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The Effect of Technological Pedagogical Content Knowledge (TPACK) on Rural Area Students' English Writing

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Abstract—**This research was conducted to examine the impact of the Technological Pedagogical Content Knowledge (TPACK) and Direct Learning (DL) model on the learning outcomes of students in rural areas concerning English descriptive text composition. The models introduced a meaningful learning experience within conventional classroom settings, enabling students to connect prior knowledge with new information in creating innovative ideas. TPACK model played an essential role in the educational system, facilitating teachers in integrating technological, pedagogical, and content knowledge throughout the instructional process. Therefore, students became more engaged, active, and enthusiastic participants in their learning. An authentic experimental and control group design was carried out in two parallel classes at a senior high school. Meanwhile, ANOVA Factorial (2-way ANOVA) was used to analyze the data. The results showed that the learning outcomes of TPACK were significantly different from those of the DL group. Therefore, TPACK substantially affected the learning outcomes of students in writing English descriptive text. This research reported the valuable contribution of the model in equipping future teachers with the knowledge necessary to integrate content, learning theories, teaching models, methods, and technology into their instructional practices.**

Index Terms—**Effect, TPACK, writing, descriptive text**

I. Introduction

In the contemporary era of Society 5.0, individuals are expected to seamlessly integrate virtual and physical spaces to complete their work following established standards efficiently. Furthermore, this digital age is characterized by the availability of diverse information sources (Hasjim et al., 2020; Hasyim & Arafah, 2023a). The pervasive influence of this new era is specifically essential, with the younger generation significantly contributing to its advancement (Arafah & Hasyim, 2023a; Arafah et al., 2023). The transformation from a traditional to a modern system has been gradual (Takwa et al., 2022), largely dependent on technological mastery. Over time, scientific progress has fostered a substantial nexus between individuals and technology (Arafah et al., 2021; Siwi et al., 2022). This advancement has shaped human behaviour, compelling people to use science and technology to meet their needs (Arafah & Hasyim, 2019; Suhadi et al., 2022; Manugeren et al., 2023). It is essential to state that amidst rapid modernization, preserving local identity and heritage should be addressed (Arifin et al., 2022).

In the context of contemporary society, teachers are tasked with the responsibility of not only mastering various pedagogical theories, methodologies, and methods but also possessing proficiency in the use of technological and teaching aids integrated with pedagogical methods and high-order thinking skills (Harmer, 2007). The consistency with teaching and learning paradigms extends to incorporating online platforms (Anggrawan et al., 2019). Integrating Technological, Pedagogical and Content Knowledge is the TPACK framework or model (Ammade et al., 2020;

Manong et al., 2021). In essence, 21st-century teachers striving to meet the demands of Society 5.0 are expected to excel in professional, pedagogical, social, and personal competence and acquire proficiency in learning technology (Uno, 2014). The challenges teachers face include structuring subject matter context and formulating effective lesson plans (Sunardi et al., 2018). This needs rapid adaptation to fit the competencies (Arafah et al., 2023). Therefore, professional teachers must integrate the four competencies with technology in the classroom setting, a framework commonly known as the TPACK model.

The framework or model has been developed by Mishra and Koehler (2006) with characteristics built from Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK). By analyzing this framework, professional teachers can transmit knowledge in depth through understanding. This combination can be described as Pedagogical Content Knowledge (PCK). Framework-based learning, or the TPACK model, has been implemented in the Teacher Professional Education (PPG) program. This is in line with the characteristics of 21st-century learning familiar with technology (Smaldino et al., 2008). Therefore, as learning designers, teachers are required to possess a profound mastery of the science supporting their instructional ability (Uno, 2014). These skills and knowledge are critical to integrating technology while conducting the learning process. These behavioural patterns can become ingrained rather than complaining against a novel and less favourable learning method (Arafah & Kaharuddin, 2019; Mokoginta & Arafah, 2022). In addition, teachers must be able to adopt technology in selecting and using teaching methods (Manong et al., 2021; Mishra & Koehler, 2006). High motivation and effort will always result in a positive impact and success (Arafah et al., 2020; Arnawa & Arafah, 2023). Technology enhances skills by reading and understanding learning materials provided by digital media (Arafah & Hasyim, 2023b). As a result, students' ability to read materials somehow affects their responses in doing tests or exercises (Mardiana et al., 2023). The skills of teachers and students can only be improved through severe practices and discipline (Kuswanty et al., 2023; Kaharuddin et al., 2023).

