

# The Effect of Application Design and Ease of Use on Student Interest in Using the TajwidQ Application

Shobah Shofariyani Iryanti<sup>1,a)</sup> Purwidiyanto<sup>2,b)</sup> Muhammad Arifin Rahmanto<sup>3,c)</sup>  
Hilma Soleha<sup>4,d)</sup> Anul Fitri<sup>5,e)</sup>

*University of Muhammadiyah Prof. DR. HAMKA*

<sup>a)</sup> Corresponding author: [shobah\\_si@uhamka.ac.id](mailto:shobah_si@uhamka.ac.id)

<sup>b)</sup> [purwidiyanto@uamka.ac.id](mailto:purwidiyanto@uamka.ac.id), <sup>c)</sup> [m.arahmanto@uhamka.ac.id](mailto:m.arahmanto@uhamka.ac.id), <sup>d)</sup> [solehahilma06@gmail.com](mailto:solehahilma06@gmail.com), <sup>e)</sup> [anulfitri@gmail.com](mailto:anulfitri@gmail.com)

**Abstract.** This study aimed to determine the effect of application design and ease of use on student interest in using the tajwidQ application. This research applied a quantitative method using numerical or statistical calculations. This research was conducted at the University of Muhammadiyah Prof. DR. HAMKA among the 1st semester students in the 2022/2023 academic year. The sample technique was saturated sample technique. Sixty students were taken as participants as research subjects. The instrument was a questionnaire contained 45 statements using a Likert scale. The analysis technique was analyzed using SPSS. The results of this study yield that the application design and ease of use of the application have a positive and significant effect on student interest in learning. The more attractive the application design and the ease of use of the application are, the higher interest in learning of the University of Muhammadiyah Prof. DR. HAMKA 1<sup>st</sup> semester students to use the tajwidQ application in learning tajwid.

## INTRODUCTION

Education is the essential foundation in the intellectual, emotional [1], social, and spiritual development of individuals [2]. In the 21<sup>st</sup> century, education has undergone a significant transformation in the form of the necessity of utilizing technology in learning. [3]. Mobile learning is one form of learning evolution in terms of accessibility. This phenomenon has changed the way we work in accessing, comprehending and presenting learning materials.

The advances in mobile technology have influenced learning at different levels of education. The connectivity of mobile devices integrated with learning materials helps to promote meaningful learning encounters in various fields of study. [4]. Mobile technology in learning has benefits for submitting homework, reflecting on hands-on learning experiences, and sharing ideas. [5]. Mobile technology can be used to enhance and understand learning [6]. The concept of mobile learning provokes learning become flexible, so that students can have the opportunity to learn more easily and as needed. Mobile technology offers opportunities to facilitate student-centered learning. [7]. In a study, it was mentioned that the use of mobile technology contributed to higher cognitive, affective and behavioral learning outcomes. [8]. The implementation of learning with *e-learning* media, made students more motivated, more enthusiastic, easier for them to understand the material, and attracted interest in participating in learning [8]. The results of [9], and [10] also declare to have impacts on improving students' learning achievement [11], [12].

In the context of religious learning, mobile learning participates in facilitating the accessibility of religious materials that have been difficult to achieve. This is a place for someone who wants to understand religious material individually, including in understanding *tajweed* materials. In a previous study, it was found that there were still students who did not comprehend *tajweed* material that well. [13]. This will have an impact on the ability to read the Qur'an as mastery of *tajweed* will make it easier for someone to read the Qur'an properly. [14]. In Islam, reading the Qur'an is a way to acknowledge and understand the Divine message. On the contrary, mistakes in reading the Qur'an will be such misinterpretation or change true meaning of the verse(s). Therefore, the science of *tajweed* is important for Muslims to learn.

