DIGITAL LITERACY AMONG TEACHERS IN SINGKAWANG CITY: AN ANALYSIS OF GENDER, AGE, AND SOCIO-ECONOMIC STATUS

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Keywords :	ABSTRACT
digital literacy, gender, age, socioeconomic status	*One of the demands of teachers in Generation Z is being able to have digital literacy content that supports their functions and work. There is no research related to the influence of gender, age, and socioeconomic status on digital literacy competency teachers in Singkawang City. This study aims to review whether there are significant differences in teachers' digital literacy abilities in terms of gender, socioeconomic status aspects of those who are able, moderate, or poor, and the age of teachers in different generations. This research method includes the descriptive quantitative inferential survey method. The number of volunteer respondents as research subjects was 200 teachers from 50 elementary and junior high schools who taught in Singkawang City and were selected by the voluntary response sampling technique. Data collection used a questionnaire instrument for teachers that contained 17 items that had been proven valid. Data were analyzed using the Mann-Whitney test for gender and the Kruskal-Wallish H test for age and socioeconomic status. The results showed that (1) the significance value was 0.063 > 0.005, which did not show a significant difference between teachers' digital literacy skills based on gender; (2) the significance value was 0.075 > 0.05, meaning that there was no difference in teachers' digital literacy seen from socioeconomic status (able, moderate, and underprivileged); and (3) the significance value is 0.106 > 0.05, indicating that there is no difference between teachers whose age includes the baby boomers generation, generation X, and the millennial generation.*

INTRODUCTION

The demand for teachers in the current millennial era is to be able to have digital literacy competencies that support their duties and functions as educators to guide students to grow and develop according to the nature of the times. Along with the development of information and communication technology and the demands of the Republic of Indonesia Law Number 14 of 2005, teachers are expected to be professionally able to utilize digital technology and critically assess the truth of information from digital sources. The learning ecosystem in the school environment requires teachers with digital literacy skills so that students can think critically and intelligently respond to the truth of information (Naufal, 2021).

Digital literacy according to Gilster in (Kharisma, 2017) is defined as an individual's ability to understand the information they obtain from digital sources in various forms and use it. The opinion of the European Information Society (Martin, 2005) in (Ng, 2012) states that digital literacy is an individual's conscious attitude toward using digital facilities or tools correctly and appropriately. Digital literacy can be analyzed from a person's activities in cyberspace such as sharing content, information literacy skills and use of digital information (Santos et al., 2013). According to research studies (Syah et al., 2019), several factors influence a person's digital literacy abilities, including active use of online media, academic abilities, family or parents and intensity in reading. The rapid development of digital media today has indirectly forced every individual to become the colours of the digital nation, one of which is educators (Munthe et al., 2021).

Teachers must possess digital literacy skills to keep up with the rapidly evolving world of education. Poor digital literacy can lead to communication and information technology failures, which can be detrimental to the teaching process. The Internet offers numerous benefits that can aid teachers in teaching, sharing, and communicating with their students (Putri, 2021). Additionally, teachers' digital literacy skills indirectly contribute to improving the learning process. According to (Wulandari, 2022), teachers who can encourage their students to utilize digital technology media during their learning can positively influence their academic performance. The study concluded that digital literacy skills played a significant role in enhancing student learning achievement. Therefore, digital literacy skills are deemed essential for supporting quality learning in the current era of Generation Z.

The digital literacy abilities of each generation are different. This is because the development of information technology is always felt year after year. The millennial generation born from 1980 to 2000 has behavioural characteristics that enjoy using information technology (Poluakan et al., 2019). According to the Pew Research Center, the millennial generation includes people with birth years between 1981 and 1996 (Ng, 2012). Meanwhile, those born from 1997 onwards are included in the Z generation category. The increasingly rapid development of technology has been felt from the generation born in the 2000s to the present or what is known as generation Z or net generation. Sensitivity to information technology gives Generation Z more advantages compared to teachers born in previous eras. Therefore, digital literacy is considered important for teachers as educators to have and innovate in classroom learning that suits the character of students today (Zis et al., 2021).

