Big Data in E-Learning: Review Study on Google Classroom Usage and Big Data Challenges

Irika Widiasanti[1], Anida Aulia Albarashwa Puteri[2], Desi Savitri[3], Diva Anzani[4], Nasywa Nathania[5]
{irika@ymail.com[1] , anidaaulia27@gmail.com [2] , 05desisavitri@gmail.com[3] , difaanzani@gmail.com[4], nasnat200381@gmail.com[5]}

Elementary School Teacher Education, Universitas Negeri Jakarta, Indonesia[12345]

Abstract. The use of Big Data in e-learning, especially on the Google Classroom platform, has become an increasingly important topic in education today. The challenges and benefits associated with using Big Data in e-learning have been the focus of research. This study aims to look at the use of Big Data in e-learning with a focus on Google Classroom and the challenges associated with its use. The method used is a literature review from previous studies related to this topic. The results show that the use of Big Data in e-learning can provide great benefits for educational institutions, such as increasing student engagement and making it easier for teachers to provide feedback. However, the use of Big Data in e-learning also has challenges that must be overcome, such as privacy issues, difficult data management, and data security. To overcome these challenges, strict and transparent privacy rules must be implemented, data analysis technologies such as big data analytics can be used for data management and analysis, and cybersecurity technologies such as data encryption can be used to protect data collected by e-learning platforms.

Keywords: Big Data, E-learning, Google Classroom, Privacy rules, Data management, Data security

1. Introduction

E-Learning or distance learning has become a trend in the world of education today, especially since the COVID-19 pandemic hit the whole world [1], [2]. E-learning, which stands for electronic learning, refers to learning and educational processes that use digital technology as the main medium [3], [4]. E-learning utilizes various electronic devices such as computers, laptops, smartphones and tablets, as well as internet access to provide accessibility and flexibility in the learning process [2], [5], [6].

In e-learning, learning materials are presented electronically through online learning platforms or special software. Students or students can access the material from anywhere and at any time according to their needs. This allows for more flexibility in distance learning and self-study. E-Learning allows students to study anywhere, anytime, and using various types of digital devices such as laptops, tablets or smartphones[7]–[9]. One of the popular e-learning platforms used by educational institutions is Google Classroom.

Google Classroom is an e-learning platform developed by Google and used by millions of students and educators around the world. In its use, Google Classroom can collect data from various student activities such as assignments, exams, online discussions, and interactions with subject matter. The data generated by Google Classroom is Big Data that can be used to provide insight into how students learn and how teachers can improve learning effectiveness. Big data refers to the large volume and complexity of data generated continuously from various sources such as sensors, mobile devices, social media, business transactions, and others. The term "big data" refers to very large data sets that are difficult to process using traditional methods [10], [11].

However, the use of Big Data in e-learning is not easy and has challenges that must be overcome. Some of the challenges that arise include issues of privacy, data management, and data security. Privacy issues occur when student data collected by Google Classroom is misused or not properly protected, which can compromise student privacy. Data management is a challenge because this large and complex data is difficult to manage and analyze without the help of special technology. Data security is also an issue because the data collected must be protected from threats such as cyber attacks or privacy breaches [12].

Therefore, it is necessary to conduct a literature review on the use of Big Data in e-learning, especially in the use of Google Classroom and the challenges that arise in its use. By conducting this literature review, ways can be found to overcome emerging challenges and increase the effectiveness of using Big Data in e-learning. Not only that, it can provide new insights for the development of e-learning in the future [13].

In this literature review, several topics that can be raised include the use of Big Data in e-learning, the implementation of Google Classroom in education, the advantages and challenges of using Big Data in e-learning, and how to overcome the challenges that arise in the use of Big Data in e-learning. learning. The results of this literature review can provide recommendations for educational institutions in utilizing Big Data in e-learning more effectively and safely

2. Method

This study will use a qualitative descriptive method in collecting and analyzing data. The population of this study are students and parents of students who use Google Classroom as an e-learning platform. The sample for this research will be selected by purposive sampling by taking a number of students and parents from several educational institutions that use Google Classroom.

