The Effect of Using Podcasts as a Learning Medium on Improving Student Learning Outcomes and Communication Skills

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INFO ARTICLE	ABSTRACT
	The use of podcasts in Islamic Religious Education remains minimal, especially at the junior high school level. Many children find learning with infrequently changing media boring. Most Islamic Religious Education teachers still rely on the lecture method as their primary approach, with limited and less varied use of learning media. This situation has implications for low student engagement and interest in learning, particularly because Islamic Religious Education material is often perceived as abstract and overly theoretical. The purpose of this study was to determine how the use of podcasts as a learning medium impacts students' learning outcomes in Islamic Religious Education at SMP Negeri 1 Sitinjo and their ability to communicate. This study employed a quantitative methodology and a quasi-experimental pretest-posttest control group design. Two classes participated in this design: an experimental class using podcasts and a control class using conventional methods. The questionnaires on learning outcomes and communication skills of the study were tested for validity and credibility. To analyze the data, MANOVA, ANCOVA, and independent t-tests were used, and SPSS was used. The results showed that podcasts significantly influenced students' learning outcomes and communication skills, with a partial eta squared value of 0.564. Therefore, podcasts are considered an innovative learning option that encourages active student participation, improves material understanding, and enhances their communication skills in Islamic Religious Education learning in the digital era. *This is an open access article under a CC BY-NC-SA license.*

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INTRODUCTION

Education is one of the best ways to achieve optimal learning outcomes. Various countries, including Indonesia, are beginning to integrate technology into their learning systems with the aim of improving the quality and accessibility of education (Hayati & Harfiani, 2024). Education is expected to prepare students to develop into quality human beings who are capable and proactive in responding to the challenges of the times (Setiawan & Masitah, 2019)In recent years, the world of education has undergone significant transformation thanks to advances in digital technology. Despite the increasing integration of technology, its application in Islamic Religious Education (PAI) teaching at the junior high school (SMP) level remains relatively conventional. This has resulted in low student engagement and interest, as PAI material is often perceived as abstract and theoretical.

In simple terms, learning is creating conditions that enable students to learn effectively (Salsabila & Sitepu, 2023)The use of instructional media is a crucial element in learning. Amid these challenges, several studies have shown that using podcasts as a learning medium has the potential to increase

student engagement and understanding. As a learning medium, podcasts are expected to improve students' comprehension of the lesson and their communication skills, including listening, responding, and expressing opinions both orally and in writing. The audio-centric nature of podcasts allows students to focus on the verbal aspects of communication, such as intonation, articulation, and proper language use. Furthermore, podcasts can be accessed anytime and anywhere, giving students the flexibility to learn at their own pace and style. Several studies have shown that using podcasts in learning can improve students' motivation to learn, comprehension of the material, and critical thinking skills (Muliatik, 2024).

However, the use of podcasts in Islamic religious education remains minimal, especially at the (Masitah & Setiawan, 2018) junior high school level. Many children find learning boring with infrequently changing media. However, the availability of new media can increase children's enthusiasm for Podcasts are considered an effective learning medium, capable of reducing verbalization and unengaging learning practices. Podcasts are expected to improve student learning outcomes and communication skills, in line with learning objectives that not only impart knowledge but also develop communication skills essential for success in the digital age.

Based on observations at several schools, including SMP Negeri 1 Sitinjo, it was found that most Islamic Religious Education (PAI) teachers still rely on the lecture method as their primary approach, with limited and less varied use of learning media. This condition has implications for low student engagement and interest in learning, especially because PAI material is often considered abstract and overly theoretical. Research conducted by also emphasized that the lack of innovation in learning (Nurfadhillah, Ulfah, Nikmah, & Fitriyani, 2021)methods and media contributes to the minimal active participation of students in the teaching and learning process.

