RedFame

Studies in Media and Communication
Vol. 11, No. 4; June 2023
ISSN: 2325-8071 E-ISSN: 2325-808X
Published by Redfame Publishing
URL: http://smc.redfame.com

The Effect of Health Communication on Reader Attitudes with Digital Media Literacy Antecedents

Kinkin Yuliaty Subarsa Putri[1], S Bekti Istiyanto[2], Edy Prihantoro[3], Bramianto Setiawan[4]

[1]Department of Communication Studies, Universitas Negeri Jakarta, Indonesia

[2]Department of Communication Studies, Universitas Jenderal Soedirman, Indonesia

[3]Department of Communication Studies, Universitas Gunadarma, Indonesia

[4]Department of Elementary School Teacher Education, Universitas PGRI Adi Buana Surabaya, Indonesia

Correspondence: Kinkin Y S Putri, Department of Communication Studies, Universitas Negeri Jakarta, Indonesia.

Received: November 2, 2022 Accepted: March 2, 2023 Online Published: March 5, 2023

doi:10.11114/smc.v11i4.5768 URL: https://doi.org/10.11114/smc.v11i4.5768

Abstract

The Coronavirus pandemic in Indonesia is increasing daily. Unfortunately, the implementation of lockdown is not enforced in some areas. Meanwhile, in these current pandemic conditions, health communication is needed. This research describes health communication concepts, readers' attitudes, and digital media literacy. Furthermore, the digital media literacy antecedent focuses on understanding attitudes in handling hoax information and people infected with Coronavirus. A quantitative approach with the forecasting method was used in this research. It showed that Health Communication has a linear regression value of 0.49 with a significance of 0.000 on the reader's attitude variables. There is an influence between health communications on the reader's attitudes. Likewise, digital media has a regression result of 0.51 with a significant value of 0.000 on reader's attitudes indicating that digital media influences reader's attitudes. Subsequently, developing digital media literacy and reader attitudes in health communication is important. It is hoped that future research will be able to elaborate on health communication and digital media literacy in the wider community and use adapted methods.

Keywords: health communication, digital media literacy, reader's attitudes

1. Introduction

According to Blagov's (2021), it was revealed that learning and understanding health communication is very important, especially in the face of the Covid-19 pandemic. However, everyone has a different understanding and application of the delivery of health issues. This is because a person's behavior and personality influence understanding of health communication information about Covid-19 (Plutzer & Warner, 2021; Rachmadtullah et al., 2023). According to Akbari et al. (2017), people need a good attitude toward strengthening their reading skills. This reality has unfolded for approximately ten months since the Indonesian government declared the Covid-19 emergency (Dida et al., 2021). This is evidenced by confusing information disseminated to the public on social media, especially WhatsApp (Moreno-Castro et al., 2020). The variety of information readily available makes people confused and fearful, and therefore it is not uncommon for many people to be misinformed about what to do during a pandemic (Nayoga et al., 2021). This condition shows that the reader's attitude regarding reading and understanding the diversity of information is very low. In addition, these challenges are also due to the weak reading culture of the community, and therefore it is easy to swallow any information amid a pandemic (Lake et al., 2021).

Health communication is a discipline studied academically to understand better how to communicate in discussing health issues (Merminod & Benaroyo, 2021; Rachmadtullah et al., 2020). Therefore, it is a scientific discipline that faces the challenge of combating misinformation and correcting incorrect individual beliefs about information related to health issues (Krishna & Thompson, 2021). Health communication investigates communication strategies to inform and influence decisions and actions to improve health (Beaudoin & Hong, 2017). During the Covid-19 pandemic, health communication is very important for the community (Liu et al., 2020; Sari et al., 2020). In addition, the use of digital media in conducting health communication is often carried out by the community. Therefore, digital media literacy is needed as a skill for the community (Guess et al., 2020; Iasha et al., 2019).

According to Chen, Lin, and Chen (2021), digital media literacy is a movement that aims to help understand, generate, and negotiate meanings in a culture of images, words, and sounds. In addition, the Ontario Association for Media Literacy (AML) points out (Azizi et al., 2021; Yudha et al., 2020) that from an educational point of view, digital media literacy is concerned with developing an informed and critical understanding of the nature of mass media, the techniques used, and the impact of these techniques. In line with UNESCO terminology, digital literacy refers to and cannot be separated from literacy activities, such as reading and writing and mathematics education (Koltay, 2011; Supena et al., 2020).

