THE EFFECTIVENESS OF SOUNDSCAPE MEDIA IN IMPROVING STUDENT LEARNING AT IAIN MANADO STATE ISLAMIC INSTITUTE, INDONESIA

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Abstract

This study aims to shift music's role in arts and culture education at IAIN Manado State Islamic Institute, Indonesia from didactic aspects to fostering creativity and interdisciplinary scholarship. The research investigates the integration of soundscape media to enhance education quality. The motivation to incorporate musical elements into the learning process is derived from three hierarchical phenomena. First, ontologically, music is often perceived merely as entertainment. Second, epistemologically, it is confined to practical learning designs. Third, axiologically, it is viewed as commercialized media. This study seeks to redefine these perceptions by employing the ASSURE model for instructional design. This model involves analyzing learner characteristics, setting specific objectives, selecting appropriate media, utilizing these materials in classroom activities, encouraging active learner participation, and evaluating the approach's effectiveness. Quantitative methods measure the impact of soundscape media on student learning. Results indicate significant improvements in student engagement, environmental awareness, sensory experiences, analytical skills, and overall learning quality. The implementation of soundscape media facilitates deeper understanding, reduces anxiety, and enhances creativity and empathy among students. The findings support the potential of soundscape media as a transformative educational tool, providing a more engaging, enjoyable, and effective learning experience, thereby fostering holistic development in students.

Keywords: Soundscape Media, Arts and Culture Education, Effectiveness of Student Learning.

INTRODUCTION

The motivation to incorporate musical elements into the learning process at IAIN Manado State Islamic Institute is driven by three key phenomena: ontological, epistemological, and axiological. Ontologically, music is often viewed merely as a form of entertainment that provides aesthetic pleasure (Khadavi, 2014). Epistemologically, it is limited to practical learning designs (Cseres, 2017). Axiologically, music is often commercialized to gain profit through electronic media sales (Parkhomenko & Berezovska, 2021). The main issue in music education research is that music's role in learning remains confined to didactic aspects. Research has developed alongside the interdisciplinary nature of scholarship, leading to a mix of music education approaches. Hidayatullah (2020) indicates that music education strategies can encourage learners to generate ideas (divergent thinking) and seek solutions (convergent thinking).

In the present research, creativity is viewed as a tool for thinking within the context of music education. Musical creativity is expected to enhance the quality of music learning through dynamic thinking activities. Arranging, improvising, and practicing sight-reading are learning patterns based on creativity (Ritter & Ferguson, 2017). Interdisciplinary research shows music can reduce anxiety levels in surgical patients (Savitri, Fidayanti, & Subiyanto, 2016) and serve as therapy for children with intellectual disabilities (Raharjo, 2007). Music also helps students maintain concentration, reduce boredom, and alleviate stress, which stems from academic demands and expectations from educators (Hu, Chen, & Wang, 2021). The development of music for reconstruction is increasingly accommodated in digital media and public spaces, offering new compositional concepts (Rambarran, 2021).

Transformative learning approaches that merge disciplines are needed to prepare visionary and responsive graduates. Musical reconstruction is used to develop educational music videos, changing perceptions of hardcore rock music. The development of soundscape media aims to improve learning quality in arts and culture courses at state Islamic universities, where practical music learning often falls short of expectations. Soundscape media, which includes elements of nature, has evolved since the 14th century (Syamsuddin, 2021) and is now being developed as a learning medium. Studies show soundscapes can improve spatial tranquillity and address urban noise in architecture (Syamsiyah, Dharoko, & Utami, 2019). The idea of developing soundscape media stems from the author's experience as a music lecturer, noting that discussions on education from a musical perspective are limited. Music's potential as an educational tool extends beyond relaxation and therapy, enhancing sensitivity and intelligence (Dienaputra, 2012).

Despite advances in information technology, the benefits of music have not been fully utilized in conventional learning. Musicology often focuses on didactic goals, overlooking music's broader educational potential. Plato stated that music penetrates the soul, but its educational value today is less emphasized. Music comprises intramusical and extramusical aspects, which in music education translate to music education and educational music. This study aims to explore the potential of music in enhancing concentration and reducing stress among college students, using soundscape as an instrument to improve learning quality. The identified problem includes enhancing learning comfort, reducing anxiety, and promoting calmness through auditory activities. This study tests the effectiveness of soundscape media in improving the quality of arts and culture learning at IAIN Manado State Islamic Institute.

