Journal of Communication in Scientific Inquiry (JCSI)
Volume 5 Issue 1, June 2023 [15-23]

The Impact of Digital Communication Technology on Education in the Post-Crisis Period of the Covid-19 Pandemic

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Received: 22nd March 2023; Revised: 22nd April 2023; Accepted: 1st June 2023

ABSTRACT

This study investigates the impact of digital communication technology in the education sector of Indonesia following the Covid-19 crisis. The rapid spread of the pandemic necessitated a shift towards digital communication tools in educational institutions. However, challenges such as limited access due to concurrent usage were encountered. This qualitative research employs a post-positivist paradigm and utilizes in-depth interviews with purposefully selected informants to collect data. The findings reveal that the adoption of online media technologies, including eLearning platforms, Zoom, Google Meet, WhatsApp, Classroom, and YouTube, has significantly enhanced technological literacy among students and lecturers. Moreover, it has facilitated effective communication both offline and online, demonstrating potential for future outcome-based education. This study emphasizes the importance of appropriate technology in post-crisis education, underscoring its value as an asset in the learning process. The findings contribute to the existing body of knowledge on digital communication technology in the educational context, specifically in the Indonesian setting.

Keywords: Digital Communication, Technology, Covid-19 Crisis, Education.

1. INTRODUCTION

The teaching and learning process underwent significant transformations in the aftermath of the Covid-19 pandemic crisis. The crisis necessitated a shift from offline to online work practices, resulting in increased technological literacy among students and lecturers. This study aims to examine the contribution of digital communication technology to education in the post-pandemic era. Technological literacy is deemed crucial for adapting to the "new normal" in education. Digital technology has become prevalent across all age groups, as work and learning processes within the education system have largely transitioned online. The Covid-19 crisis has profoundly impacted the education landscape, replacing manual approaches with digital communication perspectives. This study identifies communication issues within the Indonesian education sector following the pandemic. While educational institutions have chosen digital communication technology as a solution, concurrent usage sometimes leads to access problems and link congestion. Utilizing technology-based applications such as e-learning platforms, Zoom, Google Meet, WhatsApp, Classroom, and YouTube, the study emphasizes the vital role of digital media in facilitating online learning and teaching methods and highlights its significant contribution to digital communication patterns.

2. LITERATURE REVIEW

Digital information and communication technology have undergone significant transformations, especially in the context of education. While such technological advancements were once considered insignificant, the COVID-19 pandemic has highlighted their indispensable role. The

pandemic has compelled the adoption of various digital tools to enhance work strategies, particularly in teaching and learning. Technology has proven vital in maintaining community activities during times of restrictions, such as the Large-Scale Social Restrictions (PSBB) implemented during the pandemic. The rapid development of technology has allowed remote education through various application platforms, including e-learning management systems like Google Classroom and institution-owned e-learning portals. Video conferencing applications like Zoom, Google Meet, and Cisco Webex have also become popular for distance learning. Additionally, WhatsApp Groups serve as an alternative platform for remote learning and teaching. However, challenges arise due to limited facilities and technology support, affecting both educators and students. The progress of technology, fuelled by the Fourth Industrial Revolution and the Fifth Social Revolution, has significantly altered daily life, making it more convenient and faster. The COVID-19 pandemic has heightened the role of parents in supporting their children's education at home, utilizing digital technology.

Educational technology encompasses various levels of education, from elementary to high school and universities, enhancing the learning experience. The integration of information and communication technology in madrasas has improved education quality and eased da'wah efforts. Computer literacy has accelerated due to the integration of technology. Information technology advancements have led to automation, hybrid approaches, and digitization, impacting information systems, digital libraries, and various fields. The influence of technology is evident in both urban and rural communities. Advances such as television, telephones, mobile phones, and the internet have penetrated remote villages. This study highlights the global trend of adopting IT systems for more controlled audit processes. In summary, the rapid development of information and communication technology, accelerated by the pandemic, has reshaped education, communication, and various aspects of daily life, emphasizing the need for adaptability and integration of technology.

