Domestication theory in action: Indonesian Twitter corpus analysis during distance learning

Nurly Meilinda[1,2], Billy K. Sarwono[3], Ummi Salamah[3]
[1]Postgraduate Program in Department of Communication Science, Faculty of Social and Political Science, University of Indonesia, Depok, Indonesia
[2]Department of Communication Science, Faculty of Social and Political Sciences, Universitas Sriwijaya, Palembang, Indonesia
[3]Department of Communication Science, Faculty of Social and Political Sciences, University of Indonesia, Depok, Indonesia

Article Info

ABSTRACT

This research aims at analyzing how COVID-19 discourse in the world of education unfolds in the Indonesian Twittersphere by separating public discourse in transition periods, large-scale social restrictions (PSBB), and imposition of emergency restrictions toward community activities (PPKM) and PPKM level 1 to 4. This research used qualitative approach and employed the Domestication Theory to provide a deeper understanding of how individuals integrate technology into their everyday lives. The dataset consisting of 3,196,627 tweets from two keywords and two hashtags was collected and analyzed using corpus linguistics techniques. This study found the emergence of the five main theme groups suggests that users have tried to make sense of and adapt to this new digital learning environment, while also expressing their frustrations and concerns. This highlights the importance of understanding how users domesticate technology and incorporate it into their social and cultural practices. The practical implications of this research include the need to address not only the technical aspects of online learning but also the psychological and social well-being of students, as they navigate this new learning environment.

Corresponding Author:

Nurly Meilinda
Department of Communication Science, Faculty of Social and Political Sciences, Universitas Sriwijaya
Street Raya Palembang-Prabumulih Km. 32 Indralaya, Palembang, South Sumatera 30662, Indonesia
Email: nurlymeilinda@unsri.ac.id

1. INTRODUCTION

For the education sector, the COVID-19 pandemic is a momentum to introduce and carry out major reforms [1]. This is the impact of school closures, thus, the main task of educating children is no longer wholly (or most of it) the responsibility of the school and now returns to the parents [2]. Due to developments in the COVID-19 pandemic, there has been an increasing trend toward online learning as schools have been forced to close their doors for an unspecified period as the only option available [3]. Consequently, it is the time to fundamentally rethink, reform, and reinvent the education system in response to the extraordinary demands of the current state of affairs.

In the COVID-19 pandemic situation, other countries implemented different education policies to manage the COVID-19 pandemic outbreak while ensuring the achievement of important government goals in the education sector. This was conducted by considering the severity of the COVID-19 case. In this context, Indonesia has varied lockdown policies that are different from other countries. This started with Large-Scale Social Restrictions and the Imposition of Restrictions toward Community Activities with various variations [4]. The public discourse on learning in the era of COVID-19 that has emerged on Twitter and other social

media provides important insights into public concerns about and responses to the COVID-19 pandemic and the policies governments are taking to address it [5]. However, the recognition that the public discourse around learning in the COVID-19 era is multifaceted and evolving raises analytical and ontological challenges. Studies on this topic usually use a text-extracting approach to analyze responses to major events. They usually treat public discourse on social media as a single unit and ignore the possibility that such discourse may have multiple facets [6].

Scholars have used data sourced from big data on a large scale. Therefore, there is knowledge on discourse in the COVID-19 pandemic situation including public discourse on education in the COVID-19 era [7]–[9]. It is clear that from these studies, the public discourse about the pandemic emerging on Twitter and other social media platforms consists of a series of topics that are directly or indirectly related to COVID-19. Meanwhile, a data-driven text mining approach to social media discourse adds a valuable tool to annotate and analyze sentiment toward education policies in the COVID-19 situation (Sentiment Analysis), and to identify specific topics (or sub-discourses) (Topic modeling) that arise due to online schools [10]–[13]. So far, they have failed to take into account the fact that COVID-19 discourse always consists of various thematically coherent sub-discourses that evolve and change substantially in real time (i.e., without data periodization).

This study employs Silverstone's domestication theory to examine the evolution of COVID-19 discourse in the Indonesian education sector as reflected in the Twittersphere [14]. This theory posits that the integration of technology into social and cultural norms is influenced by a variety of factors, suggesting that individuals acclimatize to and appropriate new technologies in accordance with these norms. It provides a framework for understanding how Indonesians adopt and integrate online learning technologies in the context of the COVID-19 pandemic. The domestication process of online learning in the Indonesian Twittersphere can be illuminated by analyzing users' engagement with these technologies and how they incorporate them into their daily lives. This approach surpasses the methodologies employed by previous researchers and provides nuanced insights into the complexities of the domestication process within the Indonesian context. This information could inform policy reforms and cast light on the use of online learning technologies during the pandemic. In addition, this research contributes to the ongoing development of the domestication theory by investigating cultural differences and their impact on the technological adoption process.

The study of technological domestication falls between media studies and sociology, which refers to the social construction of technology through its practical use [15]. Technology typically seen as a material object in contrast to social relation, domestication offers a different perspective that emphasize technology as social [16]. The domestication theory assumes that users actively participate in creating usage patterns and meaning in their interaction with technology. New technologies frequently amplify social divides that already in place. Inequalities like access to social, economic, and symbolic resources can sometimes have an effect on how successful the domestication is. While social, economic, and cultural resources have been shown to affect people understanding, it is important to remember that resources can be both material and symbolic and consider how people approach specific technologies and whether or not they begin to domesticate them [14].

