



Is Duolingo Media Effective? An Experimental Study on Increasing Student Interest in Arabic Learning

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Abstract

This study aims to determine whether Duolingo application effectively increases students' interest and how much it increases student's interest in Arabic learning. This study used a quantitative approach with experimental methods (*one group pretest posttest design*), and the population was class IX students of MTs Al Riyadhul Jannah. The sample in this study were students of class IX C, totaling 21 students using *purposive sampling* technique. Data collection was obtained through observation, interviews, questionnaires, and documentation. Data hypothesis testing was carried out through *paired sample t-test* and *N gain* test. The results showed a significance value of $0,003 < 0,05$ that H_0 was rejected and H_a was accepted, also the *N gain* percent value was 26,8198. So, Duolingo application is effective in increasing students' interest in Arabic language learning and there is an increase in interest by 26,82%. The main contribution in this study is to apply new teaching media based on *online games* that are expected to increase students' interest in Arabic learning.

Keywords: *Duolingo application, learning interest, Arabic learning*

Introduction

Science and technology are increasingly developing from time to time, which is a sign of the progress of the times (Lestari, 2018). The presence of technology brings various conveniences and benefits that have been able to be felt in various fields (Daud, 2021), including in the field of education. Technological advances indirectly require educators to innovate, including using online-based applications as teaching media (Manoppo et al., 2023). Media is one aspect of the success of teaching and learning activities in schools (Supit, 2022). The use of applications as teaching media includes an update that can attract students' interest in teaching and learning activities.

Applications used as teaching media can take the form of online games. Games can increase student motivation and interest in learning, reduce learning anxiety, and

also build a cooperative learning environment and foster a participatory attitude in learning (Rifdinal, 2021). In the teaching and learning process, many students are often not enthusiastic about participating in Arabic lessons due to their low interest in Arabic learning (Dhayfullah et al., 2022). From the results of preliminary observations made by researchers, Arabic is classified as a subject that students do not like. The stigma of Arabic as a difficult subject is still rooted in students, because the writing and pronunciation are different from the Latin writing, so new innovations are needed (Widiya Yul & Riko Andrian, 2022) so that students can master Arabic language skills.

In Arabic, there are 4 language skills (Hermawan, 2011) that students should master, namely listening skills (*istimâ*), speaking skills (*kalâm*), reading skills (*qirâah*), and writing skills (*kitâbah*). To master these four skills, Arabic learning requires the creativity of a teacher (Yahaya et al., 2021) because Arabic is not a native language so it has not been recognized by students from an early age (Nuha, 2021). One of the teacher's creativity can be seen from the creativity of the teaching media used. The use of the right media is a way to create an atmosphere learning is fun and not boring (Susanti et al., 2020). One of the game-based educational applications that can be used to increase interest in Arabic learning is the Duolingo application.

Duolingo is a language learning application created by Luis Ivon Ahn and Severin Hacker (Manoppo et al., 2023), which is available in web, android, IOS, and windows versions. Duolingo is classified as an application in the field of education that offers language leaning in the form of interactive games (Maknuna et al., 2023). Based on the classification of learning media, Duolingo is included in audio-visual media that displays images and voice (Jennah, 2009). With adequate visual and audio effects, this can attract students' interest in learning. Based on the classification, there are 2 factors that influence the learning process, namely external and internal factors (Suryabrata, 1995). Interest is included in the internal factors that influence student learning process (Syah, 2014), meaning that this factor comes from the student and only the student can control it. Interest is a will, desire, or success (Khairani, 2013) that does not appear suddenly. Interest is important because a person will struggle to get what he interested in (Khairani, 2013).

Previous research states that the Duolingo application is very useful for anyone who wants to learn Arabic by themselves, this is evidenced by the effect of Duolingo on improving speaking skills in the research sample. Through several question points, 80% of the sample agreed that the Duolingo application can improve speaking skills, Arabic learning feels easier and preferred because the learning model is more like playing games instead of learning from books (Tabroni et al., 2022). Another study made Duolingo as an alternative media to eliminate students' boredom over the *mufradât* memorization system applied so far. The results showed an increase in the mastery of *mufradât*, with the difference in the average score at the pretest stage being 74,7 and the average posttest stage being 97,5 (Yazid et al., 2023). In line with previous research which has a background problem, namely the lack of mastery of Arabic vocabulary owned by students and the lack of learning media used in teaching and learning activities in Arabic subjects, this causes students to find it difficult to understand learning in other sub-materials. As a result, the use of the Duolingo application has a positive and

effective impact on students' mastery of Arabic vocabulary (Kadir, 2023). Other previous research also utilizes Duolingo as a support for fun and interesting learning media to improve students' speaking skills (*maharah al-kalâm*). The research also states that learning media is important in supporting the knowledge transfer process (Hafifah, 2021). The novelty of this research with previous studies lies in the focus of utilizing Duolingo in Arabic language learning. Previous studies emphasized the direct aspects of language learning, such as speaking skills (*maharah al-kalâm*) and vocabulary mastery (*mufradât*), while this study offers a perspective on how Duolingo affects the affective dimension of students' interest in learning Arabic.

