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RESEARCH ARTICLE

Auditory Intellectually Repetition (AIR) Learning Model Assisted by Microsoft Sway: Influence on Students' Learning Outcomes in Physics Science Lessons

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Abstract

The increasing need for effective learning models in education has led researchers to explore various instructional methods and tools. Among these, the Auditory Intellectually Repetition (AIR) learning model has shown promise in enhancing student engagement and comprehension. The purpose of this study was to determine the impact of the AIR learning model supported by Microsoft Sway on student performance in a physics science classroom. The study population consisted of 92 eighth-grade students of MTs Muhammadiyah Sukarame, Bandar Lampung, Indonesia divided into experimental and control groups using purposive sampling techniques. Data were collected through a 10-question written test and analyzed using an independent samples t-test. Results indicated that the AIR learning model significantly improved student learning outcomes, with the experimental group outperforming the control group ($p < 0.05$). The AIR model's integration with Microsoft Sway facilitated interactive and engaging learning, enhancing student understanding and retention. The study underscores the potential of combining innovative learning models with digital tools to address common educational challenges, such as low student engagement and poor comprehension. These findings align with the broader educational objective of leveraging technology to foster higher-quality learning experiences. By incorporating listening, reasoning, and repetition, the AIR model promotes active student participation and intellectual development, making learning more effective and enjoyable. This research highlights the importance of adopting such integrative approaches to improve educational outcomes and suggests future studies could explore combining different digital tools with varied learning models to maximize student potential.

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INTRODUCTION

Currently, the development of science and technology is progressing very rapidly. In this era of increasing modernization, high-quality human resources are urgently needed to keep pace with scientific and technological advances and achieve national glory (Coffman et al., 2002). One way to improve the quality of talented human resources is to improve the level of education (Jayadiningrat et al., 2017; Kooli & Abadli, 2022). Education is a means for individuals to acquire existing knowledge and new types of knowledge, and it also serves as a platform for expanding one's thinking more optimally. The knowledge gained can then be applied to life now or in the future (Fityan & Wahyudin, 2018; Tuomi, 2002). Achieving desired educational goals is inseparable from implementing effective learning processes.

Learning activity is an educational process in which communication is established between the educator and the student to help the student become better individuals for the future and as a means to develop knowledge (Tama et al., 2018). Learning activities can be carried out effectively if the knowledge or concepts imparted by the educator are well communicated to the students (Arends & Kilcher, 2010; Kamran et al., 2023; Wicaksono et al., 2021). Through this, students' learning outcomes can also be improved.

Learning outcomes are also known as behavioral changes after students complete their learning activities. These behavioral changes manifest as changes in knowledge (cognitive), attitudes (affective), and skills (psychomotor) (Asdar et al., 2020; Sönmez, 2017). One thing that can improve student learning outcomes is to implement a learning model that is appropriate for the subject being taught (Anggraini et al., 2020). It is important to use a good learning model. A learning model is a plan or pattern that can be used to create curriculum, design learning materials, and guide learning in classrooms and other settings (Laurillard, 2013; Romiszowski, 2016; Rusman, 2012). A learning model that can help students more easily understand the presented material, encourage them to think actively, and motivate them to actively participate in learning activities, specifically a learning model AIR (Manurung & Sagita, 2019; Syahid et al., 2021).

The Auditory Intellectually Repetition (AIR) learning model is similar to the Somatic, Auditory, Visualization, Intellectually (SAVI) and Visualization, Auditory, Kinesthetic (VAK) learning models (Huda, n.d.). Students learning by listening, reasoning, and repeating lessons are important in the AIR model (Syazali et al., 2021). The AIR model is a learning model whose implementation takes into account three aspects, the first of which is auditory means speaking and listening, in this aspect students learn by listening and hearing the teacher present, understanding what is said, speaking, and present in front of the class, express opinions and respond to opinions of other students. Second, in terms of intellectually, that is, the ability to think, in this aspect, students learn by thinking and solving problems, especially according to the regulations, the teacher raises a problem related to the material, and then Students think about how to solve problems and think of solutions. To apply the results of the discussion. Third repetition means to repeat, the purpose of repetition in this aspect is that students can repeat the material they have learned in the form of individual problems, exercises, and quizzes.

This is intended to deepen and expand students' understanding after receiving material from educators (Irmayanti, 2019). Using the AIR Model can be a solution to overcoming problems in physics learning. As learning activities are more effective and enjoyable, students will be more enthusiastic about learning activities because students think that physics lessons are very boring (Gertz et al., 2024; Siregar et al., 2022). Students often express their ideas, students can understand the lesson material presented because there is repetition at the end of learning such as quizzes and assignments so that students remember more about the formulas in physics, students can exploit their minds to solve problems and think about how to apply problems. This means that students are more adept at solving problems and can understand the lessons delivered by educators (Yuliani et al., 2019).