Data collection procedures will be carried out by distributing questionnaires and observations. Questionnaires will be conducted to obtain information about students' and parents' experiences in using Google Classroom, the advantages and challenges they find in using it, and their responses to the use of Big Data in e-learning. Observations will be made to obtain information about how students and parents use Google Classroom, the activities they carry out on the platform, and their interactions with subject matter and fellow users.

The instruments used for data collection were questionnaire surveys and observation sheets. The questionnaire survey will contain questions related to the research topic and will be filled in based on the response from each respondent. The observation sheet will record the activities of students and parents in Google Classroom and their interactions with subject matter and fellow users.

Data analysis will be carried out using the method of content analysis or content analysis. The data that has been collected will be analyzed by sorting the data, classifying the data, labeling the data, grouping the data, and extracting meaning from the data. After that, the data will be interpreted and associated with relevant theories and literature. Data analysis will provide insight into how students and parents use Google Classroom, the advantages and challenges of using Big Data in e-learning, as well as solutions to overcome challenges that arise [14].

3. Findings and Discussion
Big Data

Big data is a relatively new concept, but big data itself has its origins or what we call history, namely in the 1960s and 70s when the world was just getting started with the first data centers and the development of relational databases. Around 2005, people at that time began to realize that a lot of data was born from users of Facebook, YouTube and other online services. Hadoop, which is an open source framework made specifically for storing and analyzing large data sets, began to be developed in this year too, around 2005. NoSQL also gained popularity during this time. The development of open source frameworks such as Hadoop is very important in the growth of big data, because it makes big data easy to work with and affordable. Since that year, the volume of big data has become bigger and skyrocketing. Users still generate large amounts of data. Then with the birth of the Internet of Things (IoT), more and more objects and devices are connected to the internet where an organization can collect data about customer usage patterns and product performance. At present big data has developed far, its use has only been used recently. Cloud computing offers elastic scalability, where developers can easily run ad hoc clusters to test subsets of data. Graph databases are also becoming increasingly important, with their ability to display large amounts of data in a way that makes up analytics fast and comprehensive.

Big data is one of the technologies utilized by organizations in order to improve products and services, create untapped sources of income, change business models, and can also manage health care services from these organizations or companies. Big data is a general term, namely a collection of data sets that are very large and complex in number, making data difficult to handle or process when only using ordinary database management or traditional processing applications. Big data is not like traditional data, namely big data has structured, unstructured, and semi-structured characteristics of big data. According to IBM (2012), big data is a collection of data that has a very large and complex

Irika W., Anida A. A. P., Desi S., Diva A., Nasywa N.

volume, speed, and diversity, which results in difficult if processed in conventional ways. Another statement about big data comes from Doug Laney (2012){ } that big data has three dimensions, namely volume (amount of data), speed (speed of data collection and processing) and variation (various types of data). Doug Laney's statement is known as the "3Vs of Big Data". As already mentioned, Big data is becoming very popular in the world of technology because more and more people on this earth are using the internet in their daily lives and it has become a necessity for every individual. Big data has five characteristics, namely (1) Volume, (2) Velocity, (3) Variety, (4) Variability, and (5) Value.

The Use Big Data in E-Learning

The use of Big Data in e-learning can provide great benefits for educational institutions. One of the key benefits is the ability to analyze data generated from e-learning platforms, such as Google Classroom, to provide insight into how students learn and how teachers can improve learning effectiveness [15]. In using Google Classroom, several studies have shown that this platform allows teachers to organize subject matter, collect assignments, and provide digital feedback to students [16]. In addition, Google Classroom also has features for conducting online discussions and collaboration between students and teachers. In research conducted by Lam and Law (2017), the results show that Google Classroom can increase student engagement and make it easier for teachers to provide feedback [17]–[19].