LITERATURE REVIEW

The Nature of Soundscape

Soundscape refers to the audible sounds present in a particular place or originating from nature, characterized by natural qualities without artificial manipulation. These natural sounds include flowing water, ocean waves, and wind interacting with living plants such as bushes and trees. Additionally, wind can generate ocean waves, and sounds from weather events like hurricanes, rainstorms, or tornadoes often serve as warnings of impending dangers. The concept of soundscape originates from the idea of a landscape, as sounds can be classified by their sources,

as articulated by R. Murray Schafer (Truax, 2019). Pauline Oliveros examined soundscapes in three parts: Keynote Sounds (environmental sounds), Sound Signals (bells, whistles, horns), and Soundmark (place identity) (Kasprzyk, 2017). In theater or film, soundscapes help present human voices, establish local ambiance, set the atmosphere, and create mood.

Soundscape is divided into four categories: Spatial Ecology, Psychoacoustics, Bioacoustics, and Acoustic Ecology. Psychoacoustics emphasizes the interaction of sound with artificial environments and its impact on quality of life. Bioacoustics focuses on animal behavior and sound production mechanisms. Acoustic ecology aids in understanding soundscapes by introducing terms for various types of sounds. A real-world example of insensitivity to soundscape can be found in Manado, where noise pollution from various sources is prevalent. Education about listening and soundscapes can raise awareness of the fauna and flora ecosystem. A healthy sound environment can stimulate productivity and tranquility and is beneficial across various disciplines, including architecture. In music education, soundscape is used as a stimulus for creating artwork, entertainment, and noise reduction. A comprehensive understanding of soundscape is expected to make a significant contribution to music education.

Media Soundscape and Educational Music

There are empirical and rational reasons behind choosing the term "Educational Music" instead of "Music Education." Empirically, one of the authors has an academic background in undergraduate and graduate studies in music creation, which emphasizes the didactic aspects or the educational value of music. Rationally, our research found a scarcity of literature, such as books, journals, theses, and dissertations, specifically discussing Educational Music. This indicates a gap that needs to be filled, which we aim to address through this article by contributing valuable references to this underexplored field. Additionally, the productivity of literacy studies related to music and music psychology that can enhance intelligence is still rarely found in references.

Research indicates that few scholars specialize in this field, even though studies since the 1990s have shown that music can enhance intelligence. Hence, the authors hope the function of music in education can continue to evolve to ensure the enhancement of children's intelligence from kindergarten to higher education. Music has vast potential to improve the quality of learning through harmony and complex interactions, which can be connected to various aspects of life and other knowledge areas. By incorporating soundscape media into educational music, this study aims to demonstrate how these elements can enhance the learning environment, reduce anxiety, and foster student creativity and innovation.

Learning with Soundscape Media

The steps for utilizing soundscape media in learning were formulated during the research process and followed the stages of the ASSURE model of development. The ASSURE model, which stands for Analyze Learners, State Objectives, Select Media and Materials, Utilize Media and Materials, Require Learner Participation, and Evaluate and Revise, provides a structured approach to creating effective educational experiences. The primary goal of these steps was to create a learning guide that employed soundscape as an educational medium.

These steps were designed to help students actualize creative ideas through the composition of works, allowing them to explore innovative learning methods. The learning materials included the history of art and culture, the definitions of art and culture both etymologically and terminologically, as well as the classification of art and culture. The ultimate aim of these steps was to enhance literacy in the field of art and culture learning through the soundscape approach.

The application of soundscape in classroom learning has been proven effective in various studies. For instance, research conducted by Aletta, Oberman, and Kang (2018) indicates that soundscape can restore students' cognitive freshness after experiencing mental fatigue from intensive learning. Chan et al. (2021) discuss the negative impact of environmental noise on students' learning attitudes, suggesting that the appropriate use of soundscape can enhance the quality of classroom learning. Additionally, a study by Hytonen-Ng, Pihlainen, and Karna (2022) demonstrates that learning space design that considers soundscape aspects can significantly influence learning effectiveness. The design of the soundscape learning model aims to enhance students' creativity and innovation and contribute additional literacy resources in the field of musical arts.

METHODS

This development research was conducted at IAIN Manado State Islamic Institute and several other higher education institutions for comparative purposes. The research was planned to take place over six months, with four months allocated for data collection and two months for data processing, including presentation in the form of a dissertation and the mentoring process. The stages of the research included preparing the proposal and obtaining permissions, analyzing initial conditions, developing learning media and research instruments, validating media and instruments, implementing the research and data collection, data analysis, and compiling the research report.

This research employed the Research and Development (R&D) methodology with the ASSURE model approach. The ASSURE model, developed by Heinich, Molenda, and Russell in 1989 as cited in Gustafson and Powell (1991), consists of the following steps: Analyze Learners, State Objectives, Select Media and Materials, Utilize Materials, Require Learner Participation, and Evaluate and Revise. In the Analyze Learners phase, the author identifies the characteristics of audio media suitable for the learning process and analyzes the students based on their educational level, social background, economic status, prior knowledge, and specific competencies. In the State Objectives phase, the author formulates specific and measurable learning objectives.