This research delves into the impact of Information Technology (IT) on internal control elements, such as the control environment, risk assessment, control activities, information and communication, and monitoring. It offers guidelines and best practices for effectively conducting internal audit tasks in the light of IT. Furthermore, it explores how technology, information systems (IS), and electronic data processing (EDP) have revolutionized organizational operations, enhancing operational efficiency and decision-making. The study also sheds light on the spectrum of IT-related risks and controls and investigates whether there is adequate oversight of IT risks by responsible parties (Tumanggor and Adriansyah 2020). Technology plays a multifaceted role, extending its influence into disciplines like corpus linguistics, where it aids in the computational analysis of central keywords, linguistic techniques, and natural language processes (Barcelona 2019). During the COVID-19 pandemic, information and communication technology literacy became indispensable for implementing distance learning. It serves as the linchpin connecting teachers and students separated by distance, underlining the need for tech-savvy users to harness technology's potential. This literacy encompasses skills from device familiarity to information processing and communication (ZAM 2021). The realm of Education Technology has experienced a transformative journey, evolving the learning process. Traditional classroom settings have evolved into digital alternatives like Zoom, Google Classroom, and other virtual platforms. Despite their numerous advantages, these digital tools also introduce challenges such as misuse and negative effects, including plagiarism and breaches of confidentiality (Mulyani and Haliza 2021).

The COVID-19 pandemic triggered a significant shift towards digitalization, leaving its mark on various sectors, including education, business, and the economy. The transformation of digital communication is no longer a mere option but has become the new norm, leading to a revaluation of its benefits. Digital work tools and technologies have gained prominence as lockdowns facilitated their integration into work routines (Richter 2020). In the context of education, digital capabilities have been a focus for educators and teachers long before the pandemic. Various

frameworks, models, and literacy initiatives have been developed to guide students in using emerging technologies. This holistic approach aims to equip them with the necessary skills to navigate digital environments ethically and effectively (Best Educations Orientation). For instance, education in economics emphasizes technology-based applications to ensure that auditors meet established standards (Tumanggor and Adriansyah 2020). The fusion of technology and education continues to reshape various domains, urging stakeholders to adapt and embrace technology's potential for enhanced learning and productivity.

3. METHODOLOGY

3.1 Research Design

This study employs a mixed-methods approach that encompasses oral interviews and secondary data collection. In addition to direct data, secondary data obtained from intermediary sources such as notes, documentation, and scholarly journals from platforms like Mendeley.com are also utilized. Embracing a qualitative approach rooted in the post-positivism paradigm, this research builds upon previous studies demonstrating the effectiveness of online learning platforms like Zoom (Nirmala, Wibowo, and Fatah, 2021). The methodology phase of this research provides insights into the research design and implementation, including sampling, data collection, and analysis processes. The study's design specifically focuses on the role of Higher Education managers in adapting learning practices amidst the Covid-19 pandemic, with an emphasis on fostering digital technology knowledge. E-learning tools, including the E-Learning application, Zoom, and Google Classroom, were employed to facilitate student learning.

Throughout the research process, a flexible approach was maintained in line with qualitative perspectives and the case study methodology. The inductive approach aimed at understanding on-ground situations and deriving theory from collected data. The data generation and analysis occurred concurrently within the case study framework, which delves into contemporary problems and utilizes various sources such as interviews and documents. This study further explores specific cases, particularly those involving unsold products, utilizing documents and social media. Crisis response strategies are analysed through the SCCT Theory. The primary data collected aligns with the Situational Crisis Communication Theory (SCCT), offering insights into student reactions to new learning norms during crises. Grounded in the Attribution Theory, the SCCT acknowledges the public's quest to understand event causes. To systematically collect data, semi-structured qualitative interviews and case study analyses were conducted, incorporating field observations and interactions with both students and higher education management.

