

EXPLORING ELECTRONIC SYSTEM MODERNIZATION AND DIGITAL LITERACY ABILITY: COMPARATIVE LITERATURE REVIEW

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ABSTRACT

This research aims to discuss modern electronic systems associated with digital literacy with a comparison of literature reviews related to this research. This research uses qualitative methods with secondary data collection techniques from scopus-indexed journals and local journals that have been officially published. In this research, we explore the development of digital literacy in different countries and the Indonesian government's efforts to combat fake news in the digital age. The study reveals various approaches to enhancing digital literacy worldwide, emphasizing the importance of adapting to local contexts. Notably, advanced technologies such as virtual reality and artificial intelligence play significant roles in improving digital literacy. The research also underscores the vulnerability of individuals to fake news and its consequences, which necessitates government action. Recommendations from this study include the promotion of literacy, both digital and conventional, to empower individuals to discern accurate information from misinformation. Government initiatives should focus on organizing literacy campaigns and expanding online education opportunities to ensure a more informed and resilient society. This research sheds light on the critical role of literacy in an ever-evolving digital landscape, offering valuable insights for individuals, communities, and governments.

Keywords: *Digital Transformation, Media Literacy, Educational Innovation, Digital Literacy, Modern Electronic System.*

1. INTRODUCTION

Since the beginning of the 21st century, digital devices have changed the way civilizations communicate between individuals and groups. Digital devices have become a necessity for many people to be able to complete their work in a much faster timeframe than the conventional way. Along with the times, digital is increasingly used in various ways, ranging from recording daily expenses, storing company data, even selling both on a large and small scale. Society is greatly facilitated by the existence of digital transformation. Even digital devices that were originally only reached by affluent people, can now be used by various household / individual economic

scales because people who sell digital devices are getting smarter in managing their raw materials so that the prices offered can be reached by all economic scales of society [1].

Digital technology can save time and labor costs. In addition, digital technology is currently highly utilized by students in obtaining literacy that is useful in various ways, both to broaden their horizons, the need for materials to complete assignments, get literacy materials for research literature studies from journals circulating on official publication websites. Several studies have been conducted related to digital transformation on digital literacy. Among others, such as research conducted by Farias-Gaytán, Silvia, et al (2022)

which discusses Systematic Literature Mapping with findings stating that the largest articles as digital literacy materials are in Scopus with quantitative and qualitative research methods followed by conceptual theoretical methods along with mixed methods that are at a lower level. The research is also useful for students in providing answers regarding where they can find the most reliable digital literacy materials. Then in the same source, research conducted by Da Silva and Cardoso (2020) on educational librarianship provides findings related to lifelong learning to accelerate technological progress.

Research related to digital literacy from the findings obtained from researchers motivates readers regarding technological advances that maximize digital literacy activities and make the literacy process more practical and cost-effective.

In Indonesia itself, the low digital literacy of the community has become a problem for the dissemination of fraudulent information. People become more easily deceived and utilized by the hoax content providers to increase their views by spreading fake news. There are also many students who have not utilized the electronic system for digital literacy properly so that the use of paper has not reached the reduction target and raw materials are starting to run out accompanied by cases of weather changes caused by forest fires, depletion of the earth's ozone so that global warming damages the air balance, and so on. In dealing with the case of minimalist society in conducting digital literacy through the internet, APJI (*Asosiasi Penyedia Jasa Internet*) and Mastel (*Masyarakat Telematika Indonesia*) made a solution with Mafindo (*Masyarakat Anti Fitnah Indonesia*) by developing an application that can involve the community to test the validity of news so that the community can minimize hoax cases, especially for high levels of hoaxes and involve the state [4].

Digital literacy has been developed by several researchers using Interest-Driven Creator loops, which appear to be more effective in enhancing digital information literacy, personal knowledge management, and students' self-directed learning skills. As in the research conducted by Mohammadi & Moloud (2023). The study's findings also indicate that elements such as participation, perception-interest, and facility-opportunity play a significant role in the learning process [26].

In the research by Da Silva et al. (2020), higher education institutions must pay attention to technological changes and apply them to students'

literacy practices. It can be concluded that technological changes emerging in society can impact higher education in terms of digital transformation and digital literacy [3].

A similar phenomenon also occurred in the research conducted by Al-Shaye et al. (2021), where prospective Arabic language teachers also leveraged technological advancements as a means of educational approach to enhance academic skills through digital literacy [27].

Another study conducted by Huntington et al. (2023) focused on improving literacy and numeracy for out-of-school children in the same region, by integrating technology with the cultural context and community needs. This research utilized EdTech (Education Technology) as the means to implement a learning competition in remote villages in Tanzania. It represents a new platform in the advancement of digital technology, particularly in the process of enhancing digital literacy [28].