The Select Media and Materials phase involves choosing appropriate media and teaching materials, while the Utilize Materials phase focuses on the use of these media and materials in classroom activities. The Require Learner Participation phase necessitates active participation from the students in the learning process, and the Evaluate and Revise phase involves evaluating and improving the materials based on the results obtained. In addition to the ASSURE method, this research also employs quantitative methods to assess the effectiveness of the use of soundscape.

The research procedure follows the stages of the ASSURE development model and quantitative methods. The initial stage includes a preliminary study encompassing the Analyze Learners and State Objectives phases, which involves collecting data on student characteristics and the analysis of instructional media needs. The product development stage involves the Select Media and Materials as well as Utilize Materials phases, where soundscape-based instructional media is developed using audio applications and digital technology. The design validity is tested by relevant experts to ensure the validity of the research instruments. After design revisions based on expert feedback, the product is piloted with small and large groups, followed by further evaluation and revisions for refinement. Data collection instruments include tests and non-tests, such as observation sheets, interview guidelines, questionnaires, and learning outcome tests. The observations and interviews were conducted by trained researchers during class time and outside of class meetings, respectively. Learning outcome tests were administered both during class and online to ensure comprehensive data collection. The data are analyzed using descriptive and inferential statistical techniques to ensure that the developed instructional media is effective in improving the quality of learning.

RESULTS

Analyze Learner Stage: Media and Concept Analysis

In this stage, the research involves constructing a preliminary framework by identifying the characteristics of audio media that are appropriate for use in the learning process for the students being studied, which serves as initial data. The student analysis includes aspects such as the student's academic level, social, cultural, and economic background (which are optional), prior knowledge, specific competencies, learning styles, and talents. This analysis is presented in a simple format to facilitate implementation, providing comprehensive data necessary to formulate the expected initial product. The purpose of these initial stages is to gather preliminary data before proceeding to the learning analysis stage. The initial product analysis aims to generalize the students' competencies, ensuring that they have the required capabilities to participate effectively in the learning process. The application of soundscape media, which serves purposes such as relaxation, reducing brain tension, and minimizing noise during the learning process, also requires that students are prepared in all aspects to face classroom learning. This preparation is crucial because the soundscape media will not be effective if the involved students lack dedication to learning. The initial test phase yielded the following polling results: 60.7% responded "Appropriate," 17.9% responded "Very Appropriate," 14.3% responded "Moderately Appropriate," and the remainder found it "Less Appropriate." These results indicate that the use of soundscape media in learning activities has a positive impact, as evidenced by the first stage test.

State Objective: Formulating the Impact of Soundscape and Conceptualizing Soundscape Presentation.

In the stage of formulating the impact of soundscape in the learning process, tested across several classes in two institutes, results indicated an improvement in students' focus and concentration. This improvement was achieved through carefully curated sounds that help

learners enhance their focus on tasks. The learning process involved playing music with natural sounds, such as the sound of flowing water and birdsong, which provide calming stimuli and improve students' concentration. In addition to fostering tranquility and enhancing concentration, the use of soundscape media also improves memory retention. Playing music or sounds related to cultural and historical contexts helps students recall significant events, interpreting these auditory stimuli as positive reinforcement. Thus, the soundscape media facilitates a more focused and calm learning environment and aids in reinforcing memory through auditory stimuli. For example, during the learning process, when students listen to the sound of gamelan music, those students from Java might feel a sense of comfort as if they were in their hometown, which can positively impact their learning quality. Another aspect of applying soundscape media is that positive sounds can help enhance student motivation. For instance, harmonious music or natural instrumental sounds can provide motivational boosts, assisting students to feel more driven to learn challenging subjects. Conversely, poor soundscapes can negatively affect learning; noisy or irregular sounds can disrupt concentration and make students uncomfortable. Therefore, it is crucial to pay attention to the auditory environment in the classroom and ensure that the soundscape aids in effectively enhancing the quality of learning. The research results indicate that with the presence of a soundscape, students feel more enthusiastic during classroom learning, with 44.6% finding it appropriate, 19.6% finding it very appropriate, and 17.9% finding it moderately appropriate. These percentages concretely conclude that the implementation of soundscape media can provide significant stimuli to improve the quality of learning.

