



The Influence of Using TikTok Social Media on Students' Social Interaction Levels

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ABSTRACT

Purpose of the study: This study aims to determine the effect of the level of use of TikTok social media on the level of students' social interaction.

Methodology: This type of research is quantitative with the *expost facto* method. The technique used in sampling is the purposive sampling technique with a sample size of 79 students. Instruments and data collection techniques were carried out using a questionnaire on the use of social media TikTok and social interaction. The data analysis technique used in this study is simple linear regression analysis with the help of the SPSS 24 program.

Main Findings: The study revealed that the influence of TikTok usage on the social interaction of Grade VII students at State Junior High School 17 Jambi City is 11.2% (or 0.112), which falls into the low but significant category. The level of TikTok use among students is 63.89%, categorized as high, while their level of social interaction is also high at 64.57%. Although the direct influence of TikTok on social interaction is relatively low, the high usage level warrants attention. Therefore, parents and guidance and counseling teachers are encouraged to supervise and monitor students' activities on social media to ensure it remains positive and constructive.

Novelty/Originality of this study: It is expected to add new insights and knowledge about the influence of social media on students' social interactions, so that teachers can work together with parents to help monitor children's social relationships.

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1. INTRODUCTION

In today's digital era, social media has become an inseparable part of the lives of teenagers, including school students [1]-[3]. One of the social media platforms that has experienced a significant surge in popularity is TikTok [4]-[6]. With interactive short video features and algorithms that adjust to user interests, TikTok has succeeded in attracting the attention of the younger generation massively. This makes TikTok not only a means of entertainment, but also a part of the student lifestyle [7]-[9]. This condition raises concerns about the impact of TikTok use on aspects of students' social lives, especially in terms of direct social interaction.

Social interaction is an important aspect in the development of students' personality and social skills [10]-[12]. The ability to communicate, cooperate, and build healthy relationships is greatly influenced by the frequency

and quality of social interactions [13]-[15]. However, the widespread use of social media such as TikTok is feared to shift the pattern of social interaction from face-to-face to online [16]-[18]. This can have an impact on reducing students' social skills in real life. Therefore, it is important to explore how the use of TikTok affects the level of students' social interaction in the school environment and outside of school.

Several previous studies have examined the relationship between social media and students' social interactions, but most of them still focus on platforms such as Facebook, Instagram, and WhatsApp [19]-[21]. Studies that specifically examine the influence of TikTok on social interactions are still relatively limited [22]. In addition, many previous studies only look at the duration of use, without considering the motives for use, the type of content consumed, and user engagement patterns. This indicates a research gap that needs to be filled in order to gain a more comprehensive understanding of this phenomenon. This study is here to answer this need with a more contextual and up-to-date approach.

The urgency of this research is increasingly relevant because the phenomenon of student dependence on TikTok continues to increase from year to year. In the context of education, healthy social interaction is an important foundation in forming character and shared values [23], [24]. If the use of TikTok is proven to reduce the quality of social interaction, then this can have a negative impact on the process of socialization and the formation of student identity [25], [26]. Therefore, the results of this study are expected to provide a basis for schools and parents in directing the use of social media wisely. In addition, this study can also be a basis for developing school policies that support positive social interaction in the digital era.

The novelty of this study lies in its focus on the TikTok platform as the main variable and its relationship with the dimensions of students' social interactions. Unlike previous studies that tend to use a purely quantitative approach, this study will combine quantitative and qualitative approaches to capture social dynamics more holistically. Thus, this study not only measures the impact, but also explores the reasons and contexts behind students' TikTok usage behavior. This approach allows for a deeper analysis of the influence of social media on adolescents' social lives. The results are expected to be able to explain the complexity of the relationship between the digital world and real social interactions.

The implications of this study are quite broad, especially in the fields of education and adolescent developmental psychology. The findings of this study can be used by guidance and counseling teachers to design appropriate interventions in fostering students' social interactions. In addition, schools can design digital literacy programs that not only emphasize security, but also balance online and offline activities [27], [28]. This study is also useful for curriculum developers to include contemporary issues such as social media in character learning. Thus, this study not only contributes to the academic realm, but also has high practical value.