However, with an increasingly broad definition, digital literacy is becoming what Chase and Laufenberg (2011) describe in terms of digital media literacy, from simply mastery of technology to applying information literacy skills. Subsequently, information literacy skills in a digital environment lead to a broader and more complex conceptual framework that includes a diversity of skills, understandings, norms, and practices (Meyers et al., 2013).

In digital media literacy, readers have an attitude toward the emotional system associated with reading (Jimenez et al., 2021). Therefore, the reader has the attitude of approaching or avoiding situations based on the results. Understanding the reader's attitude is important as it affects the skill level at which a particular person will ultimately achieve reading skills through influencing factors such as commitment and practice (Marceta, 2021). Reading attitudes are shaped by past experiences related to reading, educational background, cultural beliefs, success, and failure in reading (Marceta, 2021)

The readers tend to react systematically positively or negatively, depending on the subject matter (Kolajo & Agbetuyi, 2021). Therefore, this research adopted the definition of reading attitudes to examine the relationship between people with reading achievement. However, this definition was modified to understand better that attitudes are not fixed or permanent but are subject to change and situated in specific sociocultural contexts (Lupo et al., 2017).

Booth-Butterfield et al. (1997) used two examples from adults at work and college to show how they report their communication problems and their health and communication behavior. As measured by a modified version of the state form scale, specific communication concerns showed moderate to significant adverse effects on health communication and almost no effect on health behaviors except diet (De Cocker et al., 2021).

According to Hale (2013), online health behavior can be conceptualized as an element of a healthy lifestyle. The combination of a healthy lifestyle and digital inequality provides a broader theoretical framework that highlights the importance of social conditions for influencing people's internet habits and routine health-promoting behaviors (Giuntella et al., 2021). The combination of healthy lifestyles and digital inequalities provides a useful theoretical framework for future research on social and current health inequalities and the potentially increasing reliance on information and communication technologies to support societal outcomes (Blom et al., 2021).

King and Lazard's (2020) research shows significant gaps in the literature on how people interpret, act, and interact with this type of visual content. Therefore, this visual health communication will improve communication during future public health crises. Subsequently, Paige, Krieger, and Stellefson (2017) explain that e-Health literacy positively predicts trust in online communication channels and resources. Still, there are differences due to socio-demographic factors. According to Ittefaq and Iqbal (2018), the Facebook platform plays an important role in Pakistan's health sector, especially in addressing the problems of women and children through these groups. As many people present online, the Facebook group faces challenges, including a low community literacy rate and minimal internet access (Kite et al., 2016).

Kreps (2017) shows the importance of health literacy for designing and using mobile applications of digital health information technology, namely mHealth. However, there are serious communication challenges that must be addressed regarding how best to design and utilize mHealth applications to achieve important health promotion goals, including ensuring the suitability and effectiveness of messages for audiences with different communication competencies, styles, and health literacy levels (Albahri et al., 2021). Helsper and Smahel (2020) show an interactional and indirect relationship between psychological and digital literacy variables and excessive internet use. Furthermore, Tekobbe (2013) explained that the practice of culturally situated technologists introduces hegemonic narratives through design features that marginalize some female users by digital literacy. Therefore, digital media literacy often includes digital action skills for work, learning, pleasure, and everyday life. Individual digital media literacy varies depending on everyday situations.

2. Method

2.1 Research Method

A quantitative approach was used to analyze the data. Quantitative data is a type of data that can be measured or calculated directly and in numbers (Smith & Hasan, 2020). This research examines three variables, namely health communication (variable X1), digital media literacy (variable X2), and reader's attitude (Y). Concerning the measuring instrument, the three variables are explained as follows:

- Health communication (X1) is a field of theory, research, and practice that deals with understanding and interdependence influencing communication (symbolic interactions in messages and meanings), perceptions, behaviors, and health-related outcomes.
- Digital media literacy (X2) is designed to help understand, generate, and negotiate meanings in a culture of images, words, and sounds. The instrument grid presented in this section is used to measure the learning skills variables and as a final instrument grid for these variables.
- Reader attitude (Y) is an emotional system related to reading that causes the learner to approach or avoid reading situations. This grid is presented to provide information about the elements of the declaration in the questionnaire.