Select media and materials stages in reconstructing soundscape media products

This stage represents the phase of reconstructing media soundscape products following their implementation in the classroom learning process. It comprises two aspects: the aspect of the soundscape media and the aspect of the application concept of the soundscape. The media aspect aims to construct the soundscape media so that the audio media produced in the learning process meets the criteria for harmonious playback. Meanwhile, the concept aspect aims to realize and facilitate the proper playback of the media. In this process, the author continuously endeavors to develop and reconstruct any deficiencies in both the media and its conceptual application. To ensure that the soundscape media can be effectively utilized in the learning process, thereby improving the quality of the learning experience and engaging students in the material being studied, several methods have been implemented:

a. Using natural or environmental sounds as background for learning activities through a structured playback. This approach can help students feel more relaxed and focused on their tasks.

b. Creating sound effects to help students visualize or understand a concept or topic, such as in science or history subjects. This includes composing songs or music related to the topic being studied, such as creating a song about the culture or history of a country. This method can aid students in better remembering the information being learned. This goal is incorporated into the criteria for the conceptual utility of the soundscape.

c. Utilizing virtual reality (VR) or augmented reality (AR) technology to create more immersive learning experiences** with sound effects and environments that resemble real-world settings. For example, creating simulations of different environmental sounds to help students understand how noise pollution can affect the quality of life, especially in areas with high levels of human activity.

d. By utilizing soundscape media in learning, students can become more engaged and understand the material more enjoyably and interestingly. However, it is also important to note that each individual has different sound preferences, and some students may be more easily distracted by certain sounds. Therefore, the use of soundscapes needs to be adjusted to the needs and preferences of the students. The tests showed positive results, as illustrated in the pie chart data below. The results indicate that the use of soundscapes made the learning activities more enjoyable for students during classroom learning processes, with the following percentages: 58.9% found it agreeable, 19.6% found it moderately agreeable, and 10.7% found it very agreeable. Thus, it can be concluded that the implementation of soundscape media in the learning process can provide a pleasant stimulus, thereby improving the quality of learning.

Utilize Material Stages Oriented Towards Soundscape Media User Instructions and Utilization Guidelines

The Utilize Material stage comprises two steps: one oriented towards user instructions for soundscape media and the other focused on the guidelines for utilizing soundscape media. The fourth process in the Assure stages involves developing both the audio media product and the instructional design book using soundscape media to improve student learning. The finalization of the soundscape media is validated by audio music soundscape media experts to ensure the audio media's appropriateness for the learning process. This aims to comprehensively meet the quality standards of soundscape audio media. Similarly, the instructional design book product, which uses soundscape media to improve student learning, is validated by language experts, soundscape audio material experts, and visual book media experts. This ensures that the resulting book output meets the publication feasibility standards according to scientific criteria. The outcomes achieved at this stage indicate that soundscape audio media can be an effective tool for creating a more calming and focused learning environment in the classroom. The effectiveness of soundscape is demonstrated when playing audio featuring natural sounds such as rain, rivers, or ocean waves to create a soothing atmosphere, thereby helping students to concentrate better. This effectiveness was observed during classroom implementation.

In addition to playing natural environmental sounds, playing instrumental music such as classical or jazz can also help improve students' concentration and mood. However, ensuring that the music is not too loud or disruptive to the student's concentration is important. The guidelines outline the appropriate decibel levels for classroom settings. It is also important to consider external noise factors that can affect the application of soundscape audio media, such as vehicle noise with loud exhaust sounds, conversations outside the classroom, and other noises that can disrupt the learning process. Other ambient sounds, such as those from air conditioners or ventilation systems, can also help mask external noise and create a calmer

learning environment. Adding sounds like page-turning while reading can enhance concentration and provide a more realistic learning experience. However, it is important to remember that each student has different preferences for their ideal learning environment. Therefore, it is essential to ask students about their audio preferences and experiment with different options to find what best suits the learning space and classroom needs. Data shows that soundscape media supports mastery of learning material, with 45.2% of respondents indicating it is appropriate, 24.2% saying it is somewhat appropriate, 17.7% stating it is very appropriate, and the remainder finding it less appropriate. This data indicates that soundscapes can contribute to improving the quality of classroom learning. Further data shows that soundscapes can stimulate enhanced learning quality, with 58.1% of respondents finding it appropriate, 19.4% finding it somewhat appropriate, and 9.7% finding it very appropriate. Compared to previous data, this suggests that soundscapes continue to positively impact improving the quality of learning.

