance 3.1 To determine the relationship between effort expectancy and student performance among UiTM student. 3.2 To determine the relationship between social influence and student performance among UiTM student.	H1, H2, H3	Inferential analysis

3.3 To determine the relationship between technology tools usage and student performance UiTM student.		
--	--	--

Validity and Reliability

In this research, questionnaire was tested to determine its consistency and accuracy. This is to ensure that it measures what it is supposed to be measured. The reliability of the questionnaire was tested by using Cronbach's Alpha or called Coefficient Alpha to show the internal consistency of the questionnaire. Coefficient Alpha, as stated by Sekaran and Bougie (2010), state that a reliability number of less than 0.60 was low and not acceptable, a reliability number of 0.60 to 0.70 was fair and acceptable, a reliability number of 0.70 to 0.80 was good, a reliability number of 0.80 to 0.90 was very good and 0.90 and above was excellent. However, several research considered 0.60 to be acceptable. (Hair et al., 1992).

ANALYSIS AND FINDINGS

Common Method Bias

According to Schaller et.al. (2015), Common Method Bias (CMB) also known as common method variance. A systematic error variation which known as "common method variance" arises from a standard strategy to measure the study's constructs. When common technique variation affects the correlation between the variables being evaluated, common method bias is present (Richardson et al., 2009 as cited in Kock et al., 2021).

For instance, there are a few ways on how to do analysis technique on estimating biasness in a survey such as Common Latent Factor, Common Marker Variable, and Harman's Single Factor Test. Hence, this study decided to use Harman's Single Factor Test where the data of this research have been analysed by using IBM SPSS version 23. Principal Component Analysis have been chosen in this research. The test has been run and no common method bias found in this study as the threshold value is below than 50%.

Demographic Profiles of the Respondents

The first four questions in the survey were built to gather data for demographic data of the respondents. The data were gathered and generated into a table. There are total of four data which have been analysed which are gender, age, campuses, and academic level.

Gender, Age and Campus

The result shows the total number of demographic value according to the gender. It is showed that out of the 422 respondents, 75 (17.8%) were male while 347 (82.2%) were female. Frequency of ages for 18-20 was 122 (28.9%) and at the ages of 21-25 was as much of 252 (59.7%). Meanwhile for the age of 26-30, there was 20 (4.7%) and on the other hand, 30 and above was 28 respondents (6.6%). Regarding to the campuses, data collected in UiTM Rembau with 175 respondents with 41.5% were the highest frequency followed by UiTM Puncak Perdana with 134 respondents (31.8%). Meanwhile, UiTM Puncak Alam were from 82 respondents (19.4%) and UiTM Seremban 3 with 31 respondents (7.3%).

Academic Level

For academic level, the highest frequency was collected from Bachelor's Degree respondents with 265 respondents (62.8%) followed by Diploma respondents with 117 (27.7%), Master respondents with 34 (8.1%) and Ph.D. respondents with 6 (1.4%).

Table 2: Descriptive Analysis for all of the Variables

Selected Descriptive Statistic	1	2	3	4
Mean	2.8412	2.8507	2.8602	2.7583
Median	3.0000	3.0000	3.0000	3.0000
Standard Deviation	0.36589	0.35680	0.34720	0.58981
Minimum	2.00	2.00	2.00	2.00
Maximum	3.00	3.00	3.00	3.00
Range	1.00	1.00	1.00	1.00
Interquartile Range (IQR)	0.00	0.00	0.00	0.00
Skewness	-1.874	-1.975	-2.085	-1.211
Percentile 25th	3.0000	3.0000	3.0000	3.0000
50th	3.0000	3.0000	3.0000	3.0000
75th	3.0000	3.0000	3.0000	3.0000
90th	3.0000	3.0000	3.0000	3.0000
Level Disagree (1.00-2.33)	0 (0%) 67 (15.9%) 355 (84.1%)	0 (0%) 63 (14.9%) 359 (85.1%)	0 (0%) 59 (14%) 363 (86%)	0 (0%) 102 (24.2%) 320 (75.8%)
Neutral (2.34-3.67)				
Agree (3.68-5.00)				
Total	422	422	422	422
Notes: 1. Student Performance 2. Effort Expectancy 3. Social Influence 4. Technology Tool Skill				

Student Performance

According to the five-point scale which has been used throughout the survey, based on descriptive analysis in table 4.1, the minimum rating for student performance was 2.00 and the maximum rating with 3.00. The median for rating value was 3.0000 and with a standard deviation of 0.36589. Meanwhile, the mean rating was 2.8412. The skewness value was -1.874 which it was negatively skewed, and it can be seen that it is perfectly normal.

For the percentile, student performance got 3.0000 for 25th percentile, 3.0000 for 50th percentile, 3.0000 for 75th percentile and 3.0000 for 90th percentile. The interquartile range (IQR) was 0.00.

Based on the frequency level which has been stated on above the table, the cumulative mean which has been suggested is 1.00-2.33 for disagree, 2.34-3.67 for neutral and 3.68 to 5.00 for agree. Based on

the results, it can be seen that student performance for Disagree was (0%) followed by Neutral (15.9%) and Agree (84.1%). Therefore, the study shows that the frequency level of student performance is Agree.

