Eduvest – Journal of Universal Studies
Volume 6 Number 2, February, 2026
p- ISSN 2775-3735 - e-ISSN 2775-3727

The Effect of Audiolyfe Stimulation on the Optimization of Children's Potential and Talents: A Case Study in Banda Aceh

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ABSTRACT

Recognizing and developing children's potential and talents from an early age plays an important role in shaping their future. However, many children face challenges such as difficulty discovering their interests or lacking enthusiasm to explore their own potential. Proper stimulation, including audio-based technologies such as Audiolyfe, can help address these issues. This study aims to analyze the influence of Audiolyfe stimulation on the development of children's potential and talents in Banda Aceh. Using quantitative methods and a quasi-experimental approach, this research involved 25 children aged 0–12 years who were selected through purposive sampling techniques. Data were collected through observation and questionnaires, then analyzed using descriptive statistics. The results show that Audiolyfe stimulation has a significant influence on the development of children's potential and talents. A noticeable difference was observed between the pretest and posttest results, in which children who received regular stimulation demonstrated increased creativity, cognitive abilities, and enthusiasm for learning. These findings indicate that Audiolyfe can be an effective tool to support the optimization of children's abilities from an early age. Through a structured approach, this technology contributes meaningfully to preparing a younger generation that is more confident and better equipped with the skills needed to face future challenges.

KEYWORDS Stimulation, Audiolyfe, potential, talent, child.

INTRODUCTION

Childhood is a crucial period in individual development, as it is during this phase that cognitive, motor, social, and emotional abilities develop rapidly (Manas, 2020; Mayra, Maulana, & Kushendar, 2022; Ramesh, 2022). At an early age, a child's potential and talents begin to emerge and can serve as the foundation for future development. Potential and talent are closely related, where potential functions as the basis for the emergence of talent. Every child possesses unique potential, and talent represents one manifestation of that potential (Kinesti et al., 2022).

Potential can be interpreted as the ability or capacity that children possess to develop and achieve something in the future. This can be likened to a seed that has the potential to grow into a large and strong tree. Developing this basic potential provides opportunities for children to prepare themselves for the next stages of life, allowing them to grow into well-rounded adults (Ratnawati, 2021). Meanwhile, talent refers to innate potential that a person has since birth. Talent is reflected in human behavior that exhibits particular skills, such as music, art, writing, mathematics, mechanics, and

others. According to Wintara (2017) in Prima (2021), talent is a person's basic ability to learn faster than others, yielding better results. Therefore, talent can be considered a fundamental skill or capacity that distinguishes one individual from another.

In today's digital era, technology has become an integral part of children's education and development. Audiolyfe, an audio-based technology, has emerged as an innovative approach to address these challenges by providing targeted stimulation to enhance creativity, cognitive abilities, and enthusiasm for learning. Despite its substantial potential, research on the impact of such technology on child development remains limited, particularly in specific contexts such as Banda Aceh.

The development of children's potential and talents plays a vital role in shaping their future. According to Abidin and Nasrudin (2021), this development can generate long-term positive effects, particularly when supported by parents and the surrounding environment. Children's potential and talents must be nurtured optimally to ensure their growth is sustainable. However, in reality, this process often encounters challenges. Some children display their talents early, and parental guidance becomes essential to help refine and maintain those talents. Conversely, children who have not discovered their talents until adolescence or adulthood must find ways to identify and develop their potential, which requires appropriate methods of motivation and stimulation.

To address this problem, proper stimulation can greatly assist in optimizing children's potential and talents from an early age. One emerging form of stimulation involves audio-based technologies such as Audiolyfe. Audiolyfe is a therapeutic platform that uses audio waves projected into children's brain pathways to stimulate and support the development of their potential and talents (Ma'ani, 2026; Purbasari & Elfira, 2025). This sound stimulation aims to influence the brain through specific audio frequencies, improving cognitive, emotional, and social abilities more effectively. Such stimulation is expected to help children recognize and develop their potential and talents more optimally.