In the digital era, there have been various developments in *tajweed* learning media with technology, such as audio-visual-digital based *tajweed* books, websites [15], *tajweed* application [16], [17] as well as android-based *tajweed* educational games [18]. This development is an answer to today's education world challenges. The learning device is presented with features and displays that attract users' attention. This provides a more enjoyable feelings and moments of learning *tajweed*. In digital learning, there are three main components that must be considered. These components are the readiness of learners and instructors, learning management and support systems. [5]. Therefore, the application design and ease of use of the application are crucial to note. This is due to the perceived usefulness and ease of use, enjoyment, suitability of technology that will affect the use of mobile learning for continuing education [19], [20]. This means that the features, appearance, material content, and all components in the learning application will have an impact on the user's desire to learn using the application media. Additionally, learning interest is a main factor in learning success [21], as high motivation and interest can improve the quality of student learning. If a person has interest and motivation to learn a material, then the person tends to have better results in learning [22]. [22]. Therefore, it is suggested to understand the quality of application design and the level of ease of use which can affect student interest in learning. A growing interest in learning will motivate students to be willing to learn the material in the learning application [10].

The application design also includes aesthetic aspects, such as the selection of graphic styles, colors and other visual design elements. Good aesthetics can increase the visual appeal of the application [23]. Therefore, digital platforms in the learning process must pay attention to application design and ease of use. In this case, many learning applications are specifically designed with divergent designs and different ease of use levels. The visual appearance of an application is also influential in managing comfort, communicating and delivering concepts, and attracting the attention of its users since many digital platform users are reluctant to access an application which is considered unattractive, especially in design issues and ease of use [24].

One of the digital platforms that combines technology with *tajweed* learning is "TajwidQ". It is an application that was created and designed to make it easier for users to learn *tajweed*. Basically, *tajweed* science is the basic foundation in reading the Qur'an properly by actualizing the reading of *makharijul* letters, the characteristics and procedures for reading the Qur'an appropriately. This is important to learn and be understood well so that students can read the Qur'an properly and correctly. However, learning the Qur'an and *tajweed* are considered quite difficult by some people and it also takes a long time. [25]. Therefore, the development of effective learning media for teaching *tajweed* is very relevant to use. The students can easily and widely access *tajweed* material anytime and anywhere. It can assist students learn independently according to their learning tempo [16].

Mobile learning has become a necessary instructional technology component in higher education. This research was explored to find out what influences students' interest in learning using the *tajwidQ* application. Thus, the formulation of the problem in this study, as follow:

- a. Is there an effect of application design on student interest in using the *tajwidQ* application?
- b. Is there an effect of ease of use on student interest in using the *tajwidQ* application?

## METHODS

This research applied a quantitative method. This method is a research method that uses numerical or statistical calculations. This research was conducted at the University of Muhammadiyah Prof. DR. HAMKA for the 1<sup>st</sup> semester students in the 2022/2023 academic year. In the current research, researchers took the entire population of students who would be the target in the study. The sample technique was the saturated sample technique, which was a sampling that requires all members of the population and they became the subject of the study. The research sample was taken, namely 60 students. The type of instrument was a questionnaire contained 45 statements using a Likert scale. The researchers tested the instrument first before the research was conducted, to get its validity and reliability tests. The analysis technique was the data analyzed using SPSS program with multiple linear regression analysis. It represented the number of independent variables which had two variables, then analyzed with the normality test and multicollinearity test. Furthermore, after the analysis tests were carried out, they were analyzed with hypothesis testing. The hypothesis tests were using the t-test, f-test, and the coefficient of determination test, then drew conclusions whether there was an effect of the research conducted.

## RESULTS AND DISCUSSION

Along with the development of science and technology, a *tajweed* application was created specifically for learning *tajweed* easily and flexibly. It can be accessed easily anywhere and anytime [26]. TajwidQ is an application that contains teaching *tajweed*, and can be practiced directly because there are features that can record the reading of the Qur'an users. The tajwidQ application has application design and features that are designed to be easily practiced by its users. This study examines the effect of application design and ease of use on student interest in using the tajwidQ application. It was examined to find out whether there is an effect of application design and ease of use on student interest in using the tajwidQ application. This research is expected to provide information on technological advances, namely the use using tajwidQ application on students' interest in learning *tajweed*.

