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The Efficacy of e-Guru Application in Boosting Learning Effectiveness: Does It Deliver Results?

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ABSTRACT

In light of the unexpected events caused by the pandemic, educators urgently needed inventive educational resources to improve student comprehension. The rapid implementation of adaptable methods for instruction became necessary. E-guru is a user-friendly online platform that shows the potential to encourage student participation. This study conducted at State Vocational High School 1 of Tanah Luas in North Aceh examines the influence of e-guru on learning effectiveness. Using quantitative methods and conducting SPSS analysis, the results indicate no sie-guruchast impact of e-guru on effectiveness (p = 0.846 > 0.05). Based on the comparison between the T count value (0.196) and the T table value (1.685), the study concludes that e-guru does not significantly impact learning outcomes. The result emphasizes the necessity of further studies to enhance e-learning platforms to address evolving teaching and learning demands.

***Keywords*:**

E-guru; Efficacy; Learning; Application.

ABSTRAK

Mengingat situasi tak menentu yang disebabkan oleh pandemi, para pendidik menghadapi tantangan yang berat dalam mencari sumber daya pendidikan yang inovatif untuk meningkatkan kompetensi dan pemahaman siswa. Oleh karena itu penerapan metode pengajaran yang cepat dan mudah beradaptasi menjadi penting. E-guru adalah platform online yang mudah digunakan yang menunjukkan potensi dalam mendorong partisipasi siswa. Penelitian yang dilakukan di Sekolah Menengah Kejuruan Negeri 1 Tanah Luas di Aceh Utara ini meneliti pengaruh e-guru terhadap efektivitas pembelajaran.

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Dengan menggunakan metode kuantitatif analisis SPSS, hasil penelitian menunjukkan bahwa tidak ada pengaruh yang signifikan penggunaan e-guru terhadap efektivitas pembelajaran (p = 0,846 > 0,05). Berdasarkan perbandingan antara nilai T hitung (0,196) dan nilai T tabel (1,685), penelitian ini menyimpulkan bahwa e-guru tidak memiliki dampak yang signifikan terhadap hasil pembelajaran. Hasil penelitian ini menekankan perlunya melakukan penelitian lebih lanjut untuk mengembangkan platform e-learning dalam rangka memenuhi tuntutan pembelajaran yang terus berkembang.

***Keywords*:**

E-guru; efektivitas; pembelajaran; aplikasi.

1. Introduction

Education has a very pivotal role in improving the quality of human resources. The success or failure of a nation is frequently attributed to its achievements in teaching. Especially in challenging situations such as the pandemic that hit a few years previously (Apandi et al., 2023), there is an urgent necessity for innovative educational media that are capable of helping students gain a deeper understanding of the subject matter (Kalia, 2013; Owolabi & Bekele, 2021). According to Sjahruddin et al. (2022), utilizing such media innovations can achieve the desired learning outcomes even within the pandemic's or remote conditions' limitations. Therefore, schools and teachers must immediately adopt innovations in learning methods (Shen & Guo, Z 2022), creating learning opportunities that can be accessed flexibly without being bound by time and place (Llewellyn, 2019).

The current post-pandemic situation emphasizes the importance of media innovation in education. Classrooms have traditionally been disrupted, prompting a shift toward distance and online learning (Gacs et al., 2020). To ensure uninterrupted continuity of education, researchers need to explore new learning methods that do not rely solely on physical interaction (Rapanta et al.,2021; Bojović et al., 2020). Utilizing a suitable educational medium, we can overcome geographical barriers between students and teachers, creating effective communication and engagement. Furthermore, with the help of digital platforms, students can easily access learning materials and participate in interactive activities, which in turn encourages the creation of a collaborative and dynamic learning environment (Decuypere et al., 2021; Feoktistov, et al., 2020; Capuno, 2023).

The rapid advancement of technology has opened up many opportunities for educational institutions and educators to innovate in their teaching practices. By integrating media innovations into the learning process, schools and teachers can improve educational effectiveness by offering diverse and engaging learning experiences (Bernacki et al., 2020). These media innovations include interactive e-learning platforms, virtual reality simulations, online discussion forums, and multimedia presentations (Elmqaddem, 2019; Shatri, 2020; Nariman, 2021). These tools allow students to actively engage in learning materials, stimulate critical thinking, improve problem-solving skills, and

explore their creativity. In addition, media innovation provides more flexibility and convenience to students so that they can learn at their own pace, following their learning styles and personal preferences (Abdulrahman et al., 2020).