Furthermore, in a study conducted by Choung et al. (2023), digital literacy also has an impact on the financial field referred to as digital financial literacy. Digital financial literacy is considered to be associated with financial well-being in South Korea and can provide protection against digital fraud [29].

This research has a problem formulation: The set of modern electronic systems in helping neighborhoods to increase interest in digital literacy and the Indonesian government's handling of hoax news.

This research will discuss modern electronic systems in the world of digital literacy. This research uses qualitative methods with literature study data collection techniques which are carried out subjectively by comparing both official journals and reading materials on internet sites with similar topics. This research provides an outline of the progress of digital transformation that has an influence on literacy interest with electronic systems as a medium for digital delivery to digital users.

The purpose of this research is to provide information and solutions for the community related to digital literacy and applications that support digital literacy in order to avoid the community from fraud or being deceived by hoax news and help the community in getting good literacy materials for the community, especially students.

The contribution of this research is to provide information related to electronic systems that can support digital literacy to the wider community, especially helping people to increase reading awareness so that people are not fooled by fake news that is widespread on social media.

2. THEORY AND LITERATURE REVIEW

The increasing variety and complexity of today's digital practices and processes has prompted some academics to push for the need for more inclusive and modernized literacies. The notion of literacy now includes digital literacy conducted with various technological tools. For various reasons, conventional literacy is slowly being displaced, especially due to the depletion of raw materials from trees. In addition, digital literacy is more practical, interesting, and good for the stability of nature [5].

Since the 1990s, early literacy scholars have recognized that in an era of technological advancement, reading and writing can no longer be done conventionally. Reading and writing must consider the growing variety of texts that are accompanied by increasing technological and multimedia capabilities. This gives a new direction to society to be able to adjust to the times in reading and writing [6].

Digital literacy introduced by Gilster (1997) refers to everything that is allowed digitally, namely gaining access to, managing and sending information in online networks and providing reciprocity to digital services [5]. Then, digital literacy was further expanded in the 2000s within social, economic, political, and cultural factors to form new literacy practices and concepts [8, 9]. In this context, new literacies are multifaceted, multimodal, multifaceted, and changing as digital technologies change. These literacies can be defined as a collection of "new social practices, abilities, strategies and attitudes" needed to participate in personal, economic, and civic spheres, and which adapt as technology evolves [10].

In Indonesia, interest in digital literacy has reached a high level. According to the 2022 digital literacy status report, Indonesia experienced an increase of 3.54% compared to the previous year. The measurement uses four pillars, namely Digital Proficiency, Digital Ethics, Digital Safety, and Digital Culture. Based on the survey, men from the government sector have a higher percentage index

in digital literacy compared to women. As for the provincial level, Yogyakarta occupies the highest position with a score of 3.64 for digital literacy for two consecutive years and the 3T region (underdeveloped, frontier, and outermost) is the region that has a low digital literacy index. Based on community segmentation, from the survey conducted, the government sector TNI / POLRI / other government segments have the highest score of 3.74, the second position is filled by the education segment starting from workers and students with a score of 3.70, and the last position is filled by the public with the lowest score of 3.50 [11].

2.1 Digital Transformation

Since the 20th century, the incorporation of literacy into technology has led to a new world of literacy. Nowadays, literacy is more modern than conventional literacy. Modern literacy generally uses digital media or electronic media as a conduit between readers and literacy materials. Researchers do not distinguish between digitalization and digital literacy [12, 13].

This time, workers are prioritized in equipping themselves with digital literacy and the use of other digital technologies. This shapes workers' skills to be more sophisticated, innovative, able to solve problems quickly and accurately, and have brighter individual qualities [14].

Along with the development of digital literacy and its concepts, policymaking and research publications also use digital literacy. In addition, the development of technology and the provision of the internet have transformed literacy practices into practices that are frequently encountered and easily accessible anywhere and anytime. Even more recently, the notion of digital literacy is considered more comprehensive, encompassing cognitive and socio-emotional aspects, including problem-solving in digital environments [15, 16].

2.2 Information Literacy

Literacy can be considered as a description of the community in reading, writing, and calculating in daily activities. Literacy can also provide a society with information in any form, whether it is spread in the newspaper media, explanations on news reports on television, and social media [18]. Generally, people immediately believe the information that is shared, especially for information spread through social media so that cases of fake news become widespread. The main

factor is the lack of literacy activities so that people immediately accept the information [17].

Both the government and students are busy conducting anti hoax campaigns to various regions and social media sites. This aims to foster public interest in reading in order to reduce the number of victims affected by hoax news [19].