Research related to the TPACK framework or model has been carried out in this context. However, the results are limited to analyzing and exploring the implementation of the model in learning (Bugeño, 2013). In a research conducted by Sari and Sumardi (2020) to examine meta-cognitive awareness in designing TPACK learning, the aspects of the stages were stated during reflection. Meanwhile, Koh et al. (2010) measured the development of teacher knowledge related to Technological, Pedagogical, and Content. Septiyanti et al. (2020) analyzed students' perceptions and teachers' roles at the University of Lampung in obtaining the model learning.

Research on TPACK and DL Models has not been conducted. Therefore, this research was carried out to overcome this gap by examining the Effect of TPACK and DL Models on learning Outcomes of SMA Negeri 14 SIGI Students in Writing English Descriptive Text. In particular, it examines the effect of differences between TPACK and Conventional Learning models on learning outcomes of descriptive text writing skills in English.

II. LITERATURE REVIEW

TPACK is a practical framework or model for delivering lessons with technological integration (Santos & Castro, 2021), and it is an ideal application for all aspects of the learning process. Furthermore, Mishra and Koehler (2006) and Schmidt et al. (2009), inspired by the PCK theory developed by Shulman (1986), were able to address the need by designing research instruments for TPACK assessment in pre-service teachers and identifying that the framework builds on the following seven elements. (1) PK: PK is a learning method and process, including classroom management knowledge, assessment, development of learning device plans, and student learning. (2) TK: TK ranges from low to high technologies such as pencils and paper to desktops, computers, internet connections, laptops, monitors for projection/television, printers, scanners, scanners, speakers, tablets, and smartphones. (3) CK: CK is related to teaching materials that will be learned and taught. Professional teachers must know the material's content and how knowledge characterizes the different areas. (4) PCK: PCK refers to content knowledge related to the learning process. This model differs from various content areas, combining content and pedagogy to develop better learning practices. (5) Technological Pedagogical Knowledge (TPK): TPK refers to knowledge of how various technologies can be used in learning. (6) Technological content knowledge uses technology to create new representations of specific content. According to this framework, using different technologies, teachers can change how students practice and understand concepts in specific content areas. (7) TPACK: TPACK refers to the knowledge teachers require to combine technology with learning and content areas.

Teachers intuitively understand complex interactions between the three essential components of knowledge (CK, PK, and TK) by teaching content using appropriate methods and technologies. The framework aligns with Ammade et al. (2020) that TPACK is a combined model that explores the understanding of using ICT as a learning tool. Learning materials should be observed based on context to deliver the messages from the sender to the receiver (Arafah et al., 2020; Baa et al., 2023; Asri et al., 2023). Teachers are expected to pay attention to the context of values regarding the subject taught using technology (Takwa et al., 2022; Yudith et al., 2023). Several cultural aspects are very close to the life of society performed by symbols or signs included in the material lesson (Hasyim et al., 2023).

Furthermore, the language must be clear and easy to understand by avoiding the excessive use of figurative and connotations (Mutmainnah et al., 2022; Afiah et al., 2022). This shows a deep understanding of the concept of using technology. Teachers should be able to communicate effectively, using clear and comprehensible language to positively influence students' perceptions (Yulianti et al., 2022; Hasjim et al., 2020; Arafah et al., 2023). It is an attempt to avoid multiple interpretations of using difficult dictions and utterances (Asriyanti et al., 2022). In this context, committing a mistake while using technology, such as generating an error during program execution, can affect the learning process (Iksora et al., 2022). The results related to TPACK show that the framework or model has been calculated as a practical learning model.

III. Methods

This authentic experimental research was conducted to test the hypothesis of causal relationships between variables (Degeng, 2000). A factorial design was used, a variation to analyze the independent variable and the simultaneous effect of the treatment variable on outcomes (Creswell, 2009). This design is a research structure where the size of the analysis of variance is equal to the number of independent and dependent variables (Tuckman, 1999).

In particular, this research was a factorial version of the non-equivalent control group design (Cohen et al., 2011; Degeng, 2000; Setyosari, 2012; Tuckman, 1999) carried out at SMAN 14 Sigi, Poleroa Makuhi Village, Kulawi District, Sigi Regency, Central Sulawesi Province, Indonesia, about 100 km from Palu City. The variability researched was an independent variable, consisting of the TPACK model intended for the experimental group and the DL model used in the control.

The population and the research sample comprise grade 11 students in SMAN 14 SIGI academic year 2021/2022. A random sampling method was used because the diverse population consisted of grade 11 social research and sciences. Meanwhile, before selecting samples, the principal and teachers were consulted regarding randomized classes. The number of samples in the control (class B) and the experimental group (class A) were 36 each. Students in groups A and B were given TPACK and DL learning models, respectively.