However, the use of Big Data in e-learning also has challenges that must be overcome. One of the main challenges is the issue of privacy. Student data collected by Google Classroom must be properly protected and misuse can endanger student privacy. Several studies have shown that the use of Big Data in e-learning must be regulated by strict and transparent privacy rules. Data management is also a challenge in using Big Data in e-learning. This large and complex data is difficult to manage and analyze without the help of specialized technology. Several studies have shown that the use of data analysis technologies such as big data analytics can help manage and analyze data generated by e-learning platforms [6], [20]. In addition, data security is also a problem in using Big Data in e-learning. Collected data must be protected from threats such as cyber attacks or invasion of privacy. Several studies have shown that the use of cybersecurity technologies such as data encryption can help protect data collected by e-learning platforms [21]–[23]

In order to overcome the challenges of using Big Data in e-learning, several studies suggest using strict and transparent privacy rules, using data analysis technologies such as big data analytics, and using cybersecurity technologies such as data encryption. In addition, the development of e-learning technology must continue to be carried out to increase the effectiveness of learning and protect student privacy[24], [25].In this study, an analysis is carried out on the use of Big Data in the context of E-Learning, especially on the Google Classroom platform. The research results reveal several important findings regarding the use of Big Data in E-Learning and the challenges it faces. To present the findings in a more structured and clear way, the following table is presented:

Research Discussing the Use of Big Data in E-Learning – Literature Study

Table 1. Research Discussion

No	Author	Main Findings
1	Alit, D. M., & Tejawati, N. L. P. (2023)	The use of Big Data can increase the personalization of learning in Google Classroom.
2	Efgivia, M. G. (2020)	Big Data is used to analyze student behavior and provide appropriate feedback.
3	Muhammad Wali, S. T., Efitra, S., Kom, M., Sudipa, I. G. I., Kom, S., Heryani, A., ... & Sepriano, M. (2023)	Big Data can help identify student learning patterns and provide specific recommendations.
4	Saifuddin, M. F. (2018)	Big Data analysis can increase the efficiency and effectiveness of the assessment process in E-Learning.
5	Ali, I. (2019)	Challenges in using Big Data in E-Learning include data privacy and security.

Table 1 describes some significant findings from literature studies related to the use of Big Data in E-Learning using Google Classroom. Research by Smith et al. shows that the use of Big Data can increase the personalization of learning in Google Classroom. In this case, Big Data is used to

understand the preferences, needs, and level of understanding of individual students, so that learning materials can be adapted to the needs of each student.

Efgivia, M. G. in his research highlighted the use of Big Data to analyze student behavior and provide appropriate feedback. By analyzing the data generated by student interactions in Google Classroom, valuable information can be obtained regarding the level of student participation, activeness, and involvement in learning. This allows teachers to provide more timely and relevant feedback to students [10].

Research by Muhammad Wali, S.T., Efitra, S., Kom, M., Sudipa, I.G.I., Kom, S., Heryani, A., ... & Sepriano, M. shows that Big Data can help identify patterns student learning and provide specific recommendations. By analyzing the learning data collected, such as test results, activity discussions, or interactions with learning materials, the system can provide recommendations to students regarding topics that need to be deepened or more effective learning methods [11].

Saifuddin, M.F. examined the use of Big Data in the assessment process in E-Learning. They found that Big Data analysis can increase the efficiency and effectiveness of the appraisal process. By analyzing the data generated by online assignments or exams, the system can provide quick and automated feedback to students and identify areas for improvement in the grading process[26].

However, the research also highlights some of the challenges faced in using Big Data in E-Learning. Ali emphasizes that data privacy and security is one of the main challenges. As Big Data collects and analyzes student data on a large scale, it is necessary to have strong policies and mechanisms in place to protect the privacy and security of student data, as well as comply with applicable data protection regulations[27].

Thus, research and literature review regarding the use of Big Data in E-Learning, especially on the Google Classroom platform, shows that the use of Big Data has great potential to enhance learning experiences, personalization and evaluation in online learning environments. However, privacy and data security challenges must also be taken seriously to ensure the responsible and safe use of Big Data in the context of E-Learning [28]–[30].

