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Teacher Acceptance of Multimodality Digital Media in Mathematics Lessons with a Meaningful Learning Approach in Elementary Schools: Based on SUS

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Abstract. Digital technologies have changed the educational landscape, demanding a generation that is tech-savvy, critical, creative and innovative. Mathematics, often considered difficult, requires an innovative approach. Multimodality digital learning media comes as a solution, supporting meaningful learning by linking new information to existing concepts. However, its utilization by teachers is still not optimal. This study aims to examine the acceptability of multimodality digital media in meaningful learning-based mathematics learning among 50 elementary school teachers in Lengkong Sub-district. Using quantitative survey method, data were collected through System Usability Scale (SUS) questionnaire, which assessed ease of learning, efficiency, memorability, error handling, and satisfaction. As a result, the media achieved an average SUS score of 76, placing it in the "Good" and "Acceptable" categories. This indicates a positive and significant acceptance from teachers. Nonetheless, this study was limited in terms of coverage area and number of respondents. For future studies, it is recommended to expand the coverage and respondents for more representative results. In conclusion, this media has great potential to create more interesting and meaningful math learning.

Keywords: Multimodality Digital Media, Mathematics Learning, Meaningful Learning, System Usability Scale (SUS), Teacher Acceptability.

INTRODUCTION

Technological developments have brought significant changes to various aspects of human life, including education. According to Hoyles & Lagrange, digital technology has a significant impact on the current global education system. This is because digital technology-based learning offers attractiveness, efficiency, and effectiveness, as explained by Simanjuntak (2019). Modern learning must be able to shape an adaptive generation to respond to global challenges. Yuliati & Saputra (2019) explain that the era of the industrial revolution 4.0 demands human resources who are literate in science and technology, as well as possessing critical thinking skills, collaboration, creativity, innovation, and high self-confidence. According to Rimayasi et al,(2024) technology offers an engaging and immersive learning experience. Technology can also improve students' cognitive and social skills through interactive learning experiences. Furthermore, technology enables more flexible learning methods, allowing students to learn at a pace and style that best suits their needs.

The primary goal of education is successful learning. To achieve this, the learning process must be designed to be effective, on-target, and capable of enhancing competencies relevant to current developments. Mathematics is often considered a daunting subject for students due to its abstract nature. Therefore, teachers must strive to create enjoyable and engaging

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mathematics learning. One way to achieve this is by implementing creative learning methods that encourage active participation. Furthermore, the use of learning media can also increase student interest, making them more creative, active, and innovative in the teaching and learning process (Astra et al., 2013; Margarita, 2018; Widayanti & Aisyah, 2019).

To make mathematics learning more engaging and meaningful, it's helpful to connect it to students' everyday experiences. This approach is known as contextual learning, where material is taught in contexts relevant to students' real lives. According to Assingkily & Hardiyati (2019), effective learning occurs when students can process new information, make sense of it, and align it with their own way of thinking.

According to Munifah (2019), mathematics learning not only aims to help students understand the material but also encourages them to learn with in-depth understanding and actively construct new knowledge from experience and existing knowledge. Therefore, it is crucial to choose the right learning strategy so that students can easily understand and absorb the material presented by the teacher. One strategy that can be used is meaningful learning. According to Irmawan (2021), meaningful learning is the process of connecting new information with existing relevant concepts. Similarly, Ausubel, in Irmawan (2021), states that the meaningful learning process occurs when someone is able to adapt their existing knowledge to the new knowledge they have acquired. According to Irmawan (2021), meaningful learning has several advantages. First, new information tends to be more easily remembered in the long term. Second, this approach makes learning similar material easier later. Finally, although knowledge may not always be immediately remembered, its traces will remain in our cognitive structure, allowing it to be recalled when needed.