Applying the AIR model affects student learning outcomes (Hakimin et al., 2021). Other research showed that applying the AIR model can improve students' understanding of mathematical concepts and reasoning (Shabrina et al., 2021). The AIR learning model had a significant influence on students' physics learning outcomes (Siregar et al., 2022). In previous research, no one has integrated learning media to improve students' learning outcomes. Therefore, another way to update learning using the AIR model and improve student learning outcomes is to use Microsoft Sway media.

To obtain different sources of information, researchers need different media such as electronic media (Zakia, 2018). Microsoft Sway is listed as a feature of Microsoft Office 365, which is an interactive learning medium that makes it easier for users to share reports, personal presentations, and stories as web pages. In Microsoft Sway, users can convert text, images, animations, videos, and sounds, and the available formats are also very diverse and interesting. What makes Microsoft Sway so appealing is that it has a modern interface, can be adapted to the user's wishes, and is quick and easy to use, accessible on mobile phones if used. Internet network and no need to install the application because just click on the link provided. The learning materials display screen will appear. The advantage that will be gained if you use Microsoft Sway is that students can easily get the course materials. In addition, students can connect to Microsoft Sway anytime, anywhere without time limits (Hlazunova et al., 2024; Listianah et al., 2022). With Microsoft Sway, users no longer have to spend a lot of time editing the presentations they create. An integrated design engine improves automatically created works. If users don't like the original theme, they can easily apply another theme or change the layout to their liking (Qutsiati Utami et al., 2022). Therefore, using Microsoft Sway to support the learning process can promote students' interest and motivation to pay attention to the explanation of the material presented by the teacher (Waskitorini & Arifendi, 2021).

Sourced from the results of pre-research interviews with science teachers in the preliminary research shows that during the process of learning physics, some students ignore the teacher when explaining lesson content. Students think that physics lessons are very difficult and boring, leading to a lack of reaction and enthusiasm in participating in learning activities. Students also do not actively participate in learning activities, which create them unable to digest material. At that time, students did not want to ask teachers or friends if they had difficulty understanding the learning materials, and when teachers asked about the materials they had taught to students, only a few students answered. The remaining students just remained silent. The learning model used by educators is the Direct Instruction model. Applying the direct learning model does not allow students to participate actively in learning activities. At the same time, the learning materials used are printed books, PPTs, and sometimes blogging media. However, this learning medium does not arouse students' interest in paying attention to the explanation of the content presented by the teacher. Some students' scores were lower than the minimum standard during the examination. The reason is that students do not understand the lesson, so when answering the questions in the exam, they cannot answer and score low.

Low student learning outcomes, particularly in cognitive abilities, are often attributed to the application of inappropriate learning models. This issue results in students not actively engaging in their studies, becoming bored, and losing interest in learning. Consequently, they fail to thoroughly understand the lesson content (Anggraini et al., 2021). Addressing this challenge requires innovative and engaging teaching methods to foster better learning environments and improve student outcomes.

One such innovation is using Microsoft Sway in the Auditory Intellectually Repetition (AIR) learning model. The integration of Microsoft Sway aims to assist educators in explaining material more effectively. This tool is particularly beneficial in subjects like physics, where students often find the content challenging and uninteresting. By incorporating engaging and interactive media, Microsoft Sway can make lessons more appealing, thereby increasing student enthusiasm and attention. This approach is essential to combat student disengagement and foster a more interactive and stimulating learning environment.

Given the potential benefits of combining the AIR learning model with Microsoft Sway, researchers have undertaken a study titled "Auditory Intellectually Repetition (AIR) Learning Model Assisted by Microsoft Sway: Influence on Student Learning Outcomes in physics science lessons." This research aims to explore how this combined approach can positively impact student learning outcomes in physics science lessons. By addressing the existing problems with traditional learning models and leveraging innovative tools, the study seeks to provide insights into more effective teaching strategies that can enhance cognitive abilities and overall student performance.