This section describes the analysis and discussion as well as statistical data processing. Based on the results of the research that has been conducted by researchers, the following research results were yielded:

In this study, the authors used a multiple linear regression analysis with the model:

### 1. Vx1 (Application Design)

#### a. Validity Test

**TABLE 1. Application Design Validity Test Results**

Variables	Item	Rhitung (Pearson Correlation)	Rtabel	Description
X1 (Application Design)	X11	0.817	0.361	Valid
	X12	0.931	0.361	Valid
	X13	0.837	0.361	Valid
	X14	0.763	0.361	Valid
	X15	0.716	0.361	Valid
	X16	0.829	0.361	Valid
	X17	0.817	0.361	Valid
	X18	0.727	0.361	Valid
	X19	0.874	0.361	Valid
	X10	0.680	0.361	Valid
	X111	0.896	0.361	Valid
	X112	0.910	0.361	Valid
	X113	0.842	0.361	Valid
	X114	0.793	0.361	Valid
	X115	0.856	0.361	Valid
	X116	0.787	0.361	Valid

Based on the table above, it is known that 16 items from the application design questionnaire have been tested for validity. All of these items were examined to be valid where each item had a  $r_{\text{count}}$  greater than the  $r_{\text{table}}$ .

#### b. Reliable

**TABLE 2. Reliability Test Results**

Cronbach's Alpha	N of Items
.965	16

Based on the table above, it was confirmed that the statement items from the application design questionnaire were declared reliable. It is said to be reliable if the Cronbach Alpha (a) value is greater than 0.7. It can be seen that the *Cronbach Alpha* value is 0.965

### 2. Vx2 (Ease of Use)

#### a. Valid Test

**TABLE 3. Ease of Use Validity Test Results**

Variables	Item	R <sub>count</sub> (Pearson Correlation)	R <sub>table</sub>	Description
X2 (Ease of Use)	X21	0.804	0.361	Valid
	X22	0.832	0.361	Valid
	X23	0.870	0.361	Valid
	X24	0.804	0.361	Valid
	X25	0.677	0.361	Valid
	X26	0.863	0.361	Valid
	X27	0.842	0.361	Valid
	X28	0.867	0.361	Valid

Variables	Item	R <sub>count</sub> (Pearson Correlation)	R <sub>table</sub>	Description
	X29	0.800	0.361	Valid
	X210	0.876	0.361	Valid
	X211	0.913	0.361	Valid
	X212	0.820	0.361	Valid

Based on the table above, it is known that 16 items from the application design questionnaire have been tested for validity. All of these items were examined to be valid where each item had a  $r_{\text{count}}$  greater than the  $r_{\text{table}}$ .

- b. Reliable

**TABLE 4. Reliability Test Results**

Cronbach's Alpha	N of Items
.955	12

Based on the table above, it was certified that the statement items from the user convenience questionnaire were declared reliable. Where it is said to be reliable if the Cronbach Alpha (a) value is greater than 0.7. It can be verified that the *Cronbach Alpha* value was 0.955.

3. Variable Y (Learning Interest)

- a. Validity Test

**TABLE 5. Learning Interest Validity Test Results**

Variables	Item	R <sub>count</sub> (Pearson Correlation)	R <sub>table</sub>	Description
Y (Learning Interest)	Y1	0.777	0.361	Valid
	Y2	0.835	0.361	Valid
	Y3	0.881	0.361	Valid
	Y4	0.781	0.361	Valid
	Y5	0.805	0.361	Valid
	Y6	0.793	0.361	Valid
	Y7	0.909	0.361	Valid
	Y8	0.806	0.361	Valid
	Y9	0.828	0.361	Valid
	Y10	0.890	0.361	Valid
	Y11	0.889	0.361	Valid
	Y12	0.901	0.361	Valid
	Y13	0.851	0.361	Valid
	Y14	0.851	0.361	Valid
	Y15	0.752	0.361	Valid
	Y16	0.845	0.361	Valid
	Y17	0.804	0.361	Valid

Based on the table above, it is pictured that 17 items from the application design questionnaire have been tested for validity. All of these items were examined to be valid where each item had a  $r_{\text{count}}$  greater than the  $r_{\text{table}}$ .

- b. Reliability Test

**TABLE 6. Reliability Test Results**

Cronbach's Alpha	N of Items
.970	17

Based on the table above, it is affirmed that the statement items from the study interest questionnaire were declared reliable. It is said to be reliable if the Cronbach Alpha (a) value is greater than 0.7. It can be discovered that the *Cronbach Alpha* value was 0.970.