According to Putra et al. (2023), the rapid advancement of digital technology has had a significant impact on education. The use of digital technology in learning enables a more active learning experience, helping students build knowledge, develop problem-solving skills, and explore material in greater depth. Digital technology not only functions as a means of conveying information but also creates a learning environment that connects teachers and students across physical locations. Based on research by Anam (2021), the use of technology-based or digital learning media can enliven the classroom atmosphere through active communication and discussion. This media also makes it easier for teachers to deliver material and makes it easier for students to understand. Furthermore, digital technology adds an engaging dimension to learning, making the learning process more effective and efficient. The rapid advancement of technology and the presence of digital learning media in education

make it easier for teachers to implement meaningful and contextual learning. These digital tools enable teachers to create learning experiences that are more relevant to students' lives, while facilitating a deeper understanding of the material.

Although teachers are aware of this rapid technological development, some teachers may still not utilize and accept digital media as a support in the learning process, especially in mathematics learning which has more challenges. Therefore, researchers will try to explore the extent of teacher acceptance of multimodal digital media in mathematics lessons with a meaningful learning approach in elementary schools. This research will be conducted using the system usability scale method. The hypothesis of this study is that multimodal digital media in mathematics lessons with a meaningful learning approach in elementary schools is acceptable to teachers.

METHODOLOGY

In this study, the researchers used quantitative methods. This approach is effective for answering research questions involving numerical data and requiring statistical analysis. To effectively present a research report, it is essential to have a solid understanding of the various components of quantitative methods. These include the research approach and type, population and sample, research instruments, data collection techniques, and data analysis. A thorough understanding of each of these concepts is crucial. This helps ensure that the entire research process, from the type of research to the data analysis presented in the proposal and report, aligns with applicable scientific writing standards (Wahidmurni, 2017). The following explains the specific stages of the quantitative method applied in this research:

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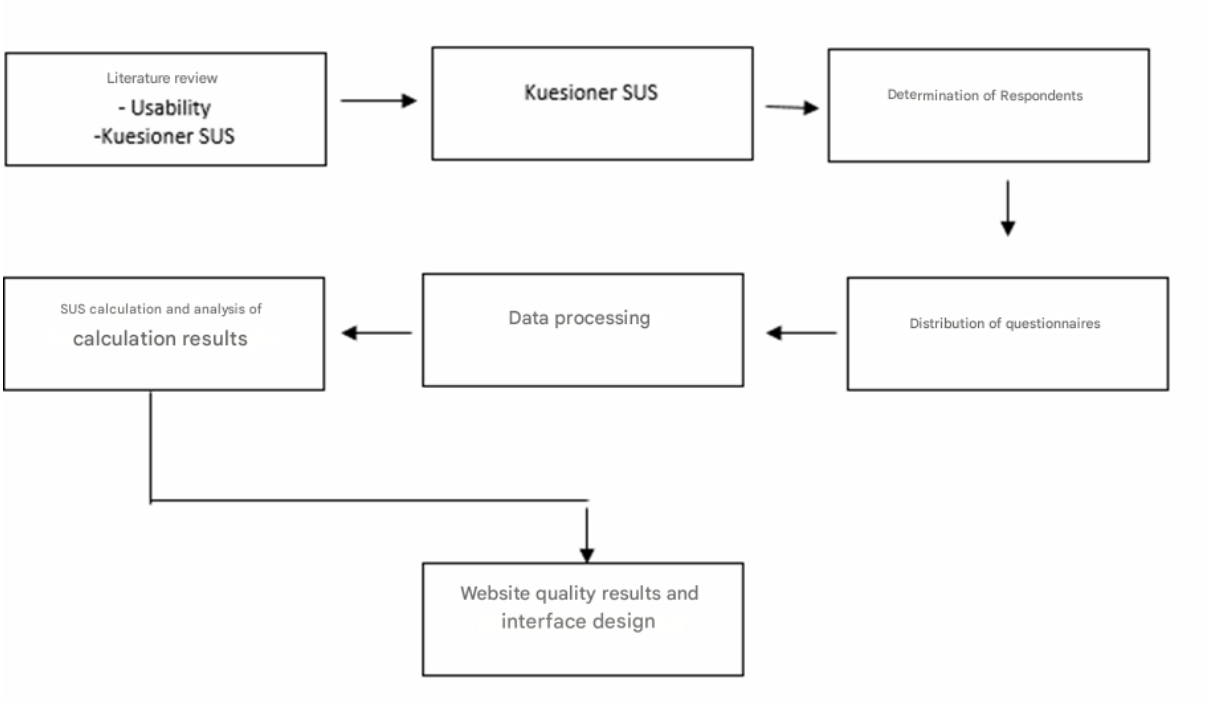