An internal survey at SMP Negeri 1 Sitinjo showed that approximately 80% of students felt bored and struggled to understand the monotonous material presented. The lack of engaging presentation hindered students from developing an interest in the spiritual and moral values that should be the foundation for their character development, despite their best efforts (Puspita & Harfiani, 2024)

Thus, the researcher is interested in further investigating the findings of the researcher entitled "The Effect of Using Podcasts as Learning Media on Improving Learning Outcomes and Student Communication Skills at SMP Negeri 1 Sitinjo" which will be expected to become a strong basis for developing PAI learning strategies that are more effective, interactive, and in accordance with the demands of the digital era.

This research is important because PAI learning in junior high school is still dominated by lecture methods with monotonous media, making students less active, less understanding of the material, and easily bored. The high percentage of students who have difficulty understanding lessons shows the need for learning media innovation. Podcasts offer a more interesting, flexible, and tailored solution to the needs of the digital generation. The novelty of this research lies in the use of special podcasts in PAI learning at the junior high school level, which is still rarely researched. In addition, this study assesses not only learning outcomes, but also students' communication skills—a combination that has not been widely studied in the context of PAI.

THEORETICAL CONCEPT
Podcast Learning Media

According to the Big Indonesian Dictionary (KBBI), a podcast is technically audio data, usually in MP3 format, that can be listened to online using electronic devices such as laptops, tablets, or smartphones, and can also be downloaded from the internet. As it develops, Podcastis a great communication tool for interacting and sharing interesting information (Sudarmoyo & Semarang, nd). According to Philips, a podcast is a digital audio document created and distributed online through various platforms so that people can listen to it directly from their devices (Paramadina, 2021).

The main advantage of Podcasts is their ability to present historical information verbally in an interesting and easy-to-understand way (Purnomo et al., 2023) .The process of creating podcast content

in MP4 video format consists of several main stages, such as preparation, recording, editing, and uploading.

Assessment of Learning Outcomes

Learning outcomes are the level of mastery that students have after following a learning program in accordance with the established educational objectives (Wicaksono et al.). Learning outcomes are one indicator of the learning process (Yandi et al., nd). Learning outcomes are also abilities acquired by students after receiving learning experiences from teachers or educators (Agusti, 2022). Student learning outcomes are influenced by many factors, including student interest and motivation. Learning outcomes are a number of experiences gained by students, which include the cognitive domain, namely the student's ability to work on the given questions(Nurlayali & Sohiah, 2020) .Therefore, learning outcomes can be considered as an indicator of the success of education and learning experiences received by students.

Communication Skills

Communication is the most important thing in every human interaction (Amalia, Hidayah, & Irwandani, 2020) .Communication is one of the most important aspects in any field, including education. In the learning process, communication is used to convey messages in the form of knowledge and skills. Success in conveying information to students is often determined by the effectiveness of communication. To create an effective communication process, teachers must have a deep understanding of educational communication, including communication skills (Kristin Manik, 2023).

The importance of communication, listening well, and studying seriously.

QS. Az-Zumar verse 18

ٱلَّذِينَ يَسْتَمِعُونَ ٱلْقَوْلَ فَيَتَّبِعُونَ أَحْسَنَهُ ۚ أُوْلَٰٓئِكَ ٱلَّذِينَ هَدَىٰهُمُ ٱللَّهُ ۖ وَأُوْلَٰٓئِكَ هُمْ أُوْلُواْ ٱلْأَلْبَٰبِ

It means:

"(Namely) those who listen to the word and follow the best of it. Those are the ones whom Allah has guided and those are the men of understanding. "This verse is very appropriate for the use of podcasts as a learning medium because, as mentioned in the phrase "yastami'ūna al-qawl", podcasts require students to listen carefully.

Through the communication process, teachers can transfer knowledge and skills to students, contributing to successful learning. Furthermore, communication skills are crucial for students, as they support productive interactions and information exchange. Therefore, developing communication skills in educational settings is crucial for achieving better and more meaningful learning outcomes.

The Use of Podcast Media on Student Learning Outcomes and Student Communication Skills

The use of podcasts in education has significantly impacted student learning outcomes and communication skills. In this regard, podcasts serve as an innovative learning tool, enabling students to better understand the material being taught. The use of podcasts also contributes to the development of students' communication skills. By regularly listening to a variety of topics, students can better practice their listening skills. Good listening skills are an essential foundation for effective communication. Furthermore, when students participate in podcast creation or discussions, they learn how to convey ideas and information more clearly and confidently.