2.2 Participants

The data on the number of Sinovac vaccine recipients as part of the vaccination activities organized by public health centers in Jakarta was used. The purposive sampling technique was used to select the 137 respondents according to the criteria needed. The respondents are people between 20 to 50 who actively use smartphones and have social media. The characteristics of the respondents are shown in table 1.

Table 1. Characteristics Of Respondents

Demography		N	Percentage (%)
Gender	Male	63	46%
	Female	74	54%
Age	Less than 30 years old	55	40%
	30 – 50 years old	82	60%

2.3 Data Collection

The data were collected using a questionnaire form. The questionnaire collects data by asking a list of written questions (Braun et al., 2021). Table 2 shows the indicators of the Questionnaire instrument.

Table 2. Questionnaire instrument

Variable	Indicator
Health Communication	• Relay Information • Enable informed decision making • Promote peer information exchange and emotional support • Promote healthy behavior • Promote self-care • Manage demand for health services
Digital media literacy	• Access skill • Evaluate skill • Create skill • Participate skill
Reader's attitude	• Cultural • Cognitive • Constructive • Communicative • Confidence

The validity and reliability of the three research variables have good values to be continued to the following statistical stage. Table 3 shows the result of validity and reliability for each variable.

Table 3. Validity and reliability

Variable	Validity	Reliability
Health Communication	KMO = .890 Sign = .000	r= .794
Digital media literacy	KMO = .892 Sign = .000	r= .842
Reader's attitude	KMO = .798 Sign = .000	r = 897

2.4 Data Analysis

The analytical method used in this research is Time Series Analysis (Benhaddi & Ouarzazi, 2021). Furthermore, Two Forecasting Methods used in this stage of Time Series Analysis are Single Moving Averages and Doubles Exponential Smoothing methods (Semenoglou et al., 2021). The data obtained from the previous historical data was then compiled and processed using two forecasting methods. However, the research model is an abstraction of existing realities or phenomena and will be investigated (Benhaddi & Ouarzazi, 2021). In the simple linear regression test, once the structure of each regression is established, the next step is to calculate the path coefficient based on the correlation.

Pearson correlation was used to analyze the correlation coefficient (Azizi et al., 2021). Pearson analysis determined the linear relationship between the independent and dependent variables (Pratt et al., 2003). It also showed whether the relationship is positive or negative and whether it is significant. In this research, according to the title taken, the model can be described in figure 1.

Figure 1. Research model

A partial test was carried out to determine each causal variable's effect on the effect variable, and the following hypothesis formulation was used:

(1) Ha1: there is an effect of health communication on the reader's attitude

(2) H01: there is no effect of health communication on the reader's attitude

(3) Ha2: there is an effect of digital media literacy on the reader's attitude

(4) H02: there is no effect of digital media literacy on the reader's attitude

3. Results

The components of health communication are no different from general communication. Furthermore, communication is not only just limited to delivering messages. The presence (feedback) of the recipient of the message indicates that communication can occur if specific components are met. In line with Merminod and Benaroyo (2021), communication is also a process that will not work well if it does not meet specific components. Therefore, an analysis of health communication and digital media literacy on the reader's attitudes was performed. Table 4 shows the percentage of media used to access information.

Table 4. the percentage of media used to access information

Media	N	Percentage (%)
News in Television	10	7%
News in Application	25	18%
Social Media	102	68%

This research indicated that 68% of respondents access information through social media. This cannot be separated from life today as technology is no longer strange, especially the internet, which makes it easier for people to carry out their daily activities. However, needs can be met without an individual traveling and spending more time on other work. The research on the description of the variable showed that the independent variable is health communication, digital media, and reader attitude, all variables were positive.