Figure 1 : Research stages

a. SUS Questionnaire

In this study, data was collected through a questionnaire. A questionnaire is a data collection method that involves providing written questions to respondents for them to answer. The data collection process involves asking respondents to answer a series of questions. The ten questions in question are shown in Table 1.

Table 1. SUS Instrument

No	Component Statement
1	I think will use multimodality digital media in mathematics learning
2	I feel multimodality digital media in mathematics learning complicated For used
3	I feel multimodality digital media in mathematics learning easy used
4	I need help from person other or technician in use multimodality digital media in mathematics learning
5	I feel features multimodality digital media in walking mathematics learning with should
6	I feel There is Lots matter Which No consistent (No harmonious on multimodality digital media in mathematics learning)
7	I feel person other will understand method use multimodality digital media in mathematics learning with fast
8	I feel multimodality digital media in mathematics learning confusing
9	I feel No There is obstacle in use multimodality digital media in mathematics learning

10	I need get used to self moreover formerly before use multimodality digital media in mathematics learning

Based on Table 1, the System Usability Scale (SUS) instrument uses a five-level Likert scale. Respondents can choose from "strongly disagree" (score 1) to "strongly agree" (score 5). The total SUS score ranges from 0 to 100 (Widiyanti & Maknunah, 2021).

Data analysis in this study was conducted quantitatively using the System Usability Scale (SUS) method. SUS is a survey method developed to measure the level of application usability quickly and efficiently, often referred to as a "quick and dirty" measurement (Handayani & Adelin, 2019). The SUS questionnaire consists of 10 questions or instruments, the details of which can be seen in Table 1.

According to Nielsen (2012), there are five important aspects of *usability quality* :

1. *Learnability*

This aspect measures how easily new users can learn and complete basic tasks when they first visit a website.

2. *Efficiency*

Efficiency indicates how quickly users can complete advanced tasks once they understand the basic functions of the website.

3. *Memorability*

This aspect assesses users' level of familiarity with a website after they haven't used it for a long time. Essentially, whether they still remember how to use it.

4. *Error*

Errors relate to how often users make errors, how severe those errors are, and how easily users can resolve or fix errors that occur when interacting with a website.

5. *Satisfaction*

The final aspect, *Satisfaction* , describes the overall level of user satisfaction when using the website.

There are several stages in analyzing quantitative data. First, data validation is performed to ensure the collected data meets research standards. Second, data editing is performed to

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correct the raw data. This may include removing duplicate entries or correcting other inconsistencies. Finally, the questionnaire data is processed using calculations according to the established System Usability Scale (SUS) method formula.

Testing multimodality digital media in mathematics learning using the SUS instrument involves several calculation rules. Each statement has a contribution score ranging from 0 to 5. For odd-numbered statements, subtract 1 from the respondent's answer scale. For even-numbered statements, subtract 5 from the respondent's answer scale. The collected contribution score is then multiplied by 2.5 to obtain the overall System Usability Score (SUS) (Handayani & Adelina, 2019). The following is the SUS score calculation formula:

$$\text{mean} = \sum_{n}^{i} = 0\ xi/n \quad (1)$$

Where xi : mark score respondents N : Number of Respondents

Score SUS = ((R1 - 1) + (5 − R2) + (R3 - 1) +(5 - R4) + (R5 - 1) + (5 - R6) +(R7 - 1) + (5 - R8) + (R9 - 1) +(5 - R10)) x 2.5) (2)

After all respondent data is collected and processed, the System Usability Scale (SUS) generates a score. This score is then grouped into different rating and grade categories , depending on the total score obtained. Details of these categories can be seen in Figure 2.