3.2 Recruitment and Sampling Strategy

The interviews conducted at the end of 2022, followed a hybrid learning approach that combines Zoom meetings and face-to-face sessions due to the Covid-19 crisis. Interviews involve students and higher education managers from Muhammadiyah University of North Sumatra, including lecturers and leaders. Initial contact was made with the Deputy Chancellor, the Dean of the Faculty of Social and Political Sciences, and students from Communication Science class 7D specializing in Public Relations. Purposive sampling was employed, aligning with research objectives and including the Deputy Chancellor, the Dean, and capable students willing to share experiences. A total of ten (10) students were interviewed, with informed consent and anonymity maintained.

3.3 Data Collection

Semi-structured face-to-face interviews were chosen for data collection to assess the understanding and skills of animal feed managers. This method allows flexibility while exploring the issue comprehensively. The interview guide was organized thematically and adapted iteratively based on new insights. Saturation of data was achieved after ten interviews. The interviews took place at Muhammadiyah University of North Sumatra's Mukhtar Basri campus, ensuring a comfortable setting for candid discussions. Interviews were recorded and supplemented with observational data, including the author's participation in formal and informal meetings. Additionally, the author, being a lecturer in Communication Science, gained insights from personal involvement in the learning and teaching process.

3.4 Data Analysis

The process of data analysis is underpinned by the Situational Crisis Communication Theory (SCCT), which was conceptualized by W.T. Coombs and Holladay S.J. This theory serves as the overarching framework for interpreting the collected data. Initially, interviews provide the foundational data, which undergoes coding and analysis prior to the incorporation of additional data. Recorded conversations are meticulously analysed using specialized tools aimed at unveiling public reactions during crisis scenarios (Amali, 2019). The SCCT theory also serves as a valuable foundation for comprehending optimal strategies for crisis communication (Coombs, 2007: 164). Subsequently, the findings are seamlessly intertwined with the interview responses and observational insights, resulting in a cohesive integration within the results section of the journal paper. This integration ensures a coherent narrative that effectively addresses the research questions while adhering to academic standards.

4. ANALYSIS AND RESULTS

This study examines the transformative impact of digital communication technology on education in the wake of the Covid-19 pandemic. The crisis has acted as a catalyst, driving students and educators to embrace and enhance their understanding of digital technology for learning. The integration of digital media into education is a process that undergoes continuous evaluation to ensure its effectiveness. The investigation explores the contribution of digital communication to Higher Education, shedding light on the challenges encountered during its implementation. Limitations like limited internet access, financial constraints, and technical difficulties in utilizing platforms like Zoom Meet have been identified. Among the ten interviewed students, there is a range of proficiency levels in using Zoom Meet; while some exhibited a swift adaptation, others encountered initial difficulties before ultimately acclimatizing to the digital learning environment (interview, Paragraph 23). This reflects the resilience and adaptability of students in their pursuit of learning through digital means.

Analysis revealed the digital communication understanding among students and educators at Muhammadiyah University of North Sumatra, particularly the significance of nurturing digital literacy, even among individuals who own smartphones. Notably, smartphone ownership does not guarantee an easy and effective participation in online lectures or digital learning activities. In other words, having a smartphone doesn't automatically ensure that a person can smoothly engage in educational activities that require digital technology. There might be challenges or obstacles that prevent them from fully participating, despite having the necessary technology. Students face challenges in accessing digital education due to factors such as varying degrees of internet connectivity and familiarity with digital tools (interview 4, paragraph 6). In this context, the study recommends digital literacy education, focusing on improving skills for comprehending content delivered through digital platforms (Restianty, 2018). Interviews displayed diverse perspectives. While some students, like P2 and P3, consider digital communication

understanding as inherent due to smartphone ownership, others, such as P1, emphasize the essential role of smartphones in grasping digital communication skills. This perspective shows the interconnectedness of digital literacy and effective information retrieval, and highlights the role of digital technology in contemporary communication (Restianty, 2018). As we approach the post covid phase, the transition back to traditional face-to-face learning is in progress. However, potential challenges may arise, causing interruptions in the learning process (Interview 1, Part 1, Paragraph 20). This emphasizes the ongoing importance of maintaining digital literacy skills even as educational modes shift, enabling students and educators to remain adaptable and well-equipped to the evolving landscape of education.