Table 1
Number of Research Samples

		Learning Methods		
Class	*Sum*	*TRACK*	*DL Model*	*Total*
Class A	36	36	-	36
Class B	36	-	36	36
Total	72	36	36	72

The procedure is as follows: 1) Research orientation related to determining the population and sample, 2) Sampling determination, 3) Pretest, 4) Treatment of the learning process, and 5) Post-test. The pretest was given to experimental (class A) and control class students (class B) on Monday, July 18, 2022, before the treatment. The aim is to determine the initial level of knowledge in writing descriptive text. The pretest also serves as a clue in writing descriptive text in English.

After the initial pretest, treatment was carried out to prove whether the application of the model can make it easier to obtain ideas, fun, and motivation to write descriptive text in English. The treatment was administered six times, each session scheduled for 90 minutes. These sessions were conducted on Wednesdays and Thursdays from 09:30 to 11:00, specifically on July 20-21, July 27-28, and August 3-4, 2022. The post-test was given after implementing TPACK and DL model learning treatments. The aim is to determine learning outcomes after implementing the treatment. The post-test or final test was carried out simultaneously between the experimental and control classes to avoid reducing the accuracy of the data. This was conducted on Tuesday, August 9, 2022, at the expiration of the research permit.

The instruments used were pretest and post-test before and after treatment given to the experimental and control classes. Writing test results in English descriptive text were measured using an assessment tool adapted from Brown (2007). The data collected were statistically analyzed using ANOVA statistical analysis (analysis of variance) in two 2 x 2 factorial pathways. Testing the null hypothesis (Ho) was carried out at a significance level of 5% or $\alpha = 0.05$, and the statistical analyses used SPSS software version 25 for Windows. ANOVA was used to test the difference in mean values between two or more groups based on the variables measured on an interval or ratio scale.

To determine the presence of variances in learning outcomes within each group, this research relies on the following criteria:

Each group has a significant difference in learning outcomes when the value of the Anova Sig.< Than test result is 0.05.

There is no difference in learning outcomes in each group when the value of the Anova Sig. test result > 0.05.

The requirement considered in factorial ANOVA is the assumption of homogeneity, where the variety between the groups tested must be the same (homogeneous). This testing should be conducted using Levene's Test of Equality for Error Variances. Variety can be expressed the same when the value is significant (Sig >0.05), while the normality assumption means that the results are expected to spread usually. The assumption is tested using the Kolmogorov–Smirnov Analysis, and the result is normally distributed when the Z calculates the value at Sig. > 0.05. The factorial results can be used and interpreted when the assumptions are met. For further interpretation, the prerequisites supporting the factorial ANOVA should be considered, and Table 2 presents the results of factorial ANOVA.

TABLE 2
CONTROL CLASS FACTORIAL ANOVA PREREQUISITE NORMALITY TESTING

Prerequisite	Value	Test Value	Sig.	Information
Normality	*Pretest*	.174	.007	Fulfilled
	Post-test	.169	.011	Fulfilled

Table 2 shows that the normality test value for the pretest value is .174 with a significance level of 007. The conclusion of the normality test of the pretest value can be seen based on the Kolmogorov value Z = .174 less than the Z of table .007. Therefore, there is no difference between the theoretical and the empirical distributions. Second Asymp. Sig. (2-tailed) is a p-value resulting from a null hypothesis test, with no difference between the test data distribution. Since the value of p = .174 is more significant than 0.05, the conclusion is that the null hypothesis fails to be rejected. This means that the test data distribution follows a normal distribution, and the normality prerequisites for the pretest value are met.

The result of the post-test normality test is .169, with a significance level of .011. The conclusion of the post-test normality test can be obtained based on the Kolmogorov-Sminirv value Z = .169 less than the Z table .011. It means there is no difference between the theoretical and the empirical distribution. Second Asymp. Sig. (2-tailed) is a P value resulting from a null hypothesis test where there is no difference between the distribution of tested and normal data. Since p .169 is more significant than 0.05, the conclusion is that the null hypothesis fails to be rejected. Therefore, the test data distribution follows a normal distribution, where the prerequisites for normality of post-test values are met. Table 4.8 presents the prerequisite test of homogeneity of pretest and post-test values in the control class, as seen in Table 3.