Finally, by understanding the influence of TikTok on students' social interactions, we can take more appropriate preventive and curative steps. This study is also expected to raise awareness among students to be wiser in using social media. In the long term, it is hoped that this study can encourage the creation of an educational ecosystem that is adaptive to technological developments, but still upholds essential social values. With a systematic and data-based approach, the results of this study will enrich the scientific literature in the fields of educational sociology and digital communication. Therefore, this study is important to be carried out as a form of academic response to the ever-evolving social dynamics. This study aims to determine the effect of the use of TikTok social media on students' social interactions.

2. RESEARCH METHOD

2.1. Types of Research

This study uses a quantitative method with an ex-post-facto approach. The ex-post-facto approach is a study that examines cause-and-effect relationships that are not manipulated or treated by the researcher himself [29]. Causal relationship research is conducted on programs, activities or events that are ongoing or have occurred [30]-[32]. Therefore, the study is intended to determine the effect of TikTok social media on the level of student interaction.

2.2. Population and Sample

The population of this study is the entire group consisting of subjects, objects, characteristics found in the study and then conclusions are drawn in this study, the population is grade VII students of State Junior High School 17, Jambi City, totaling 239 students. The sample of this study is 79 students selected based on the purposive sampling technique. The reason for choosing a sample using the purposive sampling technique is because the researcher has certain criteria in selecting the sample [33]-[35]. The sample criteria in this study are students who use the TikTok application.

2.3. Data Collection Technique

The data collection technique was carried out by distributing closed questionnaires that had been validated and declared valid [36], [37]. The questionnaire was divided into two parts, namely the first part to measure the use of TikTok social media with 30 valid statement items, and the second part to measure the level of student social interaction with 21 valid statement items. The TikTok social media usage questionnaire was declared reliable with a value of 0.896 and the social interaction level questionnaire was declared reliable with a value of 0.852. Data collection was carried out directly at the school while still paying attention to research ethics, including approval from respondents and the school. The outline of the research questionnaire used is listed in Table 1 and Table 2.

Table 1. Social media usage questionnaire grid

Variables	Indicator	Number of statement items
Social Media	Information	7
	Communication	7
	Entertainment	16
Total number of items		30

Table 2. Social interaction questionnaire grid

Variables	Indicator	Number of statement items
Social Interaction	Cooperation	10
	Accommodation	11
Total number of items		21

2.4. Data Analysis Techniques

The data obtained from the questionnaire were analyzed using descriptive and inferential statistics. Descriptive statistics are used to describe the average and percentage of data [38], [39]. While inferential statistics, especially simple linear regression tests, are used to determine the effect of TikTok usage on the level of student social interaction. Quantitative research that uses inferential statistical analysis needs to use statistical assumption testing [40], [41]. This is a requirement that must be met so that the statistical formula can be used. Data normality and data linearity are statistical assumptions that must be met. Data is considered normal if the significant value obtained is > 0.05 , then the sample comes from a normally distributed population [42], [43]. Data is linearly distributed if the significant value is < 0.05 , then the data for both variables is linear. The entire data analysis process is assisted using SPSS 24 software.

2.5. Research Procedures

The research procedure begins with planning, namely compiling the problem, objectives, and instruments to be used. After that, the researcher determines the appropriate population and sample, then carries out data collection using the compiled instruments, such as questionnaires. The collected data is then analyzed descriptively and inferentially to answer the problems and achieve the research objectives. In this process, ethical aspects are also still enforced, namely asking for approval from respondents and maintaining the confidentiality of the data provided. Data analysis is then concluded and presented as research results that can be useful for the development of science and practical application in the field. The research procedure can be seen in the following diagram:



Figure 1. Research Procedure

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistics

Data description is a description of the research results that have been obtained from the field. This study consists of two variables, namely the level of use of TikTok social media which is the independent variable (x) and the level of student social interaction is the dependent variable (y). Data were collected by distributing questionnaires. In this study, the data collected were data from grade VII students who had met the criteria, namely students who used the TikTok application, so that a sample of 79 students was determined. The questionnaire used in this study consisted of 30 statement items related to the use of TikTok social media and 21 statements related

to student social interaction. After distributing the questionnaire, the results of the overall score of the respondents' answers were obtained, which are illustrated in Table 3.