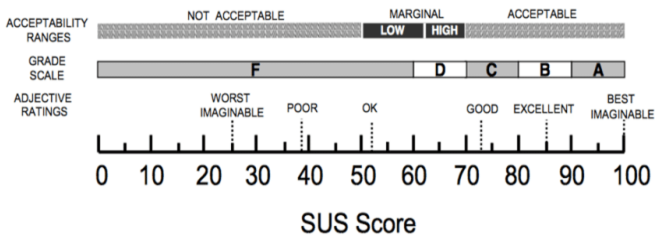

Figure 2. Interpretation of SUS Scores (A. Bangor, et al., 2009)

Table 2. Explanation of SUS Scores

Grade Scale	Adjective Ratings	Acceptability Range
A: 91 – 100	Best Imaginable : 85 – 100	Acceptable : 70 – 100
B: 81 – 89	Excellent : 74 – 85	
C: 71-80	Good : 53 – 74	Marginal : 50 – 70
D: 61 – 70	Okay : 39 – 53	
F: 0 – 60	Poor: 25 – 39	Not Acceptable : 0 – 50
	Worst Imaginable : 0 – 25.	

As shown in Table 2, the System Usability Scale (SUS) evaluates software from three perspectives. Acceptability measures the degree to which users perceive the software. Website quality or level is assessed using a grade scale, and descriptions of website quality are obtained through adjective ratings (N. Oktaviani and Fatmasari, 2020).

b. Respondent Determination

Survey research serves to identify and analyze data from samples representative of a population. This method allows researchers to understand the frequency of events, the distribution patterns of certain characteristics, and the relationships between variables. The advantage of surveys lies in their flexibility, allowing them to be applied to populations of various sizes, both large and small (Syahrizal & Jailani, 2023). The subjects who would become respondents were 50 elementary school teachers, consisting of both male and female classroom teachers, aged between 20 and 60 years old, covering the Lengkong District of Bandung City.

RESULTS AND DISCUSSION

Results

a. Multimodality Digital Media Display

Multimedia digital media in mathematics learning is the object of assessment using the SUS instrument, where the multimedia digital media is hosted on a website that includes supporting media for mathematics learning. The following is a display of multimodality digital media on the website:

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Figure 3. Multimodality Digital Media Display

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b. Data processing

Table 3. Recapitulation Answer Respondents

No	Statement	Answer 1 (STS)	2 (TS)	3 (N)	4 (S)	5 (SS)
1	I think will use multimodality digital media in mathematics learning	0	1	3	18	28
2	I feel multimodality digital media in mathematics learning complicated For used	17	19	5	4	5
3	I feel multimodality digital media in mathematics learning easy used	0	0	3	24	23
4	I need help from person other or technician in use multimodality digital media in mathematics learning	18	13	7	10	2
5	I feel features multimodality digital media in walking mathematics learning with should	0	0	2	20	28
6	I feel There is Lots matter Which No consistent (No harmonious on multimodality digital media in mathematics learning)	16	21	5	7	1
7	I feel person other will understand method use multimodality digital media in mathematics learning with fast	0	1	4	25	20
8	I feel multimodality digital media in mathematics learning confusing	20	21	6	2	1
9	I feel No There is obstacle in use multimodality digital media in mathematics learning	1	1	3	20	25
10	I need get used to self moreover formerly before use multimodality digital media in mathematics learning	13	9	1	22	5
Total		**85**	**86**	**39**	**152**	**138**
Proportion %		**17%**	**17 %**	**8%**	**30%**	**28%**

Table 3 presents the results of the questionnaire completed by respondents. 17% of respondents chose strongly disagree, 17% chose disagree, 8% chose unsure, 30% chose agree, and 28% chose strongly agree. Based on the percentage of choices, the total is 100%.

c. SUS Calculation and Analysis of Calculation Results

After obtaining data from respondents, the next step is to calculate the SUS score. The SUS score is calculated for each respondent, then added up and averaged. The calculation process is described in Table 4 below.