The concept of developing children's potential and talents through audio-based stimulation is supported by various studies demonstrating that structured sound can stimulate brain development. Research by Ragone et al. (2021) revealed that audio provides cognitive, psychosocial, behavioral, and motor benefits, especially among children with autism. Audio interventions have been used to enhance social communication and motor skills in autistic children. Meanwhile, Hairunnas (2023) studied audio therapy in children with ADHD (Attention Deficit Hyperactivity Disorder), who often struggle with concentration. This form of sound therapy uses audio stimulation to improve children's physical and mental quality. The audio waves can stimulate brain development, serve as an alternative to medication, and help improve focus and reduce ADHD symptoms. These findings confirm the significant relationship between audio-based instrument design and therapeutic activities aimed at addressing attention disorders in children

The urgency to assess the effectiveness of audio-based stimulation such as Audiolyfe continues to grow alongside the increasing complexity of developmental

challenges faced by today's young generation. In a fast-paced digital age, children are exposed not only to higher academic demands but also to vast amounts of unstructured information and external stimuli, which may hinder their ability to focus, think creatively, and explore their own talents (Kinesti et al., 2022). The gap between a child's inherent potential and their limited ability or motivation to explore it presents a real problem that requires targeted intervention. Without appropriate stimulation, children's unique potential risks remaining undeveloped, which can ultimately affect self-confidence and competitiveness in later life (Ratnawati, 2021)

Previous research underscores the importance of audio-media-based interventions in stimulating children's potential and talents, highlighting the role of sound in enhancing various aspects of cognitive and emotional development. These studies provide an important foundation by illustrating how audio media can support and accelerate children's growth. However, despite considerable findings on the benefits of audio-based stimulation, there remains a lack of research specifically examining how Audiolyfe influences children's potential and talents from either a qualitative or quantitative perspective.

Therefore, this study aims to fill that gap by exploring the extent to which Audiolyfe stimulation can contribute to the development of children's potential and talents. This research is expected to provide new insights into the application of audio technology to support child development. By examining the influence of Audiolyfe on various developmental aspects, this study makes a valuable contribution toward innovative stimulation methods that not only benefit children but also serve as useful references for parents, educators, and technology developers. The findings may guide the design of more effective approaches to nurturing children's development in creativity, social interaction, and cognitive skills.

RESEARCH METHOD

This study employs a quantitative method with an experimental approach to examine the effect of Audiolyfe-based stimulation on the development of children's potential and talents in Banda Aceh. The quantitative approach was selected because it enables a systematic analysis of causal relationships between variables and produces measurable results that can be processed using statistical, mathematical, or computational techniques (Rustamana et al., 2024). Through this method, the study aims to obtain an accurate understanding of the effectiveness of Audiolyfe as a stimulation medium in supporting children's development in Banda Aceh.

The study population consisted of children aged 0–12 years who experienced obstacles in developing their potential and talents, such as not yet discovering their interests or talents or showing difficulty in exploring their potential. The research sample was determined using a purposive sampling technique, resulting in a sample of 25 children.

Data collection was conducted through direct observation of children's behavior during the stimulation sessions, as well as through questionnaires completed by parents

or caregivers who were familiar with the children. The questionnaire was designed to measure changes in various aspects of development, including creativity, logical thinking, and social skills.

The collected data were analyzed using two statistical approaches. Descriptive statistical analysis was applied to describe the children's initial conditions before receiving treatment and the observed changes after the intervention. Inferential statistical analysis was then used to test whether the use of Audiolyfe had a significant influence on the development of children's potential and talents. This analysis involved comparing data collected before and after the intervention within the experimental group.

The hypotheses proposed in this study are as follows:

H0: There was no significant effect of Audiolyfe stimulation on the development of children's potential and talents in Banda Aceh.

H1: There is a significant influence of Audiolyfe stimulation on the development of children's potential and talents in Banda Aceh.

RESULT AND DISCUSSION

This study aims to evaluate children's potential and talents through data collection which is carried out in two stages, namely before and after the intervention. In the initial stage, an initial test (pre-test) is carried out which is filled out by parents or caregivers of children in Banda Aceh. This test aims to identify the child's behavior as the basis for initial assessment. After the initial test, the child was given an intervention in the form of Audiolyphe stimulation. Next, a final test (post-test) is carried out, which is again filled out by parents or caregivers to assess changes in the child's behavior after receiving the stimulation. Data from the pre-test and post-test were then analyzed to determine whether the intervention had a significant influence on the development of children's potential and talents. The results of this analysis, including descriptive statistics from both tests, are presented in Table 1. This table provides a comparative overview of the results before and after the intervention, reflecting the impact of stimulation on the behavior of the child who was the subject of the study.

Table 1. Descriptive Statistical Results

Descriptive Statistics

	N	Minimum	Maximum	Red	Std. Deviation
Pretest experiment	25	45	80	63.08	10.054
Postest experiment	25	70	90	80.16	6.032
Valid N (listwise)	25				

The results of the tests conducted in the experimental group show a significant increase in the development of children's potential and talents after receiving an intervention in the form of Audiolyfe stimulation. Based on the data, the pre-test scores

collected before the intervention show a minimum score of 45 and a maximum score of 80. The average pre-test score was recorded at 63.08, with a standard deviation of 10.054. These results indicate considerable variation in the development of children's potential and talents before receiving Audiolyfe stimulation. After the intervention, the post-test results demonstrate a clear improvement, with the minimum score increasing to 70 and the maximum score reaching 90. The average post-test score rose to 80.16, with a standard deviation of 6.032, indicating that Audiolyfe stimulation has a positive impact on the development of children's potential and talents.