There is a lot of research regarding digital literacy. Previous research results state that digital literacy abilities are different between men's and women's digital literacy (Munthe et al., 2021). This is in line with an analytical study (Putri, 2021) which concludes that digital literacy is influenced by gender. Apart from that, productive age influences teachers' digital literacy levels (Vernanda et al., 2020). However, different results were presented by research (Yanti, 2016) where there was no relationship between gender and digital literacy skills. Apart from that, the results of statistical tests conducted showed that digital literacy did not have a significant relationship with age. Research regarding the influence of gender, socio-economic status and age on digital literacy skills has never been conducted in the city of Singkawang. Thus, researchers are interested in analyzing the digital literacy of educators who teach in Singkawang City in terms of gender, socio-economic status and age.

Based on the literature review above, researchers want to research and analyze the level of digital literacy of teachers in terms of gender, age and socio-economic status in the city of Singkawang. The problem in this research is described in three points, namely:

1. Are there any significant differences in digital literacy between male and female teachers in Singkawang City?
2. Are there any significant differences in digital literacy among teachers with affluent, medium, and underprivileged socio-economic status in Singkawang City?
3. Are there any significant differences in digital literacy among teachers from the baby boom generation, generation X, and the millennial generation in the city of Singkawang?

METHOD

Researchers used quantitative inferential research with survey methods. Quantitative methods are scientific methods that fulfil scientific principles such as rational, measurable, empirical, objective and systematic (Firmansyah et al., 2021). The instrument for research uses a questionnaire, where the type used is a digital survey questionnaire which was adopted from the research results of Wan Ng (2012) in the journal Computer and Education which investigated students' digital literacy levels (Ng, 2012). The survey questionnaire used contained 17 questions and was given to respondents in the form of a Likert scale. The survey questionnaire was created with four answer choices, including strongly agree (4 points), agree (3 points), disagree (2 points) and strongly disagree (1 point).

The type of respondent determination in this research study is classified as non-probability sampling because the researcher only focuses on providing opportunities for teachers at the basic education level who teach in Singkawang City. The respondents consisted of 200 teachers who came from 50 schools at the basic education level from state schools and private schools who taught in Singkawang City and consisting of 29 elementary schools (consisting of 24 state schools and 5 private schools) and 21 schools. Middle School (consisting of 16 schools classified as state and 5 classified as private). The sample was selected using a voluntary response sampling technique. There are 66 male gender teachers and 134 female gender teachers. This technique is a way of collecting samples where respondents voluntarily respond to the public online survey in this research (Sugiyono, 2015).

The sampling procedure was carried out in stages, namely 1) the researcher recorded the number and names of target schools in the city of Singkawang and then entered it into a Google form, 2) the researcher asked for respondents' willingness to fill out a survey questionnaire and distribute it in their respective school areas, 3) a survey questionnaire that has been created in the form of a Google form is sent via the WhatsApp application to be filled in by respondents voluntarily and then distributed via WhatsApp groups (WAG) such as school groups, practitioner community groups, teacher organization groups and other groups, and 4) after the researcher gets The desired number of respondents will then be processed.

The data obtained will then be analyzed using inferential statistics. The use of inferential statistics is because the results of this research aim to conclude the population studied (Sugiyono, 2015). The data analysis technique begins with carrying out a test of Normality to find out whether the data is distributed evenly or not. In this study, the Kolmogorov-Smirnov test of normality was used because the sample size of respondents was more than 50 people. If the data is found to be normally distributed then the data is then processed using a parametric test, but if the test results are found to be unevenly distributed then a non-parametric test is carried out (Quraisy, 2022).