Based on the results of interviews with Arabic language teacher at MTs Al Riyadhul Jannah, it is known that there is no application of online game-based teaching media. Meanwhile, online games have become something familiar to students. Students' learning difficulties can be overcome one of them by utilizing things that are familiar with students (Nasrulloh et al., 2018), namely online games. Students' ability to use Arabic can affect their lives, including in terms of worship (Fauziddin & Fikriya, 2020). Therefore, researcher interest in knowing whether Duolingo application is effective in increasing student interest and how much is the increase in student interest in Arabic learning through Duolingo application.

Method

This research used a quantitative approach with an experimental method. The experimental method is a method that requires a researcher to manipulate and control the independent variable and the dependent variable in order to see the difference between the two (Santoso & Madistriyatno, 2021) from the use of Duolingo application on student interest in Arabic learning. The type of research used is pre-experimental design (one group pretest posttest design). The characteristics of an experimental study are random assignment (each object has the same chance), control of variables, manipulation of treatment conditions, and observation (Abraham & Supriyati, 2022). Meanwhile, the data in this study were collected through several ways, namely observation, interviews, questionnaires, and documentation. The observations were systematic, using guidelines as an instrument of observation (Arikunto, 2013). Meanwhile, the interviews applied were structured because the researcher knew that information would be obtained (Sugiyono, 2011). Then, when filling out the questionnaire, the researcher used a Likert scale type of answer to measure each student's perceptions (Hidayat, 2021).

The sampling technique in the study was purposive sampling, which is a sampling technique based on a certain consideration (Agustianti et al., 2022). Considerations in sample selection are made so that the selected sample is in accordance with the research objectives (Lenaini, 2021). The sample in this study consisted of students from class IX C MTs Al Riyadhul Jannah, totaling 21 students. The recommended sample size in experimental research is at least 30 individuals, but even 15 individuals can still be experimented with if strictly controlled (Agustianti et al., 2022).

Researcher conducted validity and normality tests to test the validity of research data. Validity is carried out to measure the accuracy of the use of instruments in research, while reliability is carried out to determine the consistency of measurements in research instruments (Yusup, 2018). Furthermore, the data analysis technique in this study went through two stages. The first is the normality test, which is carried out to determine whether the data comes from a normally distributed population (Nuryadi, 2020). The second is the homogeneity test, which determines whether the data comes from the same population or not (Isnawan, 2020). The data hypothesis test in this study is the paired sample t-test, where the data used is not free (paired) (Montolalu & Langi, 2018) with the control and experimental classes. Then, the Gain normality test (N gain Test) was conducted to determine the effectiveness and measure the improvement of the treatment given (Oktavia & Prasasty, 2019) by calculating the difference between the pretest and posttest values. Statistical data calculations in this study were carried out through the SPSS version 25 application.

Results and Discussion

Duolingo Application

Duolingo is an application that is included in one of the online games. Unlike online games, Duolingo is classified as an educational online game that indirectly offers learning through games. Duolingo application applies learning by dictation and writing, as well as speaking practice for users who are already at a certain stage or level. This Duolingo application can be downloaded on IOS and Android from the Play Store for Android or the App Store for IOS users. Duolingo application is designed so that users can continue to improve their language skills anywhere and anytime (Widyastuti & Kusumadewi, 2018). Learning in Duolingo is structured like a game, so it can attract interest and be easily absorbed by its users.

This application can be downloaded for free via play store and has provided 94 forms of practice questions in 30 languages for English speakers and non-speakers (Tabroni et al., 2021), one of it features provides Arabic language courses. In 2013, Duolingo won Google Play's Best of The Best award for its gamification technique. This application is classified as an educational application, but its use is still the same as online games in general so that it can be used casually, flexibly, and without pressure (Widyastuti & Kusumadewi, 2018). This application facilitates students in Arabic learning, especially in learning listening skills (*istimâ'*) and speaking skills (*kalâm*) (Manoppo et al., 2023). Duolingo is an online language learning platform that is provided free of charge, not only learning vocabulary, Duolingo also learns simple grammar (*at-tarkib*). In addition, Duolingo is structured to train writing, listening, and speaking skills for its users. The use of Duolingo application as a learning media is expected to run effectively, efficiently, and fun (Herlina et al., 2022). The features available on the Duolingo application consist of 6 menus, namely:

- a. The first menu displays the levels of the game, giving an overview of the stages that need to be completed by the user. This menu consists of 30 units, with each unit

having 5 to 10 levels. Each unit also includes keywords as clues to answer the questions.