The descriptive results reveal that Audiolyfe stimulation effectively enhances the development of children's potential and talents, as evidenced by the substantial increase in average scores between the pre-test and post-test. However, to ensure that this difference is statistically significant and not due to random variation, further analysis using the Paired Sample t-Test is required. Before conducting the Paired Sample t-Test, it is essential to perform a normality test on the data.

The normality test is a statistical method used to determine whether the collected data follow a normal distribution. Normality can be assessed through various methods, such as the Kolmogorov–Smirnov test, the Shapiro–Wilk test, or by visualizing the data using graphs and analyzing distribution patterns (Quraisy, 2020). The normality test is a critical prerequisite for the Paired Sample t-Test since the test assumes that the data are normally distributed. In this test, if the significance value (sig) is greater than 0.05, the null hypothesis (H_0) cannot be rejected, meaning that the data are considered normally distributed. The results of the normality test in this study are presented in Table 2 as follows:

Table 2. Normality Test Results

Tests of Normality

		Kolmogorov-Smirnova			Shapiro-Wilk		
	Classes	Statistic	df	Sig.	Statistic	df	Sig.
Audiolyfe stimulation results	Pretest experiment	.154	25	.127	.953	25	.293
	Postest experiment	.169	25	.062	.934	25	.110

a. Lilliefors Significance Correction

In the process of analyzing the normality of the data, the relatively small sample size, which is as many as 25 respondents, makes the Shapiro-Wilk Test a more suitable method than the Kolmogorov-Smirnov Test. The Shapiro-Wilk test is often recommended for small samples because of its more accurate ability to evaluate the normality distribution of data. Based on the test results, the significance value for the pre-test was 0.293, while for the post-test was 0.110. Since these two values are greater than the significance threshold of 0.05, the null hypothesis (H0), which states that the data is normally distributed, cannot be rejected. Thus, it can be concluded that the data from the pre-test and post-test meet the assumption of normality.

Once it was confirmed that the data was normally distributed, the analysis was followed by a Paired Sample T-Test to determine if there was a significant difference between the pre-test and post-test results after the Audiolyfe stimulation intervention was administered. This step is important to test the effectiveness of the intervention in increasing children's potential and talents. This research bases its analysis on two main hypotheses. The first hypothesis states that Audiolyfe stimulation does not have a significant influence on the development of children's potential and talents. On the contrary, the second hypothesis states that this intervention has a significant influence.

To determine whether Audiolyfe stimulation has a significant effect, the analysis was performed using the significance-based test criteria (Sig.). If the value of Sig. (2-tailed) is less than 0.05, then the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted. This indicates that interventions in the form of Audiolyfe stimulation have a significant influence on the development of children's potential and talents. Conversely, if the Sig. value is greater than 0.05, the null hypothesis (H0) is accepted, and the alternative hypothesis (Ha) is rejected, indicating that the intervention did not have a significant effect (Haryanti et al., 2021). Table 3 below presents the results of the Paired Sample T Test.

Table 3. Paired Sample T Test Results

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Red	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest experiment - Postest experiment	-17.080	7.926	1.585	-20.352	-13.808	-10.774	24	.000

The results of the analysis using the Paired Sample t-Test, as presented in Table 3, showed a significant difference between the pre-test and post-test scores in the experimental group. The mean difference between pre-test and post-test results is -17.080, with a standard deviation of 7.926. This indicates that there is an increase in the development of children's potential and talents after being given an intervention in the form of Audiolyph stimulation. Further analysis showed that the obtained t-value was -10.774 with a degree of freedom (df) of 24. The significance value (Sig. 2-tailed) of this test is 0.000. Since the significance value is smaller than the 0.05 threshold, the null (H0) hypothesis is rejected, and an alternative hypothesis is accepted. This conclusion confirms that Audiolyfe stimulation statistically has a significant influence on the development of children's potential and talents.

Discussion

Research shows that Audiolyfe stimulation is an effective method for supporting the development of children’s potential and talents. The analysis results revealed a

significant difference between pre-test and post-test scores in Banda Aceh, where the improvement in post-test performance reflected the positive impact of this intervention. The Audiolyfe method successfully helps children overcome various obstacles, such as difficulty identifying interests or a lack of enthusiasm to explore their potential and talents.