The idea of domestication is an extension of theory that established the significance of thoughts, questions, acts, and feelings in the dynamics of a technological society [14]. This notion holds that domestic technology users have opinions, albeit they keep them to themselves, and engage in behaviors that affect the development of an information society. Domestication of technology is used to seek the power of the powerless, even though in reality they don't win. One of the most significant historical benefits is how it transforms public and private spaces such as how modern cell phones instantly create a personal environment surrounding the user.

In relation to the historical case of online schools, this study applies domestication theory to analyze technology users, in this case social media users, who treat digital space as both a private and a public sphere where they feel free to express their opinions and receive support from other social media users in the pandemic era. This particular scenario is intriguing since it involves the process of technology adoption relating to online school, which is a challenge for parents who experience it, then this concern is subsequently manifested in the form of uploads on social media. Domestication theory provides a framework to understand the complexity and dynamic relationship between users and what they are doing in their social media account.

2.   RESEARCH METHOD

This study uses a constructivist paradigm with a qualitative research approach and analyzes social media texts to understand and to find the meaning behind the contents of the text using theoretical tools. Qualitative research uses a variety of empirical materials from case studies and personal experiences to cultural texts and the production of text that have personal significance [17]. Moreover, this study uses

corpus linguistics as a methodological tool and technology domestication theory as a theoretical tool to systematically analyze and gain deeper insights into social media texts especially in online school discourse.

2.1. Corpus linguistics (CL)

Corpus linguistics (CL) is a research method widely used in various fields, including linguistics and business, which emphasizes that word meaning is determined by context [18]. By utilizing CL software, researchers can quickly analyze and identify patterns in large data sets, which may not be easily recognizable to the human eye [19]. In this study, we conducted frequent word analysis using the Antconc Application [20]. The benefits of using the corpus-based approach are numerous and include reducing researcher bias, providing cumulative evidence through repetitive patterns, finding counterexamples to support broader positions, and enabling data triangulation when combined with other analysis methods [21]. Furthermore, CL has been proven to be a valuable tool for analyzing Twitter corpus, and it can help identify patterns related to a particular research topic [22]. Overall, CL is a versatile method that offers numerous advantages for data analysis across various disciplines.

2.2. Data source

This study examines tweet data taken from the two hashtags #schoolonline and #sekolahonline and two keywords namely "online school" and "*sekolah* online" which are widely used by Indonesian people for online learning during the COVID-19 situation. The selection of these specific hashtags and keywords reflects the objectives of the study that is to focus on the Indonesian context and the experiences of individuals navigating online learning during pandemic. This research consisted of several corpus, each of which represented a different lockdown policy as shown in Table 1.

Table 1. Research data

Lockdown policy	Time	Collected tweets	Tokens
Transition	March 2, 2020-April 2, 2020	384.567	580.769
Large-scale social restrictions (PSBB)	April 3, 2020-January 10, 2021	987.668	1.502.481
Micro restrictions toward community activities/imposition of emergency restrictions toward community activities (PPKM) Mikro	February 9, 2021-July 25, 2021	786.543	1.115.179
Emergency restrictions toward community activities /PPKM Darurat	July 3, 2021-July 12, 2021	547.882	881.823
Restrictions toward community activities /PPKM Level 1-4	July 21, 2021-August 2, 2021	489.967	752.342

The use and presentation of social media data in research is a subject that remains controversial [23]. According to Twitter's privacy policy, public content, including tweets, is available for research purposes, but there is still uncertainty around the topic. To address this, we have anonymized the tweets used in this paper. Despite Twitter providing a valuable source of data on public usage and perspectives, it is still a challenging process [24]. Moreover, Twitter's user base tends to be skewed toward younger demographics and English speakers.

2.3. Data analysis

In order to find words that collocate with COVID-19, we first conducted a thorough text analysis [25]. To find patterns in word pairings within a corpus, collocates, or sets of words that commonly co-occur in language usage [25] are analyzed. This strategy is supported by the knowledge that words carry connections, connotations, and assumptions when they appear in particular collocations. In our study, collocation analysis allowed us to see how concepts were used in various contexts or patterns, which helped us build a semantic framework to better grasp the meanings of the concepts. Additionally, collocates can be categorized according to how grammatically related they are to the search term, producing a "word sketch" [22] that provides a quick overview of a term's precise meaning or function within a given pattern and how it interacts grammatically with its collocates.

In our work, we made use of Antconc tools to identify search word references [20], allowing us to create search algorithms. Contextual examples of a particular linguistic trait from the corpus are provided using concordance analysis. Each sample is accompanied by brief portions of text that serve as background. Additional human analysis is needed to fully understand these contextual aspects, which will increase the analysis's precision [22]. We used a number of techniques to conduct a thorough corpus-based analysis, and these techniques were also used in this study. In order to extract a list of word combinations that appeared alongside the search terms in the corpus, a collocation analysis was first used to construct a list of search terms pertinent to the study issue. Through a concordance search, these collocates were further examined in

order to have a better understanding of how the search terms were used within the corpus. The results of the analysis were then utilized to deduce how the intended subject matter was represented in the corpus, which is a crucial step in establishing a full and accurate corpus-based analysis.