SUMMARY AND DISCUSSION OF FINDINGS

The questionnaires have been distributed to four (4) campuses of Universiti Teknologi MARA (UiTM) namely UiTM Puncak Perdana, UiTM Puncak Alam, UiTM Rembau and UiTM Seremban 3 which answered by the students from all academic levels such as Diploma, Bachelor's Degree, Master, and Ph.D. After 3 weeks of questionnaires distribution, the target of respondents which are needed by this research is achievable as 422 respondents answered the questionnaire, and it is more than target samples which is 380. Female students conquer the high number of respondents with 347 respondents (82.2%) and male with 75 respondents (17.8%). The result of the study has been analysed. This analysis has been used to answer the objectives which is to examine the digital literacy level among UiTM students and to determine the relationship between the effect of digital literacy and student performance among UiTM student by taking Effort Expectancy, Social Influence and Technology Tool Skill as their factors.

Students' Performance

Student performance (SP) somehow influenced by the literacy in using digital platform as they know how to retrieve information. The influence of contemporary technology on communication has been enormous (Alhadlaq, 2016). Throughout the finding on student performance level affected by digital literacy, it can be seen that the result of the mean is 2.8412. Mean in statistics, is a measure of a central tendency of a probability distribution along median and mode. Here, the mean of this variable is positively rated by the students who answered the questionnaires. For their standard deviation, this variable scores 0.36589 where this thing measures the amount of variation or dispersion of a set of values. A low standard deviation indicates that the values tend to be close to the mean of the set, while a high standard deviation indicates that the values are spread out over a wider range. For the frequency level, this variable shows that neutral and agree dominate the levels where Agree is among the highest with 84.1% and Neutral with 15.9% as it conclude that digital literacy level which affect student performance is Agree that UiTM students are having literacies in managing digital platform.

Digital Literacy

In this study, digital literacy empowers individuals to communicate with others, work more effectively, and increase one's productivity, particularly with those who have the same skills and proficiency levels (Martin, 2008). In this study, Social Influence (SI) were recorded the highest mean among all variables with 2.8602 score. For standard deviation, social influence scores 0.34720. For the frequency level, the result which is neutral and agree dominate the levels where Agree is among the highest with 86% and Neutral with 14% as it conclude that the student agree that the usage of digital platform influenced by SI bring positive effect towards their academic performance. The correlation by using Pearson scores with 0.782 where it records as the highest correlation among other variables, and it shows that it has significant relationship towards student performance.

Technology Tool Skill

For Technology Tool Skill (TS), the previous discussion has mentioned that talking about digital technology in this modern world, numerous studies have found that using instructional technology improves overall student motivation and involvement in learning (Utama et al., 2019). Resulting from the descriptive analysis, the mean for this variable is 2.7583 with standard deviation 0.42863. Additionally, it has been noted that the majority of respondents' responses for Agree with 75.8% and Neutral with 24.2, respectively, for the frequency level as it conclude that the student agree that the usage of digital platform

influenced by TS bring positive effect towards their academic performance. According to the Guildford Rule of Thumb chart, the correlation using Pearson scores with 0.716, which ranks as the second highest correlation among other factors, demonstrates that it has a substantial relationship with student performance. Here, the overall result of this variable was supported by a past research by Saubari and Baharuddin (2016) that technology tools is a part of the things which can increase the knowledge performance and develop the awareness of the digital literacy among students.

Effort Expectancy

Effort Expectancy (EE) refers to the extent to which professionals believe that their continued use of e-learning is free of effort. If a system is relatively easy to use, individuals will be more willing to learn about its features so as to use more of them intensively and adapt their work practices to fit its norms (AbuShanab & Pearson, 2007). Resulting from the descriptive analysis, the mean of Effort Expectancy is 2.8507. The standard deviation for this variable is 0.35680. Moreover, for the frequency level, it has been stated that most of the respondents' answers for neutral and agree where Agree got 85.1% and Neutral with 14.9% as it conclude that the student agree that the usage of digital platform influenced by EE bring positive effect towards their academic performance. Meanwhile, the correlation by using Pearson scores with 0.710 where it records as a good correlation, and it shows that it has significant relationship towards student performance according to the Guildford Rule of Thumb table. The overall outcome of this variable in this case was supported by previous study by Mohammadyari et al. (2015), which found that people are more ready to learn about a system's capabilities so they may utilize them more intensively and adapt their work practices to meet its norms.

CONCLUSION

In a conclusion, this research has answered the objectives which is to examine the digital literacy level among UiTM students and to determine the relationship between the effect of digital literacy and student performance among UiTM student by taking Effort Expectancy, Social Influence and Technology Tool Skill as their factors. The first objective which is to examine digital literacy level among UiTM students have resulted in an Agree level where most of the variable have high percentage towards Agree. This means that most of students from selected campuses in UiTM are having literacies in managing digital platform.