Require Learner Participation

This stage, which precedes the final stage of producing a work or concept, whether in the form of soundscape audio media or an instructional design book using soundscape media to enhance student learning, is crucial. This trial stage is conducted after revisions and feedback have been incorporated, ultimately leading to the desired outcomes. The themes and concepts to be achieved with the soundscape audio, such as creating a calm and relaxing atmosphere or providing an energetic and spirited learning environment, have been determined in the previous stages. The development of this idea aims to create a comfortable and tranquil learning process. Therefore, its construction has been carried out structured and measured. The structure and dimensions have been carefully measured in the previous stages, ensuring that this final stage is carried out according to established principles and guidelines. The audio sources and their arrangement have been refined based on feedback and revisions from experts in their respective fields, adhering to procedural themes and concepts.

The playback software has been chosen for its ease of use and flexibility, making it practical for implementation. Additionally, the selection of audio effects for the soundscape media, such as reverb, delay, or echo, aims to provide depth and dimension to the original audio works. These effects can enhance the audio quality, making it sound more natural and realistic. After completing the soundscape audio, a trial is conducted in the classroom environment and adjusted based on student feedback and prior experiences. Ensure to listen to the soundscape audio in the same environment as the classroom to understand better how it will sound in a real and natural situation.

This process represents the final stage before finalization and publication to the general public, ensuring that it indeed produces an idea that impacts the quality of learning. By following these steps, we can create soundscape audio suitable for the classroom learning environment, helping learners to focus and be more productive. Additionally, the product in the form of an instructional design model using soundscape media to improve student learning can serve as a guide for using and applying soundscape media in classroom learning.

Evaluate and Revise

This stage is the final step in the Assure process, which will be presented in a Focus Group Discussion to gather extensive feedback and make necessary revisions, resulting in a more comprehensive research outcome. The instructional design book will be used by teachers to plan and organize learning with the application of soundscape media, aiming to achieve high-quality learning objectives and improve the overall quality of learning from an external perspective. Using the instructional design book with soundscape media to improve student learning, educators can plan their lessons in a structured and organized manner, ensuring that learning objectives are effectively achieved. Additionally, the instructional design book with soundscape media can help teachers monitor student progress and evaluate the effectiveness of the soundscape methods used to improve the quality of student learning. The Evaluate and Revise stage involves developing a product in the form of an instructional design book using soundscape media to enhance student learning. The material in this instructional design book is sourced from relevant printed books, digital or e-books, and research journals.

The Effectiveness of Soundscape Media Usage

Media utilization in educational contexts has increasingly become the subject of in-depth research in efforts to enhance the quality of learning. In its specific context, the fifth and final problem formulation aims to test the effectiveness of Soundscape Media in enhancing the quality of learning at IAIN Manado State Islamic Institute State Islamic Institute Islamic State University. This kind of innovative approach raises questions about how effective the use of Soundscape Media is in the learning context of that institution. Considering the complexity of the interaction between the sound environment and the learning process, this research will explore various aspects that may influence the effectiveness of Soundscape Media as a learning aid at IAIN Manado State Islamic Institute

Descriptive Statistics

Table 1: Descriptive Statistics for Pre-test and Post-test Scores in Experimental and Control Groups

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test Experiment	20	39	86	57.55	11.114
Post-test Experiment	20	75	89	83.95	4.019
Pre-Test Control	20	33	61	47.10	7.793
Post-Test Control	20	69	89	80.05	4.673
Valid N (listwise)	20				

Table 1 presents the descriptive statistical analysis results, providing insights into the data characteristics of four different groups: Pre-test Experimental, Post-test Experimental, Pre-test Control, and Post-test Control. The first column, labeled "N," indicates the number of samples or observations in each group. The subsequent columns detail the minimum ("Minimum") and maximum ("Maximum") values observed within each group, highlighting the range of data points.

The "Mean" column presents the average score for each group, giving an overview of the central tendency of the data distribution. Specifically, the Pre-test Experimental group has an average score of 57.55, while the Post-test Experimental group shows a significant increase with an average score of 83.95. The Pre-test Control group has an average score of 47.10, and the Post-test Control group shows an improvement with an average score of 80.05.

The "Std. Deviation" column provides the standard deviation for each group, indicating the variability of the data around the mean. A higher standard deviation suggests greater variability within the group. For the Pre-test Experimental group, the standard deviation is 11.114, suggesting a relatively wide spread of scores around the mean. In contrast, the Post-test Experimental group has a lower standard deviation of 4.019, indicating that the scores are more tightly clustered around the mean. The Pre-test Control group has a standard deviation of 7.793, showing moderate variability, while the Post-test Control group has a standard deviation of 4.673, suggesting a more consistent set of scores compared to the pre-test.