METHOD

This study is classified as a quasi-experimental study. A nonequivalent control group design was the design of this study. This design uses an initial test before treatment and a final test after treatment, including two groups, the experiment group, and the control group (Yuberti & Saregar, 2017). The experiment group was given action with the AIR learning model and Microsoft Sway, while the control group was treated with the direct instruction model

Research Design and Procedures

A non-equivalent control group design was employed in this study. The research was conducted at MTs Muhammadiyah Sukarame in Bandar Lampung from August 22, 2023, to September 16, 2023. Two groups were involved: the experimental group and the control group. The experimental group utilized the Auditory Intellectually Repetition (AIR) learning model assisted by Microsoft Sway. The learning process in this group comprised three stages: preliminary activities, core activities involving the implementation of the AIR model and Microsoft Sway, and closing activities. In contrast, the control group followed the direct instruction learning model, also structured into three stages: preliminary activities, core activities implementing the direct instruction model, and closing activities. Both groups underwent pre-exam and post-exam assessments to measure students' cognitive learning outcomes. The results of these assessments were then analyzed to conclude the learning outcomes of students in the experimental and control groups.

Population and Sample

The subjects of this study were Grade VIII students at MTs Muhammadiyah Sukarame Bandar Lampung during the odd semester of the 2023/2024 school year, comprising a total of 92 students becoming the population that includes all research subjects with certain characteristics (Sundayana, 2018). Samples were selected using a purposive sampling method. Consequently, the resulting sample consisted of 30 students from class VIII-B and 30 students from class VIII-C.

Data Collection and Instrument

Tests and observations were the methods used to collect data in this research. The test used to measure cognitive learning outcomes in physics science subjects (force and motion) consists of essay questions, with 10 questions administered before the treatment (pretest) and after the treatment (posttest). This test focuses on students' mastery of Bloom's Revised Taxonomy cognitive levels: C1 (remembering), C2 (understanding), C3 (applying), and C4 (analyzing). To measure the implementation of the AIR learning model assisted by Microsoft Sway in learning activities, observation sheets were used and study activities were documented.

Data Analysis

In this research, prerequisite tests were used in the form of normality tests and homogeneity tests. Normality tests were conducted to ensure that the data distribution met the assumptions required for further parametric testing. Homogeneity tests were then performed to verify that the variance within each group was similar, which is crucial for the accuracy of the hypothesis tests. Hypothesis testing using independent sample t-test was carried out to compare the mean scores between the experimental and control groups, allowing the researchers to determine the effectiveness of the AIR learning model supported by Microsoft Sway. Additionally, observations of the implementation of the AIR model were assessed using a Likert scale to gauge the extent of student engagement and interaction during the learning process.

RESULT AND DISCUSSION

Students' cognitive learning outcomes were measured by a test in the form of essay questions with a total of 10 questions. At the same time, the learning process is evaluated by observing the implementation of the learning model. The cognitive learning results of students in the experiment group and the control group are shown in Table 1 as follows.

Table 1. Students' learning outcomes data

Group	Pre-exam		Post-exam		Average Value	
	X_{min}	X_{max}	X_{min}	X_{max}	Pre-exam	Post-exam
Experiment	37,5	67,5	72,5	90,0	51,08	80,67
Control	32,5	60,0	67,5	87,5	45,92	75,75

The table results indicate a significant improvement in cognitive learning outcomes for both the experimental and control groups. The experimental group, utilizing the AIR learning model assisted by Microsoft Sway, showed an increase in average scores from 51.08 (pre-exam) to 80.67 (post-exam). In comparison, the control group, which followed the direct instruction learning model, improved from an average score of 45.92 (pre-exam) to 75.75 (post-exam). While both groups exhibited substantial progress, the experimental group achieved a higher post-exam average, suggesting that the AIR learning model with Microsoft Sway enhanced student engagement and understanding more effectively.

Then the implementation of the AIR learning model was assessed using an observation sheet. The results of implementing the AIR learning model in three meetings can be shown in Table 2 as follows.

Table 2. AIR Model implementation data

Meeting	Percentage	Category
1	87%	Very good
2	86%	Very good
3	87%	Very good
Average	87%	Very good

The table above shows that the implementation of the AIR learning model at the first meeting was in the very good category, at the second meeting with a percentage of 86% in the very good category, and the third meeting with a percentage of 87% in the very good category. Based on these data, the implementation of the AIR learning model in the experiment class went very well.

After obtaining the pre-exam and post-exam data, the next action was to analyze them using SPSS version 25. Tests were performed in the form of normality tests, homogeneity tests, and hypothesis tests using independent samples t-tests. To find out whether the data is normally distributed or not, a normality test is performed. The normality test used was that of Kolmogorov-Smirnorv with a sig level of 5% (0.05) as shown in Table 3 below.