TABLE 3
FACTORIAL ANOVA PREREQUISITE HOMOGENEITY TESTING ON CONTROL CLASSES

Prerequisite	Value	Test Value	Sig.	Information
Homogeneity	*Pretest*	.458	.806	Fulfilled
	Post-test	.435	.823	Fulfilled

Table 3 shows that the prerequisite homogeneity of pretest values in the control class has a significance value of .806. Since the significance value is more significant than > 0.05, the data groups have the same variance or homogeneity. The *Levene Statistic* figure .458 shows an inverse relationship between the test value and homogeneity. It means that the prerequisites of homogeneity of variety are met.

The prerequisite test of homogeneity of the variety of post-test values can be seen in Table 4.8, with significance values of .823 > 0.05. The data groups have the same variety or homogeneity. The *Levene Statistic* number .435 shows that the prerequisite of homogeneity of variety is met. Further testing of the normality in the experimental class is described in Table 4.

TABLE 4
EXPERIMENTAL CLASS ANOVA PREREQUISITE NORMALITY TESTING

Prerequisite	*Value*	*Test Value*	*Sig.*	*Information*
Normality	Pretest	.174	.007	Fulfilled
	Post-test	.128	.145	Fulfilled

Table 4 shows that these prerequisite tests also use the Kolmogorov-Sminorv Test. Based on the pretest value in the experimental class, the Kolmogorov-Sminorv value Z = .174 is less than the Z value of Table 940. Therefore, there is no difference between the theoretical and the empirical distribution, and the tested data is normally distributed. Based on primary data, Asymp. Sig. (2tailed) which is the p-value resulting from the null hypothesis test; there is no difference between the tested and normal data distribution. Since the value of p = .128 > 0.05, the null hypothesis fails to be rejected. Furthermore, the distribution of the tested and normal data is related, and the prerequisites of normality in the pretest scores of the experimental class are met.

The normality test on the post-test value of the experimental class shows that the value of Kolmogorov-Sminorv Z = .128 is less than Z table .145. Therefore, there is no difference between the theoretical and empirical distribution since the tested data is normally distributed. According to the Asymp. Sig. (2-tailed) value, representing the null hypothesis test, there is no statistically significant difference between the distribution of the tested data and average data. Since the value of p=.128 is more significant than 0.05, the null hypothesis fails to be rejected, and the tested data follows a normal distribution.

Table 5 presents the results of the homogeneity test of the post-test and pretest values in the experimental class as a prerequisite for ANOVA. The pretest and post-test values have significance scores of .806 > 0.05 and .760 > 0.05, where both data groups have the same variety (variance) or are homogeneous. This prerequisite testing of homogeneity uses Levene's test of equality for error variances. To determine the homogeneity of the tested data when the value of $\alpha >$ 0.05, the group has the same variety. Conversely, when the value of $\alpha < 0.05$, the tested data groups have unequal variations. Based on the control and experimental classes, the prerequisites of ANOVA are met and can be used to interpret research data.

TABLE 5
TESTING OF PREREQUISITE HOMOGENEITY OF EXPERIMENTAL CLASS FACTORIAL ANOVA

Prerequisite	*Value*	*Test Value*	*Sig.*	*Information*
Homogeneity	Pretest	.458	.806	Fulfilled
	Post-test	.520	.760	Fulfilled

The models used in learning descriptive text writing skills in English are TPACK and DL models. The application of the TPACK model uses video media accessed through the YouTube page and can be used directly or online when there is an internet network. The video can be uploaded through software located in the libraries menu of a laptop. The video serves as a valuable teaching resource integrated into the classroom setting. This can be presented using PowerPoint, operated through a notebook (laptop) and projected onto a screen using an LCD. This multimedia method effectively captivates and motivates students, particularly in English language instruction, explicitly enhancing their proficiency in writing descriptive text.

Videos used as teaching materials are selected according to descriptive text materials and learning objectives. Using videos, students are expected to have digital literacy skills that provide information and knowledge. Furthermore, students obtain ideas about writing descriptive text in English focused on social functions, linguistic characteristics, and text structures, such as identification and description related to people, objects, places, and animals.

IV. RESULTS AND DISCUSSION

Result

This research aims to test the significant differences in learning outcomes as an influence of the application of TPACK and DL Models on learning outcomes of writing descriptive text in English. The analysis tool used is ANOVA with a factorial design of two strategy categories. There is a different value when the F-value is calculated with the α value < 0.05. However, the difference is insignificant when the F-calculate value is calculated with α > 0.05.