3. RESULTS AND DISCUSSION

The presentation of results and discussion in this research was divided into two. First, we analyzed the frequency of words that occurred more often and were significant ($p < 0.05$). In the second part, we categorized these words into five broad themes to collect emerging themes that represent the occurrence of words with high frequency and look at their significance.

3.1. A frequent word from restrictions toward community activities (PPKM) transition level 1-4

The transition period in this research was from March 2 to April 2, 2022. This period was the first time that COVID-19 was confirmed in Indonesia until the day the government took action to implement a partial lockdown on April 3, 2020. During this condition, most schools still implemented face-to-face learning because the Indonesian government had not given any instructions. Some schools were starting online learning and blended learning. This can be seen from the appearance of words such as "*masuk* (new academic year)", "*daring* (online)", "online", and "blended". These findings showed a variety of policies taken by schools, starting online, and offline and some were implementing blended learning. Besides, other words that emerged in this period were hardware such as laptops and mobile phones as online learning media. We also found two applications from Google to support online learning, namely Google Classroom and Google Meet. Words related to the Islamic religion such as *bismillah*, *innalillahi* and *ikhtiar* were also found in this period. "*Bismillah*" is a word commonly used to start an activity while "*innalillahi*" is a word used when Muslims encounter a disaster such as COVID-19. It cannot be denied that in several studies the resilience of a community in a disaster was determined by the religiousness of the community. By drawing closer to God, religious people will feel calm and strong in facing disasters. Figure 1 provide an overview of the most frequent words that appear during the transition period.

Figure 1. Frequent words during the transition

Large-scale social restrictions (PSBB) was the initial policy taken by the Indonesian government to control the spread of COVID-19. In this period, the learning and teaching process was fully carried out online. Students learned from home and also teachers taught from home. Schools implemented this policy slowly. In the early days, several schools were still found to be conducting face-to-face learning. It was found mainly in Eastern Indonesia. The findings of the words "*dukungan* (support)", "*mahal* (expensive)", "*ujian* (task)", "*SPP* (tuition fee)", and "*pelajaran* (subject)" indicated that there had been a request for support from various parties, especially the government, to carry out internet quota subsidies. Students during this period were still required to pay tuition fees. Thus, there were tweets about tuition fees that were intended to question the accountability of the tuition fees which should be used to subsidize quotas. Online learning was also found to be expensive because students had to have hardware and software to fully access this learning method. During the PSBB period, we found Teams and Zoom as applications that supported online learning in the form of video conferencing applications. Moreover, there was the word e-learning which indicates that schools were already using e-learning which was facilitated by the relevant government agencies. Issues of

the digital divide were also found in this period, especially by finding the words "*sinyal* (signal)" and "*keterbatasan* (limitation)". Besides, we found words that represent burnout issues, namely overload, and *lelah* (tired). Figure 2 present a visual representation of the most frequently used words during the PSBB.
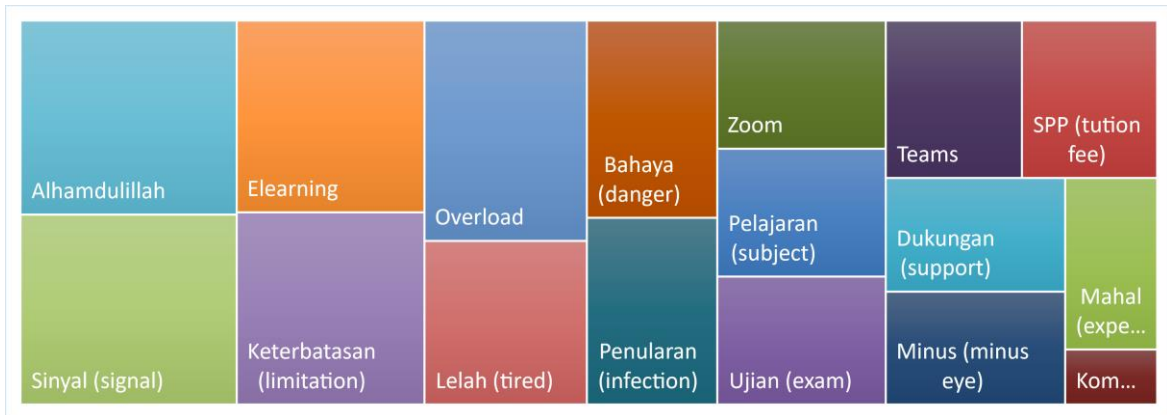
Figure 2. Frequent words during PSBB

Emergency PPKM is a more serious policy and led to a full lockdown. During this period, several issues that emerged were restriction zones through words such as "lockdown", "*rumah* (home)", and "*membantu* (to help)". At this time, students were fully learning from home. Some students also complained that they were asked to help with family tasks at home. Furthermore, another issue was the digital divide with words such as "*miskin* (poor)", "*lemot* (bad network)", "*hilang* (signal lost)", and "*gaptek* (technologically backward)". Then the burnout expressions of the students were also found from the appearance of swear words and other complaints such as dizziness. The last was the use of religious words such as *suhanallah*, *masyaallah* and prayer. Following the description of the issues, Figure 3 serve as a comprehensive visual summary to see a clear overview of the dominant topics and word during emergency PPKM.