Media innovation in education is not just about catching up with technological developments but rather an important step to prepare students for a changing world. By incorporating technology in learning, educational institutions provide opportunities for students to become independent learners who can adapt to dynamic global developments. As educators, we must continue to explore and utilize the potential of these media innovations to improve the quality of education and help students reach their full potential.

In education, carefully selecting appropriate and effective learning media is crucial as it affects the overall learning experience. The traditional paradigm that portrays students as passive recipients of knowledge must be replaced by a more progressive view, where students play an active role and contribute to the learning process. Through this shift, the instructional media chosen should empower all students to play an active role in their learning. The chosen learning media should aim to improve students' fundamental skills and form positive attitudes to facilitate a smooth teaching and learning process and ultimately lead to improved academic achievement.

Practical learning media should demonstrate commitment to engaging all students and providing equal opportunities for all. It is essential to recognize the diversity among students, including variations in their learning styles, preferences, and abilities (Bahasoan et al., 2020). The selection of learning media should be inclusive and adaptable with flexibility to meet the diverse needs of students so that no student is marginalized. By including interactive elements and encouraging student participation, such as through group discussions, hands-on practice, or multimedia presentations, learning media can facilitate active learning and promote the cultivation of student autonomy.

In addition, keep in mind that learning media should focus on knowledge acquisition, building essential skills, and forming positive attitudes (Dwijayani, 2019). Students should not only rely on memorization but also be guided to cultivate critical thinking abilities, problem-solving skills, and the capacity to engage in meaningful discussions (Alsaleh, 2020; Servant-Miklos, 2019). Further, learning media should allow students to apply their knowledge in real-life contexts, which will develop practical skills that can be used in various situations. In addition, encouraging positive attitudes such as curiosity, perseverance, and teamwork is essential to creating a learning environment that supports students' comprehensive development. By incorporating elements that stimulate critical thinking and encourage collaboration, learning media can significantly contribute to students' overall growth.

Hence, it is crucial to acknowledge that the appropriate educational tools and resources are vital in establishing a successful teaching and learning experience. With the transition in the educational paradigm towards an active participant model, it is essential for learning media to empower and encourage all students to engage in the learning process fully. To offer equal chances for all students, one needs to select learning media that can accommodate varied learning styles and student preferences. Efficient educational resources should surpass the mere acquisition of knowledge. The

design should enhance the cultivation of crucial skills and foster favorable attitudes. Learning media can improve student achievement and facilitate impactful learning experiences by incorporating interactive aspects and promoting critical thinking, problem-solving, and collaboration. Therefore, it is crucial to meticulously choose learning materials and seamlessly integrate them into the educational process to attain the most favorable educational outcomes.

One of the learning media that can be used to attract students' interest in learning is e-guru, which is one of the learning media that is easily used and is one of the novelties in the web-based learning system; in this case, students can access learning materials anywhere and anytime through laptops or various kinds of electronic devices that they have (Dewantara et al., 2020; Rohman et al., 2023)**.** To function correctly, e-guru, a web-based application, requires a web server and browser. State Vocational High School 1 of Tanah Luas has employed e-guru to facilitate instructors and students in receiving and delivering informative or beneficial learning materials and content in a more efficient and conducive environment. Therefore, the preliminary hypothesis of this study is that using the e-guru application affects the learning effectiveness of students and instructors at State Vocational High School 1 of Tanah Luas.

Therefore, this research aims to determine whether or not using the e-guru web-based application at State Vocational High School 1 of Tanah Luas affects the learning efficacy of both instructors and students. This involves evaluating the application's impact on the effectiveness and environment-friendly nature of transmitting and receiving educational materials and content.

2. Methods

2.1. Research Design

This study employed a quantitative research methodology to examine the effectiveness of e-teacher applications in enhancing student learning outcomes (Mohajan, 2020).