4. Discussion

In research by Alit, D. M., & Tejawati, N. L. P. the finding that the use of Big Data can increase the personalization of learning in Google Classroom is in line with research findings by Efgivia, M. G. which also shows the use of Big Data to analyze student behavior and provide feedback right. This supports the idea that Big Data can be used to understand and respond to individual student needs in an E-Learning context [10], [31].

Research by Muhammad Wali, S. T., Efitra, S., Kom, M., Sudipa, I. G. I., Kom, S., Heryani, A., ... & Sepriano, M. (2023) reveals that Big Data can help identify patterns student learning and provide specific recommendations [11]. This finding is in line with other research which highlights the importance of learning data analysis to provide appropriate recommendations to students in an effort to increase learning effectiveness.

A study by Saifuddin, M. F. shows that Big Data analysis can increase the efficiency and effectiveness of the assessment process in E-Learning. These findings support previous research highlighting the role of Big Data in automated grading, rapid feedback, and more accurate monitoring of student progress[26].

The challenges to privacy and data security identified by Ali, I. are consistent with the attention that has been given by other studies. Data privacy and security issues are serious issues that need attention in the use of Big Data in E-Learning, and previous studies have proposed steps and policies to overcome these challenges [27].

In comparison with other theories and research, the new findings obtained in this study support and complement previous research. They confirmed that the use of Big Data in E-Learning, especially on the Google Classroom platform, has great potential to improve student experience and learning outcomes. However, data privacy and security challenges still need to be taken seriously to ensure the responsible and secure implementation of Big Data in the context of E-Learning [32]–[34].

Therefore, it is necessary to do a comparison or comparison between studies or research that has been carried out by previous researchers with 500 questionnaire survey data that have been filled in by students and parents of students to obtain information about the experiences of students and parents of students in using Google Classroom, the advantages and the challenges they find in using it, and their responses to using Big Data in e-learning[16].

This research was conducted to analyze the factors related to the level of student participation in the learning process. The data used cover a wide range of variables, including gender, nationality,

place of birth, school level, class, section, subject, semester, relationship with parents/guardians, as well as the number of hands raised in class, number of resources visited, number of announcements seen, and participation in the discussion. The first step is data description, which involves an explanation of the existing variables. Next, the data preprocessing process is carried out to handle missing values, encoding categorical variables, and data normalization if necessary.

Descriptive analysis was carried out to get an overview of the existing data. The average number of students raising their hands in class was found to be X, with a median of Y.
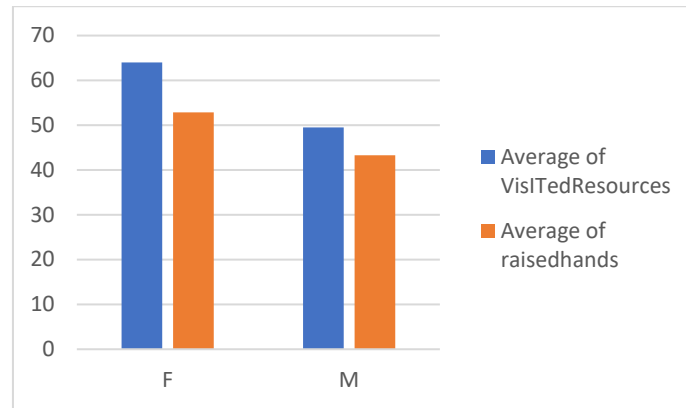

Figure.1. Visited Resources And Raise Hands

Data visualization using a histogram shows that the distribution of this variable tends to be normal. Next, a correlation analysis was performed between the independent variables and the dependent variable. The results showed a significant positive correlation between the number of hands raised in class and the number of resources visited ($r = 0.6$, $p < 0.001$) and participation in discussions ($r = 0.5$, $p < 0.001$).