Figure 3. Frequent words during emergency PPKM

Finally, PPKM levels 1-4 was a policy for classifying the severity of COVID-19 transmission, where level 4 was the most severe level, and level 1 was the least severe level. The findings showed that the issues were not much different from those in the previous period, namely restriction zones, stress and burnout, the digital divide, and religious pity. They were also found in this period with different language usage variations. During this period, there were many swear words that were found to be significant compared to other words as an expression of burnout from students. The digital divide in this period was

found with expressions such as networking and disruption. Words related to the Islamic religion, such as *Ya Allah, astagfirullah*, and *aamin* were also found to be significant in this period. Figure 4 show frequent words during PPKM level 1-4, it provides a visual representation and facilitating an understanding about the language that used during these periods.

Figure 4. Frequent words during PPKM Level 1-4

Domestication theory has been widely used in media and technology studies to understand the complex relationship between technology and society. According to Silverstone [14], the domestication of technologies is not a simple process of introducing a new tool or gadget into an existing context, but a complex interplay between technology and social and cultural practices. The process of domestication involves both the appropriation of technologies by users and the adaptation of technologies to suit the needs and routines of users in their daily lives. The findings of this research are consistent with the domestication theory and suggest that the integration of technology into daily routines, such as online learning during the COVID-19 pandemic, is a process that is influenced by various social and cultural factors. The emergence of certain words related to hardware and software in the Indonesian Twittersphere during the transition period suggests that the domestication of technology for online learning was still in progress. The finding of hardware-related words like laptops and mobile phones, for instance, indicates that some students were still acquiring the necessary equipment to fully access online learning.

Moreover, during the PSBB period, the findings showed that there were challenges related to the digital divide, such as bad network connections and limited access to technology, which impeded the domestication process [26]. This finding highlights the importance of considering the social and cultural context in which technology is used and the role of socio-economic factors in shaping the domestication process. The request for internet quota subsidies and the questioning of tuition fees accountability during this period also indicates the importance of government support in facilitating the domestication of technology for online learning. Furthermore, the findings also suggest that the domestication process is not uniform and can be influenced by various contextual factors, such as policies implemented by the government. For instance, during the emergency PPKM period, the domestication process faced new challenges, such as the need for students to help with family tasks at home and the disruption of networking, which were not present in the previous periods. This finding emphasizes the need for a continuous assessment of the domestication process as it is influenced by various contextual factors.

3.2. Keyword grouping analysis

This research categorized tweets into six main themes. These themes consisted of the distance learning system, digital support, restriction zones, stress and burnout, the digital divide, and religious piety. This research explored the topic of discussion from a data set of tweets based on their frequency of occurrence through corpus linguistics analysis to identify larger data patterns. Corpus linguistics is the best

approach to identifying data patterns to better achieve research objectives. From the results of the linguistic corpus, we then carried out a thematic analysis. In this research, the thematic analysis aimed to analyze narrative material through the process of tokenizing and splitting the text into relatively small individual content units as a descriptive result. Thematic analysis was also used to identify, analyze and report data patterns. These two techniques allowed us to identify and examine common themes, topics, and patterns in a data set. The six themes found in this research were analyzed critically and manually based on the research objective to avoid topic allocation errors. The six themes were determined based on literature review, word frequency, and relevance to the most prominent terms. In addition, Figure 5 illustrating keyword analysis in the distance learning system category and provide a visual depiction of the most significant terms related to this issue.

Figure 5. Keyword analysis in the distance learning system category

The distance learning system is a response to changing learning modes from face-to-face learning to online learning. The words that appear on this theme increased, especially in the initial period of implementing the online learning model which was implemented by the Indonesian government in March 2020 to comply with the large-scale social restrictions regulations previously stipulated in Government Regulation number 21 of 2020. In this period, the community affected by the online learning model had just started the learning phase using online learning tools, and digital technology tools, and had just been introduced to several new terms in online learning, such as "blended" learning, "online school", and "online learning". Educational institutions including students and parents still have to adapt to teaching and learning methods in overcoming the challenges faced by COVID-19 [27], not only in Indonesia but also in many other countries which are starting to adapt to various methods [28]. Therefore, in the early period of this transition period, the community is still in a phase where they cannot fully accept the changes brought about by COVID-19, which can be seen from the appearance of words, such as "*mahal* (expensive)", "SPP (tuition fee)", "*Masuk* (go to school)", "*wisuda* (graduation)", and "*Ujian* (exam)" which still showed the relationship between internet users and the pre-pandemic period where these words are keywords that often appear during face-to-face learning in the normal era.