- b. The second menu is designed to introduce the *hijaiyah* letters, punctuation marks and Arabic numerals. This menu also includes practice questions that help users learn how to write and pronounce, making it suitable for beginner learners.
- c. The third, paid menu offers three main features; a review of the material learned, information on mistakes made when answering questions, and the opportunity to repeat practice questions.
- d. The fourth menu displays the ranking of Duolingo app users in various language learning programs. This menu allows users to see a list of the top 30 users, with the rankings constantly updated according to each user's achievements.
- e. The fifth menu provides user profile information, profile settings, and a feature to invite or add fellow Duolingo users. In addition, this menu also provides recommendations for friends who can be invited.
- f. The last menu offers access to a blog containing the work of the Duolingo system, so all users can read the content.

Student Learning Interest

Interest is a form of encouragement for someone to do something without coercion. Several indicators become a reference in preparing statements on research instruments to get validity test results that meet the criteria for measuring interest in learning. According to Safari, there are four indicators of learning interest: feelings of pleasure, student attraction, student attention, and student involvement (Septiani et al., 2020).

As said by Safari, student interest in learning consists of four indicators that influence it: feelings of pleasure, student attraction, student attention, and student involvement or participation. The following is a diagram of the results of the presentation of data for each indicator of the pretest and posttest results of students' interest in learning Arabic:

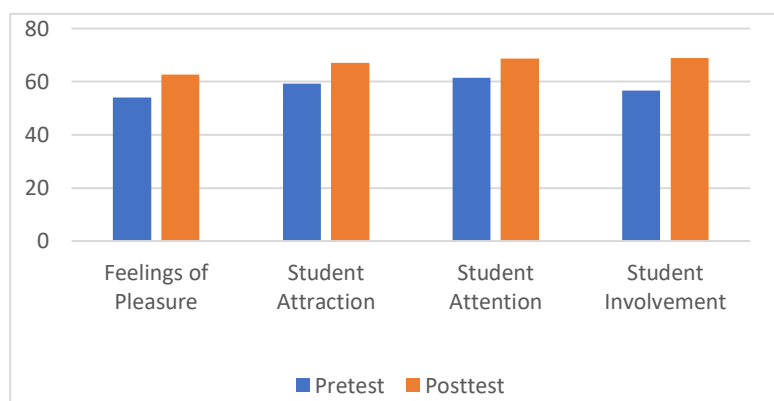


Figure 1. Diagram of Learning Interest Indicator

The diagram above of pretest results shows that the indicator of students' feelings of pleasure is 54, the indicator of student attraction is 59.3, the indicator of student attention is 61.4, and the indicator of student involvement is 56.6. meanwhile, the posttest result of diagram shows that the indicator of students' feelings of pleasure is 62.75, students' attraction is 67, students' attention is 68.6, and students' involvement is 69. So, based on the diagram above, each indicator of student interest in learning has increased after being given treatment in the form of Arabic language learning with Duolingo application.

Effectiveness of Duolingo on Student Learning Interest

Arabic language learning with Duolingo application is carried out through several stages, namely the pretest questionnaire filling stage, the introduction of Duolingo application to students, the implementation of Arabic language learning with Duolingo application, and finally the posttest questionnaire filling stage. This study used 2 stages of filling out the questionnaire, namely pretest and posttest in order to compare the situation before and after being given treatment to students through Duolingo application, this can add a level of accuracy to the research results (Sugiyono, 2011). Before the questionnaire was distributed to students, a validity test was first carried out on the questionnaire to measure whether or not each statement used in this study was valid (Darma, 2021).

The criteria for testing the validity of the questionnaire can be seen when the value of R count $>$ R table, the statement items in the questionnaire are said to be valid, while if the value of R count $<$ R table, the statement items in the questionnaire are said to be invalid (Hidayat, 2021), with a suitable type of answer in the form of a Likert scale to measure student perceptions related to things they experience (Hidayat, 2021), in this case the Duolingo application and student interest. The R table value in this study is 0,433. Of the 30 statement items for each variable, 26 statement items on the Duolingo application variable were declared valid and 4 others are invalid, while in the learning interest variable 20 statement items are declared valid and 10 other items are invalid.