Pretest and post-test value variables control class and experiment class

This section presents the difference in the value of pretest-posttest learning outcomes in the two groups taught with *TPACK and DL* models. There is a difference in learning outcomes between the groups when Sig. (0.000) value α < 0.05. Conversely, when Sig. (0.000) with a value of α > 0.05, there is no difference in *pretest* and *post-test* values.

TABLE 6
TESTING THE DIFFERENCE IN PRETEST-POSTTEST VALUES OF DL AND TPACK GROUPS THROUGH MULTIPLE COMPARISON

Value	*N*	*Lowest*	*Highest*	*Mean Difference*	*Sig.*
DL	36	35	60	10.00000	.000
TRACK	36	45	70	28.888889	.000
Total	72	80	136	38.888889	.000

The data in Table 6 shows that the mean difference value of the pretest-posttest results of the group treated with the DL Model has the lowest and highest values of 35 and 60 with a mean difference of -10.00000 and a value of Sig. 000 0.05. Therefore, there is a significant difference in learning outcomes of the control class after treatment compared to before. The mean difference value of learning outcomes pretest value - post-test group treated with TPACK model has the lowest and highest values of 45 and 70 with a mean difference of 28.888889 and a Sig value of .000 0.05. This means there is a significant difference in experimental class learning outcomes after being subjected to TPACK model treatment.

Post-test values or learning outcomes are measured using instruments consisting of writing tests of English Descriptive Text. To determine the score of students, a scoring rubric of descriptive text adapted from Brown (2007) with a total score of 100 was used, as seen in Table 7.

TABLE 7
DIFFERENCES IN POST-TEST VALUES-POSTTEST DLM AND TPACK GROUPS THROUGH MULTIPLE COMPARISON

Value	*N*	*Lowest*	*Highest*	*Mean Difference*	*Sig.*
DL	36	60	85	-18.88889	.000
TRACK	36	80	90	18.88889	.000
Total	72	120	176	18.888.907.88889	.000

The data in Table 7 shows that the mean difference post-test value of the DL Model group has the lowest and highest values of 60 and 85 with a mean difference value of -18.88889, while TPACK has 80 and 90 with a mean difference value of 18.88889. Based on statistical tests through multi-comparison, a Sig value of 0.000 < 0.05 was obtained. Therefore, there is a significant difference in learning outcomes (post-test) of the group given TPACK treatment compared to DL treatment.

Based on the results of the Anova 2x2 test using the SPSS 25 program on the variables and learning outcomes, the learning model shows a significant difference between TPACK and DL models with an F value of 16,567 at a significance level of .000. Based on the tests of the between-subject effect, the significance level of the learning model is. 000 < 0.05. Therefore, there are significant differences between ML and TPACK learning factors. This is because the learning model is more influential on learning outcomes of writing Descriptive Text than the DL model.

Discussion

Differences in the effect of learning models on learning outcomes

The 1st hypothesis is the influence of learning models on outcomes, which are explained below.

HO: Learning outcomes of writing descriptive text in English are similar for students taught with TPACK and DL models.

HI: There is a significant difference in learning outcomes of writing descriptive text in English between the group taught with TPACK and the DL learning model.

The analysis shows an F-calculate value of 16,567 with a value of α = .000. In the F-calculate statistical value of 16,567 with a learning model of .000 smaller than alpha 0.05 (.000 < 0.05), there are significant differences in outcomes between the group taught with TPACK and DL model. By using the TPACK learning method, outcomes of writing Descriptive Text in English are improved when compared to the DL model.

The first null hypothesis, where there is no significant difference in learning outcomes between the models, is rejected. Meanwhile, the 1st (one) alternative hypothesis that states there is a significant difference is acceptable.

Concerning the description results in general and the hypothesis testing, a summary can be presented as follows. There was a difference in learning outcomes between the students who received TPACK and DL model treatment, with an F- calculate and alpha values of 16,567 and 000< 0.05. The learning process with the TPACK model significantly has a better influence on the acquisition of outcomes. Based on the data collected, this research showed significant differences between classes using the TPACK model compared to those using DL with an F-count value and significant rates of 16,567 and .000< 0.05. Based on these results, the TPACK learning model can be implemented in the instructional process of writing descriptive text.

The results align with previous research, including Putri (2019) and Bugueño et al. (2013), where students in the TPACK group obtained higher learning outcomes or *post-test* scores than DL. The group showed less significant positive attitudes towards science but was more committed than DL. In addition, teachers who incorporate technology into their teaching tend to favour a higher frequency of classroom activities. This method can transform traditional learning into engaging, dynamic, and meaningful experiences, improving effective communication and preventing boredom in student interactions. According to Rahayu et al. (2023), technological-enhanced learning engenders a sense of fun and increased motivation, encouraging active participation in every learning process.