Table 3. Data Description of the TikTok Social Media Usage Level and Student Social Interaction Level

Variable	Variables		
	Total score	Average	Percentage (%)
TikTok Social Media Usage	6057	76.67	63.89
Social Interaction	4285	54.24	64.57

The level of use of TikTok social media is an independent variable that influences. Based on the questionnaire data of the TikTok social media usage variable from 79 respondents, a total score of 6057 was obtained with an average of 76.67 and the results of the TikTok social media usage level were 63.89%. These results indicate that the level of TikTok social media usage of grade VII students at State Junior High School 17, Jambi City is included in the high category.

The Level of Student Social Interaction is a dependent variable that is influenced. Questionnaire data on the variable of the level of student social interaction from 79 respondents obtained a total score of 4285 with an average of 54.24 and the results of the level of student social interaction were 64.57%. These results indicate that the level of social interaction of class VII students at State Junior High School 17, Jambi City is included in the high category.

3.2. Statistical Assumptions

Normality Test

The data normality test is conducted to determine whether the distribution of data follows or approaches a normal distribution [44], [45]. In this study, the normality test used was the Kolmogorov Smirnov (K-S) test with the help of SPSS version 24. The interpretation criteria for this normality test are that the data is considered normal if the asymp. Sig obtained $\geq \alpha 0.05$ and the data is considered abnormal if it has an asymp. Sig obtained $\leq \alpha 0.05$.

Table 4. Results of data normality test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		79
Normal Parameters ^{a,b}	Mean	0.0
	Std. Deviation	7.608
Most Extreme Differences	Absolute	0.052
	Positive	0.037
	Negative	-0.052
Test Statistic		0.052
Asymp. Sig (2-tailed)		.200 ^{c,d}

Based on the statistical assumption test conducted using the Kolmogorov Smirnov (K-S) method, the asymp.sig value is 0.054. In accordance with the criteria, namely $0.200 > 0.05$, it can be concluded that the residual value is normally distributed.

Linearity Test

Linearity test is conducted to determine whether the two variables are directly related or not. To determine whether the data distribution between the two variables is linear or not, look at the p (Sig) value. If the p (Sig) linearity value is less than 0.05 ($p < 0.05$), then it is considered linear.

Table 5. Results of data linearity test

Anova Table							
			Sum of Squares	df	Mean Square	F	Sig.
Level of student social interaction*Use of TikTok social media	Between Groups	(Combined) Linearity	2683.847	38	70.628	1.178	0.305
		Deviation from linearity	566.974	1	566.974	9.455	0.004
			2116.874	37	57.213	0.954	0.556
Within Groups			2398.583	40	59.965		
Total			5082.430	78			

Based on the results of the linearity test, it is concluded that the significant value of linearity is 0.004 with a significance level of 0.05. Thus, it is concluded that both variables are linear.

3.3. Simple Linear Regression

Regression analysis is an increase in the coefficient of determination by estimating several independent variables (X) against the dependent variable (Y) through the equation of X with Y in constant conditions and affected conditions. This analysis uses the help of SPSS 24, the following SPSS output results are listed in Table 6.

Table 6. Coefficient of Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.334 ^a	0.112	0.100	7.658

a. Predictors: (Constant), TikTok Social Media Usage Rate

Based on the model summary table above, it explains that the value of the R Square determination coefficient is 0.112 or 11.2%. The magnitude of the influence (R Square) obtained is 0.112 or 11.2% so that it can be interpreted that the large contribution of the influence of the variable level of use of social media tiktok on the level of student social interaction is 11.2% and the rest is influenced by other factors not included in this study.