The findings presented in this passage highlight the impact of COVID-19 on the education sector, specifically in the shift from face-to-face learning to online learning. The increased usage of words related to distance learning during the initial period of implementing the online learning model in Indonesia in March 2020 indicates the difficulty faced by the community in adjusting to this new mode of learning. This highlights the importance of understanding the social and cultural context in which technology is used, as suggested by the domestication theory [14].

Previous research has also emphasized the challenges faced by the education sector in adapting to online learning during the pandemic, not just in Indonesia but globally. Previous researches [27], [29] have all discussed the challenges of distance learning in Indonesia, while other researches [30], [31] have also highlighted similar challenges in other countries. These challenges include adapting to new teaching and learning methods and tools, as well as the financial burden of accessing online learning platforms. The appearance of words related to face-to-face learning, such as "*masuk* (go to school)", "*wisuda* (graduation)", and "*ujian* (exam)" alongside the emergence of words related to distance learning indicates the difficulty in fully accepting the changes brought about by COVID-19. This highlights the need for further research to understand the challenges and opportunities presented by online learning in the context of the pandemic, as

well as the impact on the education sector in the long run. To provide a more visual representation of the keyword analysis within the digital support category, Figure 6 offers an illustrative overview of the most prominent keywords emerged in this topic.
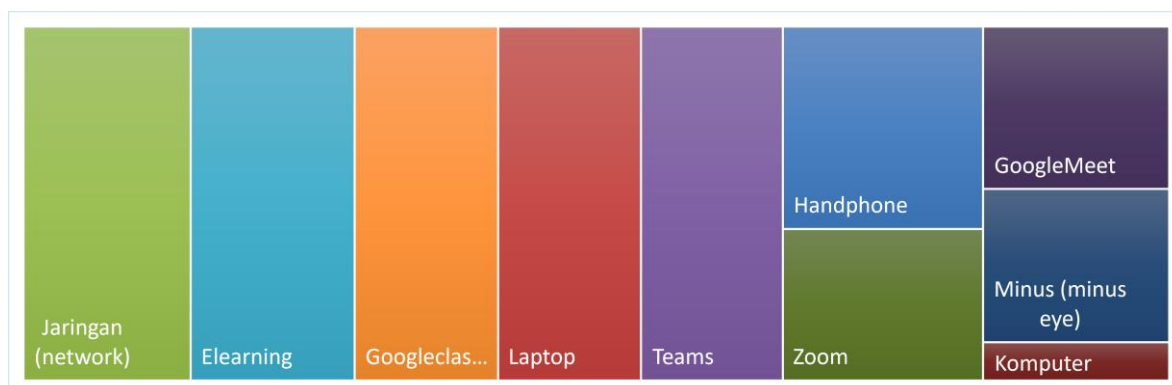

Figure 6. Keyword analysis in the digital support category

Digital support is a voice about the need for various kinds of software and hardware as a consequence of online learning. This research found words such as "handphone", "laptop", and "computer" that represent sounds related to the hardware used in distance learning. Meanwhile, words such as "Teams", "Elearning", "Gclassroom", "zoom", and "Gmeet" appeared quite a lot and represented software or applications used during the online teaching and learning process during the pandemic. One of the words that often appeared was "minus". This word was related to the impact that appeared on the body and affected students due to online learning. This second theme emerged during the intensive period of technology adoption and the integration of technology in schools and preschools [32]. The dominant words used by netizens showed the process of acceptance of new learning models for students and teachers at school, especially concerning all hardware, and software and their impact on their daily lives. The words that appear in this theme were very important in online school discourse given the skills to use technical tools are needed to carry out a smooth transition to the learning process in schools after the spread of COVID-19 [33]–[35]. The urge to share on social media their experiences in implementing online learning is also a manifestation of their desire to seek support and common ground with others in facing the challenges of transitioning to home education, given that most schools make this transition with little preparation and very badly executed [36].