Table 4. Results Recapitulation SUS

Respondents	Question										Amount	Score
	1	2	3	4	5	6	7	8	9	10		
1	4	0	4	0	4	1	3	0	4	1	21	53
2	4	3	4	4	4	4	4	4	4	3	38	95
3	4	4	4	4	4	3	4	4	4	4	39	98
4	3	1	3	1	3	1	3	1	3	1	20	50
5	4	3	3	4	4	4	3	4	4	4	37	93
6	4	0	3	1	3	1	2	2	3	0	19	48
7	4	4	3	4	4	3	4	4	4	4	38	95
8	4	0	3	2	3	3	3	3	3	1	25	63
9	4	3	4	3	4	3	2	3	3	3	32	80
10	4	0	4	1	4	3	3	3	3	1	26	65
11	4	4	3	3	3	4	4	4	4	3	36	90
12	3	3	3	3	2	1	3	3	3	1	25	63
13	3	2	2	1	4	0	3	2	3	0	20	50
14	4	4	4	3	4	4	4	4	4	0	35	88
15	4	4	4	4	4	4	4	4	4	4	40	100
16	4	3	4	3	4	3	4	3	4	1	33	83
17	3	3	3	3	3	3	3	3	3	1	28	70
18	1	1	4	4	4	3	1	4	0	3	25	63
19	3	3	3	3	3	3	3	3	3	3	30	75
20	4	3	4	4	4	3	4	3	4	1	34	85
21	2	3	3	3	2	1	2	3	1	1	21	53
22	2	1	3	1	3	1	3	3	3	1	21	53
23	2	1	2	2	3	2	3	2	2	1	20	50
24	4	3	3	3	4	3	3	3	3	3	32	80
25	3	2	3	2	3	3	3	3	3	1	26	65
26	3	3	3	2	3	3	3	3	3	1	27	68
27	3	3	3	3	3	3	3	3	2	1	27	68
28	3	3	3	3	3	3	3	3	3	3	30	75
29	4	4	4	4	4	4	4	4	4	4	40	100
30	4	4	4	4	4	4	4	4	4	4	40	100
31	4	4	4	4	4	4	4	4	4	4	40	100
32	4	3	4	3	4	3	4	3	4	0	32	80
33	3	2	3	1	3	3	2	2	3	1	23	58
34	3	3	3	2	3	2	3	3	3	1	26	65
35	3	4	3	1	3	3	4	3	4	1	29	73
36	3	2	2	1	3	2	3	1	2	1	20	50
37	4	3	3	1	3	3	3	3	3	1	27	68

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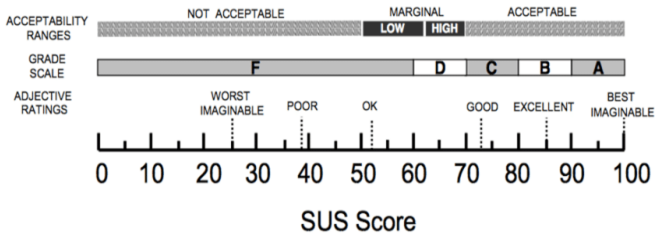
Respondents	Question										Amount	Score
	1	2	3	4	5	6	7	8	9	10		
38	3	3	3	4	4	2	3	3	4	3	32	80
39	3	2	3	2	3	1	3	2	3	1	23	58
40	4	4	4	3	3	3	3	3	3	3	33	83
41	3	3	3	4	3	4	3	4	4	4	35	88
42	4	0	4	0	4	2	4	2	3	1	24	60
43	3	3	3	4	4	4	3	4	4	0	32	80
44	3	4	4	2	4	3	4	4	4	2	34	85
45	4	4	4	1	4	4	3	4	4	1	33	83
46	4	4	4	3	4	4	4	4	4	4	39	98
47	4	4	4	4	4	4	4	4	4	4	40	100
48	4	4	4	4	4	4	4	4	4	4	40	100
49	4	4	4	4	4	4	4	4	4	4	40	100
50	4	4	4	4	4	4	4	4	4	4	40	100
Total											**3818**	
Average											**76**	

The process of calculating the usability value for 4 is carried out in several stages which are adjusted according to rule calculation score System usability scale. Based on processing data the, obtained total score as much as 3818 Then score the shared with many respondents Which produce score The average SUS for multimodality digital media in mathematics learning with a meaningful learning approach is 76.