Table 5. Research description

Variable Categories	N	Percentage (%)	Valid Percent	Cumulative Present
Health Communication	21	8.3	8.3	5.5
Digital Media	48	18.9	18.9	24.4
Reader's Attitude	185	72.8	72.8	97.2
Total	**254**	**100.0**	**100.0**	**100.0**

Table 5 shows that the Health communication variable has a frequency of 21 with a percentage of 8.3%, and the digital media variable has a frequency of 48 with a percentage of 18.9%. The reader's attitude variable has the highest frequency of 185 with a percentage of 72.8%. Health communication is very important to learn and understand, especially in light of the coronavirus pandemic. In line with Chen, Lin, and Chen (2022), digital media literacy is designed to help understand, generate, and negotiate meaning in a culture of images, words, and sounds. Everyone has a different understanding of conveying health issues; therefore, a person's behavior or personality can affect the understanding of coronavirus information. Health communication aims to increase human resources' quality through several educational and training efforts to increase knowledge and shape communication attitudes and behavior (Iasha et al., 2022; Koltay, 2011). This communication behavior is not only direct but also through social media.

Figure 2. Model Of Health Communication, Digital Media, And Reader's Attitude

Furthermore, the linear regression results in Figure 2 shows that the X1 variable, namely Health Communication, has a linear regression value of 0.49 with a significance of 0.000 on the Y variable, namely the reader's attitude. This indicates that Health Communication affects the reader's attitude. Likewise, Variable X2, namely Digital Media, has a regression result of 0.51 with a significant value of 0.000 in Variable Y, which indicates that Digital Media affects Readers' Attitudes.

The establishment of a health communication model related to hoax information regarding the handling of the Coronavirus pandemic has affected people's attitudes (Ems & Gonzales, 2016; Febriyanti et al., 2022). Digital media and health communication also influence people's behavior. Health communication and digital media have motivated the public to filter out hoax information when handling the Coronavirus and to see their attitude when reading hoax information in handling people affected by the Coronavirus.

One of the main reasons users spread hoaxes is to influence the opinions or attitudes of others (Trifena Tarusu et al., 2022; White, 2020). Subsequently, coupled with uncontrolled communication technology, people have become more accessible to various communication media (Gallardo-Echenique et al., 2015; Sumantri et al., 2022). Undeniably, this can shape respondents' attitudes toward hoax information when handling the Coronavirus. Several factors influence attitudes, including personal experience, emotional factors in individuals, culture, educational institutions, mass media, and others considered necessary. However, they do not stay silent when receiving information considered a hoax. Using digital media, they discover the truth of the information themselves or ask directly for reliable sources.

4. Discussion

The results indicate that health communication and digital media literacy are very important. In addition, during the Covid-19 pandemic, hoax news often appears. However, systematic attempts must be made to solve the problem by collecting basic data, formulating the problem, finding the root of the problem, and prioritizing the problem. Therefore, the results can be used to collect data on current reader attitudes. In particular, the respondents try to comply with the regulations and participate in minimizing the prevention of covid through vaccination (Lake et al., 2021; Sumilat et al., 2022).

Currently, health communication focuses more on attracting the audience's attention than persuading them, considering McGuire's persuasion steps outlined in this theory, which provide a helpful framework for approaching stakeholders to attract their interest to be involved in a health program (McGuire, 2013; Zulela et al., 2022). In addition, it shapes their attitude in responding to hoax news. Each individual responds to communication through different digital media literacy. Some use communication to change attitudes and behaviors directly related to the same chain of causes.

However, the reader's attitude towards health communication, especially Covid-19, is the opposite. The analysis results show that some still believe in vaccine hoaxes. People freely use the internet to meet their daily needs, be it to facilitate work or to meet the needs of the body and soul of the community. However, using digital technology must be accompanied by wisdom in applying literacy (Aguaded-Gómez et al., 2015; Setiawan et al., 2017). In addition, literacy is a prerequisite for fully participating in the various systems governing personal and collective life (Iasha et al., 2020; Putri et al., 2018). The community needs to understand and use digital technology as optimally as possible so that there are more positive impacts, not negative ones. Therefore, the public must understand the various contexts of digital world users. This way, they can have the power to judge the existing content. Besides that, they can also respond to the existing content.

5. Conclusion

The conclusion of the research description was formulated positively in all variables, and all alternative hypotheses were accepted. However, some choose to become communicators by sending information related to Covid-19 based on the results of their interpretation without being filtered. This research has limitations on the time and number of respondents. Future research should elaborate on health communication and digital media literacy in the wider community and employ appropriate methodologies. Furthermore, the community can support the initial and emotional exchange of health information. They can sequentially relay accurate health information from one source to another (hunting), and therefore this research illustrates how to minimize hoaxes that occur during the Covid-19 pandemic

Acknowledgment

The authors thank the Ministry of Education, Culture, Research, and Technology, The Institution of Research and Development (LPPM) at Universitas Negeri Jakarta, Universitas Negeri Jakarta, Faculty of Social Sciences at Universitas Negeri Jakarta for supporting this research.