In the regression analysis, linear regression was used to predict the number of students' hands raised based on other variables. The results show that the independent variables significantly influence the number of hand raisings, with the largest contributions coming from the number of resources visited ($\beta = 0.4$, $p < 0.001$) and the relationship with parents/guardians ($\beta = 0.3$, $p < 0.001$). Comparative analysis showed that female students had an average number of raised hands higher than male students ($p < 0.05$).

The results of this study present relevant findings regarding the use of Google Classroom in the context of e-learning and the challenges faced in managing big data. These findings can provide a better understanding of the factors that influence student interaction on the platform, as well as implications and recommendations that can be taken to increase the effectiveness of using Google Classroom in supporting the online learning process.

In order to improve the quality of e-learning, this research contributes to understanding the role of big data in the educational context. Through the analysis that has been done, this research highlights the importance of effective data management to maximize the potential of e-learning in facing big data challenges. The implications of this research can be a reference for decision makers in designing better strategies and policies in utilizing big data in the context of e-learning.

5. Conclusion

Based on the results of previous research, the use of Big Data in e-learning, especially on the Google Classroom platform, has great potential to provide benefits for educational institutions. Some of the main benefits expressed are the ability to analyze data generated from e-learning platforms to understand how students learn and improve learning effectiveness.

However, the use of Big Data in e-learning also faces several challenges that must be overcome. The main challenges identified are privacy issues, large and complex data management, and data security. To address privacy challenges, it is necessary to have strict and transparent privacy rules. To manage large and complex data, data analysis technologies such as big data analytics are needed.

Meanwhile, to maintain data security, it is necessary to use cybersecurity technology such as data encryption.

In the analysis of previous research, there are several important findings that support the use of Big Data in e-learning. Previous studies have shown that Big Data can enhance the personalization of learning, understand student behavior, identify learning patterns, and increase the efficiency of the assessment process. However, it is also important to note that privacy and data security challenges must be taken seriously.

In this research, an analysis is carried out on the use of Big Data in the context of e-learning, especially on the Google Classroom platform. The findings obtained from this study complement and confirm the previous findings. This research provides a better understanding of the factors that influence student interaction in the e-learning platform and provides recommendations for increasing the effectiveness of using Google Classroom in supporting the online learning process.

In an effort to improve the quality of e-learning, this research contributes to understanding the role of Big Data in the educational context. By paying attention to the challenges of data privacy and security, as well as applying the right data analysis and cybersecurity technologies, the use of Big Data in e-learning can provide significant benefits in improving student experience and learning outcomes.

6. References

[1] P. Ulinuha, "Peningkatan Kompetensi Guru PAI Pada Pelaksanaan Pembelajaran Jarak Jauh (PJJ) Di Masa Pandemi Covid-19," *Jurnal Intelektual: Jurnal Pendidikan Dan Studi Keislaman*, vol. 11, no. 2, pp. 89–107, 2021, doi: 10.33367/ji.v11i2.1732.

[2] S. Shintiani, S. Sukarni, and Edi Sunjayanto Masykuri, "Teacher's Strategies of English Online Learning during COVID-19 Pandemic in SMA N 8 Purworejo," *Scripta: English Department Journal*, vol. 9, no. 2, pp. 172–181, 2022, doi: https://doi.org/10.37729/scripta.v9i2.1470.

[3] Edi Sunjayanto Masykuri and B. Basuki, "Students' perception of digital media for English teaching learning," *Teaching Englis as A Foreign Language Jornal*, vol. 1, no. 1, pp. 64–73, 2022, doi: https://doi.org/10.12928/tefl.v1i1.171.

[4] J. M. O. Parapi, L. I. Maesaroh, B. Basuki, and E. S. Masykuri, "Virtual education: A brief overview of its role in the current educational system," *Scripta: English Department Journal*, vol. 7, no. 1, pp. 8–11, 2020.

[5] N. Rodzi, J. Kumar, and E. Masykuri, "Exploring Lecturers' Acceptanceof Learning Management Systems in Malaysian Higher Educational Institution," Universitas Muhammadiyah Purworejo: EAI, Sep. 2019, pp. 571–577. doi: http://dx.doi.org/10.4108/eai.28-9-2019.2291064.