Valid statement items are continued to the reliability test stage to determine whether the data generated is reliable or resilient which is done by comparing the Cronbach's alpha value with the significance level (0,5/0,6/0,7) (Darma, 2021). The test criteria are that if the Cronbach's alpha value $>$ significant level, the instrument is reliable, whereas if the Cronbach's alpha value $<$ significant level, the instrument is unreliable. In this study, the reliability test on the Duolingo application variable statement items obtained a result of 0,958 while the learning interest variable statement items amounted to 0,924. Both $>$ significant level, then the statement items of both variables are declared reliable.

Valid and reliable statement items can be continued to the next stage, namely the normality test, which must be met to conduct statistical inference (Nasrum, 2018). Researchers conduct a normality test to determine whether the data is normally distributed. The criteria for normality testing are if the significance value is $>$ 0,05 then the data is considered normally distributed, while if the significance value is $<$ 0,05 then

the data is considered not normally distributed (Pandriadi, 2020). This stage is carried out respectively on pretest and posttest data, the following can be seen in the normality table:

Table 1. Pretest Normality Test

| One-Sample Kolmogorov-Smirnov Test | | |
|---|----------------|-------------------------|
| | | Unstandardized Residual |
| N | | 21 |
| Normal Parameters ^{a,b} | Mean | .0000000 |
| | Std. Deviation | 3.73548345 |
| Most Extreme Differences | Absolute | .176 |
| | Positive | .176 |
| | Negative | -.084 |
| Test Statistic | | .176 |
| Asymp. Sig. (2-tailed) | | .088 ^c |

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Furthermore, the normality test data at the posttest stage is displayed as follows:

Table 2. Posttest Normality Test

| One-Sample Kolmogorov-Smirnov Test | | |
|---|----------------|-------------------------|
| | | Unstandardized Residual |
| N | | 21 |
| Normal Parameters ^{a,b} | Mean | .0000000 |
| | Std. Deviation | 4.63658410 |
| Most Extreme Differences | Absolute | .086 |
| | Positive | .085 |
| | Negative | -.086 |
| Test Statistic | | .086 |
| Asymp. Sig. (2-tailed) | | .200 ^{c,d} |

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the calculation of the normality test using the SPSS version 25 application, it was found that the significance value of the pretest stage was 0,088 while

at the posttest stage it was 0,200. At the pretest stage, the significance value is $0,088 > 0,05$, so the data is considered normal and the posttest stage the significance value is $0,200 > 0,05$, so the data is normally distributed.

Next is the homogeneity test. After knowing the data is normally distributed, the next step is to calculate the homogeneity test to determine whether the data comes from the same population. The homogeneity test can be performed on data that has been confirmed to have a normal distribution, so it is needed before comparing two or more groups (Sianturi, 2022). The criterion for drawing conclusions on the homogeneity test is if the significance value $> 0,05$ then the data is declared homogeneous, whereas if the significance value $< 0,05$ then the data is declared inhomogeneous (Sari et al., 2017). The homogeneity test is shown in the following table:

Table 3. Homogeneity Test

| | | Test of Homogeneity of Variances | | | |
|---------------------|--------------------------------------|----------------------------------|-----|--------|------|
| | | Levene Statistic | df1 | df2 | Sig. |
| Minat Belajar Siswa | Based on Mean | .757 | 1 | 82 | .387 |
| | Based on Median | .647 | 1 | 82 | .424 |
| | Based on Median and with adjusted df | .647 | 1 | 70.528 | .424 |
| | Based on trimmed mean | .757 | 1 | 82 | .387 |

The significance level based on mean in the data above obtained a result of $0,387 > 0,05$, so the data variance in this study is homogeneous or comes from the same population, so it is appropriate to proceed to the paired sample t-test. After knowing the data is normally distributed and homogeneous, the research data is feasible to proceed to the paired sample t-test stage to determine the effectiveness of Duolingo application.

