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Uncovering the Digital Divide: Gender-based Insights into Students' Technology and Media Literacy in Mathematics Learning

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Abstract

The development of digital technology is increasingly sophisticated. The need for the existence of technology is not only in everyday life but also needed in learning mathematics. This article examines how Technology Literacy and Student Media Literacy in Mathematics Learning. The urgency of this research lies in achieving equality and inclusivity in digital education. This research is survey research. The number of samples is 165 students. Male students who filled out the questionnaire were 45.7% while female students were 54.3%. The age range of those who completed the questionnaire was 17-24 years. The data collecting approach was carried out utilizing a questionnaire using Google Form to reach many research participants. Descriptive analysis was used to analyse the data. The results showed that the average student technology literacy was 61.84% in the fairly good category, while the average student media technology was 54,46% in the pretty good category. The results of the analysis based on gender, it was found that female's technology literacy and media literacy were higher than males. Further research is urgently needed to develop learning strategies that bridge the gender-based digital divide and promote equal access and technological literacy in mathematics learning.

Kata Kunci: Technology Literacy; media literacy; mathematics learning; gender

INTRODUCTION

Literacy etymologically comes from the Latin "literatus" which means "one who learns". Literacy is a milestone in the progress of a nation that has begun to develop into a functional concept that is not only limited to the ability to read and write since 1960 (Indrawati, 2020). Literacy has also been a part of human life and development since ancient times. The initial practice of very good literacy is to introduce reading from an early age so that people get a general understanding and specific information. According to Indrawati (2020), high literacy skills can produce various information related to competition in living life because literacy is able to influence individual thinking in making conclusions, responding to the environment, and cultivating a critical culture that gives birth to an intelligent and competitive society. Therefore, in this case, literacy is positioned contextually with the environment because it is not only limited by reading and writing but also by responding to the environment.

The latest literacy is not only limited to the ability to read and write; as technology develops rapidly, the expected literacy is digital literacy. With digital literacy, it is very easy to obtain information. Digital literacy is divided into various types, namely information literacy, media literacy, computer literacy, technology literacy, visual literacy, and communication literacy (Covello, 2010). Digital literacy is the skill of understanding technology, communicating and collaborating on technology to obtain information, and being creative in various ways (Tohara et al., 2021); (Buckingham, 2015); (Tang & Chaw, 2015).

Digital literacy can help the millennial generation obtain information related to digital technology and prepare them to face various challenges with the latest technology. Pratiwi and Pritanova (2017) state that digital media has made it easier for users to exchange information. Anyone can easily put it to good use, regardless of age or gender. However, people's lack of understanding of digital media has led to a lot of misuse, which has had a negative impact on their personal and social lives. The curiosity of the users is very high, resulting in hatred arising when someone provides information about something that is not in accordance with the values and norms that apply. This usually happens because of a lack of media literacy in the use of digital media, giving rise to things that are detrimental to oneself and even others.

According to data from a survey of 400 children and adolescents aged 10 to 19 who were distributed throughout Indonesia and represented both urban and rural areas, the Ministry of Information and Technology, in partnership with UNICEF, found that approximately 79.5% of them use digital media and the internet. This resulted in a transition where school-age children and adolescents like to dig up information through the internet and digital media, like interesting lessons that can be directly used with various available applications and tend to like the virtual world. (UNICEF, 2017) states that the use of digital literacy is not only a way of accessing knowledge but can also build critical thinking skills regarding the use of digital technology. One indicator of educational success is success in building digital literacy (Nasrullah et al., 2017).

The need for digital literacy is not only needed in everyday life but is also needed in the world of education, especially in learning mathematics. In learning mathematics, literacy that is very necessary is technology literacy and media literacy. This literacy is necessary because it can change a new paradigm of learning mathematics. Usually, the process of learning mathematics is still conventional and very monotonous, so it does not make students active in mathematics lessons. In accordance with the development of increasingly sophisticated digital technology, it is inevitable that it will be used in the world of education. The use of this technology is a source of learning and teaching aids (Anderson, 2021). Nevertheless, they believe that if done correctly, it can have an influence. Their enquiries stem from this: how can technology enhance education in a way that benefits learning? Which technological integration principles should be considered when implementing them? What are the factors that influence it? What are the roles of teachers and students? (Putrawangsa and Hasanah, 2018).