Table 7. Regression Equation

Model	Coefficients ^a				T	Sig.
	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta			
1 (Constant)	37.730	5.379			7.014	0.000
Use of social media TikTok	0.215	0.069	0.334		3.109	0.003

a. Dependent Variable: Level of Student Social Interaction

Based on the calculation results in Table 7 of the simple regression coefficient, the asymptotic significant value is at 0.000 where ($0.000 < 0.05$). So it is concluded that there is an influence between variable X and variable Y. Based on the Unstandardized Coefficient column with the contents of sub-column B which shows the constant a and the magnitude of the B value. The two coefficients are then added up with the regression equation formula as follows:

$$Y = (a + b X)$$

$$Y = (37.730 + 0.215 X)$$

The constant is 37,730, which means that if the value is 0, the level of TikTok social media usage is 37,730, the level of student social interaction will increase by one unit, so the level of TikTok social media usage will increase by 0.215 at a constant of 37,730.

In the discussion of the results of this study will explain the contents of the formulation of the problem that has been in the previous chapter. Based on the results of the study of the influence of the use of social media TikTok on the level of social interaction of class VII students at State Junior High School 17, Jambi City, it shows that there is a significant influence between variables X and Y. This influence is evidenced by the results of sig. 0.05 which shows an influence between the two variables, and has been proven by the results of the regression r count of 0.112 or 11.2% which is interpreted as low but certain.

Then a simple regression test was carried out using SPSS 24, the constant value in column B was obtained as 37,730 and for the value of the level of use of TikTok social media (x) of 0.215, which means that if the use of TikTok social media is 0, then the level of student social interaction is 37,730. The use of TikTok social media has increased by 1%, then the level of student social interaction will increase by 37,730, which can be interpreted that the use of TikTok social media has a positive influence on the level of student social interaction of 0.215.

Social interaction is a relationship between individuals, between groups, or between individuals and groups [46], [47]. When someone meets, social interaction occurs at that time. In social interaction, there must be a reciprocal relationship between the two, meaning that there must be a response from both [13], [48]. Social interaction can take the form of cooperation [49], [50]. Cooperation exists if everyone is aware that they have the same interests at the same time and has the knowledge and self-control to achieve those interests. If all that happens, it can be said to be social interaction.

Social media is a media platform that focuses on the existence of its users and facilitates them in their daily activities or collaboration [51], [52]. In essence, in social media, various two-way activities can be carried out in the form of exchange, cooperation, getting to know each other in the form of writing, visuals, or audiovisuals.

Social interaction can occur anytime and anywhere, including several people or certain groups of people interacting with each other on social media because they have the same goals [53], [54]. Social media can also have a positive impact on a person's life, namely where someone who uses social media can easily add and expand their social circle, not only the closest people but also people who are far away.

This research has important impacts, both from theoretical, practical, and social perspectives. From a theoretical aspect, this research also contributes to the enrichment of the treasury of Communication Science and Sociology regarding the relationship between technology and the process of human interaction, especially among students. In a practical context, the results of the study can be utilized by educators, parents, and related institutions to design a more appropriate approach to maintain the quality of students' social interactions amidst the rapid use of digital media. In addition, the findings produced are also useful as guidelines for formulating policies regarding the use of social media among adolescents, so that they can be empowered according to their goals, rather than becoming obstacles for students to learn to socialize in the real world.

However, the study also faces several limitations that are worth noting. First, the sample size used may be limited and may not fully represent the wider student population, so generalization of the results should also be carried out with caution. Second, the data collection instruments used, such as questionnaires, rely more on subjective statements from students, so there is a possibility of bias or data incursion. In addition, the study also did not consider several other variables that also influence students' social interactions, such as differences in character, family background, and learning processes at school. These limitations provide opportunities for conducting broader and more in-depth research in the future.

One aspect of the novelty of this study lies in its more detailed approach to the relationship between TikTok use and students' levels of social interaction, not just the negative impacts of social media use that are often reported in the media. The study also uses instruments that are more appropriate for students, so that the data produced is more relevant and accurate according to the current student context. In addition, the study also seeks a broader relationship, namely looking for what aspects are most affected by TikTok use, so that it can provide a more detailed picture of the processes and mechanisms that occur among students. Thus, this study provides a broader perspective on the role of TikTok social media in the process of adolescent socialization.