To answer the purpose of the goal is a significant difference in digital literacy between male and female gender differences, the test is used on two independent samples if distributed normally, while the Mann-Whitney statistical test is not spread normally. To check if there is a significant difference in digital literacy between teachers who have socioeconomic status capable, medium and pre-well, the ANOVA

statistical test is used if normal distribution and the Kruskal-Wallis statistical test if data is not normally distributed. Data analysis to see if the difference in digital literacy between teachers whose age includes baby boomers, generation X and millennials are used by Anova tests if the data is evenly distributed and the Kruskal-Wallis test if the data is unevenly spread (Nasution, 2017).

RESULTS AND DISCUSSIONS

To find out the level of digital literacy of teachers in this study, the writers classified them into low, medium and high categories. Low category if the value of $X < 33.5$ where X is the number of points of each respondent's array and SD = 8.5. Medium category if $34 \le X < 50.5$ and high category if $X > 51$. Using the SPSS application data as in the following table.

Table 1 Categories Digital Teacher Literacy Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Medium	36	17.7	18.0	18.0
	High	164	80.8	82.0	100.0
	Total	200	98.5	100.0	
Missing	System	3	1.5		
Total		203	100.0		

Based on Table 3, the category of digital literacy level teachers in Singkawang City is high. Of the 200 people, there were 36 people (18%) of teachers in the medium category. The largest is 164 (82%) people including teachers with high digital literacy.

1). Teacher's Digital Literacy Ability Based on Gender
The first problem in the study is investigating whether there are differences in digital literacy between male and female teachers in Singkawang city. Based on the results of Normality Kolmogorov-Smirno, data were presented table in table 1. The significance value for the digital survey of female teacher literacy data is that $p < 0.05$ and on the results of male teachers is $p < 0.05$. So, the researchers conclude the data were not spread normally.

Table 2. Teacher Literacy Normality Test Results Based on Gender

	Gender	Kolmogorov-Smirnov[b]		
		Statistic	df	Sig.
Mean Digital Literasi Guru	Male	.116	66	.027
	Famale	.127	134	.000

The next stage because the results of the spread data test are uneven, then the follow-up step with the Nonparametric test is the Man Whitney test. The results showed the significance of 0.063 ($p > 0.05$) which showed that there were no differences between the digital literacy of male educators and female educators. Thus, they have the same ability to process information using digital technology. This result is shown in Table 2. The results of the test were similar to the results of previous research that digital literacy capabilities were not gender-influenced (Yanti, 2016).

Table 3. Mann Whitney Test for Teacher Literacy by Gender

	Mean Digital Literasi Guru
Mann-Whitney U	3706.500
Z	-1.863
Asymp. Sig. (2-tailed)	.063

2)Digital Literacy Teacher Based on Social-Economic Status

The second research question is whether there are differences in digital literacy between educators based on socioeconomic status. Based on the results of the Normality Kolmogorov-Smirnov test in Table 4, the value of significance for digital literacy survey data for capable teachers is 0.164 (p > 0.05) , medium teacher 0.002 (p < 0.05) and pre-welfare teacher 0.010 (p < 0.05). The results of the normality test showed that one of the data does not show a normal spread. Therefore, the data were analyzed by using Kruskal-Wallish H test.

Table 4. Test of Normality for Socioeconomic Status of Teachers

	Socioeconomic Status of Teachers	Statistic	df	Sig.
Mean Digital Literacy for Teachers	Pre-prosperous (incomes below minimum wage (2,5 million per month)	.134	59	.010
	Medium (incomes above minimum wage but below 5 million per month)	.111	110	.002
	Capable (incomes above 5 million per month)	.134	31	.164

Table 5. Cruskal-Wallis Test results H

	Mean Digital Literacy for Teachers
Kruskal-Wallis H	5.179
df	2
Asymp. Sig.	.075

The results showed a significance of 0.075 (p > 0.05) in Table 5, so the researchers concluded there were no significant differences in digital literacy of educators reviewed from the socioeconomic status. This result is similar to the results of the investigation (Lazonder et al., 2020) which states that the influence of socioeconomic status does not exist on digital literacy. However, this finding does not agree with the investigation obtained by Leh (Liang et al., 2021) which states that a person's digital literacy can be influenced by their social economic status.