At the higher education level, the existence of technology and media has changed the lifestyle of student. Today's students are more passive in the process of direct communication and are more focused on the latest information from the media they access. Technology and media have become primary needs

for students, so they have a very high dependence on always looking for the latest information on the internet. The high use of technology and media must also be balanced with a good understanding of technology and the media itself, so that knowledge of technology and media literacy becomes mandatory knowledge for students regardless of gender. Students, as the millennial generation, have a role as an element in society who must always be present to be critical of any changes that might occur (Amelia & Ulumu, 2019). Therefore, students must have the mental readiness to face various challenges in an increasingly sophisticated era of technology and media by mastering knowledge about technology and media literacy. Media literacy can be interpreted as a person's ability to search, study, and utilize various media sources in various forms (Kurniawati and Baroroh 2016). The development of increasingly sophisticated digital technology has made the millennial and Z generation very fast at adopting the latest technology.

Recent advances in educational technology have reshaped the landscape of mathematics learning, with digital tools and media playing an increasingly central role in both formal and informal learning environments. However, the integration of technology in education has not been uniform across different student demographics, and the persistent digital divide, particularly along gender lines, continues to challenge the development of technology and media literacy. The urgency of this research is because digital competence has become a 21st century skill, so currently it is necessary to uncover gender differences that do not fully influence student participation in interaction with technology and media in mathematics learning.

Several studies have highlighted that male students tend to report higher confidence and frequency in using digital technologies, particularly in the domain of computer technology (He & Freeman, 2010; Yau & Cheng, 2012). Conversely, female students often demonstrate equal or superior digital competencies in communication and media-related tasks but are inferior in technology learning contexts (Hatlevi & Christophersen, 2013). This indicates a gender gap in technology use.

In mathematics learning, these differences can impact students' engagement with digital tools such as dynamic geometry software, data analysis platforms, and adaptive learning systems. Research (Abidin et al., 2018) found that both males and females benefit from technology-enhanced mathematics instruction; males are more likely to explore and experiment with mathematical software tools, while females often approach them with caution, citing a lack of confidence.

Recently, the concept of media literacy has gained importance as students are increasingly exposed to mathematics-related content through platforms like YouTube, TikTok, and educational apps. However, gender differences in media literacy, particularly in evaluating, producing, and engaging with mathematics-related content, remain underexplored.

The intersections between gender, technology, media literacy, and mathematics learning thus represent a critical area for inquiry. Despite growing recognition of these issues, there is a dearth of empirical studies specifically analyzing gender-based patterns in technology and media literacy within the context of mathematics education, particularly in the digitally evolving mathematics learning process.

Something interesting is the speed at which the millennial generation is adopting emerging technologies; is it in line with using them in learning, especially learning mathematics? This is due to the view that mathematics is difficult, despite the emergence of easily accessible technology that can help them learn mathematics. Thus, the novelty of this study is to examine How Technology Literacy and Student Media Literacy in Learning Mathematics. Knowing the ability of students' technological literacy and media literacy in learning mathematics can be used as a guide for educators to prepare for learning mathematics by utilizing the right technology. This study addresses this gap by examining how gender influences students' technological and media competencies in learning mathematics, offering insights that could inform more inclusive digital pedagogies. Problem of statement this study to explicitly uncover how gender influences students' tech and media literacy, particularly in mathematics, to inform more equitable educational practices and policy framework.

METHOD

This study uses a survey method (Nelson et al., 2011). The approach used in this study is descriptive-qualitative, namely describing the actual conditions without giving treatment or manipulation to the variables studied. The participants in this study were students from Universitas Islam Riau who had taken mathematics classes. Sampling approach using basic random sampling The sample size was 165, with 45.7% of men and 54.3% of women completing the questionnaire. The respondents who filled out the questionnaire ranged in age from 17 to 24. A media literacy and technology literacy questionnaire was utilized as a research tool in mathematics education. The aspects of media literacy and technology literacy skills used in this study are as follows.