3. RESEARCH METHOD

This research uses a qualitative method by collecting secondary data using literature studies. The appropriate data collection technique to assist this literature study is the documentation technique. The documentation technique is a data collection technique by collecting data both written and numerical from various sources. The data collected came from international journals and news about digital literacy for Indonesia.

The data taken is of course data that can be linked between each other to produce a perfect literature study. The journals used as research references have been ensured to meet international standards, as well as the news obtained from the website are certainly valid data/not fake news.

This research provides data that will be used to help groups from all sectors, including government, education, and the general public, increase their digital literacy and help them avoid cases of fake news that are widespread on social media. The steps in analyzing the data used for this research involve data reduction and data verification. Data reduction is the process of sorting and simplifying the collected data to reduce data complexity. Meanwhile, data verification is the activity of double-checking the data to ensure its accuracy and to confirm that no data is missing.

4. RESULT AND DISCUSSION

4.1 The Development of Digital Literacy

Some countries have their own ways of developing digital literacy. They also have specialized research for digital literacy and provide new discoveries that can support the needs of the community in developing digital literacy.

Such as research conducted by Ylipulli, et al (2023) regarding a project entitled Our Shared Virtual World. This project aims to develop public libraries in Finlandia based on digital technology to the wider community. This research priorities the use of Virtual Reality as a support for digital literacy. In its implementation, the library received several sets of Oculus Quest hardware, and was

offered to all Finnish libraries for free. Participating libraries also conducted a series of events for the public and staff members to introduce the device more widely [24].

In addition, there are other studies that suggest Artificial Intelligence (AI) as a digital literacy support for children. AI itself is very useful for literacy materials that can provide answers to people's questions for everything they need to ask and want to get a more detailed, fast and reliable explanation. Currently, AI has mastered various fields besides its implementation for digital literacy. However, in this context, AI provides information that is not on the website, and can even paraphrase research.

In Bueno, et al (2023) research, the potential of AI to bridge social gaps in children's education and local approaches that priorities contextual needs are important. This technology is believed to be digitally accessible, can focus on ethics, communication, tutoring, and health based on digital literacy [25].

In Indonesia itself, applications that support communities and students to do digital literacy include websites and online academy providers. Websites themselves include sites that are run independently by individuals or groups and whose networks can be accessed openly or privately. These websites provide all kinds of information for students and the public in finding solutions to daily life problems because the information presented is very complete.

On the other hand, there are many online academy providers. Practical learning and lower costs compared to offline academy providers have made these academy applications grow rapidly over time as technology continues to develop and people need practical academic training.

4.2 Indonesian Government's Handling of Hoax News.

Some people are reluctant to do further literacy. Most people only read and judge something based on the outside without any curiosity about the truth or explanation. The result is that people themselves often become victims of fake news, especially fake news spread on social media. This is because access to technology has become very easy over time so that people can commit fraud openly in a matter of time [20].

Some cases of fake news in Indonesia that have occurred include:

1. News circulated about the Citilink QG 801 aircraft that lost contact in 2018 on the Semarang - Surabaya route in an emergency at an altitude of 1,000 ft. Then the news was clarified by VP Corporate Secretary & CSR PT Citilink Indonesia, Ranty Astari Rachman that the news was not true. Then, Yohanes Sirait, who oversees public relations at AirNav Indonesia, explained that at 11:13 a.m., AirNav Indonesia received a report from flight CTV801 flying from Surabaya (SRG) to Surabaya (SUB) that they detected an emergency signal on frequency 121.5 MHz while at an altitude of 8,000 feet.

The aircraft did not experience an emergency, but only detected an emergency signal. In accordance with procedure, the crew reported this finding to Air Nav Indonesia, who then transferred the report to the search and rescue team in Semarang (SAR Semarang). Then, at 11.18 a.m., the Citilink 801 pilot reported that after reaching an altitude of 10,000 feet, there was no more emergency signal detection [20].

2. In 2017, a Facebook account with the account name Sandy Yah spread false information with the title "If the People Allow Bali to be Sold to Pay the State Debt.". Subsequently this information disappeared and received a response from the Ministry of Finance, Sri Mulyani through social media Instagram will trace the account user and process it into legal channels.

It was emphasized at the time that the Republic of Indonesia as a unitary state will not be sold and the State Budget (APBN) and state money are always managed properly and open to the public, the details of which can be accessed on the Ministry of Finance's website. The spread of this fake news is believed to be a form of attack on the government and will have a personal impact on the Ministry of Finance itself, namely Sri Mulyani [21].

3. The hoax issue about the revival of the PKI is not new. However, it has become increasingly popular in 2018, in line with the changing political dynamics in Indonesia. Several events seem to be linked to the issue of the revival of the

PKI. In early 2018, there was an incident of beating a cleric or religious figure. However, after the perpetrator was arrested, it turned out that the perpetrator was a person with a mental disorder.