2.2 Population and sample

The population for this study consisted of all the data that fell within the defined scope and timeframe of the researcher's investigation (Mohajan, 2020), with a particular emphasis on students enrolled at State Vocational High School 1 of Tanah Luas. A purposive sampling technique was employed to select 40 students for the study. The researchers commit to ensuring all participants provide informed consent before participating in the survey, highlighting their voluntary participation and the confidentiality of their answers. In addition, precautions are implemented to maintain the privacy and anonymity of participants.

2.3 Data Collection

The data collected is securely stored and handled by ethical guidelines and regulations. Data collection was facilitated by directly administering questionnaires to respondents. The selected research design ensured a systematic and unbiased measurement approach, enabling accurate data collection.

2.4 Data Analysis

The data was analyzed using quantitative analysis techniques, specifically the t-test and ANOVA test, with the assistance of SPSS software (Hoerunnisa et al., 2022). Furthermore, descriptive data analysis techniques were employed to offer a thorough and inclusive summary of the gathered data to understand the diverse factors that impact the efficacy of e-guru applications. This analysis aims to comprehensively depict the acquired data, determining the impact of web-based learning on future instructional approaches and policy.

3. Results and Discussion

3.1 Results

The following is the data from the questionnaire that the researcher presents as a table obtained through the SPSS application. This research data was gathered from students at State Vocational High School 1 of Tanah Luas during the 2022-2023 school year, who served as research subjects for this study. The data of the independent variable (X), namely the influence of e-guru, and the dependent variable (Y), namely learning effectiveness, will be described in this data description. The data description includes central tendency measures such as mean (M), median (Me), mode (Mo), variance, standard deviation, maximum value, and minimum value.

In this study, data for the e-guru influence variable and the learning effectiveness variable were collected using a research instrument in a scale sheet distributed to students selected as research subjects. The formula was calculated using the scores obtained from each question item for each variable. The information gleaned from the research will be used to test hypotheses.

Table 1. The Statistical Results

			Statistic	**Std. Error**
e-guru	Mean		28.65	.470
	95% Confidence Interval for Mean	Lower Bound	27.70	
		Upper Bound	29.60	
	5% Trimmed Mean		28.78	
	Median		28.00	
	Variance		8.849	
	Std. Deviation		2.975	
	Minimum		20	
	Maximum		35	
	Range		15	
	Interquartile Range		4	
	Skewness		-.465	.374
	Kurtosis		1.013	.733
Effectiveness	Mean		29.13	.571
	95% Confidence Interval for Mean	Lower Bound	27.97	
		Upper Bound	30.28	
	5% Trimmed Mean		29.14	

Median	29.50	
Variance	13.035	
Std. Deviation	3.610	
Minimum	22	
Maximum	36	
Range	14	
Interquartile Range	6	
Skewness	-.289	.374
Kurtosis	-.756	.733

The results of validity testing using Pearson's Product Moment Correlation state that all items used in this study are valid. The validity test is carried out to ensure that the questionnaire data to be analyzed by researchers is realistic and measurable. From Tables 2 and 3, we can see and observe that the data collected by researchers is valid, and there are also some invalid items/questions. Still, valid data is generally more dominant so that the data can be processed and analyzed with other tests.

Data is valid if the r count is more significant than the r table, such as in item Y3, where the r count is 0.704> 0.312, which states that the item is valid and can be analyzed with other tests. Invalid data has an r count smaller than the r table, such as in item X1, where the r count is 0.256 <0.312, which states that the item is invalid and cannot be used for further research data.

Table 2. The Validity Test for Learning Effectiveness

Effectiveness			
No	Respondent	r-score	Description
1	Students	0.828	Valid
2		0.740	Valid
3		0.611	Valid
4		0.812	Valid
5		0.825	Valid
6		0.734	Valid
7		0.848	Valid
8		0.723	Valid
9		0.760	Valid
10		0.851	Valid

Table 3. The Validity Test for e-guru

e-guru			
No	Respondent	r-score	Description

1	Students	0.690	Valid
2		0.718	Valid
3		0.803	Valid
4		0.571	Valid
5		0.668	Valid
6		0.821	Valid
7		0.749	Valid
8		0.809	Valid
9		0.809	Valid
10		0.817	Valid

The reliability test determines how trustworthy the tool's measurement results are. The measurement results must be reliable because they must be consistent and stable. A reliability test was performed in this study using the calculation of Cronbach's Alpha, which shows that the variables used to measure concepts in this study are reliable. After the validity test for the two variables, namely the effectiveness variable (X) and the e-guru variable (Y), the reliability test will be performed.