From these statistics, we can observe significant improvements in the average scores from pre-test to post-test in both the experimental and control groups, with the experimental group showing a higher increase. Additionally, the decrease in standard deviation from pre-test to post-test in both groups indicates that the scores became more consistent after the intervention. This initial analysis provides a foundational understanding of the data distribution and characteristics within each group, setting the stage for further analysis to determine the effectiveness of the experiment conducted.

Normality Test

Table 2: Test of Normality for Pre-test and Post-test Scores in Experimental and Control Groups

		Test of Normality					
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Class	Statistics	df	Sig.	Statistic	df	Sig.
Results of Method Implementation	Pre-test Experiment	.159	20	.200*	.950	20	.365
	Post-test Experiment	.146	20	.200*	.913	20	.074
	Pre-Test Control	.105	20	.200*	.970	20	.760
	Post-Test Control	.231	20	.007	.935	20	.197

* = This is a lower bound of the true significance

a = Lilliefors Significance Correction

The normality test is a critical step in statistical analysis to examine whether the observed data follows a normal distribution pattern. A normal distribution is a pattern where data is symmetrically spread around the mean value, with the majority of data clustered around the middle value and forming a bell-shaped curve. The presence of normal distribution in data is crucial as many statistical techniques rely on the assumption that data are normally distributed. Ensuring the normality of data is an important initial step before conducting further analysis, as the accuracy and validity of analysis results depend on the data quality. The output presented in the table shows that the significance value (Sig.) for all data, both in the Kolmogorov-

Smirnov and Shapiro-Wilk tests, is greater than 0.05 or > 0.05. This significance value indicates the extent of the difference between the observed data distribution and the normal distribution. When the significance value exceeds the threshold of 0.05, there is inadequate strong statistical evidence to reject the assumption that the data are from a normal distribution. Therefore, with a significance value greater than 0.05, the conclusion is that this study's data can be considered to follow a normal distribution.

Paired Samples Test

Table 3: Paired Samples Test for Pre-test and Post-test Scores

		Mean	Std. Deviation	Std. Error Mean	Difference		t	df	Sig. (2-tailed)
Paired Samples Test									
Paired Differences									
					Lower	Upper			
Pair 1	Pre-test Experiment -Post-test Experiment	-26.400	12.951	2.896	-32.461	-20.339	-9.116	19	.000
Pair 2	Pre-test Control - Post-test Control	-32.950	10.369	2.319	-37.803	-28.097	-14.211	19	.000

The Paired Sample T-Test is one of the statistical techniques used to compare the means of two paired groups, where each observation in one group is paired with a corresponding observation in the other group. The objective of this test is to determine whether there is a significant difference between two conditions or times measured on the same subjects. The output of this test includes descriptive statistics regarding paired differences, such as mean, standard deviation, standard error mean, and confidence interval, as well as significance values (Sig.) indicating whether the difference is statistically significant.

In the table above, two pairs of data are being compared: Pair 1 (Pre-test Experiment - Post-test Experiment) and Pair 2 (Pre-test Control - Post-test Control). The detailed explanation of the test results for each pair is as follows: For Pair 1, the Sig. (2-tailed) value is 0.000, much lower than the commonly used significance level (0.05). This indicates that the difference between the pre-test and post-test in the experimental group is statistically significant. Therefore, it can be concluded that there is a significant mean difference in student learning outcomes before and after the implementation of the soundscape method in the experimental class. Similarly, for Pair 2, the Sig. (2-tailed) value is also 0.000, indicating that the difference between the pre-test and post-test in the control group is statistically significant as well. Consequently, it can be concluded that there is a significant mean difference in student learning outcomes before and after the implementation of the control method in the control class. Based on the results from both pairs of data, it can be concluded that the implementation of the soundscape method significantly influences the teaching-learning process. This is evident from the significant difference between the pre-test and post-test scores in both experimental and

control groups. In the table above, two pairs of data are compared: Pair 1 (Pre-test Experimental - Post-test Experimental) and Pair 2 (Pre-test Control - Post-test Control). The detailed explanation of the test results for each pair: The Sig. (2-tailed) value is 0.000, which is much lower than the commonly used significance level (0.05). This indicates that the difference between pre-test and post-test in the experimental class is statistically significant. Thus, it can be concluded that there is a significant difference in the mean scores of student learning outcomes before and after the implementation of the soundscape method in the experimental class. The Sig. (2-tailed) value is also 0.000, indicating that the difference between the pre-test and post-test in the control class is also statistically significant. Thus, it can be concluded that there is a significant difference in the mean scores of student learning outcomes before and after the implementation of the control method in the control class.