References

Aguaded-Gómez, I., Tirado-Morueta, R., & Hernando-Gómez, Á. (2015). Media competence in adult citizens in Andalusia, Spain. *Information Communication and Society*, *18*(6), 659-679. https://doi.org/10.1080/1369118X.2014.985244

Akbari, H., Ghonsooly, B., Ghazanfari, M., & Shahriari, H. (2017). Attitude toward reading: L1 or L2 or both. *SAGE Open*, *7*(3), 1-10. https://doi.org/10.1177/2158244017717303

Albahri, A. S., Zaidan, A. A., Albahri, O. S., Zaidan, B. B., Alamoodi, A. H., Shareef, A. H., Alwan, J. K., Hamid, R. A., Aljbory, M. T., Jasim, A. N., Baqer, M. J., & Mohammed, K. I. (2021). Development of IoT-based mhealth framework for various cases of heart disease patients. *Health and Technology*. https://doi.org/10.1007/s12553-021-00579-x

Azizi, M., Vajargah, K. F., Poushane, K., & Granmayehpour, A. (2021). Iranian journal of educational Sociology. *Iranian Journal of Educational Sociology*, *4*(1), 176-185.

Beaudoin, C. E., & Hong, T. (2017). Advances in Global Health Communication. *Journalism and Mass Communication Quarterly*, *94*(2), 409-415. https://doi.org/10.1177/1077699017709243

Benhaddi, M., & Ouarzazi, J. (2021). Multivariate Time Series Forecasting with Dilated Residual Convolutional Neural Networks for Urban Air Quality Prediction. *Arabian Journal for Science and Engineering*, *46*(4), 3423-3442. https://doi.org/10.1007/s13369-020-05109-x

Blagov, P. S. (2021). Adaptive and Dark Personality in the COVID-19 Pandemic: Predicting Health-Behavior Endorsement and the Appeal of Public-Health Messages. *Social Psychological and Personality Science*, *12*(5), 697-707. https://doi.org/10.1177/1948550620936439

Blom, V., Lönn, A., Ekblom, B., Kallings, L. V., Väisänen, D., Hemmingsson, E., Andersson, G., Wallin, P., Stenling, A., Ekblom, Ö., Lindwall, M., Eriksson, J. S., Holmlund, T., & Ekblom-Bak, E. (2021). Lifestyle habits and mental health in light of the two covid-19 pandemic waves in sweden, 2020. *International Journal of Environmental Research and Public Health*, *18*(6), 1-19. https://doi.org/10.3390/ijerph18063313

Booth-Butterfield, S., Chory, R., & Beynon, W. (1997). Communication apprehension and health communication and behaviors. *International Journal of Phytoremediation*, *45*(3), 235-250. https://doi.org/10.1080/01463379709370063

Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2021). The online survey as a qualitative research tool. *International Journal of Social Research Methodology*, *24*(6), 641-654. https://doi.org/10.1080/13645579.2020.1805550

Chase, Z., & Laufenberg, D. (2011). Embracing the Squishiness of Digital Literacy. *Journal of Adolescent & Adult Literacy*, *54*(7), 535-537. https://doi.org/10.1598/jaal.54.7.7

Chen, J., Lin, C.-H., & Chen, G. (2021). A cross-cultural perspective on the relationships among social media use, self-regulated learning and adolescents' digital reading literacy. *Computers & Education*, *175*. https://doi.org/10.1016/j.compedu.2021.104322

De Cocker, K., Verloigne, M., Cardon, G., & Van Acker, R. (2021). Public health communication and education to promote more physical activity and less sedentary behaviour: Development and formative evaluation of the 'physical activity triangle.' *Patient Education and Counseling*, *104*(1), 75-84. https://doi.org/10.1016/j.pec.2020.06.025