Table 1. Media Literacy Skills Aspects and Technology Literacy Skills Aspects

Aspect	Statement	Number of Statement
Technology Literacy	Able to determine technology effectively to learn mathematics	1
	Able to make Electronic Letters (email)	2
	Able to use email and send by attaching files	3
	Able to create web and display writing (text), images, videos, and others while learning mathematics	4
Media Literacy	Have the skills to use digital learning media in mathematics learning	5
	Able to create digital learning media for Mathematics Learning	6
	Able to use mathematical software to learn mathematics	7

A Google Form questionnaire was used as part of the data collection method, so that it could reach many research samples. The questionnaire on the Google Form used a Likert scale with a choice of answers for each statement, namely: Very Proficient, Proficient, Skilled, Less Skilled, and Unskilled. The data analysis technique was carried out using descriptive analysis. The assessment categories for each component of media literacy and technology literacy use the following modified assessment categories (Arikunto in (Dinata, 2021)

Table 2. Rating Category

Value Interval	Rating Category
$80 < x \leq 100$	Very Good
$60 < x \leq 80$	Good
$40 < x \leq 60$	Pretty Good
$20 < x \leq 40$	Poorly
$0 \leq x \leq 20$	Very Poorly

The research instrument was tested using SmartPLS involving 99 respondents. The results of the construct validity test through the Average Variance Extracted (AVE) value showed that all indicators had an AVE value of > 0.5, which met the valid criteria. Meanwhile, the reliability test yielded a Cronbach's Alpha value of 0.8, indicating that the instrument had good internal consistency.

Quantitative data obtained from questionnaires measuring students' levels of technological and media literacy in mathematics learning will be analyzed using descriptive quantitative.

RESULTS

1. Technology Literacy

The results of digital literacy on aspects of technology literacy are presented in the following table.

Table 3. Aspects of Literacy Technology

Statement	Score	Presentage (%)	Category
Able to determine technology effectivelv to learn mathematics	3,04	60,84	Pretty Good
Able to make Electronic Letters (email)	3,41	68,36	Pretty Good
Able to use email and send by attaching files	3,66	73,33	Good
Able to create web and display writing (text), images, videos, and others while learning mathematics	2,42	44,84	Pretty Good
Total	3,09	61,84	Pretty Good

In terms of aspects of technological literacy skills, in general, students are still categorized as low in using these aspects because the categories of each aspect are still in the pretty good category. In the statement, using email and sending files alone is in the good category. Furthermore, the survey results for each statement can be seen in each of the following pie charts:

a. First Statement

In the first statement on the aspect of technology literacy, the survey results can be seen in the following table:

Table 4. First Statement of Technology Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Able to determine technology effectively to learn mathematics	Very Advanced	4	2,4
	Advanced	42	25,5
	Skilled	81	49,1
	Less Skilled	33	20,0
	Unskilled	5	3,0
Total		165	100

In the Table 4, it can be seen that almost 50% of the respondents are skilled in utilizing technology to effectively learn mathematics. Digital technologies that they often use in their daily lives, such as smartphones, laptops, Google, YouTube, Zoom, photo maps, and social media. In this case, it can be seen that students are already skilled in using technology, but the technologies used in learning mathematics are still lacking.

b. Second Statement

In the second statement on the aspect of technology literacy, the survey results can be seen in the following table:

Table 5. Second Statement of Technology Literacy

Statement	Rating	Number of Respondents	Percentage (%)
	Very Advanced	21	12,7
	Advanced	51	30,9

Able to make Electronic Letters (email)	Skilled	73	44,2
	Less Skilled	16	9,7
	Unskilled	4	2,4
Total		165	100

The Table 6 shows that In this second statement of technological literacy, being able to make Electronic Letters (email) is good, but it can be seen that only 20 people are less skilled and unskilled. This can be caused by rarely using it in daily activities.

c. Third Statement

In the third statement on the aspect of technology literacy, the survey results can be seen in the following table:

Table 6. Third statement of Technology Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Able to use email and send by attaching files	Very Advanced	26	15,8
	Advanced	68	41,2
	Skilled	61	37,0
	Less Skilled	10	6,1
	Unskilled	0	0
Total		165	100

The Table 6 shows that all students are able to use email and send attachments. However, this needs to be checked directly to verify the truth obtained from this survey. Survey data shows that more than 50% of students are very proficient and adept at sending emails in file format.

d. Fourth Statement

In the fourth statement on the aspect of technology literacy, the survey results can be seen in the following table:

Table 7. Fourth Statement of Technology Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Able to create web and display writing (text), images, videos, and others while learning mathematics	Very Advanced	1	0,6
	Advanced	15	9,1
	Skilled	40	24,2
	Less Skilled	76	46,1
	Unskilled	33	20
Total		165	100

In the Table 7, it can be seen that students are still lacking in being able to create webs and display writing (text), images, videos, and others while learning mathematics. It can be seen that more than 60% of students are still unable to create webs and display writing (text), images, videos, and others while learning mathematics. This means that students are still able to take advantage of ready-to-use technology.

