#### Journal Neosantara Hybrid Learning, 2(1) - April 2024 284-301



## Use Of ICT In Arabic Language Education At High School Level And Its Relationship With Teacher Skills Ali Muhdi<sup>1</sup>, Yuslam<sup>2</sup>, Nurul Ngarifillaili<sup>3</sup>, Ali Iqbal<sup>4</sup>, Yulian Purnama<sup>5</sup>

<sup>1</sup> Universitas Islam Negeri Prof. K.H. Saifuddin Zuhriji, Indonesia

<sup>2</sup> Universitas Islam Negeri Prof. K.H. Saifuddin Zuhriji, Indonesia

<sup>3</sup> Madrasah Tsanwiyah Swasta Yapika Kebumen, Indonesia

<sup>4</sup> Madrasah Tsanwiyah Swasta Yapika Kebumen, Indonesia

<sup>5</sup> Universitas Islam Negeri Prof. K.H. Saifuddin Zuhriji, Indonesia

Corresponding Author: Name,	Ali Muhdi	E-mail; alimuhdi77@uinsaizu.ac.ic
-----------------------------	-----------	-----------------------------------

Article Information: Received February 28, 2024 Revised April 19, 2024 Accepted April 22, 2024

Nowadays, the use of ICT has become a demand for education. The use of ICT actually requires special skills, however, it is also necessary to use ICT in Arabic language education. The use of ICT in the Arabic language learning process can enable teaching staff to make various modifications that suit learning. With these conditions, teaching staff can train and increase the skills they have to be more creative in the learning process. This research aims to determine the influence of the use of ICT in Arabic language education at the high school level and its relationship with teacher skills. Apart from that, researchers can also dig deeper into the use of ICT in Arabic language education and its relationship with teacher skills. The method used in this research is quantitative methods. The results of data acquisition were obtained by researchers through distributing questionnaires. The distribution of the questionnaire was carried out online using Google Froom software. The results of this data collection will later be tested and processed again using the SPSS application. The results of this research show that the use of ICT in Arabic language education is very adequate for the current situation and conditions. Apart from being proficient in using Arabic, teaching staff are also able to further improve their skills in using ICT. As an Arabic language educator, of course you also have to be clever in using ICT as a supporting activity in the learning process in high school and above. Based on the research that has been conducted, researchers can conclude that the use of ICT in Arabic language education at the high school level is closely

ABSTRACT

Use Of ICT In Arabic Language Education At High School Level And Its Relationship With Teacher Skills

related to improving teachers' skills in using ICT. Therefore, as educators it is also important to pay attention to good strategies in using ICT, so that the learning process runs well.

Keywords: Arabic Education, ICT, Teacher Skills

Journal Homepage	https://journal.ypidathu.or.id/index.php/jnhl
This is an open access article	https://creativecommons.org/licenses/by-sa/4.0/
How to cite:	Muhdi, A, Yuslam, Ngarifillaili, N, Iqbal, A, & Purnama, Y. (2024). Use Of Ict In Arabic
	Language Education At High School Level And Its Relationship With Teacher
	Skills. Journal Neosantara Hybrid Learning, 2(1) (284-301). https://doi.org/
	<u>10.55849/jnhl.v2i1.746</u>
Published by:	Yayasan Pendidikan Islam Daarut Thufulah

#### INTRODUCTION

Educational technology is an educational approach that is dynamic and critical (Iivari et al., 2020). In the use of technology, education considers that the learning process is something that needs to be handled rationally and appropriately (Huo et al., 2019). ICT can also be understood as a device and infrastructure (hardware, software, or a collection of application devices), systems, methods of collecting, transmitting, processing, interpreting, storing and using meaningful information. (Kim et al., 2020). Therefore, the use of ICT can influence changes in teaching materials, which will enable teaching staff in Arabic language education to be able to provide learning alternatives in the form of non-paper learning materials. (Wang et al., 2020).

Teaching information and communication technology (ICT) has become an important element in responding to current developments (Alipour et al., 2020). In learning Arabic, the use of Information and Communication Technology is deemed necessary with the aim of expanding the scope and effectiveness of teaching. Arabic language education at the high school level can give students a lot of insight into the vocabulary they will learn (Taira et al., 2020). Therefore, the function of learning Arabic can be interpreted as the process of making Arabic language usable by students, whether in linguistic, educational, social, religious or governmental environments. (Manne et al., 2020).

In general, the use of ICT in the learning process is closely related to the use of technology such as computers. Therefore, the skills of an Arabic teacher are very important in playing their role as an educator who will utilize ICT in learning (Santos et al., 2021). An Arabic language teacher must fulfill at least three core competencies, namely Arabic language proficiency, knowledge of Arabic language and culture, and the ability to teach Arabic. (Núñez-Canal et al., 2022). Because of these three requirements, teachers must be able to use various technical media to teach Arabic. This is necessary because the ability to create and use media is one of the didactic skills in language (Wilson et al., 2019).