Table 3. Normality test results

Class	Kolmogorov-Smirnov[a]	Interpretation
	Sig.	
Pre-exam experiment	.200	Normal
Post exam experiment	.175	Normal
Pre-exam control	.159	Normal
Post exam control	.068	Normal

Based on these data, the significant size of the experiment group and control group is > 0.05. So, the pre-exam and post-exam data for the two groups are normally distributed. To find out whether the sample used has uniform variation or not, a homogeneity test is performed. The homogeneity test used is One Way Anova with a significance level of 5% (0.05) which can be shown in Table 4 below.

Table 4. Pretest and posttest homogeneity test results

Test of Homogeneity of Variance		
Data	**Sig.**	**Information**
Pre-exam	.328	Homogeneous
Post-exam	.765	Homogeneous

After carrying out the prerequisite tests, the next step is to test the research hypothesis using the independent samples t-test. Hypothesis testing was to determine whether the AIR learning model assisted by Microsoft Sway affects student performance in physics science classes. Hypothesis test results are presented in Table 5 below.

Table 5. Hypothesis test results

Independent Samples Test		
Data	**T**	**Sig. (2-tailed)**
Experiment and Control Groups	3.503	.001

Table 5 above shows that the t_{count} value is 3.503 and it can be seen that the t_{table} value is 2.000, which means the $t_{count} > t_{table}$ value. If in hypothesis testing the value of $t_{count} > t_{table}$ then H0 is rejected and H1 is accepted. Then the sig value (2-tailed) is 0.001, which means the sig value is < 0.05. If in hypothesis testing the significant value is < 0.05, H0 is rejected and H1 is accepted. It indicates that there is an influence of the AIR learning model assisted by Microsoft Sway on student learning outcomes in physics science lessons.

Previous studies have applied the AIR model to student motivation and learning outcomes. This shows that the AIR model supported by worksheets significantly impacts student motivation and learning outcomes (Bulu et al., 2021). Meanwhile, the results of this study support previous research that the AIR model can improve students' learning outcomes through the use of other media, namely Microsoft Sway. Using a variety of media broadens students' experience with the media used for learning and increases students' enthusiasm for participating in learning activities.

Based on research data, the pre-exam and post-exam results in Table 1 show an increase in both classes, the average score of the experiment group is higher than the control group. This difference is due to differences in treatment between the two groups. In the experiment group, treatment was delivered in the form of an AIR learning model supported by Microsoft Sway media. The AIR model allows students to play an active role in learning activities. After that, there is a discussion stage regarding the material that has been taught and a discussion of problems related to the material to train students' thinking skills, and there is repetition at the end of the lesson so that students can easily understand and memorize the content. Using Microsoft Sway increases students' enthusiasm for subjects because it looks attractive. Meanwhile, the control class was given treatment in the form of a direct learning model, but this model was less able to involve students in active learning because the direct learning model did not involve students in its implementation. Therefore, students feel bored when participating in learning activities and do not understand the material being taught.

Using the AIR learning model, students have more time to hone their knowledge and skills, helping them participate more actively so they do not feel bored while participating in learning activities. Students with below-average ability can solve math problems in their own way, students have extensive expertise to figure out something when solving problems and train them to remember the material taught (Shoimin, 2014). Meanwhile, using Microsoft Sway as a learning medium can make it easier for students to accept learning materials and be more enthusiastic to pay attention to the presented material because viewing on Microsoft Sway is not monotonous, it can transmit images, sounds, videos, questions, and interesting formats available to reduce students' boredom during the learning process, and can also use Microsoft sway anywhere (Listianah et al., 2022). The research conducted showed that using AIR and the Microsoft Sway model was able to stimulate students' curiosity, allowing them to ask more questions about the lesson content and help them remember what was explained more easily, was able to understand the problem better and was more motivated to solve and explain the problem. The use of AIR and Microsoft Sway models can serve as a reference for educators to use effective learning models and learning media when carrying out learning processes.

CONCLUSION

The implementation of the AIR learning model assisted by Microsoft Sway appears to have had a positive impact on student learning outcomes, as evidenced by the significant improvement in the post-exam scores of the experimental group. This suggests that integrating interactive and engaging tools like Microsoft Sway can enhance the effectiveness of learning models, particularly in subjects that students find challenging. The findings support the adoption of innovative teaching methods to improve educational outcomes and foster better student engagement and understanding.

A limitation found while conducting the study was the use of a Liquid Crystal Display (LCD). He only has one LCD screen at school, so he has to take turns using it with other teachers. We hope that this study provides researchers and readers with new knowledge about the use of the AIR learning model supported by Microsoft Sway, and for further research, it is hoped that it can combine learning media with learning models, such as Microsoft Sway media which can be combined with other learning models, as well as further connecting Microsoft Sway into the learning model used.

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