For the second objectives, which is to determine the relationship between the effect of digital literacy and student performance among UiTM student by taking Effort Expectancy, Social Influence and Technology Tool Skill as their factors, has resulted with a significant relationship as all of these variables scores a high correlation by using Pearson. This means that Effort Expectancy, Social Influence and Technology Tool Skill have high relationship towards student performance with all variables scores more than 0.7 based on indication by Guildford Rule of Thumb guideline.

REFERENCES

- AbuShanab, E. and Pearson, J. (2007) Internet Banking in Jordan: The Unified Theory of Acceptance and Use of Technology (UTAUT) Perspective. *Journal of Systems and Information Technology*, 9, 78-97. <https://dx.doi.org/10.1108/13287260710817700>
- Aliaga, M. and Gunderson, B. (2002) *Interactive Statistics*. [Thousand Oaks]: Sage Publications.
- Alhadlaq, I. (2016). How technology influences communication. *International Journal of Scientific & Engineering Research*, 7(1), 960–963.

- Asnawati, Kanedi, Indra, Utami, F. H., Mirna, & Asmar, S. (2023). Pemanfaatan Literasi Digital Di Dunia Pendidikan Era 5.0. 2(1).
- Saubari, Norazilah and Baharuddin, Mohammad Fazli. (2016). Digital Literacy Awareness among Students. *Research Hub*. 2. 57.
- Bolaji, H. O. (2019). Digital literacy: an emerging technological concept for innovative classroom content delivery. *Journal of Library, Science Education & Learning Technology*, 1 (1). 173 – 180.
- Bryman, A. (2008) *Social research methods*. 3rd Edition, Oxford University Press., New York.
- Budhwar, K. (2017). The Role of Technology in Education. *International Journal of Engineering Applied Sciences and Technology*, 2(8), 55-57. Retrieved April 13, 2020 from ijeast.com
- Duran, E. & Özen, N. (2018). Digital literacy in Turkish lessons. *Turkish Education Journal*, 3(2), 31-46.
- Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1992). *Multivariate Data Analysis*. New York: Macmillan Publishing Company.
- Kock, F., Berbekova, A. & Assaf, A. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*. 86. 104330. [10.1016/j.tourman.2021.104330](https://doi.org/10.1016/j.tourman.2021.104330).
- Martin, A. (2008). Digital Literacy and the “Digital Society”. In C. Lankshear, & M. Knobel (Eds.), *Digital Literacies: Concepts, Policies, and Practices* (pp. 151-176). New York: Peter Lang.
- Mohammadyari, S. & Singh, H. (2015). Understanding the effect of e-learning on individual performance: The role of digital literacy. *Computers & Education*. 82. pp. 11-25. [10.1016/j.compedu.2014.10.025](https://doi.org/10.1016/j.compedu.2014.10.025).
- Rahmah, A. (2015). Digital Literacy Learning System for Indonesian Citizen. *Procedia Computer Science*. 72. 94-101. [10.1016/j.procs.2015.12.109](https://doi.org/10.1016/j.procs.2015.12.109).
- Raja, R., & Nagasubramani, P. C. (2018). Impact of Modern Technology in Education. *Journal of Applied and Advanced Research*, 3, 33-35. <https://doi.org/10.21839/jaar.2018.v3i1.165>
- Richardson, H. A., Simmering, M. J., & Sturman, M. C. (2009). A Tale of Three Perspectives: Examining Post Hoc Statistical Techniques for Detection and Correction of Common Method Variance. *Organizational Research Methods*, 12(4), 762–800. <https://doi.org/10.1177/1094428109332834>
- Santos, A. & Serpa, S. (2017). The Importance of Promoting Digital Literacy in Higher Education. *International Journal of Social Science Studies*. 5. 90. [10.11114/ijsss.v5i6.2330](https://doi.org/10.11114/ijsss.v5i6.2330).
- Sekaran, U. and Bougie, R. (2016) *Research Methods for Business: A Skill-Building Approach*. 7th Edition, Wiley & Sons, West Sussex.
- Schaller, M., Murray D. R., & Bangerter, A. (2015). Implications of the behavioural immune system for social behaviour and human health in the modern world. *Philosophical Transactions of the Royal Society B*, 370, 20140105. [doi: 10.1098/rstb.2014.0105](https://doi.org/10.1098/rstb.2014.0105)
- Shopova, T. (2014). Digital literacy of students and its improvement at the university. *Journal on Efficiency and Responsibility in Education and Science*, 7(2), 26–32. <https://doi.org/10.7160/eriesj.2014.070201>
- Techataweewan, W. & Prasertsin, U. (2017). Development of digital literacy indicators for Thai undergraduate students using mixed method research. *Kasetsart Journal of Social Sciences*. 39.

10.1016/j.kjss.2017.07.001.

Utama, C., Sajidan, Nurkamto, J., & Wiranto. (2019). Investigating biology pre-service teacher perception of general biology and digital literacy. *IOP Conference Series: Earth and Environmental Science*, 243(012046), 012046. <https://doi.org/10.1088/1755-1315/243/1/012046>

Yildiz, E., Alkan, A. & Çengel, M. (2020). Determination of Digital Citizenship Levels of University Students at Sakarya University Turkey. *International Journal of Higher Education*. 9. 300. 10.5430/ijhe.v9n3p300.