Table 4. Reliability Test for Learning Effectiveness

Cronbach's Alpha	N of Items
.924	10

Table 5. Reliability Test for e-guru

Cronbach's Alpha	N of Items
.913	10

Tables 4 and 5 above illustrate the significant amount of Cronbach's Alpha value of the effectiveness variable (X) of 0.924 and the e-guru variable (Y) of 0.913. After knowing the Alpha Cronbach value of the two variables, to find out whether it is reliable, the condition is that the Alpha Cronbach value> from r table, then r table of 40 research data statements is 0.320. Then, the effectiveness variable value (X) Alpha Cronbach 0.924> 0.320 and the e-guru variable value (Y) Alpha Cronbach 0.913> 0.320, and thus, the research data can be said to be reliable.

The objective of the normality test is to determine whether the confounding or residual variables in the regression model follow a normal distribution. This study employs the Kolmogorov-Smirnov test, which is conducted using SPSS software.

a. If the significance value is more > 0.05, it is stated that the data is usually distributed.
b. If the significance value is <0.05, it is stated that the data is not normally distributed.

Table 6 above shows that the exact significance value is 0.029> 0.05; thus, these results indicate that the two variables (X) and (Y) tested are typically distributed.

Table 6. Normality Test

	Unstandardized Residual

N		40
Normal Parameters[b]	Mean	.0000000
	Std. Deviation	5.34609693
Most Extreme Differences	Absolute	.225
	Positive	.214
	Negative	-.225
Test Statistic		.225
Asymp. Sig. (2-tailed)		.000[c]
Exact Sig. (2-tailed)		.029
Point Probability		.000

The T-test is an individual partial regression coefficient test used to determine whether the independent variable (X) individually affects the dependent variable (Y). The basis for concluding the T-test results can be seen:

a. If the t value> t table and sig value <0.05, then e-guru does not affect learning effectiveness.
b. If the t value < t table and sig value > 0.05, then e-guru affects learning effectiveness.

Formulation of T-Test Hypothesis

H1 = Effect of effectiveness variable (X) on e-guru variable (Y).

H2 = There is no effect of the effectiveness variable (X) on the e-guru variable (Y).

From the results of the T-test in Table 7, the T value of the effectiveness variable (X) is 0.196 < t table, namely 1.685; it can be concluded that H1 is rejected and H2 is accepted, so there is no effect of the effectiveness variable (X) on the e-guru variable (Y).

Table 7. T-test Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	29.528	5.415		5.453	.000
	Effectiveness	.036	.182	.032	.196	.846

The F test is used to test the significance of the equation used to determine how much influence the independent variable (X) simultaneously has on the dependent variable (Y). The F test on the effectiveness variable (X) and the Effect of e-guru (Y) is presented.

The basis for concluding the F test can be seen:

a. If F count < F table and Sig value > 0.05, effectiveness simultaneously does not influence e-guru.
b. If F count > F table and Sig value <0.05, then effectiveness simultaneously affects e-guru.

The test results in Table 8 state that the significance value is 0.846> 0.05 and the calculated F value is 0.038 < F table 2.425; thus, it can be concluded that the effectiveness variable (X) has no simultaneous effect on the e-guru variable (Y).

Table 8. Anova Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.126	1	1.126	.038	.846[b]
	Residual	1114.649	38	29.333		
	Total	1115.775	39			

According to the test results obtained in this study, the learning effectiveness of variable X and variable Y was examined. The T-test results indicate that variable (X) has no significant impact on variable (Y). This is supported by the low t value of 0.196 and the non-significant p value of 0.846. Therefore, it can be concluded that variable (X) has no partial influence on variable (Y).

3.2 Discussion

The following is the result of the analysis of the computations presented above: Students at Vocational High School 1 of Tanah Luas believe that using the e-guru application in the learning process is inefficient to a significant degree. This perception comes from the e-guru application primarily used in specific academic departments such as multimedia, network computer engineering, and oil and gas processing engineering. In contrast, it is not used in motorcycle engineering, light vehicle engineering, welding engineering, and electrical engineering.