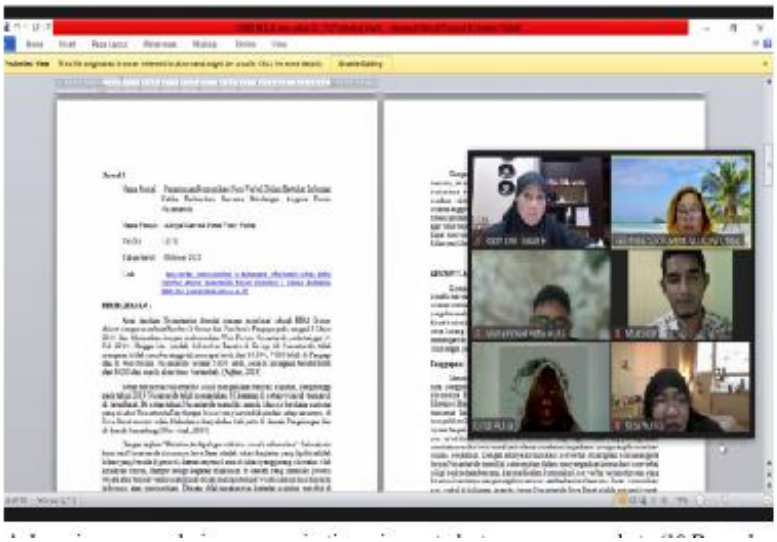

Figure 1. Learning Process During Communication Science Students (10 December 2022).

Figure 2. Learning Process During Communication Science Students (14 January 2022).

In sum, as discussed above and based on insights gained from interviews, three primary functions of digital communication have emerged, each contributing to distinct aspects of the educational process. These functions are as follows:

4.1 Understanding of Digital Communication

As discussed above, the study sheds light on the importance of digital communication understanding among students. Despite the prevalence of technology and smartphones, observations at the Muhammadiyah University of North Sumatra reveal challenges in students' active engagement during lectures conducted via platforms like Zoom Meet. This observation is reinforced by interviews, underscoring the significance of comprehending digital communication

tools during the learning process. For instance, participants like P2 emphasize their grasp of digital communication (interview 1, Part 2, Paragraph 9). A study by Rachmawati, African & Leonardo (2021) also echoes the necessity of digital communication understanding, highlighting challenges such as insufficient technology skills and grasping social media content.

Figure 3. Technology - based learning process, source: photos of field results on the cover of the book "Assessing the Effects of ICT in Education Indicators" accessed on January 14, 2022.