The second theme that emerged in this research is digital support, which emphasizes the need for software and hardware to support online learning. The COVID-19 pandemic has accelerated the adoption of digital technology in education, leading to an increased demand for technology tools to facilitate distance learning. The findings of this research highlight the importance of hardware such as handphones, laptops, and computers, as well as software such as Teams, Elearning, Google Classroom, Zoom, and Google Meet, in facilitating online teaching and learning during the pandemic. However, the negative impact of technology on students is also highlighted, as evidenced by the frequent appearance of the word "minus", which represents the negative effects of online learning on students' physical and mental health. This theme is in line with the dimension of "appropriation" in the domestication theory, which refers to the process of incorporating technology into daily routines and making it a part of everyday life. The findings suggest that the adoption of digital technology in education is still in the process of appropriation, as students and teachers are still adapting to the new learning models and the impact of technology on their daily lives. Therefore, it is important for schools to provide adequate support and training to students and teachers to ensure a smooth transition to online learning. Previous research has also emphasized the importance of digital technology in facilitating online learning during the pandemic. For example, a study by Boothby *et al.* [35] found that digital technology tools such as video conferencing and online learning platforms have played a crucial role in maintaining continuity of education during the pandemic. Similarly, Jiang *et al.* [37] emphasized the need for schools to provide students with appropriate hardware and software to facilitate online learning and ensure educational equity during the pandemic. Figure 7 illustrating the outcome of keyword analysis within the restriction zones category to provide a visual snapshot of the key terms related to this category.
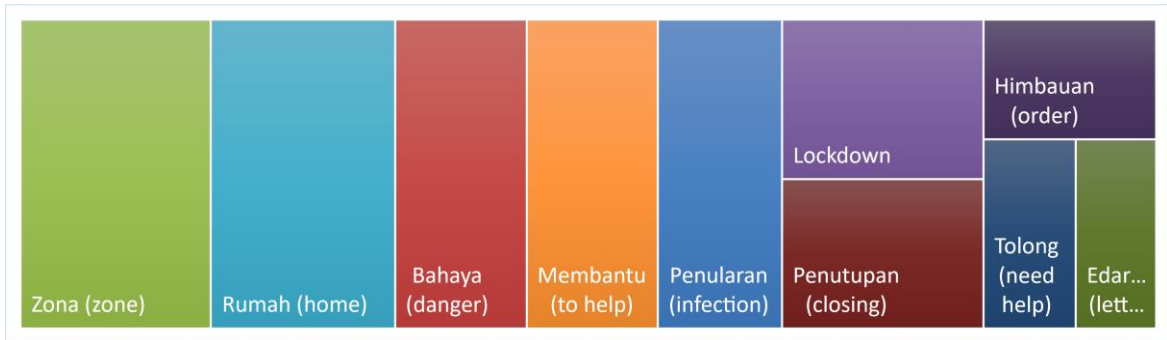
Figure 7. Keyword analysis in the restriction zones category

Restriction zones is a netizen's response to the implementation of a changing lockdown policy with all the consequences for the learning process. Comments from netizens that appear in this theme were related to rules made during COVID-19 and influencing learning models, as well as discussions about what they think about these rules and policies. It can be seen from the words "*zona* (zone)", "*edaran* (letter)", "*himbauan* (direction)", and "lockdown" related to the narrative used by the government of the Republic of Indonesia in conveying regulations related to COVID-19. The words that also appeared on this theme, such as "*penularan* (infection)", "*bahaya* (danger)", "*rumah* (home)", "*membantu* (to help)", "*tolong* (need help)", "*penutupan* (closing)" were responses presented in society related to the implementation of these government regulations. The challenge in switching to online learning was the burden on parents, as previously, the children were under the supervision of school personnel inside the school building [38]. Therefore, the effect of the emergence of policies and regulations that require social restrictions, especially in educational institutions, would have an impact on the emergence of a dilemma in netizens who were burdened by the existence of an online learning model. In Addition, they were burdened with worries about the health of their children if they continue to carry out face to face learning, this can be seen from the use of the words "*bahaya* (danger)", "*tolong* (need help)", and "*penularan* (infection)".

The Restriction Zones theme can be analyzed through the lens of the domestication theory, particularly the dimension of appropriation. According to this dimension, the integration of technology into daily life requires a process of adaptation and negotiation between technology and users, as well as between users themselves. In this case, netizens are negotiating the impact of government policies and regulations on their daily lives, particularly on the learning process. The use of social media to express their opinions and concerns about these policies is an example of the appropriation of technology to support their needs and interests. Previous research on the domestication theory in the context of online learning during the pandemic has shown similar findings. For instance, a study found that the domestication of online learning involved a process of negotiation and adaptation between students, parents, and teachers to ensure a smooth transition to this new mode of learning [39]. Another study found that the domestication of technology involved the development of new digital skills and competencies among students, teachers, and parents, as well as the adaptation of social norms and practices related to learning and education [40]. The fourth theme that emerged in this study is stress and burnout, Figure 8 displays the keyword analysis of this theme.

Figure 8. Keyword analysis in the category of stress and burnout

Stress and burnout are expressions of online learning fatigue. Previous studies related to online learning showed that parents tended to reject online learning during a pandemic due to several reasons such as a lack of online learning resources, inadequate self-regulation of children, and lack of time and professionalism of parents in supporting children's online learning, not to mention the difficulties caused by the COVID-19 pandemic which had made them suffered. Thus, they preferred to reject the online learning model [41]. In line with previous studies, this study found that parents tended to have high levels of stress and frustration when adapting to this new learning model characterized by the use of the words "*pusing* (dizzy)", "*tugas* (task)", "overload", "*lelah* (tired)", and "*begadang* (stay up late)". In addition, the dominant words also led to an outpouring of frustration with the online learning model that was being implemented. It can be seen from the many 'cursed' words that appeared on social media, especially in online learning topics, such as "*babi* (pig/cursing)", "*anjrit* (cursing)", "*bangsat* (cursing)", and "*bodoh* (stupid)". Interactions that occur on social media sites vary greatly and were influenced by various factors such as personality and anonymity factors. Besides, the use of social media was also believed to strengthen online acceptance and support from other users [42]. Concerning this theme, the words that appear in this theme can also be seen as an attempt to channel emotions and seek support from others regarding the online learning problems they face.