V. CONCLUSION

In conclusion, there were significant differences between students who learned with TPACK and DL models based on the influence on learning outcomes of writing English descriptive text. The results showed that students who diligently observed the videos cooperated and actively discussed in groups to write Descriptive Text in English. Furthermore, learning using the TPACK model showed significant results compared to DL. English teachers or Lecturers should use this model to prevent boredom, attract interest, increase activeness, obtain ideas, motivate students, and improve learning outcomes. In this context, students of other subject areas were expected to use the TPACK model in the learning process. In its application, teachers or lecturers acted as motivators, facilitators, controllers, and guides. In addition, research should be conducted to examine the TPACK model compared to CTL, PBL, and PJBL. This included the development of writing, listening, reading, and speaking skills across various academic disciplines and majors. The comprehensive exploration extended beyond English instruction and held significant value for the broader domain of instructional science.

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REFERENCES

[1] Afiah, N., Arafah, B., & Abbas, H. (2022). Burmese Women Portrait under the British Imperialism in Orwell's *Burmese Days. Journal of Language Teaching and Research, 13*(1), 213-219.

[2] Ammade, S., Mahmud, M., Jabu, B., & Tahmir, S. (2020). TPACK model-based instruction teaching writing: An analysis on TPACK literacy. *International Journal of Language Education, 4*(1), 129-140.

[3] Anggrawan, A., Yassi, A.H., Satria, C., Arafah, B., & Makka, H.M. (2019). Comparison of Online Learning versus Face-to-Face Learning in English Grammar Learning. *5th International Conference on Computing Engineering and Design (ICCED),* pp. 1-4.

[4] Arafah, B., Abbas, H., & Hikmah, N. (2021). Saving the Environmental Lessons in Colin Thiele's *February Dragon. Journal of Language Teaching and Research*, *12*(6), 935-941.

[5] Arafah, B. & Hasyim, M. (2019). Linguistic Functions of Emoji in Social Media Communication. *Opción, 35*(24), 558-574.

[6] Arafah, B. & Hasyim, M. (2023a). Digital Literacy: The Right Solution to Overcome the Various Problems of Meaning and Communication on Social Media. *Studies in Media and Communication, 11*(4), 19-30.

[7] Arafah, B. & Hasyim, M. (2023b). Digital Literacy on Current Issues in Social Media: Social Media as a Source of Information. *Journal of Theoretical and Applied Information Technology, 101*(10), 3943-3951.

[8] Arafah, B., Hasyim, M., Khaerana, A.S.A., Soraya, A.I., Ramadhani, R., Ismail, A., & Takwa. (2023). The Digital Culture Literacy of Generation Z Netizens as Readers, Producers and Publishers of Text on Social Media. *International Journal of Intelligent Systems and Applications in Engineering, 11*(3), 112-123.

[9] Arafah, B., & Kaharuddin. (2019). The Representation of Complaints in English and Indonesian Discourses. *Opción, 35*(24), 501-517.

[10] Arafah, B., Kaharuddin, Hasjim, M., Arafah, A.N.B., Takwa, & Karimuddin. (2023). Cultural Relations among Speakers of South Halmahera Languages. *Theory and Practice in Language Studies, 13*(1), 168-174.

[11] Arafah, B., Rofikah, U., Kaharuddin, A., Room, F., Takwa, & Purwarno, P. (2023). Evaluating the Suitability of Printed Materials in the Context of Online Learning. *XLinguae, 16*(2), 16-32.

[12] Arafah, B., Thayyib, M., Kaharuddin, & Sahib, H. (2020). An Anthropological Linguistic Study on Maccera' Bulung Ritual, *Opción, 36*(27), 1592-1606.

[13] Arafah, K., Arafah, A.N.B., & Arafah, B. (2020). Self-Concept and Self-Efficacy's Role in Achievement Motivation and Physics Learning Outcomes. *Opción, 36*(27), 1607-1623.

[14] Arifin, M. B., Arafah, B., & Kuncara, S.D. (2022). Dayak's Sociocultural Situation through Locality in Lumholtz's Through Central Borneo Travel Writing. *Theory and Practice in Language Studies, 12*(12), 2695-2703.

[15] Arnawa, I. G. N. E. V. & Arafah, B. (2023). Students' Self-Regulated Strategies in Approaching Second Language Writing. *Theory and Practice in Language Studies, 13*(3), 690-696.