It is worth noting that vocational school instruction is distinguished by its practical and hands-on approach, unlike Senior High School's more theory-oriented curriculum. As a result, the use of instructional media in vocational school education primarily focuses on tools and resources that are directly relevant to the respective fields of study. In this context, using e-guru at State Vocational High School 1 of Tanah Luas has reached its full potential. However, it is critical to understand that vocational school education prioritizes incorporating external media that can be directly applied in practical learning scenarios.

The findings from investigating these two variables are consistent with educational theory, particularly regarding practical learning methodologies. This theory delves into the complexities of optimal learning processes to ensure their efficacy (Tauhid, 2020). Notably, the outcomes of these variables' assessments show a negative correlation, indicating that respondents believe e-guru does not significantly improve learning effectiveness in the context of State Vocational High School 1 of Tanah Luas.

The results of the tests show that e-guru has no discernible effect on the effectiveness of student learning. Effective learning is a multifaceted concept that includes human resources, instructional materials, facilities, equipment, and procedural strategies (Billett, 2020; Ilham et al., 2023). These components work together to positively channel student behavior and align it with their potential and characteristics, ultimately achieving predetermined learning objectives. To promote effective learning, robust educational tools, whether application-based, web-based, or internet-driven, must be used (Dina et al., 2022).

According to the results of questionnaires distributed to State Vocational High School 1 of Tanah Lua's students, e-guru is regarded as a commendable application, albeit one with limited influence on the actual learning process. As a result, while e-guru is a sound educational tool, its efficacy could be improved by students' suboptimal application and utilization (Dharma, 2021). The wise application of educational media is critical, as it is the connection for realizing their full potential, free of undesirable constraints. A well-executed implementation has a rippling effect, improving user experiences and, as a result, the overall effectiveness and efficiency of the learning process (Carrillo & Flores, 2020; Latif et al., 2019). Notably, State Vocational High School 1 of Tanah Lua's students have access to a web-based application with commendable features and functionalities, which could theoretically improve learning effectiveness. Regrettably, these students' suboptimal adoption of e-guru has limited its impact, as evidenced by research findings indicating e-guru's limited influence on learning effectiveness.

A thorough examination of the researcher's test results reveals that the impact of the two variables is closely associated with behavioristic learning effects, specifically manifesting as changes in social relationships and behavior. It is worth noting that the satisfaction of specific students (participants) is intricately linked to the pleasure derived from engaging in meticulous cognitive deliberation made possible by the application's use of information technology.

In addition, a study conducted at Vocational School Bina Mandiri Depok by Astuti, Dasmo, and Sumarni (2018) highlights the supportive role played by applications, such as the Appypie application, in the learning process. This study demonstrates how the use of the application benefits the educational environment. Similarly, findings from, Dirga, Masnur, and Merlina (2021) highlight the benefits of web-based applications. According to their findings, web-based applications have a positive and constructive impact, particularly on the efficiency and effectiveness of teaching and learning activities.

While prior research has explored the efficacy of educational apps in a broad sense, the novelty of this research lies explicitly in examining the effectiveness of e-guru apps in specific educational (vocational) settings. This paper further acknowledges educational apps' potential advantages and difficulties and emphasizes ongoing enhancement and optimization to enhance learning results. The contributions made in this study distinguish it from previous research, underscore the importance of advancing our knowledge of technology-enhanced learning environments, and shed light on the potential impact on instructional methods and policies in vocational school settings.

4. Conclusion

E-guru applications in the learning context are more limited to majors emphasizing field practice. The findings reveal that many teachers who use this application still need to fully utilize this technology to its full potential in the learning process. Our investigation, however, indicates a worrisome truth despite this widespread adoption. There needs to be a substantial gap between the usefulness of e-guru apps and their practical integration into the educational process.