The collaborative process involved in podcast creation also offers additional benefits. Students who discuss and work together in groups improve their communication skills, including public speaking and critical thinking. All of these aspects demonstrate that podcasts not only contribute to improved learning outcomes but also help students become better communicators. The supporting theory for the use of podcast media, learning outcomes, and communication skills is constructivism theory, which explains that knowledge is actively constructed by students through experience and social interaction.

In this case, podcasts allow students to develop their own understanding of the subject matter through listening, discussing, and reflecting on the content. They engage in a meaningful learning process that fosters creativity and deep understanding. Overall, integrating podcasts into education creates a more comprehensive learning experience. This not only fosters understanding of the material

but also hones communication skills, which are essential in everyday life. Thus, podcasts can be an effective tool to support interactive and enjoyable learning.

METHODS

This study used a quantitative approach with a quasi-experimental design of the pretest–posttest control group type. The research subjects involved two classes with equivalent academic characteristics of eighth-grade students of Sitinjo State Junior High School. The experimental class (VIII 5, n = 8) was given treatment using Podcast Use, while the control class (VIII 6, n = 8) was given treatment using conventional learning. Both groups were given a pretest (O_1) before treatment and a posttest (O_2) after treatment. The research design is presented in Table 1.

Table 1 Research Design

Class	Pretest	Treatment	Posttest
Eksperimen	O_1	X_1	O_2
Control	O_1	X_2	O_2

In this design, a pretest is used to measure students' initial abilities, while a posttest is used to assess learning outcomes after treatment. A comparison of the pretest and posttest results in both groups is used to determine the effect of using podcasts as a learning medium on improving students' learning outcomes and communication skills.

The research instrument consists of two questionnaires: (1) Learning Outcomes Assessment Questionnaire (10 items) which measures understanding of the material, application of the material, interest and motivation, learning outcomes and achievements and (2) Communication skills questionnaire (10 items) which can also be measured through indicators such as speaking ability, listening ability, interaction ability, and self-confidence.

Before proceeding to the final testing stage, the researcher conducted validity and reliability tests on each variable on 30 students different from the researcher's sample. Validity tests are used to measure the validity of a questionnaire. To conduct this validity test, the SPSS program is used. A testing technique often used by researchers for validity testing is the product-moment correlation. In determining whether an item is suitable for use, a correlation coefficient significance test is usually performed at a significance level of 0.05, meaning an item is considered valid or the calculated r ≥ r table.

Furthermore, reliability testing indicates the extent to which a measuring instrument is trustworthy or reliable. Generally, reliability is considered satisfactory if the α value is ≥ 0.7. The pretest and posttest data were analyzed in several stages. Prior to hypothesis testing, assumption tests were conducted to ensure the suitability of the statistical analysis. The Shapiro–Wilk test was used to verify the normality of the data distribution for each variable in the experimental and control groups at a significance level of 0.05. Homogeneity of variance was tested using Levene's test, while homogeneity of the covariance matrix, required for multivariate analysis, was tested using Box's M test. Further analysis was only performed if the data met these assumptions.

To answer the research objectives, hypothesis testing was conducted using Multivariate Analysis of Covariance (MANCOVA) to determine the effect of Using Podcasts as Learning Media on Improving Student Learning Outcomes and Communication Skills, with pretest scores as a covariate to control for initial differences between groups. Furthermore, Analysis of Covariance (ANCOVA) was used to test the effect of the treatment on each dependent variable separately. As an additional analysis, an independent-samples t-test was used to compare the gain scores between the experimental and control groups, while a paired-samples t-test was used to see significant changes in each group from pretest to posttest.

Effect sizes were calculated to provide an overview of the magnitude of the treatment effect. Partial eta-squared (η^2) values were reported for both multivariate and univariate analyses, with

interpretations as small (0.01), medium (0.06), or large (≥ 0.14). For t-tests, Cohen's d was used as an additional indicator of effect size. All statistical tests used a significance level of 0.05.