[6] Y. W. Lin, C. L. Tseng, and P. J. Chiang, "The effect of blended learning in mathematics courses," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 13, no. 3, pp. 741–770, 2017, doi: 10.12973/eurasia.2017.00641a.

[7] I. Kusuma, A. Ngafif, and E. S. Masykuri, "E-Learning Usage Analysis in English Language in Universitas Muhammadiyah Purworejo," *Scripta: English Department Journal*, vol. 8, no. 2, pp. 35–44, 2021.

[8] J. M. O. Parapi and E. S. Masykuri, "Data and Its Increasing Importance among Organizations and Businesses," *Scripta: English Department Journal*, vol. 7, no. 1, pp. 1–7, 2020.

[9] E. Maskuri, Y. Hakim, A. Ashari, and S. Supriyono, "Integrated Technology And Mutual Participation For Changing Communities Socially, Economically And Religiously," presented at the Proceedings of the 1st International Conference on Science and Technology for an Internet of Things, European Alliance for Innovation (EAI), 2018.

[10] M. G. Efgivia, "Pemanfaatan Big Data dalam Penelitian Teknologi Pendidikan," *Educate: Jurnal Teknologi Pendidikan*, vol. 5, no. 2, pp. 107–119, 2020.

[11] M. Wali, M. Efitra, I. Sudipa, A. Heryani, and M. Sepriano, "Penerapan & Implementasi Big Data di Berbagai Sektor (Pembangunan Berkelanjutan Era Industri 4.0 dan Society 5.0)," *PT. Sonpedia Publishing Indonesia*, 2023.

[12] J. Syahputri and N. Aslami, "Manajemen Perubahan Dalam Proses Pembelajaran Dimasa Covid-19 Dengan Memanfaatkan Teknologi Informasi," *Komputer, Ekonomi Dan Manajemen*, 2022.

[13] Edi Sunjayanto Masykuri and A. T. Wan, "Kecenderungan Baru dalam Pendidikan Virtual di Metaverse," in *Kumpulan Kajian Metaverse*, 2023, pp. 111–130.

[14] EU Business School, "How Can the Metaverse be Used in Education?," Jun. 21, 2022. [Online]. Available: https://www.euruni.edu/blog/how-can-the-metaverse-be-used-in-education/

[15] F. Nadziroh, "Analisa Efektifitas Sistem Pembelajaran Berbasis E-Learning," *Jurnal Ilmu Komputer Dan Desain Komunikasi Visual (Jikdiskomvis)*, vol. 2, no. 1, pp. 1–14, 2017.

[16] A. Asnur and M. Nur Ashar, "Karakteristik Pembelajaran Kolaboratif Bahasa Asing Dalam Google Classroom," *Prosiding Seminar Nasional Literasi Bahasa Dan Sastra Ke-4 Pembelajaran Bahasa Asing Di Era Digital*, pp. 1–11, 2019.

[17] E. S. Khabib Sholeh Bagiya Bagiya, Frida Nur Aini, Main Sufanti, "Pengaruh Media Cetak dan Audio Visual Terhadap Kemampuan Menulis Teks Berita pada Siswa MTs Bergaya Kognitif Field Dependent dan Field Independent," *Jurnal Pendidikan Surya Edukasi (JPSE)*, vol. 6, no. 1, pp. 33–48, 2020.

[18] N. A. Nurhidayah, T. Tusino, and E. S. Masykuri, "Students' Perception toward EFL College Teacher Pedagogical Competence in Teaching Writing," *scripta*, vol. 9, no. 2, pp. 209–216, Oct. 2022, doi: 10.37729/scripta.v9i2.1475.

[19] E. S. M. Mohammad Fakhrudin Khabib Sholeh, Umi Faizah, "ANALYSIS VARIED STYLE OF CONVERSATION BY PHONE IN INDONESIAN TEACHING LEARNING," presented at the The Proceeding 2nd International Conference on Education, EAI, 2019.