Aaron Bangor created an adjective rating scale *to* complement the System Usability Scale (SUS) scores. This scale was designed to facilitate practitioners' interpretation of SUS results and to bridge the gap between understanding and that of professionals without a background in Human-Computer Interaction (HCI) (Maryati et al., 2022).



The multimodality digital media test in mathematics learning using the SUS method showed **a score of 76** , which is equivalent to **a grade "C"** . After obtaining this score, a conversion was performed to determine the adjective ratings and acceptability ranges based on the SUS score.

Discussion

This research was conducted considering the subject of mathematics, which tends to be difficult for some students, and is linked to current technological advances. Currently, technology is developing rapidly, and its impact is being felt in the world of education. The world of education must adapt to these developments; education must move hand in hand with technology. Technological developments have a significant influence on various aspects of life, including education. According to Marryono Jamun (2018), technology has a positive impact that leads to an increase in the quality of education (Elvira, 2021). Therefore, technology is an integral part of supporting the learning process in schools.

To support education that can coexist with technology, learning can be implemented using digital learning media. Learning media is designed to clarify the message and meaning of the subject matter. According to Susanti et al. (2022), this media functions as a tool for teachers in delivering material, while also increasing student creativity and attention during the learning process. A teacher needs to have the ability and readiness to prepare productive, innovative, and imaginative learning media, in line with current technological developments (T. Angraini et al., 2017).

Digital learning media that can effectively convey messages must be varied to meet the needs of students. Therefore, multimodal digital media is necessary today.

Learning implemented through media will be more engaging and provide a fun learning experience, which is essential for mathematics. Children often perceive mathematics as intimidating because it's a difficult subject. To counteract this perception, learning is integrated with multimodal digital media.

Today, learning is not just about transferring knowledge; it's much more. The goal of mathematics learning isn't just for students to master the material, but also to encourage them to learn with deep understanding. This means students are expected to actively construct new knowledge based on their experiences and prior knowledge. This can be achieved by implementing a meaningful approach. According to Rusman (2008:135), meaningful learning is the process of connecting new information with existing concepts within a person's cognitive structure.

While digital media offers numerous benefits to mathematics instruction, many teachers are reluctant to use digital media in their lessons. The reasons vary, ranging from a lack of resources to a lack of understanding of how to design digital media, and an inability to design digital media for instruction.

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Based on this, the researcher will attempt to examine teachers' acceptance of multimodal digital media in meaningful mathematics learning. This study used the SUS method. Respondents were collected using a Google Form. Respondents filled out the form voluntarily without any coercion. The researcher recruited 50 respondents from Lengkong District.

The results of the System Usability Scale (SUS) method score analysis obtained a result of 76. The ease of interpretation of SUS scores, adjective rankings are used to measure the level of usability, while the acceptance range indicates the level of acceptance of multimodality digital media (A. Bangor, et al., 2009). In terms of nature, this media is rated "Good", and in terms of acceptance, it is considered "Acceptable". The results of this study confirm that multimodality digital media in mathematics learning has a positive and significant level of acceptance among elementary school teachers in Lengkong District, as measured by the System Usability Scale (SUS) questionnaire.

This study found that multimodal digital media in mathematics learning using a meaningful approach was quite acceptable. However, several weaknesses are worth noting. The main limitation lies in the limited scope of the study. Furthermore, the number of respondents needs to be increased to produce more robust and representative findings. Improvements in these aspects are expected to optimize the validity and generalizability of future research results, allowing for a clearer understanding of the full potential of this medium.