4. CONCLUSION

Based on the results of the research analysis data processing, it can be concluded that the level of use of TikTok social media in class VII at State Junior High School 17, Jambi City has a percentage of 63.89% which is categorized as high in general. The level of social interaction of class VII students at State Junior High School 17, Jambi City has a percentage of 64.57% which can generally be categorized as high. Based on the results of the study, there is a positive influence of the use of TikTok social media on the level of social interaction of class VII students at State Junior High School 17, Jambi City by 11.2% or 0.112 in the low but certain classification. The use of TikTok social media (x) increases by 1%, the level of student social interaction (y) will increase by 37,730. For further research, it is recommended to involve a larger and more varied sample size in order to obtain a broader picture of the influence of TikTok use on students' social interactions. In addition, future research can also consider other variables, such as self-control, family support, and extracurricular activities, to obtain more comprehensive results.

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REFERENCES

- [1] S. A. Dar and D. Nagrath, "The impact that social media has had on today's generation of indian youth: an analytical study," *Int. J. English Lit. Soc. Sci.*, vol. 7, no. 4, pp. 48–56, 2022, doi: 10.54443/morfai.v3i2.309.
- [2] R. Anthony *et al.*, "Young people's online communication and its association with mental well-being: results from the 2019 student health and well-being survey," *Child Adolesc. Ment. Health*, vol. 28, no. 1, pp. 4–11, 2023, doi: 10.1111/camh.12610.
- [3] M. S. Islam *et al.*, "Problematic smartphone and social media use among Bangladeshi College and University students amid covid-19: the role of psychological well-being and pandemic related factors," *Front. Psychiatry*, vol. 12, no. April, pp. 1–12, 2021, doi: 10.3389/fpsy.2021.647386.
- [4] S. Clarissa and J. Lobo, "Rising popularity of TikTok during the pandemic: utilization of the application vis-à-vis students' engagement," *Am. J. Interdiscip. Res. Innov.*, vol. 1, no. 2, pp. 43–48, 2022, doi: 10.54536/ajiri.v1i2.699.
- [5] A. Bhandari and S. Bimo, "Why's everyone on TikTok now? the algorithmized self and the future of self-making on social media," *Soc. Media Soc.*, vol. 8, no. 1, pp. 1–11, 2022, doi: 10.1177/20563051221086241.
- [6] J. Frey, K. J. Black, and I. A. Malaty, "TikTok tourette's: are we witnessing a rise in functional tic-like behavior driven by adolescent social media use?," *Psychol. Res. Behav. Manag.*, vol. 15, pp. 3575–3585, 2022, doi:

- 10.2147/PRBM.S359977.
- [7] Z. O. Soluade, T. T. Otubanjo, S. A. Babatunde, and T. O. Idowu, "Impact of TikTok content on teenagers' lifestyle and behaviours among senior secondary school students in Ogun State — Zabur Olayiwola Soluade," *Rima Int. J. Educ.*, vol. 4, no. 1, pp. 385–401, 2025, doi: 10.1101/pdb.caut2593.
 - [8] A. Sair, A. P. Kusman, and S. Ladiqi, "The TikTok effect : exploring gender norms , lifestyle , and cultural shifts among Gen Z," *J. Soc. Media*, vol. 9, no. 1, pp. 241–259, 2025, doi: 10.26740/jsm.v9n1.p241-259.
 - [9] S. Syarifuddin, S. Triyono, F. Nur'ani, S. H. Rahmia, and R. Rusmaniah, "Analysis of the Tiktok social media phenomenon for students : a case study of the millennial generation," *Kalimantan Soc. Stud. J.*, vol. 6, no. April, pp. 209–220, 2025.
 - [10] S. Mustoip, M. I. Al Ghozali, U. S. As, and S. Y. Sanhaji, "Implementation of character education through children's language development in elementary schools," *IJECA (International J. Educ. Curric. Appl.)*, vol. 6, no. 2, pp. 1–11, 2023, doi: 10.31764/ijeca.v6i2.14192.
 - [11] A. Maksum, I. W. Widiana, and A. Marini, "Path analysis of self-regulation, social skills, critical thinking and problem-solving ability on social studies learning outcomes," 2021. doi: 10.29333/iji.2021.14336a.
 - [12] T. Silveira-Zaldivar, G. Özerk, and K. Özerk, "Developing social skills and social competence in children with autism," *Int. Electron. J. Elem. Educ.*, vol. 13, no. 3, pp. 341–363, 2020, doi: 10.26822/IEJEE.2021.195.
 - [13] S. De Felice, A. F. D. C. Hamilton, M. Ponari, and G. Vigliocco, "Learning from others is good, with others is better: the role of social interaction in human acquisition of new knowledge," *Philos. Trans. R. Soc. B Biol. Sci.*, vol. 378, no. 1870, 2023, doi: 10.1098/rstb.2021.0357.
 - [14] J. Li and W. Shao, "Influence of sports activities on prosocial behavior of children and adolescents: a systematic literature review," *Int. J. Environ. Res. Public Health*, vol. 19, no. 11, pp. 1–20, 2022, doi: 10.3390/ijerph19116484.
 - [15] I. H. M. Hatamleh *et al.*, "Trust in social media: enhancing social relationships," *Soc. Sci.*, vol. 12, no. 7, pp. 1–22, 2023, doi: 10.3390/soesci12070416.
 - [16] I. A. Nada, G. A. Ayua, and O. E. Odiri, "The role of social media in shifting communication patterns and societal lifestyle changes," in *International Seminar on Student Research in Education, Science, and Technology*, 2024, pp. 591–598.
 - [17] F. Gioia, G. Fioravanti, S. Casale, and V. Boursier, "The effects of the fear of missing out on people's social networking sites use during the covid-19 pandemic: the mediating role of online relational closeness and individuals' online communication attitude," *Front. Psychiatry*, vol. 12, no. February, pp. 1–11, 2021, doi: 10.3389/fpsyt.2021.620442.
 - [18] E. Al-Jbouri, A. A. Volk, N. Spadafora, and N. C. Z. Andrews, "Friends, followers, peers, and posts: adolescents' in-person and online friendship networks and social media use influences on friendship closeness via the importance of technology for social connection," *Front. Dev. Psychol.*, vol. 2, pp. 01–15, 2024, doi: 10.3389/fdpys.2024.1419756.