3) Digital Teacher Literacy Based on the Age of Teacher Generation

The third formula of the problem is the investigation into whether there are any significant differences in digital literacy based on the age of the teachers. In this study, the digital generation of teacher literacy based on age is divided into three categories: baby boomers (ages 58 to 76), millennials (ages 43 to 57) and generation X (ages 22 to 42 years). Based on the results of Normality Kolmogorov-Smirnov results presented in Table 6, the value of significance for digital literacy survey data for capable teachers is 0.164 (p > 0.05), medium teacher 0.002 (p < 0.05) and pre-welfare teacher 0.010 (p < 0.05). The results of Normality show that only one of the data above 0.05 while two others were below 0.05 for the significance value. This means that the data were not spread normally; therefore, the data were processed by using the Kruskal-Wallish H test.

Table 6. Test of Normality for Digital Literacy by Age

Teacher Age	Kolmogorov-Smirnovb			Statistic
	Statistic	df	Sig.	
Mean Digital Literacy for Teachers — Age 22 – 42 years old	.115	127	.000	.949
Age 43 – 57 years old	.132	48	.034	.957
Age 58 – 76 years old	.135	25	.200*	.967

Table 7. Kruskal-Wallish H Test Results for Age-based Digital Literacy

	Mean Digital Literasi Guru
Kruskal-Wallis H	4.496
df	2
Asymp. Sig.	.106

The results showed a significant value of 0.106 (p > 0.05) in Table 7 which indicated there were no significant differences between teachers whose ages included in the generation of baby boomers (ages 58 – 76), generation X (ages 43 – 57) and millennials (ages 22 – 42). This means that they have similar capabilities in digital literacy.

Based on theory, digital literacy capabilities are caused by factors from inside and outside factors. Interest from within a person e.g. gender, skill, competency, and age, while for factors from outside the individual e.g. socioeconomic, culture, family profile and appreciation (Mellyzar et al., 2021). The ability to think of men and the ability to think of women more resembles that of women (Ningrum, 2013).

There is no difference between teachers who have socioeconomic status capable, medium and pre-welfare. According to research results (Lazonder et al., 2020), a person's socio-economic status has a weak influence on digital literacy abilities. Teachers' digital literacy abilities have a relationship and influence the competence of an educator (Yazon et al., 2019). This is possible because the teacher adjusts in the pandemic. During the pandemic period, educators are required to have ICT equipment and force teachers to learn information and communication technology (Yusuf et al., 2022). This is done to support the task and function of teachers in providing learning conducted through distance learning.

CONCLUSION AND SUGGESTION

Based on statistical studies conducted, researchers concluded that there were no significant differences in digital literacy based on gender, socio-economic status, and based on level of generations. It is suggested that future research recruit more respondents to clarify the finding. Also, it is suggested to interview participants to gain deeper understanding about their digital literacy skills.

ACKNOWLEDGMENTS

REFERENCES

Firmansyah, M., Masrun, M., & Yudha S, I. D. K. (2021). Esensi Perbedaan Metode Kualitatif dan Kuantitatif. *Elastisitas-Jurnal Ekonomi Pembangunan*, *3*(2). https://doi.org/10.29303/e-jep.v3i2.46

Kharisma, H. V. (2017). Literasi Digital di kalangan Guru SMA di Kota Surabaya. *Libri-Net*, *6*(4), 31–32.

Lazonder, A. W., Walraven, A., Gijlers, H., & Janssen, N. (2020). Longitudinal assessment of digital literacy in children: Findings from a large Dutch single-school study. *Computers & Education*, *143*, 103681.