2. Media Literacy

Furthermore, the results of a survey were conducted to see student perceptions of the use of media literacy in learning mathematics. The results of research on media literacy in learning mathematics can be seen from the following table:

Table 8. Aspects of Literacy Media

Statement	Score	Presentage (%)	Category
Have the skills to use digital learning media in mathematics learning	3,07	61,40	Good
Able to create digital learning media for Mathematics Learning	2,53	50,06	Pretty Good
Able to use mathematical software to learn mathematics	2,55	51,00	Pretty Good
Total	2,72	54,46	Pretty Good

From the Table 8, in general, students already have good skills in using digital learning media in learning mathematics. However, in terms of making digital learning media for mathematics learning, it is still the lowest compared to the other 3 statements. But the difference is not significant, and the three statements have a pretty good category.

Next, an analysis was performed for each statement. The findings are presented in the following tables and pie charts:

a. First Statement

In the first statement on the media literacy aspect, the survey results can be seen in the following table:

Table 9. First Statement of Media Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Have the skills to use digital learning media in mathematics learning	Very Advanced	4	2,4
	Advanced	43	26,1
	Skilled	83	50,3
	Less Skilled	32	19,4
	Unskilled	3	1,8
Total		165	100

From the Tabel 9, it can be seen that there are still few students who are very experienced, and the percentage of students who are less and not skilled in using media in mathematics learning is still quite large. This needs to be a concern for educators.

b. Second Statment

In the second statement on the media literacy aspect, the survey results can be seen in the following table:

Table 10. Second Statement of Media Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Able to create digital learning media for Mathematics Learning	Very Advanced	2	1,2
	Advanced	28	17
	Skilled	45	27,3
	Less Skilled	71	43,0
	Unskilled	19	11,5
Total		165	100

In the Table 10, it can be seen that many students are less skilled in making mathematics learning media. Only two people are very proficient and need to be explored further to see what kind of mathematics learning media they have used. Overall, the less skilled outweigh the skilled.

c. Third Statement

In the third statement on the media literacy aspect, the survey results can be seen in the following table:

Table 11. Third Statement of Media Literacy

Statement	Rating	Number of Respondents	Percentage (%)
Able to use mathematical software to learn mathematics	Very Advanced	3	1,8
	Advanced	26	15,8
	Skilled	52	31,5
	Less Skilled	63	38,2
	Unskilled	21	12,7
Total		165	100

The Table 11 shows that the less skilled are more skilled than the skilled or proficient. However, it was also seen that the numbers were almost the same between the proficient and skilled groups and the less skilled and unskilled groups. Thus, it is necessary to familiarize students with using software that can support their mathematical understanding. Following on Figure 1, an overview of the overall data is given using the bar diagram presented in Figure 1:

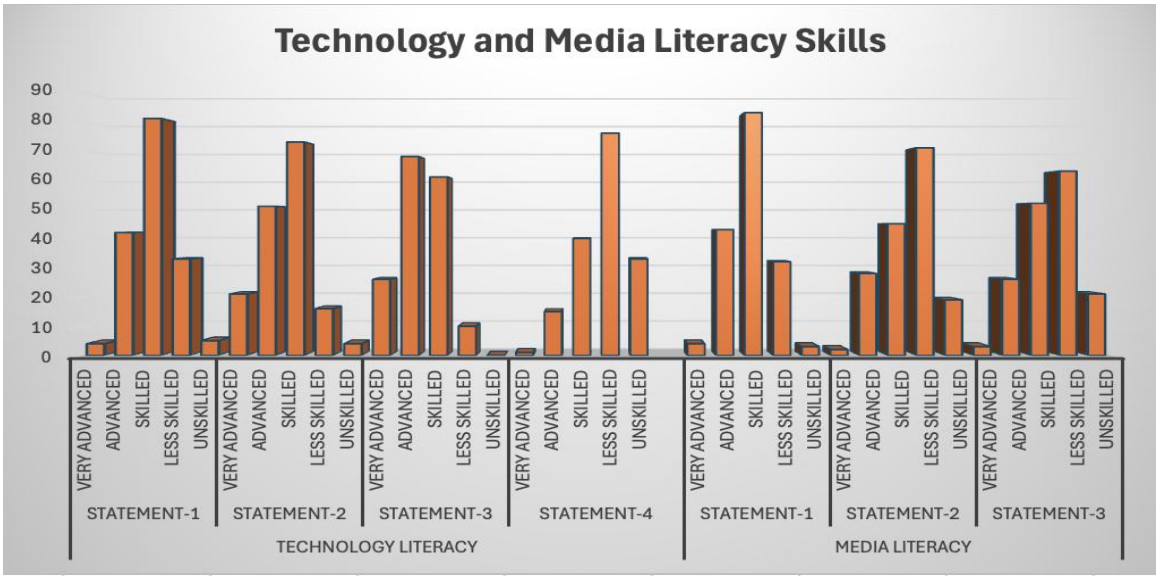

Figure 1. Tecnology and Media Literacy Skills

From the overall results in Figure 1, it is seen that the respondents have the ability to be literate in technology and media at the middle to upper level, dominated by the Skilled and Advanced categories. This shows that they are not only able to use technology and digital media functionally, but also begin to understand the evaluative and critical aspects. However, there are still a small number of respondents in the Less Skilled and Unskilled categories, which indicates a gap in digital skills among students. This condition shows the need to strengthen digital-based learning programs and media literacy to increase competence equality at all levels.

3. Technology and Media Literacy based on Gender.

The results of the survey will then describe student technology and media literacy in learning mathematics based on gender. The results of the comparison of students' technological literacy abilities based on gender are shown in the following table:

Table 12. Technology Literacy Aspects Based on Gender

Statement	Female		Categori	Male		Categori
	Score	%		Score	%	
Able to determine technology effectively to learn mathematics	3,16	63,29	Good	2,89	57,84	Pretty Good
Able to make Electronic Letters (email)	3,46	69,23	Good	3,36	67,29	Good
Able to use email and send by attaching files	3,82	76,48	Good	3,47	69,46	Good
Able to create web and display writing (text), images, videos, and others while learning mathematics	2,34	46,81	Pretty Good	2,12	42,43	Pretty Good

The Table 12 shows that In the aspect of technology literacy based on gender, overall, they are able to use technology in learning mathematics. Male experience difficulties in making websites and displaying text, images, videos, and others when learning mathematics. This may be because female are more diligent at doing tasks than male. In this indicator, there is almost the same percentage of male and female in learning mathematics. Then, media literacy based on gender will be presented in the following table:

Table 13. Aspects of Media Literacy Skills Based on Gender

Statement	Female		Categori	Male		Categori
	Score	%		Skor	%	
Have the skills to use digital learning media in mathematics learning	3,27	65,49	Good	2,83	56,75	Pretty Good
Able to create digital learning media for Mathematics Learning	2,72	54,51	Pretty Good	2,41	45,95	Pretty Good

Able to use mathematical software to learn mathematics	2,67	53,41	Pretty Good	2,52	48,38	Pretty Good

From in Table 13, in general, students are very capable of using media to learn mathematics. However, to create digital learning media in mathematics learning is still the lowest among the other two statements. For differences in abilities between male and female in media literacy based on gender, female's skills are still higher in using media literacy to study mathematics learning. he following Figure 2 contains a comparison of technology and media litercy skills by gender:

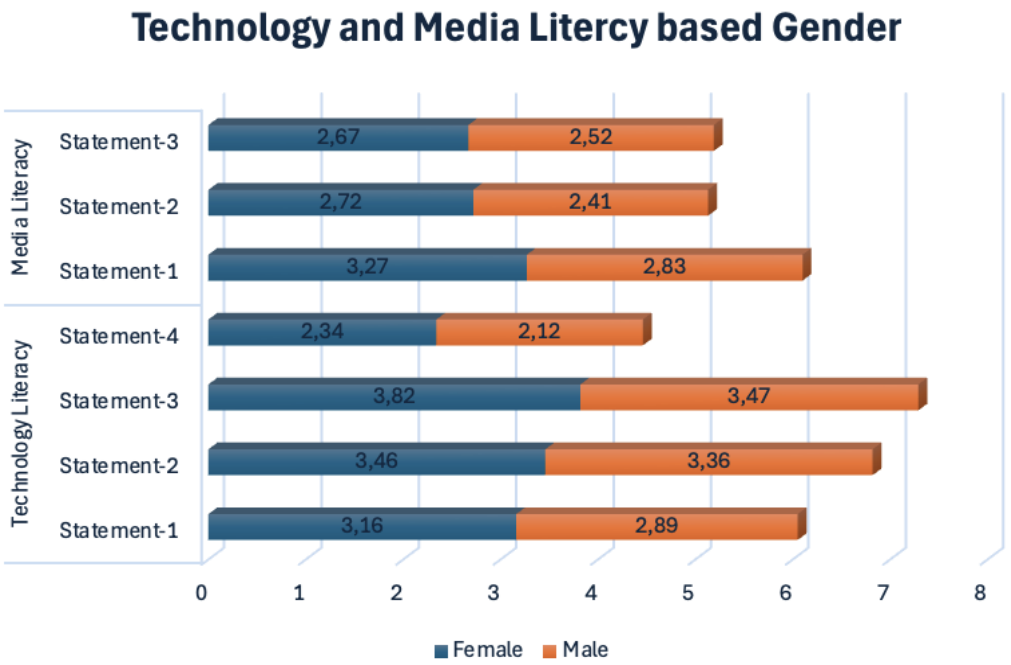

Figure 2. comparison of technology and media literacy skills by gender

Overall, women showed more consistent achievement and were in a higher category, indicating that the level of literacy or measured ability was relatively better in the female group compared to men. This finding shows that there is a tendency for gender-based differences that are important to be considered in the development of inclusive and equal learning strategies.

DISCUSSION

The results of this study show that there is a significant difference in technology and media literacy between male and female students in the context of mathematics learning. This difference is reflected in three main aspects: access and use of technology, confidence in the use of digital media, and critical ability to evaluate digital information relevant to mathematics learning.

The findings of this study indicate that overall, the average student's technology literacy is 54.46% in the pretty good category, while the average student's media literacy is 61.84% in the pretty good category. In addition, the conclusions found in this study indicate that based on gender, it was found that female technological literacy was the same as males, while in the aspect of media literacy, it turned out that females were higher than males. In general, male students show a higher frequency of using digital devices than female students, especially in non-academic activities such as playing games or exploring technology. However, when specifically associated with the use of technology for mathematics learning, no noticeable difference was found in access levels. That is, although quantitatively men use devices

more often, this is not always directly proportional to the use of technology for academic purposes. This finding supports the results of a previous study that states that the digital gap is not only related to access, but also related to literacy of its use(Anderson, 2021; Buckingham, 2015; Koltay, 2011).

This research also found that male students tend to have higher confidence in using technology and digital media in learning mathematics. On the contrary, many female students feel less confident in exploring new technology, especially applications related to solving mathematical problems (Agustin & Winarso, 2021; Herlina et al., 2023; Novitasari et al., 2020a).

The most prominent aspect is the difference in the ability to critically assess digital media sources used to learn mathematics, such as learning videos, educational sites, and mathematics applications. Although female students are more selective in choosing sources, male students are more spontaneous in using various media without always considering the reliability of information. This shows that media literacy is not only determined by the frequency of use, but also by cognitive strategies used in selecting and evaluating digital information(Covello, 2010; Nelson et al., 2011).

The findings of this study reveal significant differences in students' levels of technology literacy and media literacy based on gender, which provide new insights into the dynamics of digital competence in mathematics learning. Male students generally demonstrated higher confidence in using digital tools for problem-solving and data processing, while female students tended to show stronger awareness in evaluating and selecting appropriate media sources for mathematical tasks. This indicates that both genders possess distinct strengths that can complement each other in a collaborative digital learning environment.

Technological literacy skills in mathematics lessons play an important role in improving abilities and supporting the process of learning mathematics (Herlina et al., 2023). The development of technological literacy skills must always be updated because everything is currently very dependent on technology, especially in the education sector (Novitasari et al., 2020b). For this reason, students must be prepared to have good technological literacy. With good technological literacy skills, you can improve your understanding of mathematics.

In terms of technology literacy, the results highlight that access and familiarity with digital devices alone do not guarantee effective utilization in learning mathematics. Many students, despite having sufficient access, still face difficulties in applying digital tools for analytical or statistical reasoning/literacy. This suggests the need for instructional approaches that integrate technological skills not merely as supportive tools, but as an integral part of mathematical exploration and representation.