FINDINGS AND DISCUSSION

This research was conducted at SMP Negeri 1 Sitinjo Dairi involving eighth-grade students. The research design consisted of two groups: an experimental group and a control group, each consisting of 8 students. The experimental group received the Use of Podcasts as Learning Media used as the independent variable, while the control group was taught using conventional methods. Both groups were given a pretest and posttest that measured the improvement in learning outcomes and student communication skills as the dependent variable. The results of the pretest and posttest were analyzed using SPSS version 26 to find out the use of podcasts as a learning medium for class VIII students at SMP Negeri 1 Sitinjo.

Measurement of student learning outcomes and communication skills was conducted through a questionnaire designed to evaluate the extent to which these aspects developed during the learning process. Research data was obtained through pretests and posttests in the experimental and control groups. The pretest was used to measure the initial level of improvement in students' learning outcomes and communication skills, while the posttest was used to assess the effect of using Podcasts as a learning medium on these variables.

To proceed to the next testing stage, the researchers first conducted validity tests on each questionnaire for each variable. This can be seen in the table below.

The validity of each instrument item is shown in Table 2 as follows:

Table 2 Results of the Validity Test of Learning Outcome Assessment Items

No Item	r count	r table	Information
1	0,504	0,3494	Valid
2	0,515	0,3494	Valid
3	0,578	0,3494	Valid
4	0,480	0,3494	Valid
5	0,438	0,3494	Valid
6	0,428	0,3494	Valid
7	0,506	0,3494	Valid
8	0,363	0,3494	Valid
9	0,758	0,3494	Valid
10	0,681	0,3494	Valid

Thus, all items in the learning outcome assessment instrument are declared valid. The validity of each item of the communication ability instrument is shown in Table 3. From Table 3, it can be concluded that all items of the communication ability instrument are also declared valid.

Table 3 Results of the Validity Test of Communication Ability Question Items

No Item	r count	r table	Information
1	0,557	0,3494	Valid
2	0,620	0,3494	Valid
3	0,520	0,3494	Valid
4	0,560	0,3494	Valid
5	0,531	0,3494	Valid
6	0,427	0,3494	Valid
7	0,617	0,3494	Valid
8	0,560	0,3494	Valid
9	0,427	0,3494	Valid

| 10 | 0,401 | 0,3494 | Valid |

The validity test results show that all 10 items in the Learning Outcomes Assessment instrument have calculated r values between 0.363 and 0.758, all of which exceed the table r of 0.3494, so they are declared valid. Similarly, in the Communication Skills instrument, all 10 items have calculated r values between 0.401 and 0.620, also exceeding the same table r, so they are declared valid.

The next step was a reliability test, where the researchers obtained a Cronbach's Alpha value of 0.709 for the learning outcome assessment and 0.703 for communication skills, both above the 0.70 threshold. This indicates that both instruments have good internal consistency and are suitable for use in the main study. This can be seen in the reliability coefficient for the learning outcome and communication skills assessment instruments presented in Table 4.

Table 4 Reliability Test Results

Variables	Cronbach's Alpha	N of Items
Assessment of Learning Outcomes	0,709	10
Communication skills	0,703	10

In this study, descriptive statistical tests were conducted to determine the central tendency and variability of learning outcome and communication skill assessment scores in the experimental and control groups. Table 5 presents the mean and standard deviation for each variable.

Table 5 Descriptive Statistics of Creativity and Independence Scores

Variables	Class	Average	Standard Deviation
Assessment of Learning Outcomes	Eksperiment	83,75	3,412
	Control	78,50	5,264
Communication Skills	Eksperiment	4,525	0,1669
	Control	3,725	0,5064

Based on table 5, it shows that both groups involved in this study experienced an increase in Mean values where the experimental class and control class learning outcome assessment variables showed an increase in values of +5.25 (83.75 - 78.50), as well as the experimental class and control class communication skills variables showed an increase in values of +0.8 (4.525 - 3.725). Therefore, it is concluded that the Experimental class experienced a greater increase in values than the Control class. In other words, the Experimental class that uses podcasts as a learning medium has higher effectiveness than the Control class that uses a conventional approach.