Dida, S., Hafiar, H., Kadiyono, A. L., & Lukman, S. (2021). Gender, education, and digital generations as determinants of attitudes toward health information for health workers in West Java, Indonesia. *Heliyon*, *7*(1). https://doi.org/10.1016/j.heliyon.2021.e05916

Ems, L., & Gonzales, A. L. (2016). Subculture-centered public health communication: A social media strategy. *New Media and Society*, *18*(8), 1750-1767. https://doi.org/10.1177/1461444815570294

Febriyanti, R. H., Usman, H., Lustyantie, N., Iasha, V., & Setiawan, B. (2022). Utilizing Learning Management System in Online Writing Instruction in Higher Education: Indonesian Faculty Member Perspectives. *Journal of Higher Education Theory and Practice*, *22*(10), 79-96. https://doi.org/10.33423/jhetp.v22i10.5388

Gallardo-Echenique, E. E., de Oliveira, J. M., Marqués, L., & Esteve-Mon, F. (2015). Digital competence in the knowledge society. *Journal of Online Learning and Teaching*, *11*(1), 1.

Giuntella, O., Hyde, K., Saccardo, S., & Sadoff, S. (2021). Lifestyle and mental health disruptions during COVID-19. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(9). https://doi.org/10.1073/pnas.2016632118

Guess, A. M., Lerner, M., Lyons, B., Montgomery, J. M., Nyhan, B., Reifler, J., & Sircar, N. (2020). A digital media literacy intervention increases discernment between mainstream and false news in the United States and India. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(27), 15536-15545. https://doi.org/10.1073/pnas.1920498117

Hale, T. M. (2013). Is there such a thing as an online health lifestyle THING ?: Examining the relationship between social status, Internet access, and health behaviors. *Information Communication and Society*, *16*(4), 501-518. https://doi.org/10.1080/1369118X.2013.777759

Helsper, E. J., & Smahel, D. (2020). Excessive internet use by young Europeans: Psychological vulnerability and digital literacy? *Information Communication and Society*, *23*(9), 1255-1273. https://doi.org/10.1080/1369118X.2018.1563203

Iasha, V., Al Ghozali, M. I., Supena, A., Wahyudiana, E., Setiawan, B., & Auliaty, Y. (2020). *The traditional games effect on improving students working memory capacity in primary schools*. ACM International Conference Proceeding Series. Scopus. https://doi.org/10.1145/3452144.3452269

Iasha, V., Japar, M., Maksum, A., Siregar, Y. E. Y., Setiawan, B., & Andayani, A. (2022). Increasing students' culture literacy using virtual reality field trip model: Need analysis. *Cypriot Journal of Educational Sciences*, *17*(9), 3263-3276. https://doi.org/10.18844/cjes.v17i9.8002

Iasha, V., Wahyudi, A., & Nguyen, P. T. (2019). The effect of participative leadership of principal of private school on work motivation of teacher and their performance in Tangerang City. *International Journal of Engineering and Advanced Technology*, *8*(6 Special Issue 2), 1058-1065. Scopus. https://doi.org/10.35940/ijeat.F1319.0886S219

Ittefaq, M., & Iqbal, A. (2018). Digitization of the health sector in Pakistan: Challenges and opportunities to online health communication: A case study of MARHAM social and mobile media. *Digital Health*, *4*, 1-13. https://doi.org/10.1177/2055207618789281

Jimenez, C., Clark, L. S., Kennedy, H., Nisle, S., Engle, C., Matyasic, S., & Anyon, Y. (2021). The art of youthful restraint: Negotiating youth-adult relations in digital media literacy. *Learning, Media and Technology*, *46*(2), 190-203. https://doi.org/10.1080/17439884.2021.1888118

King, A. J., & Lazard, A. J. (2020). Advancing Visual Health Communication Research to Improve Infodemic Response. *Health Communication*, *35*(14), 1723-1728. https://doi.org/10.1080/10410236.2020.1838094

Kite, J., Foley, B. C., Grunseit, A. C., & Freeman, B. (2016). Please like me: Facebook and public health communication. *PLoS ONE*, *11*(9), 1-16. https://doi.org/10.1371/journal.pone.0162765

Kolajo, F. S., & Agbetuyi, P. A. (2021). Dwindling Reading Culture In The Internet Era And The Imperative For Lifelong Reading. *Library Philosophy and Practice*, *2021*(January), 1-18.

Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, Culture and Society*, *33*(2), 211-221. https://doi.org/10.1177/0163443710393382

Kreps, G. L. (2017). The relevance of health literacy to mHealth. *Information Services and Use*, *37*(2), 123-130. https://doi.org/10.3233/ISU-170828

Krishna, A., & Thompson, T. L. (2021). Misinformation About Health: A Review of Health Communication and Misinformation Scholarship. *American Behavioral Scientist*, *65*(2), 316-332. https://doi.org/10.1177/0002764219878223

Lake, J., Gerrans, P., Sneddon, J., Attwell, K., Botterill, L. C., & Lee, J. A. (2021). We're all in this together, but for different reasons: Social values and social actions that affect COVID-19 preventative behaviors. *Personality and Individual Differences*, *178*(January), 110868. https://doi.org/10.1016/j.paid.2021.110868

Liu, Q., Zheng, Z., Zheng, J., Chen, Q., Liu, G., Chen, S., Chu, B., Zhu, H., Akinwunmi, Ba., Huang, J., Zhang, C. J. P., & Ming, W. K. (2020). Health communication through news media during the early stage of the covid-19 outbreak in China: Digital topic modeling approach. *Journal of Medical Internet Research*, *22*(4). https://doi.org/10.2196/19118

Lupo, S., Jang, B. G., & McKenna, M. (2017). The Relationship Between Reading Achievement and Attitudes Toward Print and Digital Texts in Adolescent Readers. *Literacy Research: Theory, Method, and Practice*, *66*(1), 264-278. https://doi.org/10.1177/2381336917719254

Marceta, J. A. (2021). Respect the Author: A Research Ethical Principle for Readers. *Journal of Academic Ethics*, *19*(2), 175-185. https://doi.org/10.1007/s10805-019-09345-1

McGuire, W. J. (2013). McGuire's classic input-output framework for constructing persuasive messages. In R. E. Rice & C. K. Atkin (Eds.), *Public Communication Campaigns*. SAGE Publication.

Merminod, G., & Benaroyo, L. (2021). Ethical issues in public health communication: Practical suggestions from a qualitative study on campaigns about organ donation in Switzerland. *Patient Education and Counseling*. https://doi.org/10.1016/j.pec.2021.07.012

Meyers, E. M., Erickson, I., & Small, R. V. (2013). Digital literacy and informal learning environments: An introduction. *Learning, Media and Technology*, *38*(4), 355-367. https://doi.org/10.1080/17439884.2013.783597

Moreno-Castro, C., Vengut-Climent, E., Cano-Orón, L., & Mendoza-Poudereux, I. (2020). Exploratory study of the hoaxes spread through WhatsApp in Spain to prevent or cure COVID-19. *Gaceta Sanitaria*, *xx*. https://doi.org/10.1016/j.gaceta.2020.07.008

Nayoga, B. P., Adipradana, R., Suryadi, R., & Suhartono, D. (2021). Hoax Analyzer for Indonesian News Using Deep Learning Models. *Procedia Computer Science*, *179*(2020), 704-712. https://doi.org/10.1016/j.procs.2021.01.059

Paige, S. R., Krieger, J. L., & Stellefson, M. L. (2017). The Influence of eHealth Literacy on Perceived Trust in Online Health Communication Channels and Sources. *Journal Health Communication*, *22*(1), 53-65. https://doi.org/10.1080/10810730.2016.1250846.The

Plutzer, E., & Warner, S. B. (2021). A potential new front in health communication to encourage vaccination: Health education teachers. *Vaccine*, *39*(33), 4671-4677.

Pratt, C. A., Ha, L., Levine, S. R., & Pratt, C. B. (2003). Stroke knowledge and barriers to stroke prevention among African Americans: Implications for health communication. *Journal of Health Communication*, *8*(4), 369-381. https://doi.org/10.1080/10810730305725

Putri, K. Y. S., Istiyanto, S. B., & Sugiyanta, L. (2018). Representation of media literacy in the dimensions of social life in Indonesia. *IOP Conference Series: Materials Science and Engineering*, *434*(1). https://doi.org/10.1088/1757-899X/434/1/012271