4.2 Digital Model of Communication

The study implemented the digital education model as seen in Figure 1 below, demonstrates an illustrative representation of an e-learning educational model. Within this framework, teachers, as communicators, disseminate learning content through e-learning media, adhering to the seven online Islamic media literacy standards. This model highlighted the potential for e-learning and education through digital communication channels (Setyaningsih et al. 2019). It's interesting to note that students are valuing education more, even in the digital world. This idea is supported by Setyaningsih (2019) research, which talks about checking e-learning content against certain rules for online media. These rules include things like making content, sharing information fairly, being accurate, and preventing false information. This suggests that a model that strengthens important values through online education standards is possible (Setyaningsih et al. 2019). Similarly, the way teaching happened during Covid-19 at Darussalam Gontor University changed a lot. Technology was used more, but it also brought some challenges that needed a change in how we learn (Setyaningsih et al. 2019). In the uncertain time of the pandemic, technology became really important in education, and it's also important in public diplomacy to reach more people (Neelam Sari 2021). It's clear that technology plays a big role, and we need to know how to use it well. Neelam Sari (2021) says that it's very important to understand the right way to use digital media. Also, Muhasim's study (2017) shows that using technology can make students want to learn more. But we also need to be careful because technology can have some bad effects on learning too. During the Covid-19 pandemic, technology was a big help. It kept things going when we couldn't be together, even for medical things (Komalasari 2020). In sum, the findings reveal varying perceptions among students regarding digital communication. While P2 and P3 students, who are accustomed to smartphones, readily grasp the concept, the dynamics are more complex. Some participants, like P1, exhibit strong affinity towards digital devices, perceiving them as tools for learning (interview 1, part 1, paragraph 15). However, P1 highlights that this understanding might be challenging for those lacking smartphones, affecting their familiarity with applications like Zoom Meet.

Figure 4. Educational Model in e-learning. Source: research (Setyaningsih et al. 2019).

4.3 Implementation of Digital Communication

The study also emphasizes the implementation of digital communication tools. It becomes evident that while most students possess smartphones, there are challenges in participating in digital communication platforms. Interviews indicate that students often struggle to join lectures via platforms like Zoom Meet due to connectivity issues, even though they possess the necessary technology (interview 4, paragraph 6). The findings show the significance of effective digital literacy education, highlighting the need to cultivate skills in understanding digital content (Restianty 2018). Despite initial challenges in using digital tools, students have also shown strong interest in learning and enhancing their knowledge, driven by their natural curiosity about the world around them. This era demands a range of skills like creativity, innovation, and specific expertise, which are crucial for students studying communication. Digital communication technology, including social media, allows schools to creatively connect with younger generations, helping them better understand and engage with digital communication methods (Satriya, 2019).

5. CONCLUSIONS AND RECOMMENDATIONS

The researcher provides a discussion regarding the contribution of digital communication technology to the learning and teaching process after the Covid19 pandemic crisis. As in the research conducted by Rattheeswari, he agrees that the current educational process uses information communication technology that affects every aspect of human life. According to him, technology plays an important role in the educational process and also many people recognize technology besides students. Society is also exposed to changes, these changes are indicated in; changing learning conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information communication technology. Especially the current changing climate in the educational process, namely when students learn by using learning media in class such as using smartphones. It is important to provide opportunities for students to learn and apply needed 21st-century skills. Technology improves teaching and learning, and assists lecturers in innovating materials to make them attractive, digital processes are useful for future learning techniques and is important for teachers in carrying out their role as creators of pedagogical environments. (Ratheeswari 2018). Likewise, the results of this study found that the quality of educators who understand communication technology in education greatly influences the results of their education. Technology has undergone very significant changes, followed by the educational climate and its tools, so

educators also adapt and contribute to transformation by changing education through the use of technology. They need to be involved in personal transformation through continuous learning (Albion and Tondeur 2018). As shown in the results section of the study that students' views on the use of information and communication technology for their educational process. The results of the exploration of students' views regarding the learning process that uses communication technology for 3 years of research at 6 high schools in England and 2000, the results of student learning and teaching processes using digital media as an aid can improve achievement and perfect useful learning as a liaison and change of atmosphere, class relationships, and increase student interest and motivation to learn (Deaney, Ruthven, & Hennessy, 2003) In the context of educational communication technology, this can be described as a medium that greatly contributes to the educational process for both students, lecturers, administrators of educational institutions and the wider community, especially students of Communication Studies at the University Muhammadiyah Sumatra Utara. Following up on the findings in this manuscript, the research questions can be answered as follows: digital communication technology contributes to post-covid19 pandemic crisis education, through student and lecturer understanding and programs launched by educational institution managers. Therefore, our results confirm but also extend the literature by providing deeper insights into educational communication technologies.

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