The Impact of Using Podcasts as a Learning Medium: Podcasts are a form of media that can be an option for students to improve their communication skills and assessment results during class. This is because the process of using podcasts is very simple, easy to access, and portable. Podcasts are considered an effective learning tool (Angraeni, Paida, Author, Institution, & Muhammadiyah Makassar, n.d.).

A normality test was performed to determine whether the data for each variable was normally distributed. The Shapiro–Wilk test was used with a significance level of 0.05. If the p-value (Sig.) is greater than 0.05, the data is considered normally distributed. The results are presented in Table 6.

Table 6 Normality Test Results (Shapiro–Wilk)

Variables	Class	Sig. Pretest	Sig. Posttest
Assessment of Learning Outcomes	Eksperimet	0,063	0,570
	Control	0,095	0,107
Communication Skills	Eksperiment	0,801	
	Control	0,344	

Results in Table 6 shows that all significance values are greater than 0.05, which means that the data for the learning outcome assessment and communication skills variables, both in the experimental and control classes, are normally distributed. A homogeneity test was performed to assess whether the variances between groups were equal. Levene's test was used with a significance level of 0.05. If the p-value is greater than 0.05, the variances are considered homogeneous. The results are presented in Table 7.

Table 7 Homogeneity Test Results (Levene's Test)

Variables	Sig.
Assessment of Learning Outcomes	0,681
Communication skills	0,061

Results in Table 7 shows that all significance values exceed 0.05, which means that the variance between groups is homogeneous for both the Learning Outcomes Assessment and Communication Skills variables. Meeting the assumptions of normality and homogeneity indicates that the data are suitable for analysis using MANOVA. Meeting these assumptions is essential to avoid bias in the results of multivariate statistical analysis.

A MANOVA test was conducted to determine the simultaneous effect of using podcasts as a learning medium on improving learning outcomes and communication skills. The MANOVA results are presented in Table 8.

Table 8 MANOVA Results

Effect	F	Sig.	Partial Eta Squared
Learning Method	8,414	0,005	0,564

Based on Table 8, a significance value of 0.005 < 0.05 indicates that learning through Podcast media has a significant simultaneous effect on the assessment of learning outcomes and communication skills. The Partial Eta Squared value of 0.564 indicates a very large effect size.

These findings indicate that the implementation of learning through podcasts has a positive impact on both dependent variables simultaneously. By using audio podcasts, listeners do not need to stare at a smartphone screen, as they only require their sense of hearing. Podcasts are practical and flexible, not bound by distance, space, and time, so they can be used anywhere and anytime. With podcast-based audio learning media, students can listen to the material repeatedly, making it more effective for understanding. Podcasts do not replace textbooks and other materials, but rather serve as a valuable supplement to learning(Armiati & Hidayat, 2024) .

An independent samples t-test was conducted to compare the mean posttest scores between the experimental and control groups for each variable. The results are shown in Table 9.

Table 9 Independent Samples t-Test Results

Variables	t	Sig. (2-tailed)
Assessment of Learning Outcomes	2,367	0,033
Communication skills	4,244	0,001

As shown in Table 9, both variables have p-values less than 0.05, indicating a significant difference between the experimental and control groups. Students in the experimental group who received podcast-based learning achieved higher scores on learning outcomes and communication skills compared to students in the control group who received conventional learning.

These findings corroborate the MANOVA results, which showed that podcast learning media positively impacted both variables. Podcast-based audio learning media is expected to help teachers facilitate student understanding of subject matter, allowing for listening while relaxing and multitasking. This media also offers a variety of alternative supplementary media, which have traditionally been more visual, that can be utilized in and outside of the classroom. It is hoped that this media will enable students to learn more independently, and this will impact student learning outcomes.

This test aims to determine the effect of podcast-based learning on each variable separately. The results are shown in Table 10.

Table 10 Results of the Test of Between-Subjects Effects

Variables	F	Sig.	Partial Eta Squared
Assessment of Learning Outcomes	5,603	0,033	0,286
Communication skills	18,010	0,001	0,563

Based on Table 10, the p-value for both variables is less than 0.05, indicating that podcast-based learning has a significant effect on the assessment of learning outcomes and communication skills, when analyzed separately. The Partial Eta Squared value for the assessment of learning outcomes (0.286) indicates a low influence, while for communication skills (0.563) indicates a moderate influence.

These findings confirm the MANOVA and t-test results, which prove that podcast learning media is effective in improving both varia(Gardiakos, 2025). These findings reinforce the results of previous studies that show that podcasts have great potential in improving learning outcomes through the presentation of authentic, flexible, and engaging content(Djumabaeva & others, 2025). Thus, podcasts can be a learning solution relevant to the needs of the digital generation who are accustomed to audio-based and mobile media. The effectiveness of using podcasts in this study is also supported by a communicative and contextual learning approach. Podcast material that focuses on everyday conversations has been proven to help students understand the use of language naturally and applicable(González Enríquez, 2023). Podcasts emphasize that podcasts encourage active learning and connect material to real-life contexts. Students not only hear vocabulary and language structures, but also learn pronunciation, intonation, and the culture inherent in the language (Islam, Mustakim, Winarti, & Janis, 2025)

The results of this study consistently show that the application of the podcast model has a significant impact on the assessment of learning outcomes and communication skills, both individually and simultaneously(Hernandez-Lopez & Mendoza-Jimenez, 2025). The validity and reliability test confirms that the instrument used has internal consistency and accurately measures the variables being studied. Descriptive analysis showed that the podcast learning media group achieved higher average scores on the assessment of learning outcomes and communication skills compared to the conventional group(Ahmad Shahrizal & others, 2022).

Assumptions, including normality and homogeneity, are met, allowing the MANOVA results to be validly interpreted. MANOVA shows that podcast learning has a significant simultaneous effect on the assessment of learning outcomes and communication skills. Independent t-tests confirmed significant differences in each variable between podcasts and conventional learning groups. Furthermore, the Inter-Subject Effects test confirms that the two dependent variables are significantly influenced by individual podcast learning.

It's also hoped that students' understanding through podcasts will boost their confidence, enabling them to answer teacher questions based on the knowledge gained from the podcasts. Using podcasts to provide students with understanding will also encourage discussions among classmates, leading to more effective and optimal learning (Shanti, Safitri, & Sujarwo, 2024). The use of podcasts as a learning medium is considered appropriate if it stimulates students' understanding of the material, thus influencing their end-of-semester learning outcomes, as determined by teacher assessments. Podcasts are considered effective because they eliminate the need for students to read lengthy texts explaining the material, are well-suited for students with auditory learning styles, and don't use up a lot of internet data, thus saving students money.

Of course, achieving high student learning outcomes by utilizing podcasts as a learning medium cannot be achieved in a very short time. This means that implementing podcasts as a learning medium, from its initial design to its successful implementation in the classroom, requires a considerable time span and has undergone several evaluations to provide researchers with the opportunity to add innovations and develop the medium until it becomes an optimal product that positively impacts the learning process and student learning outcomes.

CONCLUSION

Based on the research conducted, it can be concluded that the use of podcasts as a learning medium has proven effective in improving student learning outcomes and communication skills. The group using podcasts showed significantly more improvement in learning outcomes than the group using conventional methods.

Overall, this study supports the hypothesis that using podcast learning media not only significantly improves the assessment of learning outcomes and communication skills, but also creates positive synergy between the two, which ultimately contributes to the optimal achievement of Islamic Religious Education learning objectives. This study found that the use of podcasts can increase learning motivation, clarify understanding of abstract material, and encourage students to be more active in expressing opinions. Further research is suggested to test the use of podcasts in the long term, in other subjects or levels, and combine them with other digital media for more optimal results.

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