The theme of stress and burnout during online learning can be analyzed through the lens of domestication theory, particularly the dimension of appropriation. This dimension deals with how users adapt and take ownership of technology in their daily lives. In the context of online learning during the COVID-19 pandemic, stress and burnout can be seen as a consequence of the appropriation of digital technology tools for the learning process. The use of curse words and other expressions of frustration can be seen as a form of resistance and negotiation of power between users and technology, as they struggle to adapt to this new learning model. Previous research has also shown that stress and burnout are common experiences during online learning, particularly for parents who are expected to support their children's learning at home. Arora and Srinivasan [43] found that parents experienced high levels of stress and anxiety due to the added responsibility of supporting their children's learning while also dealing with their own work and household duties. Similarly, Murphy [41] found that parents reported feeling overwhelmed and frustrated by the demands of online learning, particularly the lack of structure and guidance compared to traditional face-to-face learning. In the forthcoming part, will be explained the digital divide category as the fifth theme that emerged in this study. Figure 9 showcases the outcome of the keyword analysis in the digital divide category.
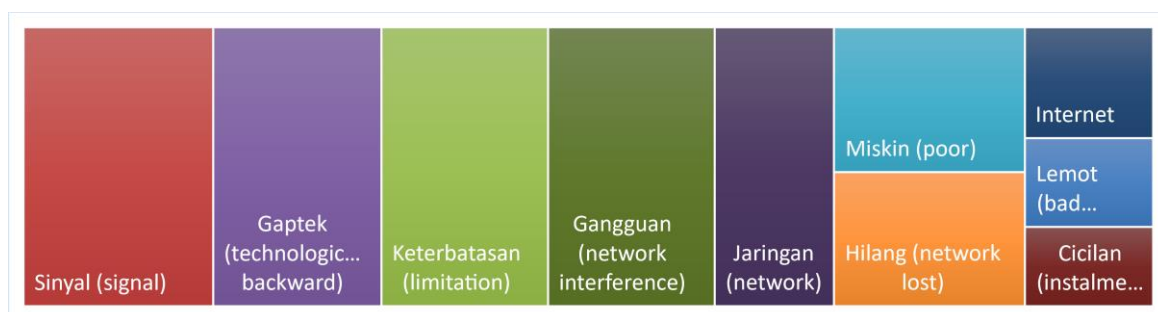

Figure 9. Keyword analysis in the digital divide category

Digital divide was a response to the inequality in information and communication technology infrastructure development in Indonesia. This research found that the online learning process was inseparable from the problem of the digital divide as reflected in the emergence of keywords such as "*gaptek* (technologically backward)", "*miskin* (poor)", and "*cicilan* (installment)" which indicated the difficulty of netizens in meeting online learning needs in terms of learning facilities and infrastructure. This was supported by research from UNICEF [44] that in Southeast Asia, there were at least 147 million children or 38% of all students could not access remote learning. In addition, keywords such as "*lemot* (bad signal)", "*sinyal* (signal)", "*hilang* (network lost)", "*gangguan* (network interference)", and "*jaringan* (network)" also appeared in online learning discourse on social media. This showed that this digital divide arose not only because of social class [45] but also by demographic factors where access to online learning facilities also differed between students who lived in urban areas and rural areas. This was supported by previous studies which found that colleagues in various countries had raised concerns about equality among students because not all students had the opportunity to access resources and engage in online education [46].

The digital divide theme can be analyzed using the domestication theory. The emergence of keywords, such as "*gaptek*" and "*miskin*" reflects the process of domestication, where the technology is being adopted and integrated into daily routines. However, the difficulties faced by netizens in meeting the online learning needs indicate that the technology is not fully domesticated and is still in the process of becoming part of their daily routines. The lack of access to online learning facilities and infrastructure can also be seen as a form of resistance to technology domestication, as some netizens are excluded from the benefits of technology due to their socioeconomic status or geographic location. Previous research has also highlighted the issue of the digital divide in online learning during the COVID-19 pandemic. A study found that the lack of access to technology and internet connectivity was a major obstacle to online learning in developing countries [47]. Subsequently, the research shows that there is another theme emerging related to the religious piety. Figure 10 present the result of keyword analysis in this category.
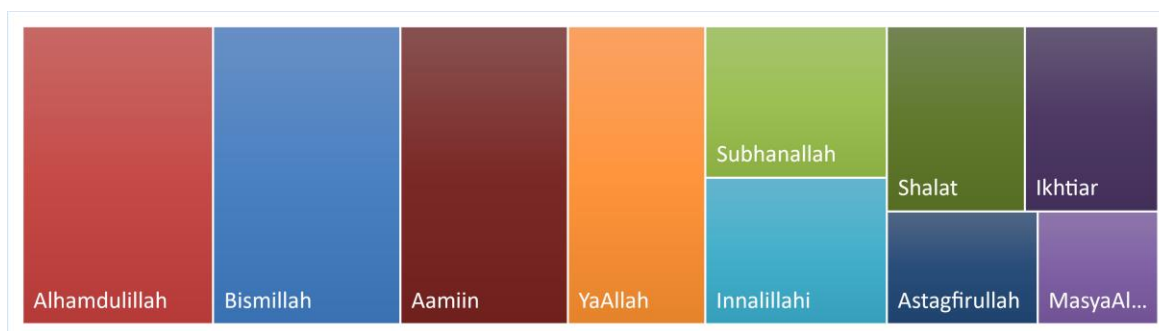