 - [19] A. J and J. Sutcliffe, "The use of social media such as Whatsapp, Youtube and Instagram in enhancing rather than impeding the learning of college students: an investigative case study," *J. Educ. Soc. Sci.*, vol. 22, no. 1, pp. 1–11, 2022.
 - [20] D. Menon, "Updating 'Stories' on social media and its relationships to contextual age and narcissism: a tale of three platforms – WhatsApp, Instagram and Facebook," *Heliyon*, vol. 8, no. 5, p. e09412, 2022, doi: 10.1016/j.heliyon.2022.e09412.
 - [21] S. Boulianne, C. P. Hoffmann, and M. Bossetta, "Social media platforms for politics: a comparison of Facebook, Instagram, Twitter, YouTube, Reddit, Snapchat, and WhatsApp," *New Media Soc.*, vol. 00, no. 0, pp. 1–32, 2024, doi: 10.1177/14614448241262415.
 - [22] Q. Jia, X. Xu, M. Zhou, H. Liu, and F. Chang, "Exploring the determinants of continuous intention in TikTok from the perspective of social influence: a mixed approach of SEM and fsQCA," *J. Electron. Bus. Digit. Econ.*, vol. 2, no. 1, pp. 45–68, 2023, doi: 10.1108/jebde-07-2022-0016.
 - [23] T. G. Ginting, "Forming a solid foundation: the role of early childhood education in character development," *Solo Univers. J. Islam. Educ. Multicult. E*, vol. 2, no. 1, pp. 71–82, 2024.
 - [24] S. Sarbaitinil, R. Rudagi, I. Rahmat, N. Elfemi, and I. Isnaini, "Expressing philosophical discourse in pencak silat as a pillar of character education and strengthening social ties in society," *J. Pragmat. Discourse Res.*, vol. 3, no. 2, pp. 150–162, 2023, doi: 10.51817/jpdr.v3i2.301.
 - [25] V. Zelenin, "The role of social networks in shaping the identity and self-realisation of young people," *Amaz. Investig.*, vol. 13, no. 84, pp. 291–303, 2024.
 - [26] Nazmine, A. Khalid, K. Z. Chishti, and H. K. Tareen, "New media technologies and society: a study on the impact of new media technology on interaction patterns of youth," no. May, pp. 66–77, 2021, [Online]. Available: <https://www.researchgate.net/publication/351955632>
 - [27] S.-N. Voicu and I. Crăciun, "Preventive online safety education for teenagers," *Int. J. Leg. Soc. Order*, vol. 3, no. 1, pp. 571–579, 2023, doi: 10.55516/ijlso.v3i1.165.
 - [28] M. S. Putri *et al.*, "Exploring digital literacy among high school students : the role of environment assistance," *J. Educ. Dev. Inst.*, vol. 12, no. 2, pp. 140–145, 2024, doi: 10.37081/ed.v12i2.5784.
 - [29] N. Nurhidayatullah, N. Ayu, and S. Herawati, "Analysis of price and product quality on impulsive buying on online shopping platforms islamic economic approach," vol. 3, no. 3, 2025.
 - [30] R. Jensen, "Exploring causal relationships qualitatively: an empirical illustration of how causal relationships become visible across episodes and contexts," *J. Educ. Chang.*, vol. 23, no. 2, pp. 179–196, 2022, doi: 10.1007/s10833-021-09415-5.
 - [31] M. M. Dhodapkar, X. Shi, R. Ramachandran, E. M. Chen, J. D. Wallach, and J. S. Ross, "Characterization and corroboration of safety signals identified from the US Food and Drug administration adverse event reporting system, 2008-19: cross sectional study," *BMJ*, pp. 1–10, 2022, doi: 10.1136/bmj-2022-071752.
 - [32] G. Carloni, A. Berti, and S. Colantonio, "The role of causality in explainable artificial intelligence," *Wiley Interdiscip. Rev. Data Min. Knowl. Discov.*, vol. 15, pp. 1–22, 2025, doi: 10.1002/widm.70015.