4. Classical Assumption Test

- a. Normality Test

The data is defined to be normally distributed if the residual value is  $> 0.05$ . Then it means the data is normally distributed. The results showed a significant value of  $0.30 > 0.05$  so that it can be stated that the data is normally distributed. Thus, the regression analysis stage for hypothesis testing can be carried out.

The normality test can be drawn from the test results which state that the Kolmogorov-Smirnov value is

1,447 with a significance of 0.30. Thus, it can be concluded that the independent variables such as application design and ease of use and the dependent variable is learning interest, have met the requirements of the normality test. This means that the standardized residual value is declared to spread normally.

**TABLE 7. Normality Test Results**

		Unstandardized Residual
N		60
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	3.98816192
Most Extreme Differences	Absolute	.187
	Positive	.100
	Negative	-.187
Kolmogorov-Sminov Z		1.447
Asymp. Sig. (2-tailed)		.030

a. Test distribution is Normal.

b. Calculated from data.

Based on can be concluded normally the table above, it that the data is distributed, named with a value of 0.30>0.05.

b. Multicollinearity Test

Data that is said to have no multicollinearity is presented to have a tolerance value> 0.10 and a VIF value < 10.

**TABLE 8. Multicollinearity Test Results**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Tolerance VIF
1	(Constant)	1.168	5.377		.217	.829	
	Design	.477	.160	.399	2.986	.004	.224 4.474
	Ease of Use	.748	.197	.508	3.802	.000	.224 4.474

a. Dependent Variable: Learning Interest

Based on the table above, it can be concluded that there is no multicollinearity because each variable has a tolerance value> 0.10 and a VIF value < 10, namely variables X<sub>1</sub> and X<sub>2</sub> tolerance value 224> 0.10 and VIF value 4,474 < 10. To sum up, the independent variables such as application design and ease of use, have met the classical requirements regarding multicollinearity.

5. Multiple Linear Regression Test

This test is conducted to see whether two independent variables and one dependent variable have a linear relationship or not. The following are the results of multiple linear regression analysis.

**TABLE 9. Multiple Linear Regression Test Results**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	T	
1	(Constant)	1.168	5.377		.217	.829
	Design	.477	.160	.399	2.986	.004
	Ease of Use	.748	.197	.508	3.802	.000

Based on the multiple linear test results above, there is a regression equation as follows:

$$Y = a + b X_{11} + b X_{22} + e$$

$$Y = 1.168 + 0.477 X_1 + 0.748 X_2 + e$$

The regression equations can be demonstrated:

- The constant value a = 1.168 means if the design and ease of use variables are not included in the study, the students' interest in learning still increases by 1.168%.
- The regression coefficient of the design variable is 0.477. It means that every time the value of the design variable increases by 1, their interest in learning will boost by 47.7%, assuming that the other independent

variables are constant.

- c. The regression coefficient of the ease of use variable is 0.748, which means that every time the value of the design variable increases by 1, the interest in learning will increase by 74.8%, assuming that the other independent variables are constant.
- d. The significant value of the design variable coefficient table and user convenience is below or smaller than 0.05, so it can be concluded that application design and ease of use have an effect on learning interest.

## 6. Hypothesis Test

### a. T-Test

The t-test is conducted to determine whether the hypothesis occurs partially (individually) or not. The basis for decision making is to use the t-table value obtained from  $df = n-k-1$  ( $60-2-1 = 57$ ) with a significance value of 0.05, so that the t table is 2.002. The criteria for saying that variables  $X_1$  and  $X_2$  have an influence on  $Y$  is if  $t_{count} > t_{table}$ . The t-test results are as follows:

**TABLE 10. T-Test Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	T
1	(Constant)	1.168	5.377		.217
	Design	.477	.160	.399	2.986
	Ease of Use	.748	.197	.508	3.802

a. Dependent Variable: Learning Interest

Based on the table above, it can be derived that:

1. The design of the test results shows that the  $t_{value}$  is  $2.986 > 2.002 t_{table}$ , and the sig. value of 0.04  $< 0.05$ , so it is specified that there is a significant influence on variable  $Y$ , namely learning interest.
2. The ease of use of the test results shows that the  $t_{value}$  is  $3.802 > t_{table}$ , and the sig. value of 0.000  $< 0.05$ , so it is declared that there is a significant influence on variable  $y$ , namely learning interest.