In Arabic language education, a teacher will teach and introduce students to the order and phrases of Arabic (Qin et al., 2022). That way, more and more students will discover new vocabulary in Arabic. Students will be trained slowly in learning, reading and calculating in Arabic, as well as good writing skills in Arabic (Luo et al., 2022). To avoid boredom in students' learning, with the presence of ICT, teachers must also be able to be more creative in learning. This aims to increase students' understanding and become more advanced. Apart from that, it will also involve all students' overall activity in Arabic (Dowd et al., 2020).

The use of ICT will never be without problems, and efforts must be made to overcome the problems that arise when teachers introduce ICT-based Arabic language teaching in high schools. (Abdollahzadeh et al., 2021). Furthermore, if teachers do not pay attention to aspects of learning capacity, of course teachers who do not dare to innovate in implementing their learning models, this will be the first problem for them in implementing ICT-based Arabic language learning in high schools. (Yuan et al., 2020). This situation is further complicated by the absence of detailed guidelines for Arabic teachers regarding the implementation of ICT-based Arabic language teaching (Saad et al., 2020). To anticipate these problems, an Arabic language education teacher must be able to improve his professionalism, so that he is able to be more creative by making good use of existing ICT. (McCluney et al., 2021).

This research shows that learning supported by the use of Information and Communication Technology in Arabic language education can have a very significant impact on students' understanding compared to traditional teaching systems. (Sigala, 2020). Because basically, what is an educational resource in learning with the use of ICT can be used whenever and wherever you are (Zuo et al., 2019). In the use of ICT in Arabic Education, it will also be able to develop vocabulary that will be even more to be found (Alamer, 2021). Arabic language education staff, using ICT, can provide different variations than previous learning. Where teachers can also provide games in learning that are directly related to Arabic language education (Li et al., 2022).

This research was researched using quantitative research methods. The quantitative method used by researchers aims to determine the paradigm of the use of information and communication technology in Arabic language education at the high school level. Apart from that, it is also useful to know the extent to which Information and Communication Technology plays an active role as the main object in Arabic Language Education (Wolff et al., 2019). By using ICT, you can see the teacher's skills and abilities in using ICT. Researchers also took research data from the results of respondents' answers that researchers had carried out. The questions asked by researchers are created in the Google From application, which will then be presented in percentage form and also in average form. Furthermore, in processing the data that has been obtained by researchers find relevant research results.

Based on the explanation from the research above, researchers think that the use of ICT in Arabic language education at the high school level is very effective for use in Arabic language education, because education at this time is required to use ICT to help the learning process. Therefore, in Arabic language education, ICT can also be used to further develop the learning process. This research also aims to look at the advantages and disadvantages of using ICT at the high school level and its relationship with teacher skills. And researchers also have a hope that future researchers, when researching the use of ICT in Arabic language education, will research it again in depth, and develop research to get maximum results.

# **RESEARCH METHODOLOGY**

## **Research design**

In this research, the method used to examine the use of ICT in Arabic language education at the high school level and its relationship with teacher skills is to use a quantitative method. To obtain research data results, researchers created 20 questions to collect data related to this research. The questions asked by the researcher will be answered by the respondents and will be presented in the form of tables and percentages. The data that has been obtained will be reprocessed using the SPSS application, which aims to compare the results of the respondents' responses. From the comparison of the results of the respondents' answers, the researcher can provide a solution to any information that the researcher gets regarding the use of ICT in Arabic language education at the high school level and its relationship with teacher skills.

## **Research procedure**

In this research, there are several stages that researchers have carried out in examining the use of ICT in Arabic language education at the high school level and its relationship with teacher skills. The questionnaire that the researchers distributed was filled out by high school students in Piladang online. In distributing the questionnaire that the researcher carried out, the questions asked by the researcher were related to the use of ICT in Arabic language education at the high school level and its relationship with teacher skills. In distributing the questionnaire, the researcher used the Google From application to fill out the questionnaire by Piladang High School students. Apart from that, in making questions, the researcher was very careful so that there were no misunderstandings when the respondent answered the questions asked by the researcher.

## **Research subject**

In researching the Use of ICT in Arabic Language Education at Senior High School Level and its Relationship with Teacher Skills, the researcher of course determines the subject for his research. In this research, the subject in this research is aimed at female High School students in Piladang. As for before the distribution of the questionnaire was done by the researcher, the researcher asked for the respondents' readiness first to be able to spend their time in filling out the questionnaire that the researcher will distribute. In the questionnaire, each contains 10 questions about the Use of ICT in Arabic Language Education at Senior High School Level, and then 10 more questions about the Use of ICT in relation to Teacher Skills.