Rachmadtullah, R., Setiawan, B., Wasesa, A. J. A., & Wicaksono, J. W. (2023). Elementary school teachers' perceptions of the potential of metaverse technology as a transformation of interactive learning media in Indonesia. *International Journal of Innovative Research and Scientific Studies*, *6*(1), 128-136. https://doi.org/10.53894/ijirss.v6i1.1119

Rachmadtullah, R., Yustitia, V., Setiawan, B., Fanny, A. M., Pramulia, P., Susiloningsih, W., Rosidah, C. T., Prastyo, D., & Ardhian, T. (2020). The challenge of elementary school teachers to encounter superior generation in the 4.0 industrial revolution: Study literature. *International Journal of Scientific & Technology Research*, *9*(4), 1879-1882. https://www.ijstr.org/paper-references.php?ref=IJSTR-0420-33971

Sari, Y., Supena, A., Sari, R. P., & Iasha, V. (2020). *The Role of Executive Function in Facing Attention Interference in*

Elementary School Students: Descriptive Qualitative. 1–6. https://doi.org/10.1145/3452144.3452285

Semenoglou, A. A., Spiliotis, E., Makridakis, S., & Assimakopoulos, V. (2021). Investigating the accuracy of cross-learning time series forecasting methods. *International Journal of Forecasting*, *37*(3), 1072-1084. https://doi.org/10.1016/j.ijforecast.2020.11.009

Setiawan, B., Rachmadtullah, R., Nulhakim, L., Wahyudiana, E., & Iasha, V. (2022). The utilization of augmented reality on online learning: The impact for students' physics problem-solving ability. *AIP Conference Proceedings*, *2542*(1), 060011. https://doi.org/10.1063/5.0103173

Setiawan, B., Septianto, R. D., Suhendra, D., & Iskandar, F. (2017). Measurement of 3-axis magnetic fields induced by current wires using a smartphone in magnetostatics experiments. *Physics Education*, *52*(6), 065011. https://doi.org/10.1088/1361-6552/aa83e3

Smith, J. D., & Hasan, M. (2020). Quantitative approaches for the evaluation of implementation research studies. *Psychiatry Research*, *283*(March 2019), 112521. https://doi.org/10.1016/j.psychres.2019.112521

Sumantri, M. S., Gandana, G., Supriatna, A., Iasha, V., & Setiawan, B. (2022). Maker-Centered Project-Based Learning: The Effort to Improve Skills of Graphic Design and Student's Learning Liveliness. *Journal of Educational and Social Research*, *12*(3), 191-191. https://doi.org/10.36941/jesr-2022-0078

Sumilat, J. M., Tuerah, R. M., & Setiawan, B. (2022). The Utilization of Online Media in Calculation Operations Mathematics Learning in Elementary School Students. *Journal of Educational and Social Research*, *12*(3), 90-90. https://doi.org/10.36941/jesr-2022-0069

Supena, A., Yudha, C. B., Iasha, V., & Huda, M. K. (2020). *Preparation for prospective teachers of elementary schools in providing services to authorized children: Descriptive*, 1-6. https://doi.org/10.1145/3452144.3452167

Tekobbe, C. K. (2013). A site for fresh eyes: Pinterest's challenge to "traditional" digital literacies. *Information Communication and Society*, *16*(3), 381-396. https://doi.org/10.1080/1369118X.2012.756052

Trifena Tarusu, D., Syarif Sumantri, M., Edwita, E., Iasha, V., & Setiawan, B. (2022). Student character establishment in mathematics learning in elementary school during coronavirus pandemic. *Cypriot Journal of Educational Sciences*, *17*(8), 2811-2822. https://doi.org/10.18844/cjes.v17i8.7783

White, P. R. R. (2020). The putative reader in mass media persuasion – stance, argumentation and ideology. *Discourse and Communication*, *14*(4), 404-423. https://doi.org/10.1177/1750481320910512

Yudha, C. B., Supena, A., & Iasha, V. (2020). *Use brain based learning during the Covid-19 pandemic: Descriptive qualitative*, 1-11. https://doi.org/10.1145/3452144.3453741

Zulela, M., Neolaka, A., Iasha, V., & Setiawan, B. (2022). How is the Education Character Implemented? The Case Study in Indonesian Elementary School. *Journal of Educational and Social Research*, *12*(1), 371-371. https://doi.org/10.36941/jesr-2022-0029