### b. F-Test

The test is used to determine whether the independent variables simultaneously explain the dependent variable. The f-test is yielded by comparing  $F_{count}$  and  $F_{table}$ . The basis for taking the f value of  $df = n-k$  ( $60-3 = 57$ ) with a significant value of 0.05.

**TABLE 11. Test result of F value ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3195.913	2	1597.956	97.060	.000 <sup>a</sup>
	Residuals	938.421	57	16.464		
	Total	4134.333	59			

a. Predictors: (Constant), Ease of Use, Design

b. Dependent Variable: Learning Interest

From the table above, it is demonstrated that the value of  $F_{count}$   $97.060 > 3.16 F_{table}$ , and the sig. value of 0.000  $< 0.05$ . This shows that application design and ease of use simultaneously have a significant effect on interest in learning.

### c. Coefficient of Determination (R-squared) Test

R-squared test aims to measure or determine how much the percentage between application design variables and ease of use on interest in learning. The results of the R-squared test are as follows:

**TABLE 12. Test result of Coefficient of Determination Model Summary**

Model	R	R-Squared	Adjusted R-Squared	Std. Error of the Estimate
1	.879 <sup>a</sup>	.773	.765	4.058

a. Predictors: (Constant), Ease of Use, Design

Based on the table above, the resulting value is .773 which is seen from the R-squared value, the amount of influence given is 77.3%.

Based on the results of the hypothesis testing that has been presented previously, it elaborates that the application design and ease of use variables have a positive and significant effect on students' interest in learning to use the

tajwidQ application. It can be stated that the hypothesis in this study is accepted. This shows that the application design in the tajwidQ application has successfully created interest among the 1<sup>st</sup> semester students of University of Muhammadiyah Prof. DR. HAMKA in learning *tajweed*. Therefore, an attractive application design surface can increase students' interest in learning. The same thing was also found in research conducted by Magdalena and Napitupulu [27]. The discovered that *e-learning* dimensions consisting of technological, pedagogical, ethical and interface design have a unidirectional or positive influence on students' learning motivation. This result means that sufficient *e-learning* facilities and infrastructure will have an impact on enhancing students' learning motivation. Thus, it can be concluded that students tend to be more motivated when implementing e-learning. If students are motivated to learn, then they will be more involved in learning so that learning objectives will be more easily achieved. [28]. In the context of digital learning, M-learning also focuses on the effectiveness and its design of mobile learning systems. [29]. M-learning facilitates students to learn *tajweed* independently. Therefore, the desire to use the tajwidQ application becomes a stimulus for students to learn *tajweed*. This application *tajweed*-based learning is a real form of 21<sup>st</sup> century learning.

## CONCLUSION

Based on the analysis, it can be concluded that the application design and ease of use have a positive effect on students' interest in using the tajwidQ application. The majority of students were active users of mobile technology. This can be used as a basis for lecturers to develop creative and enjoyable learning for students. So, the application design and ease of use variables can be practiced as a reference for lecturers when choosing the *tajweed* application as a supporting learning media as students' interest in learning is an essential asset to achieve learning goals.

This study has the benefits by using students who are the highest level in education as research subjects to fill in the gap. While the weakness of this study is the number of populations less than 100 causing the use of saturated samples in this study.

## ACKNOWLEDGMENTS

The researcher would like to thank the various parties who have supported this research, especially The University of Muhammadiyah Prof. DR. HAMKA. The support provided brought this research to the completion deadline. Hopefully, the results obtained from this research will benefit further researchers and the community in general.