## **Research Ethics**

After the researcher carried out several stages as previously explained, in conducting research, the researcher also paid close attention to ethics and manners in research. Researchers believe that ethics needs to be considered whenever and wherever, including in the research being conducted. This aims to gain trust and readiness from the respondents or those who are the objects of this research. Furthermore, in this research, the researcher also explained information related to the research, one of which was information in filling out the questionnaire. This information was explained by the researcher so that the respondents were ready and willing to voluntarily provide responses and answers to the questions asked by the researcher.

## **Data Collection and Analysis**

Data collected by researchers in examining the Use of ICT in Arabic Language Education at Senior High School Level and its Relationship with Teacher Skills will be processed into the SPSS application. Then the data that has been obtained will be presented by the researcher in the form of tables and diagrams. The purpose of presenting it in the form of tables and diagrams is to be able to see a comparison of the results of research that has been done by researchers on the Use of ICT in Arabic Language Education at the Senior High School Level and its Relationship with Teacher Skills. Further, the acquisition of data results is made into a percentage form or into an average form. Then from the results of the data will be tested again using the T-test.

Table 1. Categories of ICT Use in Arabic Language Education at Senior High School Level

No	Earning Category	Level of education	Percentage (%)
1	Strongly agree	Senior High School	>90%
2	Agree	Senior High School	40-80%
3	Disagree	Senior High School	15-35%
4	Don't agree	Senior High School	5-10%



Future 1. Data Collection and Analysis Flow

## RESULT

## Use of ICT in Arabic Language Education at Senior High School Level

Arabic, also known as al-lughah al-'Arabīyyah, or simply 'Arabī,' is one of the Middle Semitic languages included in the Semitic language family. At the present time, Arabic is also one of the languages that many people like to learn. Because the Arabic language has its own uniqueness from other languages, Likewise in education, it has also presented the learning of Arabic up to the upper secondary school level. So learning Arabic is not only studied among boarding schools, with the advancement of ICT at the moment, students who are at the upper secondary school level can also learn it. The advancement of ICT can provide an opportunity to encourage students to become more advanced in speaking Arabic.

Table 2. Summary of Percentag	e Results from	Respondents'	Answers
-------------------------------	----------------	--------------	---------

No.	Question	Strongly agree	Agree	Disagree	Don't agree
1	The use of ICT can improve students' ability to speak Arabic	25%	40%	25%	5%

2	The use of ICT can have a big influence on the Arabic language learning process	55%	42%	3%	0%
3	Using ICT requires special skills	62%	28%	10%	0%
4	Arabic language learning is increasingly developing with the emergence of ICT developments today	40 %	33%	20%	7%
5	The use of ICT needs to be understood and studied by teachers and students	65%	32%	3%	0%
6	The use of ICT is not separated from the obstacles and challenges in its use	77%	23%	0%	0%
7	I agree that the use of ICT is necessary in learning Arabic at this time	23%	67%	5%	5%
8	I agree that learning Arabic is very appropriate by utilizing ICT	22%	66%	10%	2%
9	When learning Arabic in high school, students tend to be enthusiastic about learning	30%	50%	10%	10%
10	In the use of ICT, it is necessary to be careful in its use	55%	45%	0%	0%

Table 2 above is a distribution of questionnaires conducted by researchers regarding the use of ICT in Arabic language education at the high school level and its relationship with teacher skills. In this table, there are 10 questions along with their percentage results. Apart from that, in the table there are also four options provided by the researcher, namely strongly agree, agree, disagree and disagree. The questionnaire was distributed by researchers using the Google From application to students High School. The questions asked by the researcher contain the topic of this research, then the researcher can compare the research results and draw conclusions about this research.

The first question asked by researchers regarding the use of ICT can improve students' ability to speak Arabic, obtained as much as 40% in the agree option. Furthermore, in the second question, namely the use of ICT can have a big influence in the Arabic language learning process, managed to get 55% of the strongly agree option. In the third question, namely the use of ICT requires special skills, there was also a strongly agree option with 62%. The next question, namely the fourth, regarding Arabic

language learning is increasingly developing with the emergence of ICT developments at this time, getting as many as 40% of the options strongly agree. The fifth question regarding the use of ICT needs to be understood and studied by both teachers and students, getting the highest score in the strongly agree option at 65%.