Furthermore, the hypothesis testing stage through the paired sample t-test with the basis for decision making if the significance level $< 0,05$ then H_0 is rejected and H_a is accepted, meaning that there is a significant difference between pretest and posttest scores, while if the significance level $> 0,05$ then H_0 is accepted and H_a is rejected, meaning that there is no significant difference between pretest and posttest scores (Ramadhani & Bina, 2021). The paired sample t-test calculation data is shown in the following table:

Table 4. Paired Sample T-test

| Paired Samples Test | | | | | | | | |
|---------------------|--|----------------|-----------------|---|-------|---|----|-----------------|
| Paired Differences | | | | | | | | |
| | | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | T | df | Sig. (2-tailed) |
| Mean | | | | Lower | Upper | | | |
| | | | | | | | | |

| | | | | | | | | | |
|--------|----------------------|---------|--------|-------|---------|--------|--------|----|------|
| Pair 1 | PRE-TEST - POST-TEST | -21.286 | 28.756 | 6.275 | -34.375 | -8.196 | -3.392 | 20 | .003 |
|--------|----------------------|---------|--------|-------|---------|--------|--------|----|------|

Based on the data in the paired sample t-test table above, it can be seen that the 2 tailed significance level is $0,003 < 0,05$, it is known that H_0 is rejected and H_a is accepted, meaning that there is a significant difference in students' interest in Arabic learning between before and after the application of Duolingo application. From these results, Duolingo application is effective for increasing students' interest in Arabic learning.

The results above are in line with a study conducted by Aliya Rahmainy Chandra on “The Use of Duolingo Application Media to Improve Mastery of Arabic Vocabulary and *Maharah Kalam* Students of Grade VII SMP IT Al-Maksum Sunggal”, among the results of her research mentioning that the use of the Duolingo application has a significant effect as a medium in Arabic learning activities and most students agree that the use of the Duolingo application can make students more interested in Arabic learning activities (Chandra, 2023). Not only that, other studies also mention that Duolingo plays a role in improving listening proficiency (*maharah istima*) through increasing students' confidence and motivation to listen to Arabic, so Duolingo is suitable to be used as a relevant alternative learning media (Baroroh et al., 2023). The results of some of these studies are also in accordance with the expressions of students during interviews who said that the Duolingo application made Arabic not feel difficult and pressured because in the learning process students felt like playing online games in general (A. Arfini, personal communication, February 9, 2023) as the gamification technique applied to this application is to create a relaxed, flexible, and pressure-free learning system (Widyastuti & Kusumadewi, 2018), so that the Duolingo application is able to improve various skills in Arabic.

Finally, the last step is to calculate the gain value on the research data to determine the value/percentage of increased interest in Arabic learning through Duolingo application. After all the prerequisite tests are met, to find out the difference in pretest and posttest scores (Wijaya, 2021), the N gain test is carried out by looking at the increase (Oktavia & Prasasty, 2019) that occurs in the students' interest in Arabic learning. The data is displayed in the following table:

Table 5. N gain Test

| Descriptive Statistics | | | | | |
|------------------------|----|---------|---------|---------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Ngain_score | 21 | -.89 | 1.00 | .2682 | .39552 |
| Ngain_persen | 21 | -88.89 | 100.00 | 26.8198 | 39.55209 |
| Valid N (listwise) | 21 | | | | |

Through the SPSS version 25 application, it is known that the N gain percent value obtained is 26,8198, this shows that after the treatment there was an increase in students' interest in Arabic learning through Duolingo application by 26,82%.

The increase in interest that occurred in this study is in accordance with the increase in speaking skills in research conducted by Erma Febriani which showed that the average pretest score was initially 82,5% and then at the posttest stage increased to 90,8% (Febriani, 2022). This shows that Duolingo application can have a positive impact, both on the linguistic and non-linguistic sides of Arabic. The results of the study also state that one of the media that can encourage or stimulate students' attention to Arabic is Duolingo application. In relation to the answer to one of the questionnaire statement items in this study, 21 students agreed that students feel happy in Arabic learning through the Duolingo application. In addition, in the interview process one of the students revealed that with Duolingo application students can feel learning while playing, Duolingo is also easy to understand because the commands and forms of questions presented by the system are very clear and the fonts in Arabic writing are easy to read (A. A. Putri, personal communication, February 15, 2023). In accordance with one of the features provided by Duolingo, which is to see the progress of users learning, so that users are motivated by seeing how far their learning progress is and generate interest in developing further in understanding and using Arabic (Mulia et al., 2023).

Conclusion

Based on the results of statistical data calculations through the SPSS version 25 application, there is a significant difference in students' interest in learning between before and after the application of Arabic learning through Duolingo application marked by $0,003 < 0,05$, so H_0 is rejected and H_a is accepted. Based on the results of statistical calculations, Duolingo application was declared effective and there was an increase in student interest in learning occurred by 26,82%. In addition, based on the results of observations, interviews, questionnaires, and documentation, several important things were found in the research, namely students need different media to make it easier to understand Arabic material, students' interest in learning depends on how the teacher presents the material, students' previous educational background affects the level of student understanding, books owned by the students can't be studied independently because they still need teacher guidance, lack of Arabic learning hours at school, and others.

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