## REFERENCES

1. X. Eryong and J. Li, "What is the ultimate education task in China? Exploring 'strengthen moral education for cultivating people' ('Li De Shu Ren')," *Educ. Philos. Theory*, vol. 53, no. 2, pp. 128–139, Jan. 2021, doi: 10.1080/00131857.2020.1754539.
2. E. Khaidir and F. M. Suud, "Islamic Education in Developing Students ' Characters At As-Shofa Islamic High School ," *Int. J. Islam. Educ. Psychol.*, vol. 1, no. 1, pp. 50–63, 2020, [Online]. Available: <https://journal.umy.ac.id/index.php/ijiep/article/download/8518/5356>
3. A. A. Alfalah, "Factors influencing students' adoption and use of mobile learning management systems (m-LMSs): A quantitative study of Saudi Arabia," *Int. J. Inf. Manag. Data Insights*, vol. 3, no. 1, p. 100143, 2023, doi: 10.1016/j.jjime.2022.100143.
4. H. Bai, "Pedagogical Practices of Mobile Learning in K-12 and Higher Education Settings," *TechTrends*, vol. 63, no. 5, pp. 611–620, 2019, doi: 10.1007/s11528-019-00419-w.
5. S. Sophonhiranrak, "Features, barriers, and influencing factors of mobile learning in higher education: A systematic review," *Heliyon*, vol. 7, no. 4, p. e06696, 2021, doi: 10.1016/j.heliyon.2021.e06696.
6. M. L. Bernacki, J. A. Greene, and H. Crompton, "Mobile technology, learning, and achievement: Advances in understanding and measuring the role of mobile technology in education," *Contemp. Educ. Psychol.*, vol. 60, p. 101827, 2020, doi: <https://doi.org/10.1016/j.cedpsych.2019.101827>.
7. C. Chen, C., & Tsai, "In-service teachers' conceptions of mobile technology-integrated instruction: Tendency towards student-centered learning," *Comput. Educ.*, p. 170, 2021, [Online]. Available: <https://doi.org/10.1016/j.compedu.2021.104224>