Some irresponsible individuals interpreted the incident as an indication of the re-emergence of the PKI. This issue created concern among the public. This is due to the dark history involving the PKI in Indonesia. Most Indonesians do not want to see the revival of the long-disbanded communist party [22].

The above cases are some of the evidence that Indonesians are really at a high risk level in digital literacy crimes. The public will easily be deceived and damage the good name of the parties involved. Therefore, the government anticipates the law to prevent this case from happening repeatedly.

The government's efforts in overcoming hoax cases are:

1. Law enforcement

Indonesia has legal instruments to deal with fake news cases, namely the Electronic Transaction Information Law (UU ITE) and the Criminal Code. These legal instruments are aimed at the makers of fake news, not at those who spread it because usually people who do not know whether the case is fake or not due to lack of literacy, especially digital literacy, they will immediately spread the news and create pro and contra teams to enliven the controversy.

2. Cooperating with platform organizers

The government works with platform organizers to protect the public from the circulation of fake news because these platforms are the source of the spread of fake news.

3. Educating the public

The government educates the public, especially to deepen literacy so that people can better understand the situation both outside and inside the range so that people are not easily deceived by people who make fake news [23].

5. CONCLUSION

5.1 The Development of Digital Literacy

1. Different countries have unique approaches to developing digital literacy, including research that supports these efforts. This reflects a commitment to meeting the needs of the

- community in facing the challenges of the digital world.
2. Research examples such as the "Our Shared Virtual World" project in Finland demonstrate the use of advanced technologies such as virtual reality to improve digital literacy in public libraries. This reflects efforts to utilise digital innovations in public education.
 3. Technological developments such as artificial intelligence (AI) have played an important role in digital literacy. AI can provide quick and reliable access to information, and even paraphrase research.
 4. Research that addresses the potential of AI to address social disparities in education emphasizes the importance of local approaches that consider social and cultural contexts.
 5. In Indonesia, there are various resources for digital literacy, including websites that provide comprehensive information for students and the general public. In addition, online academic applications have facilitated practical learning at an affordable cost.
3. To address this issue, the government has taken several steps, including law enforcement, cooperation with platform providers, and public education efforts. The ITE law and the Criminal Code are used to deal with fake news creators, while public education is emphasised to improve digital literacy so that people are better able to understand the situation and not easily fooled by fake news.
 4. Improving digital literacy and public understanding are important steps in protecting the public from the threat of fake news. Public education on digital literacy should be continuously improved to counter the spread of fake news and its negative impacts.

5.3 Author's Recommendation and Research Implication

One of the main challenges in this research was the complexity of managing the reference sources as the topic was very broad, requiring us to carefully select the sources that were most relevant to the research theme, even though some studies had different themes but were still related to the same topic.

Our recommendation to the community based on the findings of this study is to deepen literacy, both in digital and conventional contexts. In an era of rapidly evolving technology, every individual has wide access to a variety of reading materials that are constantly being updated. Therefore, there is no reason for anyone not to involve themselves in the literacy process. By doing so, people can better distinguish valid information from fake news that is often spread on social media. In addition to these benefits, regular literacy activities can also optimize brain performance and provide sustainable benefits, especially for the younger generation who are still in school.

The recommendation to the government, based on the results of this study, is to organize literacy campaigns in both urban and rural areas to encourage every citizen to take smart steps to strengthen their literacy. The aim of this campaign is to reduce the spread of fake news and information fraud. In addition, the government is also expected to actively support and expand online education programs, so that every child has access to quality education through digital literacy at an affordable cost. In this way, we can ensure that

Efforts to improve digital literacy have a significant impact on preparing people for the evolving digital age. Regardless of the different approaches, technologies and resources used, it is important to continue to promote digital education around the world.

5.2 Indonesian Government's Handling of Hoax News.

1. Digital literacy is an important factor in modern society. Unfortunately, some individuals tend to be reluctant to improve their digital literacy. This leads to many people only looking at the surface without any curiosity about the truth or explanation. As a result, people often fall victim to fake news, especially those spread through social media.
2. Fake news cases in Indonesia show how vulnerable people are to digital literacy crimes. Some of the cases include aviation-related incidents and the issue of PKI resurgence that caused concern and controversy in the community.

literacy becomes a powerful tool in creating a smarter and more informed society.

The implications of this study are highly relevant to all individuals and groups, with the main goal of increasing interest in literacy. The results of this study provide a deeper understanding of the importance of being vigilant about information obtained from social media, and can trigger individuals' awareness of the critical role to be played in information processing. In addition, society will be able to experience significant positive benefits when they adopt literacy practices on a regular basis, creating a wider and sustainable impact.

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