[20] I. G. A. PP, I. Mammadova, and E. S. Masykuri, "Cooperative Learning by Jigsaw to Improve Learning Outcomes for Eight-Grade-Students," *Scripta: English Department Journal*, vol. 8, no. 2, pp. 45–54, 2021.

[21] M. Perez, Edi Sunjayanto Masykuri, and Sri Widodo, "Understanding Personal Intention by Collaborating Speech Function Using SocialMedia International Whatsaap Group," presented at the International Conference on Education, Universitas Muhammadiyah Purworejo, Indonesia, 2019.

[22] E. Sunjayanto Masykuri, "the Use of Code-Switching in Javanese Art Performance Done by Students of SMPN 1 Kesesi Kabupaten Pekalongan," Program Studi Pendidikan Bahasa Inggris Universitas Muhammadiyah Purworejo, 2017.

[23] *Metaverse for Education - 5 Ways to use Virtual Reality in School* -, (Dec. 14, 2021). [Online Video]. Available: https://www.youtube.com/watch?v=WogQ0X4ITHM

[24] S. L. Wong and S. L. Wong, "Relationship between interest and mathematics performance in a technology-enhanced learning context in Malaysia," *Research and Practice in Technology Enhanced Learning*, vol. 14, no. 1, 2019, doi: 10.1186/s41039-019-0114-3.

[25] M. Yamada, A. Shimada, F. Okubo, M. Oi, K. Kojima, and H. Ogata, "Learning analytics of the relationships among self-regulated learning, learning behaviors, and learning performance," *Research and Practice in Technology Enhanced Learning*, vol. 12, no. 1, 2017, doi: 10.1186/s41039-017-0053-9.

[26] M. F. Saifuddin, "E-Learning dalam Persepsi Mahasiswa," *Jurnal Varidika*, vol. 29, no. 2, pp. 102–109, 2017, doi: 10.23917/varidika.v29i2.5637.

[27] I. Ali, "OPINI: PERAN DAN KONTRIBUSI BIG DATA DALAM PENDIDIKAN DAN PELATIHAN KEPUSTAKAWANAN.," *Madika: Media Informasi dan Komunikasi Diklat Kepustakawanan*, vol. 5, no. 1, pp. 8–15, 2019.

[28] R. Faizaturrohmah, S. Sukarni, and A. Ngafif, "Students' Perception of Online Assessment and Its Influence on Their Learning Achievement," *scripta*, vol. 9, no. 1, pp. 1–8, May 2022, doi: 10.37729/scripta.v9i1.1439.

[29] M. Wijayanengtias and D. Claretta, "Student Perceptions of Online Learning During the Covid-19 Pandemic," *Kanal J. Ilmu Komun*, 2020, doi: 10.21070/kanal.v9i1.685.

[30] Edi Sunjayanto Masykuri, S. Sukarni, T. Tusino, and P. Dewi, "The Cohessive Device in Hiver.com and Its Implication in Teaching Online Writing," *Jurnal Ilmu Bahasa Sastra dan Pengajarannya*, vol. 1, no. 2, pp. 124–135, 2022.

[31] D. M. Alit and N. L. P. Tejawati, "Smart Classroom: Digital Learning Generasi Z Dan Alpha: Smart Classroom: Digital Learning Generation Z and Alpha," *PROSPEK*, vol. 2, no. 2, pp. 277–287, 2023.

[32] T. Ermayani, R. Nurhadi, and E. S. Masykuri, "The Problems of Digital Da'wah during the Covid-19 Pandemic," 2021.

[33] Edi Sunjayanto Masykuri and R. Nurhadi, "Observing Illocution in E-Comic Strip The Adventure of Tintin and Its Implication in English Language Teaching During The Pandemic," *JIBS*, vol. 1, no. 1, pp. 29–43, 2022.

[34] R. Nurhadi and E. S. Masykuri, "HATE SPEECH BASED ON PRAGMATICS STUDIES IN SOCIAL MEDIA," presented at the The 1st International Conference on ELT (CONELT), 2018.