[16] Asri, D., Arafah, B., Sahib, H., & Abbas, H. (2023). Male Domination in Helen Garner's *Monkey Grip. Theory and Practice in Language Studies, 13*(7), 1651-1658.

[17] Asriyanti, S., Arafah, B., & Abbas, H. (2022). The Representation of Women's Dependence on Men in *Little Women. Theory and Practice in Language Studies, 12*(4), 790-796.

[18] Baa, S., Wardani, S. B., Iskandar, Weda, S., & Arafah, B. (2023). Lexical Metaphors in Westlife's Selected Song Lyrics. *XLinguae, 16*(1), 132-154.

[19] Brown, H. D. (2007). *Principles of language learning and teaching*. New York: Pearson Longman.

[20] Bugueño, W. M. R. (2013). *Using TPACK to promote effective language teaching in an ESL/EFL classroom*. [Doctoral thesis, University of Northern Iowa]. Semantic Scholar. https://www.semanticscholar.org/paper/Using-TPACK-to-promote-effective-language-teaching-Bugue%C3%B1o/f49668233dc888c0946f8cc3b3745aa05387de98, Accessed on October 2, 2023.

[21] Cohen, L., Lawrence, M., & Marisson, K. (2011). *Research method in education (7th Ed.)*. London: Routledge.

[22] Creswell, J. W. (2009). *Research Design (3rd Ed.)*. California: Sage Publications Inc.

[23] Degeng, I.N.S. (2000). *Metodologi Penelitian* [Research Methodology]. Malang: State University of Malang Postgraduate PSSJ Learning Technology.

[24] Harmer, J. (2007). *The Practice of English Language Teaching (4th Ed.)*. New York: Pearson Education Limited.

[25] Hasjim, M., Arafah, B., Kaharuddin, Verlin, S., & Genisa, R.A.A. (2020). Principles behind Semantic Relation between Common Abbreviations and their Expansions on Instagram. *International Journal of Criminology and Sociology, 9*, 2270-2276.

[26] Hasyim, M. & Arafah, B. (2023a). Semiotic Multimodality Communication in the Age of New Media. *Studies in Media and Communication, 11*(1), 96-103.

[27] Hasyim M. & Arafah, B. (2023b). Social Media Text Meaning: Cultural Information Consumption. *Wseas Transactions on Information Science and Applications, 20*(2023), 220-227.

[28] Hasyim, M., Arafah, B., Kuswarini, P., Masdiana, Saleh, F., Lisani, M., & Sukmal, A.F. (2023). Humane Coffee: Meaning Symbolic Interaction of a Cup of Coffee. *Migration Letters, 20*(S5), 1095-1105.

[29] Iksora, Arafah, B., Syafruddin, S., Muchtar, J., & Lestari, P.A. (2022). Typos' Effects on Web-Based Programming Code Output: A Computational Linguistics Study. *Theory and Practice in Language Studies, 12*(11), 2460-2469.

[30] Kaharuddin, Arafah, B., Nurpahmi, S., Sukmawaty, Rahman, I.F., & Juniardi, Y. (2023). Exploring How Reading Aloud and Vocabulary Enrichment Shape English Speaking Skills Among Indonesian Learners of English. *World Journal of English Language, 13*(8), 436-445.

[31] Koh, J. H. L, Chai, C. S., & Tsai, C. C. (2010). Examining the technological content knowledge of Singapore pre-service teachers with a large-scale survey. *Journal of Computer Assisted Learning, 26*(6), 563-573.

[32] Kuswanty, W.H., Arafah, B., Budiman, A.N.A., Ali, T., Fatsah, H., & Room, F. (2023). Students' Perception of Explicit and Implicit Methods in Learning Tenses in SMP DDI Mangkoso. *Theory and Practice in Language Studies, 13*(6), 1473-1482.

[33] Manong, A. B. M., Hamid, S. M., Insyirah, L., & Hidayat, N. (2021). The implementation of TPACK (Technological pedagogical and content knowledge)-based learning: The comparison of students' English learning outcomes using the blended learning model and discovery learning model. *Journal of Development Research, 5*(2), 149-155.

[34] Manugeren, M., Arafah, B., Purwarno, P., Siwi, P., Ekalestari, S., & Wulan, S. (2023). An Ecoliterature Approach to Environmental Conservation: Take Four Selected Literary Works as Examples. *Theory and Practice in Language Studies, 13*(5), 1318-1327.