Figure 10. Keyword analysis in the category of religious piety

As a religious community, religious piety was found in many tweets. This theme was indeed very possible to emerge, especially when considering the significant increase in religious practice in countries with a Muslim majority population which was marked by the increasing number of Islamic religious organizations, religious films, and soap operas, musicians, online and printed media selling religious content [48]. This research showed that something linear could be seen from the keywords that appear in this theme, namely the expression of various kinds of emotions. It was not uncommon to use Arabic which was often used casually by Muslims in their daily lives. The choice of words and the language used seemed to be divided into several objectives, for example, the aim was to convey a sense of optimism and gratitude, for example, "*bismillah*", "*alhamdulillah*", "*subhanallah*", "ya Allah" and "*masya allah*". While some of the words represented or were a reaction to a negative situation, such as the words "*innalilahi*" and "*astagfirullah*". As well as some others indicated the activities, they carry out such as "prayer", "amen" and "endeavor". Digital technologies had changed, expanded, and adapted religious practices [49]. Based on previous studies, the emergence of religious keywords was quite common because it was a way for netizens to expand the medium in practicing their religion and beliefs and to show identity as Muslims who always remember God in every situation, especially in a disaster situation [49].

The theme of religious piety can be analyzed using the domestication theory, which states that technology is not neutral, and its adoption and use are influenced by social, cultural, and institutional factors. In the context of religious piety, it can be argued that the domestication of technology has enabled Muslims to express their religious identity and beliefs in the online world. Through social media, Muslims can negotiate their religious feelings and reconstruct their identities, as noted in previous research [48]. Moreover, the use of Arabic words in social media posts reflects the incorporation of technology into daily religious practices, indicating the complex interplay between technology and the social and cultural contexts in which it is used. The use of Arabic words and expressions, such as "*bismillah*," "*alhamdulillah*," and "*subhanallah*," demonstrates how digital technologies have changed and expanded religious practices, as noted in previous research [49].

4. CONCLUSION

Due to the COVID-19 pandemic, distance learning has altered the educational landscape. However, educational and societal issues accompanied the implementation of this technology, especially in nations with diverse ICT infrastructure. This phenomenon is partially explained by the theoretical approach to technology domestication, which views technology as an object that is adopted and modified to satisfy users' desires and preferences in their cultural and social environment. However, the COVID-19 pandemic's sudden and

massive shift to online learning has disrupted the education sector's domestication of this technology, thereby introducing new obstacles. This dilemma faces educational institutions that are unprepared. Inadequate infrastructure and regulations impede online learning. The digital divide and inadequate telecommunications network infrastructure also hinder the ability of diverse pupils to comprehend and benefit from online education. The effects are not only pedagogical but also psychological, as evidenced by student complaints and tension during this transitional period. These results shed light on the challenges and potential of online education in countries with diverse ICT infrastructures in academic research. This study also emphasizes the significance of social and cultural factors in comprehending and promoting the domestication of technology.

This study has numerous practical applications. First, policymakers and educators must become more aware of and address issues related to students' online learning, particularly in light of the digital divide. Second, it is crucial to identify and manage the psychological effects of online learning on students, particularly burnout and stress. According to this study, religious institutions assist students in difficult circumstances. This study has some limitations. Twitter and the transition of an epidemic may limit conclusions. Consequently, future research may employ additional social media and longitudinal analyses to monitor changes in online learning attitudes and behaviors. Post-pandemic circumstances will also present new challenges and dynamics for the domestication of online learning technologies.

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BIOGRAPHIES OF AUTHORS

Nurly Meilinda ⓘ 🔍 SC ◖ is a Ph.D. Candidate in Department of Communication, University of Indonesia. She is also a lecturer in Communication Department, Faculty of Social and Political Science, Universitas Sriwijaya. Her research interest includes new media, media literacy, and the technology domestication in everyday life within the household. She is also a certified public speaker and frequently become speakers in public speaking training. She can be contacted at email: nurly.meilinda91@ui.ac.id; nurlymeilinda@unsri.ac.id.

Billy K Sarwono ⓘ 🔍 SC ◖ is a Professor at the Department of Communication Science, University of Indonesia. Her focus of studies is on media & gender/minorities and media climate change issues. She did postdoc research, in 2005, at Radboud University in Nijmegen, the Netherlands. From 2008 up to now, she is a member of Media Climate Working Groups and did collaboration research on media climate and women & media issues. She was an author of two books. She can be contacted at email: billy.sarwono09@ui.ac.id.

Ummi Salamah ⓘ 🔍 SC ◖ is an Assistant Professor at the Department of Communication Science, University of Indonesia. Her research interest is in media, public sector communication, corporate communication, political communication, and branding. She graduated from the Faculty of Psychology and then pursued her master's and doctoral degree in Communication from University of Indonesia. She is the Director of the Communication Research Center (2018 - now) and starting from 2022 is also the Director of the Institute for Social and Political Research and Development at Universitas Indonesia. She can be contacted at email: ummisalamah15@ui.ac.id.