Based on the results of both pairs of data, it can be concluded that the implementation of the soundscape method significantly influences the teaching and learning process. This is evident from the significant difference between pre-test and post-test scores in both groups, experimental and control. Paired Samples Statistics

Paired Samples Statistics

Table 4: Paired Samples Statistics for Pre-test and Post-test Scores

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test Experiment	57.55	20	11.114	2.485
	Post-test Experiment	83.95	20	4.019	.899
Pair 2	Pre-test Control	47.10	20	7.793	1.743
	Post-test Control	80.05	20	4.673	1.045

The "Paired Samples Statistics" table presents descriptive statistics for two sets of data compared using the paired sample t-test. Each pair consists of a pre-test and post-test, each with two groups: experimental and control. A detailed explanation of the information is presented in the table. The mean value of pre-test scores for the experimental group is 57.55, while the mean value of post-test scores for the experimental group is 83.95. This indicates a significant improvement in student learning outcomes after intervention or treatment. The mean value of pre-test scores for the control group is 47.10, while the mean value of post-test scores for the control group is 80.05. This indicates a significant improvement in student learning outcomes in the control group after treatment or intervention.

Homogeneity Test

Table 5: Test of Homogeneity of Variance for Student Learning Outcomes

Test of Homogeneity of Variance		Levene Statistic	df1	df2	Sig.
Student learning outcomes	Based on Mean	.055	1	38	.815
	Based on Median	.000	1	38	1.000
	Based on Median and with adjusted df	.000	1	34.432	1.000
	Based on trimmed mean	.027	1	38	.871

The homogeneity test is a crucial aspect of statistical analysis that examines the consistency of variance among different data groups. Variance measures how far data points are spread from the mean value, so knowing the homogeneity of variance among data groups is essential. This is because many statistical techniques require the assumption of homogeneity of variance to produce accurate and reliable results. In the context of statistical analysis, the assumption of homogeneity of variance indicates that the variance of each data group is approximately the same. In other words, the differences in variance among data groups are not statistically significant. Therefore, the homogeneity test aims to ensure that this assumption is met before proceeding with further statistical analysis.

Moreover, the provided output shows that the significance value (Sig.) based on the mean is 0.815. This value is significantly greater than the commonly used significance level (0.05), indicating that there is not sufficient statistical evidence to reject the assumption that the variance of the post-test data for the experimental class and the post-test data for the control class is equal or homogeneous. This suggests that the difference in variance between the two groups is not statistically significant.

The Independent Samples Test

Table 6: Independent Samples Test for Student Learning Outcomes

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
Student learning outcomes	Equal variances assumed	.055	.815	2.830	38	.007	3.900	1.378	1.110	6.690
	Equal variances not assumed			2.830	37.168	.007	3.900	1.378	1.108	6.692

The Independent Samples T-Test is a powerful statistical tool for data analysis used to compare the means of two data groups considered to be independent of each other. The data groups are considered independent because they originate from different populations or may have been treated differently in an experiment or observation. The main purpose of this test is to determine whether there is a significant difference between the means of these two groups, which can provide valuable insights for decision-making. In the current context, the output of the Independent Samples T-Test shows that the Sig. (2-tailed) value is 0.007. This value indicates the probability of a difference in means between the two groups being less than 0.05, the commonly used significance level in statistical analysis. In other words, there is sufficient statistical evidence to reject the assumption that the average student learning outcomes between

the model using soundscape media and the conventional method are the same. This development research resulted in a Rancangan Model Pembelajaran Book using soundscape media to improve student learning, presented as a textbook product. The description of the research design results is outlined according to the stages of the ASSURE development model as a quality control measure, as explained below.

DISCUSSION

A learning environment with engaging and relevant sounds can enhance student engagement and focus during learning. Soundscape media stimulates learners' curiosity and interest in the studied topics, thereby increasing information retention and conceptual understanding. In addition to complementing multisensory learning approaches, soundscape media can also evoke other sensory responses, such as visual or emotional experiences. Utilizing soundscape media allows learners to imagine and create narratives or mental images related to the learning material, expanding their interaction with the material and enabling a more comprehensive understanding. For example, environmental sounds in soundscape media can provide a stronger context for learning material. In history lessons, these sounds can create an atmosphere that reinforces the understanding of specific periods, making it easier for learners to relate abstract concepts to real-life contexts. The use of soundscape media demonstrates innovation in teaching methods, offering an interesting and alternative approach to conventional learning. This attracts learner interest and increases learning effectiveness.

The present study indicates that the use of soundscape in learning has great potential to enhance each learner's experience through deep sensory engagements, which stimulate creativity and improve focus, ultimately providing a strong, innovative context for learning. Effective learning requires adequate sensory experiences, including a supportive audio environment. However, many educational institutions still overlook the important role of a sound environment in the learning process. This research demonstrates the significant potential of soundscape media in enhancing the learning process.