[35] Mardiana, Arafah, B., Ahmad, D., Kaharuddin, Room, F., & Barus, E. (2023). Time Allocation Effect on Test Scores for Academic Writing of Indonesian English Learners. *Journal of Language Teaching and Research, 14*(6), 1628-1636.

[36] Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

[37] Mokoginta, K. & Arafah, B. (2022). Negotiation in Indonesian Culture: A Cultural Linguistic Analysis of Bahasa Indonesia Textbooks. *Theory and Practice in Language Studies, 12*(4), 691-701.

[38] Mutmainnah, Arafah, B., & Pattu, A. (2022). Racial Discrimination Experienced by Black People as Reflected in Langston Hughes's Poems. *Journal of Language Teaching and Research, 13*(2), 350-356.

[39] Putri, S. E. (2019). The Implementation of TPACK in Teaching Writing Recount Text in a Senior High School Level. *RETAIN, 7*(2), 156–163.

[40] Rahayu, E.M., Rahayu, E.Y., & Irawan, N. (2023). Tecnological pedagogical content knowledge (TPACK) in the instruction design of the participants in teacher profession education: A Narrative Inquiry Case Study. *Jurnal Teknologi Pendidikan*, *11*, 312-327.
[41] Santos, J. M., & Castro, R. D. (2021). Technological pedagogical content knowledge (TPACK) in action: Application of learning in the classroom by pre-service teachers (PST). *Social Sciences & Humanities Open*, *3*(1), 100-110.
[42] Sari, Y. R. & Sumardi. (2020). Reflection as a way to grapple TPACK complexity for EFL teachers. *Budapest International Research and Critics in Linguistics and Education (BIRLE) Journal*, *3*(2), 894-903.
[43] Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK). *Journal of Research on Technology in Education*, *42*(2), 123–149.
[44] Septiyanti, M., Inderawati, R. &; Vianty, M. (2020). Technological Pedagogical Content Knowledge (TPACK) Perception of English Education Students. English Review: *Journal of English Education*, *8*(2), 165–174.
[45] Setyosari, P. (2012). *Educational research and development methods*. Jakarta: Kencana Prenada Media Group.
[46] Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4–14.
[47] Siwi, P., Arafah, B., Wulan, S., Purwarno, P., Ekalestari, S., & Arafah, A.N.B. (2022). Treatment of Nature: An Ecocriticism Approach in 'Komat Kamit' of Tejo and Kamba's Tuhan Maha Asik. *Theory and Practice in Language Studies*, *12*(7), 1278-1285.
[48] Smaldino, S. E., Lowther, D. L., & Russell, J. D. (2008). *Instructional technology and media for learning*. New Jersey: Pearson Merrill Prentice Hall.
[49] Suhadi, J., Arafah, B., Makatita, F.P., Abbas, H., & Arafah, A.N.B. (2022). Science and Society: The Impact of Science Abuse on Social Life in Well's *The Invisible Man*. *Theory and Practice in Language Studies*, *12*(6), 1214-1219.
[50] Sunardi, Akil, M., Arafah, B., & Salija, K. (2018). Looking at the Shared Conception of Teaching Literature in an Indonesian ELT Setting. *Journal of Language Teaching and Research*, *9*(2), 316-327.
[51] Takwa, Arafah, B., Sopiandy, D., Taqfiah, S. J., & Arafah, A.N.B. (2022). Humanistic Values in Metaphoric Expressions of Traditional Marriage in Tolaki Mekongga Kolaka. *Theory and Practice in Language Studies*, *12*(8), 1602-1608.
[52] Takwa, Arafah, B., Kaharuddin, Putra, E., Masrur, & Arafah, A.N.B. (2022). The Shift of Lexicon in Traditional Technology System in Tolaki Community at Konawe District of Southeast Sulawesi. *Theory and Practice in Language Studies*, *12*(5), 980-989.
[53] Tuckman, B. W. (1999). *Conducting educational research* (4th Ed.). New York: Harcourt Brace College Publicist.
[54] Uno, H. B. (2014). *Education Profession*. Jakarta: PT Bumi Aksara.
[55] Yudith, M., Arafah, B., Sunyoto, F.G., Fitriani, Rostan, R.B., & Nurdin, F.E. (2023). The Representation of Animalism Issue in Sewell's *Black Beauty*. *Theory and Practice in Language Studies*, *13*(1), 108-116.
[56] Yulianti, S., Arafah, B., Rofikah, U., Idris, A.M.S., Samsur, N., & Arafah, A.N.B. (2022). Conversational Implicatures on Saturday Night Live Talk Show. *Journal of Language Teaching and Research*, *13*(1), 189-197.

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