Audiolyfe stimulation is a technique that utilizes sound or audio waves with specific frequencies to stimulate brain activity. This approach is based on the theory that certain sound frequencies can influence brain function and enhance cognitive abilities, including concentration, memory, and learning capacity. These findings are consistent with previous research, which revealed that neurological music therapy is an evidence-based practice capable of stimulating and modifying neural pathways to improve brain performance (Sharma et al., 2023). In subconscious conditions, music and rhythm work simultaneously to activate multiple regions of the brain. Additionally, the auditory and visual feedback integrated into this process can improve neuroplasticity, thereby strengthening motor learning and functional recovery.

The mechanism of action behind audio stimulation methods such as Audiolyfe is closely linked to the concept of neuroplasticity—the brain's ability to adapt and form new connections in response to stimulation. According to Puderbaugh (2023), neuroplasticity is "the ability of the nervous system to alter its activity in response to intrinsic or extrinsic stimuli by rearranging its structure, function, or connections." In this context, auditory stimulation through Audiolyfe enhances neuroplasticity by strengthening neural connections in the brain. These processes play an essential role in improving children's memory, learning, and creativity, ultimately helping them develop their potential optimally.

These findings are supported by previous research. Granddywa (2022) discovered that using music as a primary therapeutic medium for children with autism improved cognitive skills, including memory and concentration. Music acts as a stimulus that encourages the brain to build new neural pathways, supports the learning process, and strengthens other cognitive functions. Furthermore, Wahyuningrum (2017) found that music therapy positively affects verbal creativity in autistic children aged five to six years.

Another key aspect reinforced through audio stimulation is attention, which is closely related to the brain's memory system. Sustained attention enables the brain to regulate developmental processes optimally, while lack of attention can decrease productivity. In this study, productivity is understood as a structured process of developing a child's potential. Thus, stimulation through the Audiolyfe method not only enhances cognitive abilities but also helps children achieve higher productivity and creativity through mechanisms that support comprehensive brain development.

Audiolyfe stimulation also operates by activating specific brain regions through the use of precise frequencies, improving creative thinking skills and strengthening a child's ability to focus. This brain activation allows children to process new ideas more effectively. The results show that children who received Audiolyfe stimulation regularly

experienced increased creativity—they demonstrated the ability to generate innovative ideas, complete tasks with creative approaches, and display a deeper understanding of complex concepts.

In addition, Audiolyfe stimulation contributes to the synchronization of brain waves, particularly alpha and beta waves, which play vital roles in concentration and focus. Alpha waves are associated with mental relaxation and readiness, while beta waves relate to alertness and heightened concentration. A study by Garcia-Argibay et al. (2022) found that specific audio frequencies—particularly those around 40 Hz—can stimulate gamma wave activity in the brain. This activity correlates strongly with improved cognitive functions such as working memory and attention. Similarly, stimulation involving alpha frequencies can induce an optimal state of relaxation, further supporting concentration and focus. This phenomenon occurs through a brainwave entrainment mechanism, whereby the brain's natural frequency aligns with the external sound frequency, influencing overall neural activity.

Through its ability to synchronize brain waves and enhance focus, Audiolyfe stimulation helps children learn more quickly and efficiently. Children with improved concentration possess a stronger foundation for developing their talents, as they can process information more effectively and respond more rapidly to challenges. Consequently, this process maximizes the development of children's potential—a primary objective of therapies such as Audiolyfe.

In conclusion, the findings confirm that Audiolyfe stimulation effectively fosters the development of children's potential and talents through mechanisms involving brain activation, improved concentration, and enhanced creativity. The results of this study provide a strong foundation for positioning Audiolyfe as an innovative approach to supporting child development. However, it is important to note that Audiolyfe is a gradual form of stimulation and does not yield immediate results. Therefore, active parental involvement is crucial to ensure consistent application at home, accompanied by regular evaluations to support the overall success of the therapy program.

CONCLUSION

Stimulation using Audiolyfe has been proven to have a significant impact on the development of children's potential and talents in Banda Aceh. The measurement results showed a marked increase between pre-test and post-test scores after the children received an intervention in the form of Audiolyfe stimulation. This technology employs specific sound frequencies designed to stimulate areas of the brain associated with creativity and concentration. Children who regularly receive this stimulation demonstrate enhanced creativity and cognitive abilities.

Therefore, the application of Audiolyfe stimulation serves as an effective tool for supporting the growth of children's potential, making an important contribution to fostering the development of their talents and intelligence across various fields. These findings provide valuable guidance for parents and educational institutions in Banda Aceh to optimize children's potential through innovative, technology-based approaches.

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