The next question, namely the sixth question, regarding the use of ICT which is not free from obstacles and challenges in its use, received 77% of strongly agree options. The seventh question was about, I agree that the use of ICT really needs to be used in learning Arabic at this time, getting the most votes in the agree option as much as 67%. The next question, eighth, was, I agree that learning Arabic is very appropriate by utilizing ICT, getting as many as 50% of the choices of the agree option. Next is the ninth question, namely: In learning Arabic in high school, students tend to be enthusiastic about learning, getting as many as 50% of the choices of the agree option. The last question regarding the use of ICT, the need to be careful in its use, obtained as many as 55% of the option choices strongly agreed.

Based on the statement in the table above, it can be seen that the highest percentage results are found in the strongly agree option. From these results it can be seen that the use of ICT in Arabic Language Education at the Senior High School Level can indeed have an influence on Arabic language learning. Apart from that, the use of technology can also influence students' enthusiasm for learning Arabic with enthusiasm. The questions asked by the researchers were answered by the respondents, namely 15 high school students. Therefore, the use of ICT in Arabic language education is very good to use. However, when using ICT you also need to be careful so you don't use it incorrectly.

No.	Question	Strongly agree	Agree	Disagree	Don't agree
1	The use of ICT in Arabic language education prevents students from getting bored while learning	18%	30%	45%	7%
2	Arabic Language Education Personnel must also be able to master ICT in the Arabic language learning process	65%	35%	0%	0%
3	With the use of ICT, teachers' skills in Arabic language education can be improved	25%	58%	14%	3%
4	A teacher needs to supervise students well in learning Arabic using ICT	71%	19%	5%	5%

Table 3. Summary of Percentage Results from Respondents' Answers

5	The use of ICT in Arabic language education can provide facilities for teachers in teaching Arabic	15%	15%	56%	14%
6	The use of ICT can guarantee the success of students' education in Arabic	20%	60%	10%	10%
7	The use of ICT in Arabic language education can increase teacher creativity in learning	30%	60%	6%	4%
8	The presence of ICT can also influence the professionalism of Arabic language education teachers	23%	48%	17%	12%
9	The use of ICT in Arabic language education is very appropriate to use at this time	32%	58%	10%	0%
10	The use of ICT is actually very easy for students and Arabic language education teachers to understand	25%	25%	40%	10%

Based on the statement in the table above, it can be seen in the first question section, regarding the use of ICT in Arabic language education, making students not bored in learning, getting the highest category in the agree option at 30%. The second question regarding Arabic Language Education Personnel, who must also be able to master ICT in the Arabic language learning process, received 65% strongly agree. The third question regarding the use of ICT can improve teachers' skills in Arabic language education, obtained 58% in the agree option. For the fourth question, namely: A teacher needs to supervise students well in learning Arabic using ICT, managed to get 71% of strongly agree options. The fifth question, namely, The use of ICT in Arabic language education, can make it easier for teachers to teach Arabic, with 56% of the options disagreeing.

The sixth question, namely, the use of ICT can guarantee the success of students' education in Arabic, obtained a result of 60% agreeing. Likewise, the seventh question also received 60% agree options regarding the use of ICT in Arabic language education, which can increase teacher creativity in learning. Furthermore, the eighth question regarding the presence of ICT can also influence the professionalism of Arabic language education teachers, received 48% of agree options. The ninth question regarding the use of ICT in Arabic language education, is very appropriate to use at this time, with an agree option of 58%. For the last question regarding the use of ICT,

it is actually very easy for students and Arabic language education teachers to understand, the highest results obtained were in the disagree option at 40%.



Diagram 1

Table 3. T-test on the Use of ICT in Arabic Language Education at Senior High School Level

Ρ6

Ρ7

Ρ8

Ρ9

P10

Ρ5

10%

0%

Ρ1

Ρ2

Ρ3

Ρ4

Paired Samples Statistics							
				Std.	Std. Error		
		Mean	Ν	Deviation	Mean		
Pair 1	PRE TEST	39.3500	20	19.85016	4.43863		
	POST	41.7000	20	16.14115	3.60927		
	TEST						

## **Paired Samples Correlations**

			Correlatio	
		Ν	n	Sig.
Pair 1	PRE TEST & POST	20	485	.030
	TEST			

## **Paired Samples Test**

								Sig. (2-
Paired Differences							df	tailed)
					95% Con	fidence		
			Std.	Std.	Interval	of the		
			Deviati	Error	Differe	ence		
		Mean	on	Mean	Lower	Upper		
Pair 1	PRE	-	31.070	6.94765	-16.89160	12.1916		.739
	TEST -	2.3500	84			0		
	POST	0						
	TEST							