The discrepancy between potential and actual practice emphasizes how urgently comprehensive training programs created especially for teachers are needed. In addition to acquainting teachers with the technological features of e-learning platforms, these programs should emphasize cutting-edge pedagogical strategies that maximize the platforms' application in various educational settings. Institutions can lead the way for a revolutionary shift in the academic landscape where technology acts as a catalyst to enhance learning experiences and outcomes across multiple disciplines by providing educators with the skills and strategies they need to utilize e-guru apps fully.

5. References

Abdulrahman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon*, *6*(11), e05312. https://doi.org/10.1016/j.heliyon.2020.e05312.

Alsaleh, N. J. (2020). Teaching Critical Thinking Skills: Literature Review. *Turkish Online Journal of Educational Technology-TOJET*, 19(1), 21-39. https://files.eric.ed.gov/fulltext/EJ1239945.pdf.

Apandi, A., Hutagalung, S. S., Meutia, I. F., & Sulistio, E. B. (2023). Trends in Online Learning Research During the Covid-19 Pandemic in Higher Education: Bibliometric Studies. *International Journal of Social Learning* (IJSL), 4(1), 1–16. https://doi.org/10.47134/ijsl.v4i1.176.

Astuti, I. A. D., Dasmo, D., & Sumarni, R. A. (2018). Pengembangan Media Pembelajaran Berbasis Android Dengan Menggunakan Aplikasi Appypie Di Smk Bina Mandiri Depok. *Jurnal Pengabdian Kepada Masyarakat*, *24*(2), 695. https://doi.org/10.24114/jpkm.v24i2.10525.

Bahasoan, A., Ayuandiani, W., & Mukhram, M. (2020). *Effectiveness of Online Learning In Pandemic Covid-19*. 100–106.

Bernacki, M. L., Greene, J. A., & Crompton, H. (2020). Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education. *Contemporary Educational Psychology*, *60*, 101827. https://doi.org/10.1016/j.cedpsych.2019.101827.

Billett, S. (2020). Le*arning in the workplace: Strategies for effective practice*. Routledge.

Bojović, Ž., Bojović, P. D., Vujošević, D., & Šuh, J. (2020). Education in times of crisis: Rapid transition to distance learning. *Computer Applications in Engineering Education*, 28(6), 1467-1489. https://doi.org/10.1002/cae.22318.

Capuno, J. G. C. (2023). Quizziz: A Game-based Formative Assessment Tool for Enhancing Students

Self-Regulated Learning. *International Journal of Social Learning* (IJSL), 3(3), 329–340. https://doi.org/10.47134/ijsl.v3i3.206.

Carrillo, C., & Flores, M. A. (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices. *European Journal of Teacher Education*, *43*(4), 466–487. https://doi.org/10.1080/02619768.2020.1821184.

Decuypere, M., Grimaldi, E., & Landri, P. (2021). Introduction: Critical studies of digital education platforms. *Critical Studies in Education*, *62*(1), 1–16. https://doi.org/10.1080/17508487.2020.1866050.

Dewantara, J. A., Efriani, E., & Afandi, A. (2020). Pemanfaatan Aplikasi Discord Sebagai Media Pembelajaran Online. *Jurnal Teknologi Informasi Dan Pendidikan*, *13*(1), 61–65. https://doi.org/10.24036/tip.v13i1.283.

Dharma, E. (2021). Pelatihan PKB Pengembangan Karya Inovatif Guru. *PROCEEDING UMSURABAYA*, 342–349.

Dina, A., Yohanda, D., Fitri, J., & ... (2022). Teori Kinerja Guru Dalam Meningkatkan Mutu Pendidikan. *Jurnal Edukasi Nonformal*, *1*(1), 149–158.

Dirga, F, M., Masnur, & Merlina. (2021). Aplikasi E-Learning Siswa Smk Berbasis Web. *Jurnal Sintaks Logika*, *1*(1), 2775–412.

Dwijayani, N. M. (2019). Development of circle learning media to improve student learning outcomes. *Journal of Physics: Conference Series*, *1321*(2). https://doi.org/10.1088/1742-6596/1321/2/022099.

Elmqaddem, N. (2019). Augmented reality and virtual reality in education. Myth or reality? *International journal of emerging technologies in learning*, 14(3). https://doi.org/10.3991/ijet.v14i03.9289.