CONCLUSION

This study evaluated the acceptability of multimodal digital media in mathematics learning, specifically with a *meaningful learning approach* , among elementary school teachers in Lengkong Sub-District. This media was designed to clarify material, enhance student creativity, and overcome the perception that mathematics is a difficult subject, in line with the importance of technology in education. Based on testing using the System Usability Scale (SUS) on 50 respondents, this media obtained an average score of 76. This score indicates that the multimodal digital media is in the "Good" category on the trait assessment scale and "Acceptable" in the acceptance range. This indicates that teachers in the study area have a positive and significant acceptance of this media. However, this study has limitations in the narrow area coverage and a limited number of respondents. To strengthen the validity and generalizability of the results, it is recommended that further research expand the area coverage and increase the number of respondents. Overall, these findings demonstrate the

great potential of multimodal digital media in supporting more engaging and meaningful mathematics learning.

REFERENCES

A. Bangor, P. Kortum, and J. Miler, "Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale," *Jurnal Of User Experience*, 2009. https://uxpajournal.org/determining-what-individual-sus-scores-mean- adding-an-adjective-rating-scale/ (accessed Jul. 17, 2024).

Anam, K., Mulasi, S., & Rohana, S. (2021). Efektivitas Penggunaan Media Digital Dalam Proses belajar Mengajar. Journal Of Primary Education. *Genderang Asa : Journal Of Primary Education*, *2*(2), 76–87.

Angraini, T., Saragi, L. N. S., Jannah, M., & Sopian, M. (2017). Perubahan Paradigma Peran Guru Dalam Pembelajaran Era Digital. Prosiding Seminar Nasional 20 Program Pascasarjana Universitas PGRI Palembang 25 November 2017, November, 188–192.

Assingkily, M.S., & Hardiyati, M. (2019). Analisis Perkembangan Sosial-Emosional Tercapai dan Tidak Tercapai Siswa Usia Dasar. *Al-Aulad: Journal of Islamic Primary Education, 2*(2), 19-31. http://journal.uinsgd.ac.id/index.php/al-aulad/article/view/5210.

Astra, G. N. W., Suarjana, I. M., & Suwatra, I. I. W. (2013). Pengaruh model pembelajaran problem solving berbantuan media video pembelajaran matematika terhadap kemampuan pemecahan masalah siswa IV gugus IV kecamatan Sukasada. *Jurnal Mimbar PGSD Universitas Pendidikan Ganesha*, *1*(1). https://ejournal.undiksha.ac.id/index.php/JJPGSD/article/view/1399/1260

Elvira, E. (2021). Faktor Penyebab Rendahnya Kualitas Pendidikan dan Cara Mengatasinya (Studi pada : Sekolah Dasar di Desa Tonggolobibi). Iqra: Jurnal Ilmu Kependidikan Dan Keislaman, 16(2), 93–98. https://doi.org/10.56338/iqra.v16i2.1602

F. S. Handayani and A. Adelin, "Interpretasi Pengujian Usabilitas Wibatara Menggunakan System UsabilityScale," Techno, Com, vol. 18, no. 4, pp. 340–347, 2019.

I. Maryati, E. I. Nugroho, and Z. O. Indrasanti, "Analisis Usability pada Situs Perpustakaan UC dengan Menggunakan System Usability Scale," *J. Media Inform. Budidarma*, vol. 6, no. 1, p. 362, 2022, doi: 10.30865/mib.v6i1.3472.

e-ISSN: 2808-8263
p-ISSN: 2829-0976

Irmawan, D., Efendi, D., & Lestari, F. (2021). Meaningful Learning dalam Pembelajaran Matematika. *Hipotenusa: Journal of Research Mathematics Education*, *4*(2), 114-120.

Jakob Nielsen. (2012, Jan.) Usability 101: Introduction to Usability. [Online]. https://www.nngroup.com/articles/usability-101-introduction-to-usability/

Marryono Jamun, Y. (2018). Dampak Teknologi Terhadap Pendidikan. Jurnal Pendidikan Dan Kebudayaan Missio, 10(1), 1–136.