# Table 4. T-test regarding the use of ICT and its relationship with teacher skillsPaired Samples Statistics

				Std.	Std. Error
		Mean	Ν	Deviation	Mean
Pair 1	PRE TEST	20.9500	20	18.99993	4.24851
	POST	13.8500	20	15.20137	3.39913
	TEST				

#### **Paired Samples Correlations**



## **Paired Samples Test**

Paired Differences							t	df	Sig. (2- tailed)
					95%				
					Confidence				
					Interval of the				
			Std.	Std.	Difference				
			Deviatio	Error	Lowe				
		Mean	n	Mean	r	Upper			
Pair 1	PRE	7.100	28.4991	6.37260	-	20.4380	1.11	19	.279
	TEST -	00	2		6.238	0	4		
	POST				00				
	TEST								

#### DISCUSSION

## a. Use of ICT in Arabic Language Education at Senior High School Level

Use of Information Technology Technology in Arabic language education is a major change to Arabic language education methods. This shows that the use of Information Technology is a necessity to improve the quality and coverage of Arabic language education (Chen et al., 2020). The use of ICT in Arabic education makes the learning process better and easier to understand in the learning process. With ICT, it is possible for Arabic teachers to prepare classes earlier in a dynamic and interactive way (Liu et al., 2022). And Arabic language educational material is also presented in various forms using ICT.

There are several relevant factors regarding the use of Information and Communication Technology in Arabic language education at the high school level. The first factor is that the presence of Information and Communication Technology (ICT) is very important, such as schools must provide computers and other software to gain further understanding of Arabic. (Mehra et al., 2019). This aims to increase students' deeper

understanding of learning. The next factor is that you must have adequate facilities and infrastructure to support the learning process. This also aims to ensure that during study time students feel comfortable and more motivated in learning Arabic.

The more important factor that must be considered is the role of the teacher himself. Where a teacher in Arabic language education must have skills and understanding that are appropriate to the use of Information and Communication Technology in the classroom (Wei & Huang, 2019). Teachers must have extensive skills to integrate ICT into Arabic. Because as a teacher the essence is to guide and direct students in learning. It is hoped that the presence of Information and Communication Technology will enable teachers to provide positive things in Arabic language education, as well as being able to influence students' higher interest in learning Arabic. (Lent & Brown, 2019). By utilizing ICT, teachers can also provide full support to students to collaborate more in using ICT in Arabic language education.

## b. Barriers and Challenges in Using ICT in Arabic Language Education at the High School Level and Their Relationship with Teacher Skills

The use of ICT in Arabic Language Education at the Senior High School Level and its Relationship with Teacher Skills, will not be free from obstacles and challenges in its implementation (Huang et al., 2019). As for the obstacles and challenges that are often experienced by students and teachers in Arabic language education, namely, technological accessibility may be the main problem. This can occur due to interference from an unstable internet connection, making it possible for students and students not to be able to participate in accessing learning materials online. (Sharma & Klein, 2020). There are also other obstacles such as a lack of adequate infrastructure for learning. As in other high schools, there is a lack of adequate facilities for the number of students, this can lead to a lack of student motivation to study further in Arabic. (Jennings et al., 2021).

The next obstacle and challenge that is often experienced by teachers and students lies in the skills in using Information and Communication Technology. This could be because a person's level of understanding is different, or it could be that teachers and students are not yet accustomed to using technology in learning (Baden et al., 2021). Another thing that is becoming an obstacle in Arabic language education at the moment is that there is a shortage of teaching staff who will teach Arabic itself. Therefore, special attention is needed so that the use of ICT is free from obstacles and challenges in Arabic language education, so that students and teachers can carry out learning actively without being hampered. (Niu et al., 2021).

The results of the SPSS test which have been carried out by researchers using the T-test as in the statement in table 3 above, are the results of research which has been carried out by researchers on high school students in Piladang, which relate to the use of ICT in Arabic language education at the level Senior High School. From the results of this research, the researcher can conclude that the results of the T-test in the first output

section explain the mean as an average. In the Pre Test, the average number produced was 39.3500, while in the Post Test the average number produced was 41.7000. From the results of these two averages, it can be concluded that there are differences in the results of data acquisition from the results of respondents' answers. In the second output section, it explains sample corrections which are the relationship between the two data between the Pre Test and Post Test variables, because the correlation value is greater than 0.5, the relationship between the Pre Test and Post Test and Post Test variables has no relationship. The third output is a Paired Sample test. The results of the Paired Sample test, obtained a Std Deviation of 31.07084 results and Std Error Means obtained a result of 6.94765.