Feoktistov, A. V., Trofimenko, O. N., Ognev, S. P., Lyakhovets, M. V., & Koynov, R. S. (2020). Digital platform as a professional education management tool. *Journal of Physics: Conference Series*, *1691*(1). https://doi.org/10.1088/1742-6596/1691/1/012058.

Gacs, A., Goertler, S., & Spasova, S. (2020). Planned online language education versus crisis-prompted online language teaching: Lessons for the future. *Foreign Language Annals*, 53(2), 380-392. https://doi.org/10.1111/flan.12460.

Hoerunnisa, A., Suryani, N., & Efendi, A. (2019). The effectiveness of using e-learning in multimedia classes to improve vocational students' learning achievement and motivation. *Jurnal Teknologi Pendidikan*, *7*(2), 123-137.

Ilham, M., Rahman, F., Sari, D. D., & Annisaturrahmi, A. (2023). Enhancing Preschool English Vocabulary Through Multimedia Tools: Insights from a Mixed-Methods Study. *Al-Athfal: Jurnal Pendidikan Anak*, 9(2), 93-102. https://doi.org/10.14421/al-athfal.2023.92-02.

Kalia, G. (2013). A Research Paper on Social media: An Innovative Educational Tool. *Issues and Ideas in Education*, *1*(1), 43–50. https://doi.org/10.15415/iie.2013.11003.

Latif, M. Z., Hussain, I., Saeed, R., Qureshi, M. A., & Maqsood, U. (2019). Use of smart phones and social media in medical education: Trends, advantages, challenges and barriers. *Acta Informatica Medica*, *27*(2), 133–138. https://doi.org/10.5455/aim.2019.27.133-138.

Llewellyn, A. (2019). Innovations in Learning and Teaching in Academic Libraries: A Literature

Review. *New Review of Academic Librarianship*, *25*(2–4), 129–149. https://doi.org/10.1080/13614533.2019.1678494.

Mohajan, H. K. (2020). Quantitative research: A successful investigation in natural and social sciences. *Journal of Economic Development, Environment and People*, *9*(4), 50-79.

Nariman, D. (2021). Impact of the interactive e-learning instructions on effectiveness of a programming course. In *Complex, Intelligent and Software Intensive Systems: Proceedings of the 14th International Conference on Complex, Intelligent and Software Intensive Systems (CISIS-2020)* (pp. 588-597). Springer International Publishing.

Owolabi, J., & Bekele, A. (2021). Implementation of innovative educational technologies in teaching of anatomy and basic medical sciences during the COVID-19 pandemic in a developing country: the COVID-19 silver lining?. *Advances in medical education and practice*, 619-625. https://doi.org/10.2147/AMEP.S295239.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2021). Balancing Technology, Pedagogy and the New Normal: Post-pandemic Challenges for Higher Education. *Postdigital Science and Education*, *3*(3), 715–742. https://doi.org/10.1007/s42438-021-00249-1.

Rohman, A., Santoso, T., Informatika, S. T., & Jepang, S. (2023). *Implementasi Aplikasi Moodle Untuk E-Learning Bagi Guru-guru di Komunitas e-guru Semarang*. *5*(1), 1–3.

Servant-Miklos, V. F. (2019). Problem solving skills versus knowledge acquisition: the historical dispute that split problem-based learning into two camps. *Advances in Health Sciences Education*, 24(3), 619-635. https://doi.org/10.1007/s10459-018-9835-0.

Shatri, Z. G. (2020). Advantages and disadvantages of using information technology in learning process of students. *Journal of Turkish Science Education*, *17*(3), 420–428. https://doi.org/10.36681/tused.2020.36.

Shen, Y., & Guo, H. (2022). New breakthroughs and innovation modes in english education in post-pandemic era. *Frontiers in psychology*, 13, 839440. https://doi.org/10.3389/fpsyg.2022.839440.

Sjahruddin, H., Maruf, I. R., Fatmawati, E., Bangkara, B. A., & Rusiadi, R. (2022). How technology is transforming innovative education and providing solutions during a pandemic disruption. *International journal of health sciences*, 1724-1738. https://doi.org/10.53730/ijhs.v6nS4.6410.

Tauhid, R. (2020). Dasar-Dasar Teori Pembelajaran. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, *1*(2), 32–38.