Apart from technological literacy, there is also media literacy, which is part of digital literacy. Media literacy is the ability to access, analyze, evaluate, and communicate information obtained in various forms of media (Tang & Chaw, 2015). Skills cannot be acquired just like that, but like all skills, they need to be trained and can be improved (Kurniawati & Baroroh, 2016). Media literacy skills are also a must for students if they do not want to be left behind and become strangers among digital information flows (Adiarsi et al., 2015). Therefore, students are expected to be wiser in using internet media to broaden their horizons and not just as a medium of entertainment to access online games and things that are not useful regardless of gender.

Meanwhile, the findings of media literacy show that students' ability to critically assess and interpret mathematical information presented in digital media is still limited, such as the use of mathematical software, or data processing. These limitations can affect their capacity to make data-driven decisions and to understand real-world mathematical contexts. Therefore, educators must include an explicit understanding of critical analysis of mathematics learning media to strengthen students' reasoning and interpreting skills in mathematics.

The application of technological literacy and media literacy can also be applied to mathematics learning so that learning does not seem monotonous (Ting, 2015). The media used can also be adapted

to the material to be studied at that time so that learning is more interesting, enthusiasm and interest in learning mathematics can increase, and this can have an impact on learning outcomes, which also increase. (Nelson et al., 2011)

The education system will have a significant impact on technological and media literacy assessments. Therefore, in future research, it is hoped that students will be able to carry out proficiency tests using technology and media literacy as well as conduct interviews and observations from the side of their academic abilities. This aims to obtain more information on the use of student digital literacy in mathematics lessons.

This gender-based digital gap demands a pedagogical approach that is more sensitive to the needs and obstacles of each group. Teachers and educational institutions need to provide more personalized support, including digital literacy training that is not only technical but also builds confidence and critical thinking skills. In addition, it is important to eliminate gender stereotypes in the use of technology, for example STEM (Science, Technology, Engineering, Mathematics) as part of the digital curriculum (Ejiwale, 2013; Lucena;, 2020; Pablo & Navas-parejo, 2020; Position, 2018; Yildirim & Selvi, 2016).

Mitigating the gender-related digital divide in mathematics learning or matehematics education requires the implementation of targeted and practical measures. One critical approach involves introducing digital literacy programs that are responsive to gender dynamics, particularly by enhancing the confidence of female students in navigating mathematical technologies. Equally important is the integration of technology into mathematics learning through inclusive, collaborative learning strategies that encourage balanced participation across genders. Educators must also be equipped with the skills to recognize and counteract gender biases in their use of classroom technologies. Furthermore, engaging parents in supporting digital literacy at home can strengthen student involvement, especially for learners with limited access. Ultimately, ensuring fair access to digital resources, alongside supportive educational policies, is vital in enabling all students to acquire the technological and media literacy needed for meaningful participation in mathematics learning.

The novelty of this research lies in its integrated focus on both technology literacy and media literacy within mathematics learning, analyzed through the perspective of gender differences. Unlike previous studies that generally addressed digital literacy in a broad sense, this study offers a more detailed insight into how gender influences students' engagement with digital tools and media in mathematical learning environments.

The results of this study have significant implications for developing fair and inclusive learning strategies. These insights can guide educators and policymakers in creating specific interventions, such as adaptive digital training and gender-responsive curriculum models, to reduce the digital divide and strengthen students' mathematical abilities in the digital age.

CONCLUSION

This article explores technology literacy and media literacy in mathematics learning from a student's perspective. The results of the analysis show that the average student's technology literacy is 54.46% in the pretty good category, while the average student's media literacy is 61.84% in the pretty good category. In addition, the conclusions found in this study indicate that based on gender, it was found that female's technological literacy was the same as male's, while in the aspect of media literacy, it turned out that female were higher than male.

From the findings of this study, it is necessary to increase technological literacy for male and female students in learning mathematics by ensuring that teachers always use technology in the teaching

and learning process. In addition, media literacy also requires attention because students are generally less skilled at utilizing the media used in learning mathematics.

The results of this study can contribute to increasing digital literacy, especially technological literacy and media literacy, in learning mathematics. Educators can develop their digital literacy skills to design appropriate and effective teaching and learning methods to help students succeed in mastering mathematical concepts and improve their technology and media literacy skills.

The limitation of this study is that it is only based on a questionnaire survey based on the views or perceptions of each student. In order to obtain a stronger judgment, in-depth interviews and direct observation of the respondents are needed to see the agreement between the questionnaire and their technological and media literacy abilities.

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