In the fourth table section, the first output section also explains the mean in the Pre Test which obtained 20,9500 results, while in the Post Test section it obtained 13,8500 results, with the same number of respondents as 15 respondents. Furthermore, in the Paired Samples Correlations section, the Correlations were -381 and the Sign was 097. Meanwhile, in the Paired Samples Test section, the Std. Diation is 28,49912, and Std. Mean error is 6.37260. From the results of this research, researchers were able to find significant differences in the results of their research. So it can be concluded that the use of ICT in Arabic Language Education at the Upper Middle School Level and its Relationship with Teacher Skills, can have an influence on Arabic Language Education and teacher skills can also increase.

Based on the results of research on the use of ICT in Arabic language education at the high school level and its relationship with teacher skills, it can have a big influence on Arabic language education (Pogue et al., 2020). By using ICT, teachers can also improve their skills in the learning process. Apart from that, it can also create good cooperation and communication between teachers and students (Zafar et al., 2021). The presence of ICT in Arabic language education is able to provide a new color in the learning process, and learning Arabic is not only done with one method, but can be done with various variations of Arabic language learning methods. (Tellez et al., 2019). Based on this statement, the goals of Arabic language education using ICT at the high school level can be achieved well and more conducively.

## CONCLUSION

Basically, Arabic language education at the high school level has the main goal so that students can master four language skills, namely reading, writing, speaking and listening. To achieve learning goals in Arabic language education, Arabic language teachers must be able to develop Arabic language learning models, using learning media that are in accordance with advances in Information and Communication Technology. As educators, you must be able to use a learning approach that can be combined with digital media to learn Arabic in today's digital era. For example, accessing Arabic digital books as an Arabic language learning resource. The use of Information and Communication Technology in learning Arabic has great potential to increase students' motivation to learn. Learning apps, digital resources, and other interactive tools can make lessons more engaging, interactive, and relevant. The use of ICT at the high school level can provide superior learning materials compared to the direct method of delivering the material. Thus, Arabic language education teachers need skills in the field of ICT use. Apart from providing many benefits, the use of ICT at the upper secondary school level can also make it easier for teachers themselves to learn, so they don't waste a lot of time studying.

## REFERENCES

- Abdollahzadeh, B., Gharehchopogh, F. S., & Mirjalili, S. (2021). African vultures optimization algorithm: A new nature-inspired metaheuristic algorithm for global optimization problems. *Computers & Industrial Engineering*, 158, 107408. <u>https://doi.org/10.1016/j.cie.2021.107408</u>
- Alamer, A. (2021). Grit and language learning: Construct validation of L2-Grit scale and its relation to later vocabulary knowledge. *Educational Psychology*, 41(5), 544– 562. <u>https://doi.org/10.1080/01443410.2020.1867076</u>
- Alipour, M., Torabi, M. A., Sareban, M., Lashini, H., Sadeghi, E., Fazaeli, A., Habibi, M., & Hashemi, R. (2020). Finite element and experimental method for analyzing the effects of martensite morphologies on the formability of DP steels. *Mechanics Based Design of Structures and Machines*, 48(5), 525–541. https://doi.org/10.1080/15397734.2019.1633343
- Baden, L. R., El Sahly, H. M., Essink, B., Kotloff, K., Frey, S., Novak, R., Diemert, D., Spector, S. A., Rouphael, N., Creech, C. B., McGettigan, J., Khetan, S., Segall, N., Solis, J., Brosz, A., Fierro, C., Schwartz, H., Neuzil, K., Corey, L., ... Zaks, T. (2021). Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. *New England Journal of Medicine*, 384(5), 403–416. https://doi.org/10.1056/NEJMoa2035389
- Chen, T., Wu, D., Chen, H., Yan, W., Yang, D., Chen, G., Ma, K., Xu, D., Yu, H., Wang, H., Wang, T., Guo, W., Chen, J., Ding, C., Zhang, X., Huang, J., Han, M., Li, S., Luo, X., ... Ning, Q. (2020). Clinical characteristics of 113 deceased patients with coronavirus disease 2019: Retrospective study. *BMJ*, m1091. https://doi.org/10.1136/bmj.m1091
- Dowd, J. B., Andriano, L., Brazel, D. M., Rotondi, V., Block, P., Ding, X., Liu, Y., & Mills, M. C. (2020). Demographic science aids in understanding the spread and fatality rates of COVID-19. *Proceedings of the National Academy of Sciences*, *117*(18), 9696–9698. <u>https://doi.org/10.1073/pnas.2004911117</u>
- Huang, Y., Chen, L., & Van Gelder, P. H. A. J. M. (2019). Generalized velocity obstacle algorithm for preventing ship collisions at sea. *Ocean Engineering*, 173, 142–156. <u>https://doi.org/10.1016/j.oceaneng.2018.12.053</u>
- Huo, H., Chen, Y., Luo, J., Yang, X., Guo, X., & Sun, X. (2019). Rational Design of Hierarchical "Ceramic-in-Polymer" and "Polymer-in-Ceramic" Electrolytes for