M. Wahidmurni, "Pemaparan metode penelitian kuantitatif," p. 16, Aug. 2017.

Margarita, N., Harjono, N., & Airlanda, G. S. (2018). Pengembangan Multimedia Interaktif Sebagai Alat Bantu Pembelajaran Dengan Model Pbl Untuk Peningkatan Hasil Belajar Matematika. *Journal for Lesson and Learning Studies*, *1*(3), 243–257. https://doi.org/10.23887/jlls.v1i3.15388.

Munifah *et al.*, "Management Development of Student Worksheets to Improve Teacher Communication Skills: A Case Study Self-Efficacy and Student Achievement," *Educ. J. Gift. Young Sci.*, vol. 7(4), pp. 777–798, 2019, doi: https://doi.org/10.17478/jegys.625618.

N. Oktaviani and Fatmasari, "Measuring User Perspectives on Website Conference Using System Usability Scale Pengukuran Perspektif Pengguna Terhadap Website Conference Menggunakan System Usability Scale," vol. 2, no. 2, pp. 279–290, 2020.

Putra, L. D., & Pratama, S. Z. A. (2023). Pemanfatan media dan teknologi digital dalam mengatasi masalah pembelajaran. *Journal Transformation of Mandalika.*, *4*(8), 323– 329. https://ojs.cahayamandalika.com/index.php/jtm/article/view/2005/1586

R. Widiyanti and J. Maknunah, "Analisi Website STIMATA Menggunakan System Usability Scale (SUS)," *J. Ilm. KOMPUTASI*, vol. 20, no. September, pp. 331–338, 2021.

Rimayasi dkk. (2024). *Inovasi Pembelajaran dan Pendidikan: Teknologi untuk Peningkatan Kualitas Pendidikan*. Bantul: CV. Bildung Nusantara.

Rusman. (2008). Model-model Pembelajaran Mengembangkan Profesionalisme Guru.Ed.2. Jakarta. Rajawali Pers.

Simanjuntak, E. (2019). Peran Teknologi dalam Meningkatkan Kompetensi Guru di Era Revolusi 4.0. Prosiding Seminar Nasional Teknologi Pendidikan, 1(2), 429–434. http://digilib.unimed.ac.id/38825/

Susanti, A., Kasim, U., Achmad, D., Burhansyah, B., & Nasir, C. (2022). The Use of Media in Innovative Learning to Improve Students' Achievement in Learning English. Research in English and Education, 7(2), 85–90.

Syahrizal, H., & Jailani, M. S. (2023). Jenis-jenis penelitian dalam penelitian kuantitatif dan kualitatif. *QOSIM: Jurnal Pendidikan, Sosial & Humaniora*, *1*(1), 13-23. https://doi.org/10.61104/jq.v1i1.49

Widayanti, E., & Aisyah, S. (2019). Penerapan Model Pembelajaran Treffinger Berbantukan Software Sparkol Videoscribe Untuk Meningkatkan Pemahaman Matematis Siswa. *Kalamatika: Jurnal Pendidikan Matematika*, *4*(2), 117–128. https://doi.org/10.22236/kalamatika.vol4no2.2019pp117-128

Rimayasi et al. (2024). *Inovasi Pembelajaran dan Pendidikan: Teknologi untuk Peningkatan Kualitas Pendidikan*.

Simanjuntak, E. (2019). Peran Teknologi dalam Meningkatkan Kompetensi Guru di Era Revolusi 4.0. *Prosiding Seminar Nasional Teknologi Pendidikan*, *1*(2), 429–434. https://doi.org/http://digilib.unimed.ac.id/38825/

Yuliati, Y., & Saputra, D. (2019). PEMBELAJARAN SAINS DI ERA REVOLUSI INDUSTRI 4.0. *Jurnal Cakrawala Pendas*, *5*. https://doi.org/10.31949/jcp.v5i2.1389