8. J. Wang, D. E. H. Tigelaar, T. Zhou, and W. Admiraal, "The effects of mobile technology usage on cognitive, affective, and behavioural learning outcomes in primary and secondary education: A systematic review with meta-analysis," *J. Comput. Assist. Learn.*, vol. 39, no. 2, pp. 301–328, Apr. 2023, doi: <https://doi.org/10.1111/jcal.12759>.
9. A. M. Suhara, "Pengaruh Media E-Learning terhadap Minat Belajar Mahasiswa IKIP Siliwangi," *IKIP PGRI Bojonegoro*, vol. 1, no. 1, pp. 448–452, 2020, [Online]. Available: [www.journal.uta45jakarta.ac.id](http://www.journal.uta45jakarta.ac.id)
10. I. Sudiksa, D. Divayana, and I. Warpala, "Pengaruh E-Learning Dan Lingkungan Kampus Terhadap Minat Belajar Mahasiswa Dengan Motivasi Belajar Sebagai Variabel Mediasi," *J. Teknol. Pembelajaran Indones.*, vol. 10, no. 2, pp. 86–97, 2020.
11. M. M. Diacopoulos and H. Crompton, "A systematic review of mobile learning in social studies," *Comput. Educ.*, vol. 154, p. 103911, 2020, doi: <https://doi.org/10.1016/j.compedu.2020.103911>.
12. T. Talan, "The effect of mobile learning on learning performance: A meta-analysis study," *Educ. Sci. Theory Pract.*, vol. 20, no. 1, pp. 79–103, 2020, doi: 10.12738/jestp.2020.1.006.
13. A. K. F. Shobah Shofariyani Iryanti, "Pemetaan Qudrah Mahasiswa Program Studi Pendidikan Agama Islam Dalam Membaca Dan Menulis Al-Qur'an," *J. Pendidik. Islam*, vol. 11, pp. 58–67, 2020, [Online]. Available: <https://journal.uhamka.ac.id/index.php/jpi/article/view/5035>
14. D. Omran, S. Fawzi, and A. Kandil, "Automatic Detection of Some Tajweed Rules," in *2023 20th Learning and Technology Conference (L&T)*, 2023, pp. 157–160. doi: 10.1109/LT58159.2023.10092350.
15. M. R. Habibullah and H. Nihayah, "Pengembangan Bahan Ajar Tajwid Digital Berbasis Audio , Visual, dan Website di Madrasah Diniyah," vol. 4, no. 2, 2023.
16. M. R. Maulana and M. Nasir, "Pengembangan Media Interaktif Berbasis Aplikasi Android pada Pembelajaran Ilmu Tahsin dan Tajwid," *J. Basicedu*, vol. 6, no. 2, pp. 1756–1765, 2022, doi: 10.31004/basicedu.v6i2.2280.
17. S. A. Murad, D. Sujana, and A. Muhtyar, "Aplikasi Pintar : Hukum Tajwid Berbasis Android," *Unistek*, vol. 8, no. 1, pp. 36–40, 2021, doi: 10.33592/unistek.v8i1.1207.
18. S. Sotar, A. Arman, and H. Syahputra, "Game Edukasi Tajwid Berbasis Android Pada Mata Kuliah Pendidikan Agama Di Stmik Indonesia Padang," *Rang Tek. J.*, vol. 5, no. 2, pp. 301–307, 2022, doi: 10.31869/rtj.v5i2.3308.
19. A. M. Al-rahmi, W. M. Al-rahmi, U. Alturki, A. Aldraiweesh, S. Almutairy, and A. S. Al-adwan, "Exploring the factors affecting mobile learning for sustainability in higher education," *Sustain.*, vol. 13, no. 14, pp. 1–22, 2021, doi: 10.3390/su13147893.
20. A. Regal and I. R. Widiyari, "Perancangan dan Analisis Pengaruh User Interface E-Learnig Terhadap Minat Belajar Siswa SMA/SMK Menggunakan Heuristic of Responsive Web Design," *J. Inf. Technol. Ampera*, vol. 1, no. 2, pp. 88–105, 2020, doi: 10.51519/journalita.volume1.issuue2.year2020.page88-105.
21. M. Borah, "Journal of Critical Reviews Motivation in Learning," *J. Crit. Rev.*, vol. 8, no. 02, pp. 550–552, 2021.
22. S. S. Iryanti and F. Fitriliza, "Implementasi Metode Kritik Intrinsik Dalam Meningkatkan Kemampuan Membaca Al-Quran," *J. Pendidik. Islam*, vol. 10, no. 1, pp. 53–64, 2019, doi: 10.22236/jpi.v10i1.3453.
23. K. A. Marta, Asrori, and Rusman, "Open Ended: Inisiatif Model Pembelajaran Tajwid di Lembaga Pendidikan Islam," *J. Pendidik. Agama Islam Al-Thariqah*, vol. 7, no. 1, pp. 169–181, 2022, doi: 10.25299/al-thariqah.2022.vol7(1).9757.
24. A. A. Hamzah, A. Syarief, and I. S. Mustikadara, "Pengaruh Tampilan Visual Terhadap Motivasi Belajar Berdasarkan Kategori Website E-Learning," *Univ. Kristen Maranatha Jl. Suria Sumantri*, vol. 2, no. 10, p. 40132, 2012.
25. Tareq Altalmas *et al.*, "Lips Tracking Identification of a Correct Pronunciation of Quranic Alphabets for Tajweed Teaching and Learning," *IJUM Eng. J.*, vol. 18, no. 1, pp. 177–191, 2017.
26. Y. Hanafi, N. Murtadho, M. A. Ikhsan, T. N. Diyana, and A. Sultoni, "Student's and instructor's perception toward the effectiveness of E-BBQ enhances Al-Qur'an reading ability," *Int. J. Instr.*, vol. 12, no. 3, pp. 51–68, Jul. 2019, doi: 10.29333/iji.2019.1234a.
27. Y. Magdalena and T. A. Napitupulu, "Critical Factors in E-Learning Influencing Student Motivation and Collaboration in Indonesian Higher Education Institution," *The Winners*, vol. 19, no. 1, p. 9, 2018, doi: 10.21512/tw.v19i1.4244.
28. S. R. Harandi, "Effects of e-learning on Students' Motivation," *Procedia - Soc. Behav. Sci.*, vol. 181, pp. 423–430, 2015, doi: 10.1016/j.sbspro.2015.04.905.
29. W.-H. Wu, Y.-C. Jim Wu, C.-Y. Chen, H.-Y. Kao, C.-H. Lin, and S.-H. Huang, "Review of trends from



mobile learning studies: A meta-analysis,” *Comput. Educ.*, vol. 59, no. 2, pp. 817–827, 2012, doi: <https://doi.org/10.1016/j.compedu.2012.03.016>.