Liang, Q., de la Torre, J., & Law, N. (2021). Do background characteristics matter in Children's mastery of digital literacy? A cognitive diagnosis model analysis. *Computers in Human Behavior*, *122*, 106850. https://doi.org/https://doi.org/10.1016/j.chb.2021.106850

Mellyzar, M., Unaida, R., Muliani, M., & Novita, N. (2021). Hubungan Self-efficacy dan Kemampuan Literasi Numerasi Siswa: Ditinjau Berdasarkan Gender. *Lantanida Journal*, *9*(2). https://doi.org/10.22373/lj.v9i2.11176

Munthe, R. A., Raihani, R., & Simaremare, H. (2021). Gambaran Kewargaan Digital pada Siswa Madrasah Aliyah Negeri Berdasarkan Perspektif Gender. *Marwah: Jurnal Perempuan, Agama Dan Jender*, *20*(2), 160–173.

Nasution, S. (2017). Konsep Dasar Statistik. *Raudhah*, *05*(02).

Naufal, H. A. (2021). Literasi Digital. *Perspektif*, *1*(2), 195–202.

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers and Education*, *59*(3). https://doi.org/10.1016/j.compedu.2012.04.016

Ningrum, R. K. (2013). Profil Penalaran Permasalahan Analogi Siswa Sekolah Menengah Pertama Ditinjuau Dari Perbedaan Gender. *MATHEdunesa*, *2*(3).

Poluakan, M. V., Dikayuana, D., Wibowo, H., & Raharjo, S. T. (2019). Potret Generasi Milenial pada Era Revolusi Industri 4.0. *Focus: Jurnal Pekerjaan Sosial*, *2*(2), 187–197.

Putri, Y. A. (2021). Pengaruh Kemampuan Literasi Digital dan Kemandirian Belajar Terhadap Hasil Belajar Siswa pada Mata Pelajaran Ekonomi *(Survey Pada Mata Pelajaran Ekonomi Kelas XI IPS SMAN 2 Lembang)*. FKIP UNPAS.

Quraisy, A. (2022). Normalitas Data Menggunakan Uji Kolmogorov-Smirnov dan Saphiro-Wilk. *J-HEST Journal of Health Education Economics Science and Technology*, *3*(1). https://doi.org/10.36339/jhest.v3i1.42

Santos, R., Azevedo, J., & Pedro, L. (2013). Digital divide in higher education students' digital literacy. *European Conference on Information Literacy*, 178–183.

Sugiyono. (2015). Metode Penelitian dan Pengembangan Pendekatan Kualitatif, Kuantitatif, dan R&D. In *Metode Penelitian dan Pengembangan Pendekatan Kualitatif, Kuantitatif, dan R&D*.

Syah, R., Darmawan, D., & Purnawan, A. (2019). Analisis Faktor yang Mempengaruhi Kemampuan

Literasi Digital. *Jurnal Akrab*, *10*(2), 60–69.

Vernanda, D., Nurafiati, P., Susanti, R., & Soepudin, U. (n.d.). Literasi internet Guru di Era Digital. *Kurikulum Di Era Digital*, *14*.

Wulandari, A. S. (2022). Literature Review: Pendekatan Berdiferensiasi Solusi Pembelajaran dalam Keberagaman. *Jurnal Pendidikan MIPA*, *12*(3), 682–689.

Yanti, M. (2016). Determinan literasi digital mahasiswa: kasus Universitas Sriwijaya [Determinants of students digital literacy: the case of Sriwijaya University]. *Buletin Pos Dan Telekomunikasi*, *14*(2), 79–94.

Yazon, A. D., Ang-Manaig, K., Buama, C. A. C., & Tesoro, J. F. B. (2019). Digital literacy, digital competence and research productivity of educators. *Universal Journal of Educational Research*, *7*(8). https://doi.org/10.13189/ujer.2019.070812

Yusuf, M., Saifudin, A., & Zahrok, A. N. (2022). Strategi Kepala Madrasah dalam Meningkatkan Kemampuan Literasi Digital Guru pada Masa Pandemi Covid-19. *Intizam, Jurnal Manajemen Pendidikan Islam*, *5*(2), 80–96.

Zis, S. F., Effendi, N., & Roem, E. R. (2021). Perubahan perilaku komunikasi generasi milenial dan generasi z di era digital. *Satwika: Kajian Ilmu Budaya Dan Perubahan Sosial*, *5*(1), 69–87.