- [33] F. Nyimbili and L. Nyimbili, "Types of purposive sampling techniques with their examples and application in qualitative research studies," *Br. J. Multidiscip. Adv. Stud.*, vol. 5, no. 1, pp. 90–99, 2024.
- [34] S. K. Ahmed, "How to choose a sampling technique and determine sample size for research: a simplified guide for researchers," 2024, *Elsevier Ltd.* doi: 10.1016/j.oor.2024.100662.
- [35] K. R. Subedi, "Determining the Sample in Qualitative Research," *Sch. J.*, vol. 4, no. December, pp. 1–13, 2021, doi: 10.3126/scholars.v4i1.42457.
- [36] M. E. Hendriyani, I. Rifqiawati, and D. Lestari, "Online learning videos to develop creative thinking skills of students," *Res. Dev. Educ.*, vol. 2, no. 2, pp. 67–75, 2022, doi: 10.22219/raden.v2i2.20035.
- [37] Sarwanto, L. E. W. Fajari, and Chumdari, "Open-ended questions to assess critical-thinking skills in Indonesian elementary school," *Int. J. Instr.*, vol. 14, no. 1, pp. 615–630, 2020, doi: 10.29333/IJI.2021.14137A.
- [38] A. Astalini, D. A. Kurniawan, D. K. Sari, and W. Kurniawan, "Description of scientific normality, attitudes of investigation and interested career on physics in senior high school," *JIPF (Jurnal Ilmu Pendidik. Fis.)*, vol. 4, no. 2, p. 56, 2019, doi: 10.26737/jipf.v4i2.885.
- [39] J. Paul and M. Barari, "Meta-analysis and traditional systematic literature reviews—what, why, when, where, and how?," *Psychol. Mark.*, vol. 39, no. 6, pp. 1099–1115, 2022, doi: 10.1002/mar.21657.
- [40] Y. Hu and L. Plonsky, "Statistical assumptions in L2 research: A systematic review," *Second Lang. Res.*, vol. 37, no. 1, pp. 171–184, 2021, doi: 10.1177/0267658319877433.
- [41] A. Ghanad, "An overview of quantitative research methods," *Int. J. Multidiscip. Res. Anal.*, vol. 06, no. 08, pp. 3794–3803, 2023, doi: 10.47191/ijmra/v6-i8-52.
- [42] M. Misbahudholam AR, A. Asmoni, K. Aini, and M. Wardi, "The relationship of the 5th batch campus teaching program to literacy and numeracy skills in elementary schools," *AL-ISHLAH J. Pendidik.*, vol. 16, no. 2, pp. 1999–2011, 2024, doi: 10.35445/alishlah.v16i2.4958.
- [43] J. M. Sumilat, R. M. S. Tuerah, and B. Setiawan, "The utilization of online media in calculation operations mathematics learning in elementary school students," *J. Educ. Soc. Res.*, vol. 12, no. 3, pp. 90–97, 2022, doi: 10.36941/jesr-2022-0069.
- [44] D. Alita, A. D. Putra, and D. Darwis, "Analysis of classic assumption test and multiple linear regression coefficient test for employee structural office recommendation," *IJCCS (Indonesian J. Comput. Cybern. Syst.)*, vol. 15, no. 3, p. 295, 2021, doi: 10.22146/ijccs.65586.
- [45] R. Parekh, "Comparison analysis of construction costs according to LEED and non-LEED certified educational buildings," *J. Emerg. Technol. Innov. Res.*, vol. 11, no. 8, pp. 1–8, 2024.
- [46] R. Chetty *et al.*, "Social capital II: determinants of economic connectedness," *Nature*, vol. 608, no. 7921, pp. 122–134, 2022, doi: 10.1038/s41586-022-04997-3.
- [47] T. Hennig-Thurau, D. N. Aliman, A. M. Herting, G. P. Cziehso, M. Linder, and R. V. Kübler, "Social interactions in the metaverse: Framework, initial evidence, and research roadmap," *J. Acad. Mark. Sci.*, vol. 51, no. 4, pp. 889–913, 2023, doi: 10.1007/s11747-022-00908-0.
- [48] M. Misaki *et al.*, "Beyond synchrony: The capacity of fMRI hyperscanning for the study of human social interaction," *Soc. Cogn. Affect. Neurosci.*, vol. 16, no. 1–2, pp. 84–92, 2021, doi: 10.1093/scan/nsaa143.
- [49] J. R. Izharyah, J. T. Ibrahim, O. Sukmana, and D. Hartanto, "The Social Interaction Pattern in the Indonesian City of Medan's Deli Malay Coastal Community," *Eur. J. Humanit. Soc. Sci.*, vol. 3, no. 1, pp. 66–75, 2023, doi: 10.24018/ejsocial.2023.3.1.390.
- [50] J. Hohenstein *et al.*, "Artificial intelligence in communication impacts language and social relationships," *Sci. Rep.*, vol. 13, no. 1, pp. 1–9, 2023, doi: 10.1038/s41598-023-30938-9.
- [51] H. K. Azzaakiyyah, "The impact of social media use on social interaction in contemporary society," *Technol. Soc. Perspect.*, vol. 1, no. 1, pp. 1–9, 2023, doi: 10.61100/tacit.v1i1.33.
- [52] H. Susanto, L. F. Yie, F. Mohiddin, A. A. R. Setiawan, P. K. Haghi, and D. Setiana, "Revealing social media phenomenon in time of COVID-19 pandemic for boosting start-up businesses through digital ecosystem," *Appl. Syst. Innov.*, vol. 4, no. 1, pp. 1–21, 2021, doi: 10.3390/asi4010006.
- [53] M. Putri, E. W. Abbas, J. Jumriani, B. Subiyakto, and M. A. H. Putra, "Contribution of social interaction materials to the establishment of social institutions in the social studies student's book class VII," *Kalimantan Soc. Stud. J.*, vol. 3, no. 2, p. 110, 2022, doi: 10.20527/kss.v3i2.3685.
- [54] S. Fabriz, J. Mendzheritskaya, and S. Stehle, "Impact of synchronous and asynchronous settings of online teaching and learning in higher education on students' learning experience during covid-19," *Front. Psychol.*, vol. 12, no. October, 2021, doi: 10.3389/fpsyg.2021.733554.