Dendrite-Free Solid-State Batteries. *Advanced Energy Materials*, 9(17), 1804004. https://doi.org/10.1002/aenm.201804004

- Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care? *International Journal of Information Management*, 55, 102183. https://doi.org/10.1016/j.jijinfomgt.2020.102183
- Jennings, W., Stoker, G., Bunting, H., Valgarðsson, V. O., Gaskell, J., Devine, D., McKay, L., & Mills, M. C. (2021). Lack of Trust, Conspiracy Beliefs, and Social Media Use Predict COVID-19 Vaccine Hesitancy. Vaccines, 9(6), 593. https://doi.org/10.3390/vaccines9060593
- Kim, H., Park, J., Bennis, M., & Kim, S.-L. (2020). Blockchained On-Device Federated Learning. *IEEE Communications Letters*, 24(6), 1279–1283. <u>https://doi.org/10.1109/LCOMM.2019.2921755</u>
- Lent, R. W., & Brown, S. D. (2019). Social cognitive career theory at 25: Empirical status of the interest, choice, and performance models. *Journal of Vocational Behavior*, *115*, 103316. <u>https://doi.org/10.1016/j.jvb.2019.06.004</u>
- Li, Y., Wang, B., Yang, Z., Li, J., & Chen, C. (2022). Hierarchical stochastic scheduling of multi-community integrated energy systems in uncertain environments via Stackelberg game. *Applied Energy*, 308, 118392. <u>https://doi.org/10.1016/j.apenergy.2021.118392</u>
- Liu, M., Li, N., Cao, S., Wang, X., Lu, X., Kong, L., Xu, Y., & Bu, X. (2022). A "Pre-Constrained Metal Twins" Strategy to Prepare Efficient Dual-Metal-Atom Catalysts for Cooperative Oxygen Electrocatalysis. *Advanced Materials*, 34(7), 2107421. <u>https://doi.org/10.1002/adma.202107421</u>
- Luo, R., Sun, L., Xia, Y., Qin, T., Zhang, S., Poon, H., & Liu, T.-Y. (2022). BioGPT: Generative pre-trained transformer for biomedical text generation and mining. *Briefings in Bioinformatics*, 23(6), bbac409. <u>https://doi.org/10.1093/bib/bbac409</u>
- Manne, B. K., Denorme, F., Middleton, E. A., Portier, I., Rowley, J. W., Stubben, C., Petrey, A. C., Tolley, N. D., Guo, L., Cody, M., Weyrich, A. S., Yost, C. C., Rondina, M. T., & Campbell, R. A. (2020). Platelet gene expression and function in patients with COVID-19. *Blood*, *136*(11), 1317–1329. <u>https://doi.org/10.1182/blood.2020007214</u>
- McCluney, C. L., Durkee, M. I., Smith, R. E., Robotham, K. J., & Lee, S. S.-L. (2021). To be, or not to be...Black: The effects of racial codeswitching on perceived professionalism in the workplace. *Journal of Experimental Social Psychology*, 97, 104199. <u>https://doi.org/10.1016/j.jesp.2021.104199</u>
- Mehra, M. R., Uriel, N., Naka, Y., Cleveland, J. C., Yuzefpolskaya, M., Salerno, C. T., Walsh, M. N., Milano, C. A., Patel, C. B., Hutchins, S. W., Ransom, J., Ewald, G. A., Itoh, A., Raval, N. Y., Silvestry, S. C., Cogswell, R., John, R., Bhimaraj, A., Bruckner, B. A., ... Goldstein, D. J. (2019). A Fully Magnetically Levitated Left

Ventricular Assist Device—Final Report. *New England Journal of Medicine*, 380(17), 1618–1627. <u>https://doi.org/10.1056/NEJMoa1900486</u>