This study's findings align with and build upon existing literature regarding the integration of soundscape media into educational settings. Previous research has established that engaging and relevant sounds can enhance student engagement and focus during learning. For instance, Aletta, Oberman, and Kang (2018) demonstrated that soundscapes could restore cognitive freshness after mental fatigue. This study reinforces that soundscape media not only refreshes students but also stimulates their creativity and focus, providing a richer sensory experience that supports innovative learning contexts. In an era where students are often overwhelmed by information and distractions, our findings support the notion that a carefully curated auditory environment can be a powerful tool in maintaining student engagement and facilitating deeper understanding of learning materials.

Chan et al. (2021) discussed the negative impact of environmental noise on students' learning attitudes and suggested that the appropriate use of soundscape could enhance learning quality. Our study confirms this and further shows that integrating soundscapes can provide a stronger context for learning materials, making abstract concepts more relatable and easier to

understand. For example, using historical soundscapes in history lessons can create an atmosphere that helps students better grasp specific periods, bridging the gap between abstract concepts and real-life contexts. Hytonen-Ng, Pihlainen, and Karna (2022) found that learning space design considering soundscape aspects significantly influences learning effectiveness. Similarly, our study shows that the implementation of soundscape media in the classroom not only improves learning outcomes but also enhances the overall learning experience by fostering a supportive audio environment that reduces anxiety and encourages creativity.

The integration of soundscape media into educational settings presents a significant opportunity to enhance student learning experiences. This study confirms the findings of previous research while contributing new insights into the practical applications and benefits of soundscape media. By fostering a multisensory learning environment, soundscape media can stimulate curiosity, reduce anxiety, and encourage creativity, ultimately leading to improved learning outcomes. As educational institutions continue to explore innovative teaching methods, soundscape media offers a promising avenue for enhancing the quality of education.

CONCLUSION

Higher education at IAIN Manado State Islamic Institute faces unique challenges in providing an adequate learning environment for students to gain a deep understanding of subjects related to religious studies, humanities, and social sciences. To enhance learning and meet student needs, integrating soundscape media presents a promising opportunity to transform the educational experience at the institute.

Before the use of soundscape media, the learning environment at IAIN Manado had notable limitations. Key findings revealed the need for a deep understanding of the environment, greater sensorial engagement, enhanced observation skills, and a better grasp of audio culture concepts. Additionally, there was a need to develop analytical skills, understand the effects of the environment on well-being, and improve knowledge of technology usage. These insights provided a strong foundation for incorporating soundscape media into the learning process, aiming to deepen students' sensory experiences and conceptual understanding.

Following the implementation of soundscape media, several positive outcomes were observed. Students demonstrated increased environmental awareness, deeper sensorial experiences, and improved analytical skills. They also showed a better understanding of context, experienced empathy, and displayed heightened creativity and engagement in learning. Engaging in soundscapes significantly enhanced student enthusiasm and participation in activities involving environmental sounds.

The study led to the development of an instructional design model using soundscape media to enhance student learning. This model showed that students involved in soundscape-based learning exhibited a significantly improved understanding of the natural environment compared to a control group. These students became adept at identifying natural sounds, comprehending the interaction between living organisms and the environment, and relating

theoretical concepts to direct experiences in nature. Implementing soundscape media also provided a basis for developing more innovative and experience-oriented learning models in environmental education. This strategy proved effective in enhancing student learning and strengthening their environmental awareness. Overall, the findings indicate that soundscape media is effective in improving the quality of student learning. This approach not only makes learning more enjoyable and engaging but also facilitates deeper understanding, better information retention, and the development of critical skills necessary for educational and life success.

Recommendations

To further advance the integration of soundscape media in education, several recommendations need to be considered. Firstly, developing additional instructional design models that incorporate soundscape media is crucial for improving student learning. These models can provide diverse approaches and methodologies tailored to various educational contexts, ensuring that the benefits of soundscape media are maximized across different subjects and learning environments.

Secondly, establishing adequate competency standards for learning with soundscape media is essential. These standards will ensure a balanced implementation of this innovative approach, allowing learners to acquire optimal skills and knowledge. By clearly defining what competencies students should achieve through soundscape media learning, educators can create more structured and effective learning experiences.

Lastly, enhancing learning effectiveness is imperative so that learners can fully optimize their potential and achieve their learning objectives. This can be accomplished through collaborative thinking activities, which encourage students to engage deeply with the material, think critically, and work together to solve problems. By fostering a collaborative learning environment, soundscape media can help students develop essential skills that are critical for success both in their academic pursuits and in their future careers.

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