- Niu, Z., Zhong, G., & Yu, H. (2021). A review on the attention mechanism of deep learning. *Neurocomputing*, 452, 48–62. https://doi.org/10.1016/j.neucom.2021.03.091
- Núñez-Canal, M., De Obesso, M. D. L. M., & Pérez-Rivero, C. A. (2022). New challenges in higher education: A study of the digital competence of educators in Covid times. *Technological Forecasting and Social Change*, 174, 121270. <u>https://doi.org/10.1016/j.techfore.2021.121270</u>
- Pogue, K., Jensen, J. L., Stancil, C. K., Ferguson, D. G., Hughes, S. J., Mello, E. J., Burgess, R., Berges, B. K., Quaye, A., & Poole, B. D. (2020). Influences on Attitudes Regarding Potential COVID-19 Vaccination in the United States. *Vaccines*, 8(4), 582. <u>https://doi.org/10.3390/vaccines8040582</u>
- Qin, X., Zhang, Z., Yang, T., Yuan, L., Guo, Y., & Yang, X. (2022). Auto-fluorescence of cellulose paper with spatial solid phrase dispersion-induced fluorescence enhancement behavior for three heavy metal ions detection. *Food Chemistry*, 389, 133093. https://doi.org/10.1016/j.foodchem.2022.133093
- Saad, W., Bennis, M., & Chen, M. (2020). A Vision of 6G Wireless Systems: Applications, Trends, Technologies, and Open Research Problems. *IEEE Network*, 34(3), 134–142. <u>https://doi.org/10.1109/MNET.001.1900287</u>
- Santos, G., Sá, J. C., Félix, M. J., Barreto, L., Carvalho, F., Doiro, M., Zgodavová, K., & Stefanović, M. (2021). New Needed Quality Management Skills for Quality Managers 4.0. Sustainability, 13(11), 6149. <u>https://doi.org/10.3390/su13116149</u>
- Sharma, V. M., & Klein, A. (2020). Consumer perceived value, involvement, trust, susceptibility to interpersonal influence, and intention to participate in online group buying. *Journal of Retailing and Consumer Services*, 52, 101946. https://doi.org/10.1016/j.jretconser.2019.101946
- Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of Business Research*, 117, 312–321. <u>https://doi.org/10.1016/j.jbusres.2020.06.015</u>
- Taira, K., Hemati, M. S., Brunton, S. L., Sun, Y., Duraisamy, K., Bagheri, S., Dawson, S. T. M., & Yeh, C.-A. (2020). Modal Analysis of Fluid Flows: Applications and Outlook. *AIAA Journal*, 58(3), 998–1022. <u>https://doi.org/10.2514/1.J058462</u>
- Tellez, D., Litjens, G., Bándi, P., Bulten, W., Bokhorst, J.-M., Ciompi, F., & Van Der Laak, J. (2019). Quantifying the effects of data augmentation and stain color normalization in convolutional neural networks for computational pathology. *Medical Image Analysis*, 58, 101544. https://doi.org/10.1016/j.media.2019.101544
- Wang, Y., Dong, C., Hu, Y., Li, C., Ren, Q., Zhang, X., Shi, H., & Zhou, M. (2020). Temporal Changes of CT Findings in 90 Patients with COVID-19 Pneumonia: A Longitudinal Study. *Radiology*, 296(2), E55–E64. https://doi.org/10.1148/radiol.2020200843

- Wei, Z., & Huang, Q. (2019). Edible Pickering emulsions stabilized by ovotransferringum arabic particles. *Food Hydrocolloids*, 89, 590–601. <u>https://doi.org/10.1016/j.foodhyd.2018.11.037</u>
- Wilson, J. A., Waghel, R. C., & Dinkins, M. M. (2019). Flipped classroom versus a didactic method with active learning in a modified team-based learning self-care pharmacotherapy course. *Currents in Pharmacy Teaching and Learning*, 11(12), 1287–1295. <u>https://doi.org/10.1016/j.cptl.2019.09.017</u>
- Wolff, C. M., Caprioglio, P., Stolterfoht, M., & Neher, D. (2019). Nonradiative Recombination in Perovskite Solar Cells: The Role of Interfaces. Advanced Materials, 31(52), 1902762. <u>https://doi.org/10.1002/adma.201902762</u>
- Yuan, J., Ma, J., Sun, Y., Zhou, T., Zhao, Y., & Yu, F. (2020). Microbial degradation and other environmental aspects of microplastics/plastics. *Science of The Total Environment*, 715, 136968. <u>https://doi.org/10.1016/j.scitotenv.2020.136968</u>
- Zafar, M. W., Sinha, A., Ahmed, Z., Qin, Q., & Zaidi, S. A. H. (2021). Effects of biomass energy consumption on environmental quality: The role of education and technology in Asia-Pacific Economic Cooperation countries. *Renewable and Sustainable Energy Reviews*, 142, 110868. https://doi.org/10.1016/j.rser.2021.110868
- Zuo, E., Sun, Y., Wei, W., Yuan, T., Ying, W., Sun, H., Yuan, L., Steinmetz, L. M., Li, Y., & Yang, H. (2019). Cytosine base editor generates substantial off-target single-nucleotide variants in mouse embryos. *Science*, 364(6437), 289–292. <u>https://doi.org/10.1126/science.aav9973</u>

**Copyright Holder :** © Ali Muhdi et.al. (2024).

**First Publication Right :** © Journal Neosantara Hybrid Learning

This article is under:

