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The Effect of the Advance Organizer Learning Model Assisted by the Interactive Media Book Creator on the Motivation and Learning Outcomes of High School Students in Physics

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A R T I C L E I N F O

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A B S T R A C T

This study aims to examine the effect of implementing the advance organizer learning model supported by the interactive Book Creator software on the motivation and physics learning outcomes of high school students regarding energy sources. A quantitative method was used. The use of the advance organizer learning model supported by the interactive Book Creator software can be utilized to measure students' learning abilities. The research design used was a posttest-Only control group; this study can determine the effect on students' motivation and physics learning outcomes. Data analysis utilized SPSS version 27 software with the Mann-Whitney U test. The analysis results indicate a significant effect between the average scores of the experimental class and the control class, with a test result of Asymp.Sig. 0.000 (< 0.05). Meanwhile, the learning outcomes showed an Asymp.Sig. value of 0.04 (< 0.05), indicating a significant effect between the average scores of the experimental and control classes. Therefore, it can be concluded that the implementation of the Advance Organizer learning model supported by the interactive Book Creator media has an effect on the motivation and physics learning outcomes of MA students

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INTRODUCTION

Education is a deliberate and planned effort to create an environment where learning activities can take place and to help guide the learning journey. In this context, students are encouraged to fully explore their potential so that they may acquire spiritual and religious steadfastness, self-discipline, good character, knowledge, exemplary ethical values, and the skills necessary for their personal growth and the progress of society (Rahman et al., 2022). Therefore, the education system must be planned in an integrated and sustainable manner, in accordance with students' needs and societal demands, to produce individuals who are competitive, possess good character, and care for their social environment.

One subject that equips students with 21st-century skills is physics. These 21st-century skills emphasize the importance of masteringfour competencies: Creative Thinking, Critical Thinking and Problem Solving, Communication, and Collaboration (Muthmainnah et al., 2023). Physics instruction at MAN 2 Jember is one of the subjects designed to help students develop 21st-century skills; however, students perceive this subject as difficult, leading to a lack of enthusiasm for learning physics. Consequently, there is a need to enhance students' motivation, which directly impacts their academic performance. Based on interviews and observations of teachers at MAN 2 Jember, 10th-grade students' motivation to learn physics remains low, which affects their learning outcomes.

This is evident from their lack of interest and enthusiasm during teaching and learning activities, as well as the fact that only about 20% of students meet the minimum standards. Interviews with teachers revealed that the primary challenge faced by teachers is that lessons are often scheduled during the last period of the day, which makes students more prone to fatigue and drowsiness, thereby reducing their motivation. Additionally, teaching approaches frequently center on the teacher, such as lectures and discussions. Therefore, more innovative teaching models and media are required. MAN 2 Jember also has facilities such as projectors and laboratories, and all students bring their cell phones, which facilitates learning that utilizes online tools like Book Creator.

Learning motivation is the conscious drive within an individual that motivates, directs, and sustains learning behavior, thereby fostering students' enthusiasm for learning to achieve desired outcomes (Yogi Fernando et al., 2024). According to PISA (2022), as cited in the journal Sulistyowati et al., (2024), Indonesia experienced a 13-point drop in scores in mathematics and science. This situation indicates issues in the learning process that need to be addressed. Research by Saragih et al., (2023) identified factors that can influence learning motivation, such as interest, satisfaction, mastery, and the desire to learn about something, which ultimately impact students' learning outcomes. Based on this analysis, learning motivation still requires further study to be improved.

Learning outcomes are defined as the assessments achieved by students after participating in learning activities that include evaluations of students' knowledge, behavior, and skills, along with changes in behavior (Yogi Fernando et al., 2024). The purpose of such assessments is to evaluate how successfully students have understood the taught material. Bloom, as cited in Ulfah &

Arifudin, (2021) study, categorizes learning outcomes into three domains: the cognitive domain, which relates to intellectual abilities; the affective domain, which concerns attitudes and values; and the psychomotor domain, which encompasses actions and skills (Widyastuti & Ulfah, 2023). Yandi et al., (2023) noted that learning results are affected by outside influences, including the availability of instructional materials, the school environment, and school culture, as well as internal factors such as motivation, teacher competence, teacher-student relationships, discipline, classroom management, the school atmosphere, and students' ability to self-regulate. All of these factors play a role, either directly or through certain mediators, in student learning success.

Students often find physics difficult, so teachers need to use appropriate methods to make learning more understand and fun. One effective approach is to utilize interactive learning models and media. The Advance Organizer model is a learning model that emphasizes the importance of understanding basic concepts before introducing new material. By providing an overview at the beginning, students can understand the learning objectives and build a better knowledge structure (Parenta, 2020a). One benefit of using the Advance Organizer approach in education is that it helps students understand the course material and build their social skills. It also encourages pupils to come up with solutions to the challenges that are presented to them (students become more engaged), and it helps them improve their thinking abilities, whether they are working alone or in groups.

However, its disadvantages include the need for strict supervision by the teacher and the limitation that class sizes should not be too large (Parenta, 2020a). A study by Harjono et al., (2024) demonstrates that the Advance Organizer learning approach has a notable impact on the physics learning outcomes of students based on their previous knowledge. The study findings show a rise in the mean score from 35.6 on the pretest to 81.5 on the posttest, leading to the conclusion that the Advance Organizer model is capable of significantly improving students' learning outcomes. In his research, Gapari, (2023) concluded that the Advance Organizer model significantly affects the learning results of tenth-grade pupils at MADA Jerowaru, as the calculated t-value (64.67) is higher than the critical t-value (1.708). Based on Gapari's research, this study employs the Advance Organizer learning model for the school-based research.

According to research by Safrinus & Harefa, (2022), interactive media can create a more immersive learning experience, thereby helping students master the material being taught. One application with great potential but that has yet to be extensively studied at the high school level is Book Creator, a digital application that combines text, images, videos, audio, and quizzes (Mardiana et al., 2024). In the study conducted by Mardiana et al., (2024), It was observed that Book Creator use had a considerable influence on elementary school pupils' academic performance; yet, its efficacy at the high school level, particularly in physics education, needs more research. In addition, there are a few gaps.

First, studies investigating the effectiveness of Book Creator in senior high school settings, particularly in physics learning, are still limited. Second, previous research has primarily focused on learning outcomes, while students'

learning motivation has received less attention. Third, limited studies have integrated Book Creator with specific instructional models, such as the Advance Organizer learning model, to support students' understanding of physics concepts. Therefore, This study aims to examine the impact of the Book Creator platform-backed Advance Organizer learning model on Islamic Senior High School students' motivation and physics learning outcomes. This study contributes to the literature by examining the integration of an instructional model with an interactive digital platform and by simultaneously exploring both motivational and cognitive learning aspects.

LITERATURE REVIEW

Learning motivation and learning outcomes are two essential indicators of successful educational practices. Learning motivation refers to the internal and external forces that encourage students to engage in learning activities and persist in achieving academic goals. According to Yogi Fernando et al. (2024), motivated students demonstrate greater enthusiasm, perseverance, and willingness to participate actively in classroom activities, which ultimately contributes to improved academic achievement. Similarly, Saragih et al. (2023) reported that motivation, together with students' interests and satisfaction, significantly influences learning outcomes. In addition, the decline in Indonesia's science performance reported by PISA 2022 (Sulistyowati et al., 2024) highlights the urgent need for innovative instructional strategies capable of improving both students' motivation and academic performance.

One instructional approach that has received considerable attention is the Advance Organizer learning model, originally developed based on Ausubel's theory of meaningful learning. This model emphasizes activating students' prior knowledge before introducing new concepts, enabling learners to integrate new information into their existing cognitive structures (Parenta, 2020a). By presenting conceptual frameworks at the beginning of instruction, students can better organize information, understand relationships among concepts, and retain knowledge more effectively. Furthermore, Parenta (2020b) explains that the Advance Organizer model encourages active learning by helping students construct meaningful connections between previous experiences and newly acquired knowledge.

Empirical studies consistently demonstrate the effectiveness of the Advance Organizer model in improving student learning. Harjono et al. (2024) found that the model significantly enhanced students' physics learning outcomes, with substantial improvements between pretest and posttest scores. Likewise, Gapari (2023) reported that the implementation of the Advance Organizer model significantly improved students' academic achievement in senior high school. Rafuhal et al. (2024) further confirmed that the model effectively increases learning outcomes by promoting meaningful understanding rather than rote memorization. In addition to cognitive achievement, Najla et al. (2025) revealed that the Advance Organizer model positively influences students' learning motivation by increasing their engagement and interest during classroom instruction.

The integration of interactive digital media into classroom learning has become increasingly important in supporting student-centered education. Safrinus and Harefa (2022) argued that interactive learning media create engaging learning environments by combining multimedia elements that stimulate students' attention and facilitate conceptual understanding. One digital platform that has gained popularity is Book Creator, an application allowing educators to integrate text, images, videos, audio, and interactive activities into digital learning materials (Mardiana et al., 2024). This multimedia environment encourages students to participate actively and independently throughout the learning process.

Several previous studies have demonstrated the educational benefits of Book Creator. Mardiana et al. (2024) found that Book Creator significantly improved elementary students' learning outcomes through interactive and multimedia-based instruction. Similarly, Arifah and Ary (2025) reported that Book Creator-based instructional media effectively enhanced students' academic performance and conceptual understanding. Moreover, Maryam et al. (2025) emphasized that Book Creator increases students' learning motivation by providing contextual, attractive, and enjoyable learning experiences. Supporting these findings, Syabrina and Arrazi (2025) concluded that Book Creator successfully increases students' learning interest because its multimedia features make classroom activities more engaging and meaningful.

Previous research has generally investigated either the effectiveness of the Advance Organizer learning model or the use of Book Creator as instructional media independently. Studies have confirmed that the Advance Organizer model improves conceptual understanding, problem-solving abilities, and learning outcomes (Harjono et al., 2024; Gapari, 2023), while Book Creator has been shown to enhance student engagement and academic achievement (Mardiana et al., 2024; Arifah & Ary, 2025). However, limited studies have examined the combined implementation of the Advance Organizer model supported by Book Creator, particularly in senior high school physics education. Furthermore, existing research has primarily focused on cognitive achievement, with relatively little attention devoted to simultaneously examining students' learning motivation and learning outcomes.

Therefore, this study addresses these research gaps by investigating the effectiveness of integrating the Advance Organizer learning model with Book Creator interactive media in improving both learning motivation and physics learning outcomes among senior high school students. This integration is expected to contribute to the growing body of literature on technology-supported instructional strategies and provide practical implications for physics educators seeking innovative approaches to improve students' engagement and academic achievement.

METHODS

This study employed a quantitative research method. The instructional design utilized a posttest control group design with a true experimental research type. The experimental class used the Advance Organizer model supported by

the Book Creator platform, while the control class used the instructional model typically employed by teachers at the school. Data collection was conducted at MAN 2 Jember using several instruments, including:

1) A learning outcome test, based on basic competency indicators and accompanied by an assessment rubric. This test was used to assess students' physics learning achievements in the form of a posttest comprising multiple-choice questions and validated by experts.
2) A learning motivation questionnaire, evaluated using a Likert, covering interest, perseverance, goals, and self-confidence.
3) Observations, conducted to gather information and directly understand the students' learning process.
4) Interviews, which are conducted with the physics teacher, used to gain a clearer understanding of the teaching and learning process.
5) Documentation, for collecting and storing important data. These research procedures are organized in a structured manner to facilitate the research process.

Steps in Research The research began with preparation, followed by the allocation of populations and samples and the establishment of the study. samples were separated into the experimental and control classes. The experimental class was exposed to a Book Creator media-based Advance Organizer model, whereas the control class utilized a learning model that instructors often utilized in schools. After the completion of the learning process, both classes were given post-test results of physics learning and learning motivation lift. The data obtained is then processed and analyzed, then discussed until finally reached a conclusion from the research results.The data in this study were analyzed using descriptive analysis and quantitative analysis via the t-test using SPSS version 27. The data analysis steps included:

1. Data analysis of the Advance Organizer learning model supported by the Book Creator interactive learning media on student learning motivation.

a) Normality test (One-sample Kolmogorov-Smirnov test)

A normality test checks if the data follows a normal distribution. In this study, the one-sample Kolmogorov-Smirnov test was used. Hypotheses for the normality test:

Ho = The data are normally distributed

Ha = The data are not normally distributed

Decision criteria: If Sig. (p-value) is greater than 0.05, then H_0 is accepted → the data are normally distributed. However, if the p-value (Sig.) is ≤ 0.05, then H_0 is rejected → the data are not normally distributed.

b) t-Test

The t-test helps find out if two groups of data are different in a meaningful way. In this study, a t-test was used to compare two separate groups.

Ho: $\mu_E = \mu_k$ (There is no difference in learning motivation between the two groups)

Ha: μ_E ≠ μ_k (There is a difference in learning motivation between the two groups)
Decision criteria: if Sig. (2-tailed) is greater than 0.05, then H_0 is accepted → there is no significant difference. Conversely, if Sig. (2-tailed) ≤ 0.05, then H_0 is rejected → there is a significant difference.

2. **Data Analysis Methods for the Advance Organizer learning model supported by the Book Creator interactive learning tool on student learning outcomes.**

a. Normality Test (One-Sample Kolmogorov-Smirnov)

This test was conducted to ensure that the learning outcome data follow a normal distribution so that parametric analyses, such as the t-test, can be validly applied. Hypotheses for the normality test:
Ho = The data are normally distributed
Ha = The data are not normally distributed

Decision criteria: if Sig. > 0.05, then H_0 is accepted → the data are normally distributed. If Sig. ≤ 0.05, then H_0 is rejected → the data are not normally distributed.

b. T-test (Independent sample t-test)

Once we checked that the data had a normal distribution, we used an independent t-test to compare the learning results between the experimental group and the control group. T-test analysis:
Ho: μ_E = μ_k (There is no significant difference in learning outcomes between the two groups)
Ha: μ_E ≠ μ_k (There is a significant difference in learning outcomes between the two groups)

Decision rule: If the significance value (2-tailed) is greater than 0.05, we accept the null hypothesis, which means there is no significant difference. If the significance value (two-tailed) is less than or equal to 0.05, then the null hypothesis is rejected, meaning there is a significant difference.

RESULTS

This research intends to examine the effect of implementing the Advance Organizer learning model, aided by the interactive Book Creator tool, influences the motivation levels and physics learning performance of high school learners. According to the findings of this study, students in the experimental group scored higher on both physics learning outcomes and motivation than did students in the control group. The results of the Mann-Whitney U test on learning motivation showed that a notable distinction existed between the average learning motivation scores of the experimental group and the control group. The learning outcomes showed a significant difference between the average scores of the experimental class and the control class.

Thus, it can be concluded that the Advance Organizer learning model supported by the Book Creator interactive media has an effect on the motivation and physics learning outcomes of MA students. This is consistent with several

previous studies, as follows: This is consistent with several previous studies, as follows research Sibela et al., (2024) The findings of the study indicate that the Advance Organizer model can improve students' cognitive abilities in physics. Najla et al., (2025) The results of this study indicate that the use of the advance organizer learning model has an effect on students' learning motivation. And Arifah & Ary, (2025), which indicate that learning media based on Book Creator may greatly enhance students' learning results. The moderate category for N-Gain (0.46) and the t-test results (significance value of 0.000 < 0.05) support this. These results show that students' comprehension and learning results may be enhanced by using learning materials based on digital technologies.

The study samples were determined through random cluster sampling techniques by lottery techniques, where random sampling is determined. This method is used after the selected class is homogeneous after its homogenicity is tested by Levene's test using the SPSS version 27 program. On the homogeneity test using the students' pure grades of odd semester physics subjects 2025/2026. The following Table 1 provides data on the results of the homogeneity tests conducted.

Table 1 Homogeneity Test

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Hasil Ujian Fisika	Based on Mean	2,099	4	176	,083
	Based on Median	1,210	4	176	,308
	Based on Median and with adjusted df	1,210	4	141,648	,309
	Based on trimmed mean	1,580	4	176	,182

Table 1 shows that the homogeneity test yielded a significance value of 0.083. According to established guidelines for homogeneity tests, if the significance value is greater than 0.05, the data is considered homogeneous; conversely, if it is less than 0.05, the data is considered non-homogeneous. Thus, the homogeneity test resulted in a significance value of 0.083, meaning the data is categorized as homogeneous. The application of the cluster random sampling technique resulted in two classes, which were then designated as the experimental class and the control class. The experimental class was class X-A, which utilized the Advance Organizer learning model combined with the Book Creator media, while class X-I served as the control class, applying the conventional learning model typically used in schools.

1. Data on Motivation to Learn Physics

Data on students' motivation to learn physics was collected through a questionnaire completed by the students. This questionnaire was distributed to both classes. The motivation questionnaire contained 8 positive and negative statements, which were expanded into 24 statements. The data from the motivation questionnaire can be seen in Table 2.

Table 2 Student Physics Learning Motivation Questionnaire Data

Kelas	Jumlah Siswa	Skor terendah	Skor tertinggi	Rata-rata
Eksperimen	37	59	84	70,3
Kontrol	36	50	81	67,8

Looking at Table 2, we can see that the lowest score in the experimental group was 59, and the lowest score in the control group was 50. The top score in the experimental group was 84, and the average was 70,3.In the control group, the highest score was 81, and the average was 67,8. The students in the experimental group were more eager to learn than the students in the control group. Additionally, the percentage scores that show how motivated students are to learn physics for each indicator are listed in Table 3 like this.

Table 3 Percentage Scores of Students' Motivation to Learn Physics

Indicators of Learning Motivation	Experimental Class	Control Class
Perseverance in completing tasks	79,50 %	74,77%
Resilience when facing challenges	77,93%	75%
Demonstrating high interest	82,21%	77,78%
Enjoys working both independently and in groups	72,07%	70,14%
Quick to become bored with routine tasks	63,29%	59,03%
Able to defend their opinions	68,47%	70,60%
Does not easily give up on what they believe in	71,40%	69,68%
Enjoys identifying and solving problems	71,40%	67,82%
Average	73,28%	70,60%

Based on Table 3, the percentage scores for motivation to learn physics Both the experimental and control groups are in the high category, with the experimental group scoring an average of 73.28% and the control group averaging 70.60%. The difference in these averages is relatively small, indicating that the experimental class's motivation to learn physics is relatively higher compared to the control class. The indicator with the highest percentage was "showing high interest"; in this indicator, the experimental class had a percentage of 82.21% in the very high category, while in the control class, the indicator with the highest percentage was also in the same category, at 77.78%.

2. Physics Learning Outcomes Data

The data on students' physics learning outcomes were derived from the post-test scores administered at the end of the lesson on energy sources. The data on students' physics learning outcomes are as follows.

Table 4 Data on students' physics achievement

Kelas	Jumlah Siswa	Nilai terendah	Nilai tertinggi	Rata-rata
Eksperimen	37	40	100	74,3

Kontrol	36	30	100	65,5

Table 4 shows that the experimental class achieved an average physics learning A score of 74.3, where the highest possible score is 100 and the lowest is 40. At the same time, the average score for physics learning in the control class was 65.5, with the highest score reaching 100 and the lowest score being 30. This shows that, in general, the experimental class performed better in learning than the control class.

3. Testing the Effect of the Advance Organizer Learning Model Supported by the Interactive Book Creator Learning Media on Students' Motivation to Learn Physics

The purpose of this study is to examine the effect of implementing the Advance Organizer learning model supported by the interactive learning media Book Creator on students' motivation to learn physics. Therefore, the scores obtained from the Likert scale questionnaire will be tested using statistical analysis with SPSS version 27 to determine whether the effect is positive or not. The following are the results of the statistical analysis:

a) Normality Test

In this study, the normality test was used to determine whether the learning motivation data were normally distributed or not. The learning motivation questionnaire data were subjected to a normality test using the One-Sample Kolmogorov-Smirnov Test with SPSS version 27. Table 5 below shows the results Test that was conducted.

Table 5 Results of the Normality Test for Students' Motivation to Learn Physics

Tests of Normality

		Kolmogorov-Smirnov[a]		
	Kelas	Statistic	df	Sig.
Nilai Total Motivasi	Kelas Eksperimen	,150	37	,035
	Kelas Kontrol	,130	36	,127

b) Lilliefors Significance Correction

Referring to Table 5, the Kolmogorov-Smirnov normality test yields a significance value of 0.035 for the experimental class and 0.127 for the control class. The significance value for the experimental class is less than 0.05 and for the control class is greater than 0.05. Since one of the classes has a value less than 0.05, in accordance with the guidelines established for the normality test, it is concluded that the learning motivation questionnaire data are not normally distributed. In addition, there were outliers and asymmetrical scores, Some of the reasons why the data isn't normally distributed are included in that list, therefore, the subsequent testing proceeded with a nonparametric test, specifically the Mann-Whitney U test.

b) Hypothesis Testing

The study's hypothesis testing is meant to look at how the Advance Organizer model affects things, which utilizes the interactive Book Creator platform, on

students' motivation to learn physics. Based on the results of the normality test, the students' physics learning motivation questionnaire data were not normally distributed; therefore, the hypothesis test was conducted using a nonparametric test, specifically the Mann-Whitney U test. The Mann-Whitney U test is a type of statistical method that doesn't rely on assuming a specific distribution of the data.It is used to check if there is a difference between two separate groups of data. The results are shown in Table 6 below

Table 6 Results of the Mann-Whitney U test of students' physics learning motivation data

Test Statistics[a]

	Nilai Total Motivasi
Mann-Whitney U	220,000
Wilcoxon W	886,000
Z	-4,930
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: Kelas

Looking at Table 6, the results from the Mann-Whitney U test showed an Asymp. The significance value (two-tailed) is 0.000, which is less than 0.05. This means we are rejecting the null hypothesis and accepting the alternative hypothesis. Looking at the data, there is a noticeable difference in the average scores for learning motivation between the two classes.This suggests that using the Advance Organizer learning model along with Book Creator interactive media greatly affects how motivated students are to learn physics.

B. Testing the Effect of the Advance Organizer Learning Model, Supported by the Interactive Book Creator Media, on Students' Physics Learning Outcomes

This study is meant to look at how using the Advance Organizer learning model affects things, supported by the interactive Book Creator learning media, on students' physics learning outcomes. Therefore, the scores obtained from the posttest of students' learning outcomes will be analyzed using statistical tests with SPSS version 27 to determine whether there is a positive effect or not. The following are the results of the statistical tests:

a) Normality Test

The normality test is used to check whether the learning outcome data in the study follow a normal distribution or not. The learning motivation questionnaire data will undergo a regularity check that uses the One-Sample Kolmogorov-Smirnov test. The results are shown in Table 7 below.

Table 7 Results of the Normality Test for Students' Physics Learning Outcomes

Tests of Normality

			Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil Belajar Fisika		Kelas Eksperimen	,177	37	,005	,921	37	,012
		Kelas Kontrol	,137	36	,085	,949	36	,098

a. Lilliefors Significance Correction

In Table 7, which shows the results of the Kolmogorov-Smirnov normality test, the significance values were 0.005 for the experimental group and 0.090 for the control group. The importance number for the experimental group is below 0.05, but for the control group, it is above 0.05. Since one of the classes has a value less than 0.05, in accordance with the guidelines established for normality tests, it is concluded that the distribution of students' physics learning outcomes is not normally distributed. Additionally, there are outliers and asymmetrical scores, which are among the causes of the data not being normally distributed; therefore, the subsequent analysis utilizes the nonparametric Mann-Whitney U test.

b) Hypothesis Testing

Hypothesis testing in this study was conducted to examine the effect of the Advance Organizer learning model assisted by the interactive Book Creator media on students' physics learning outcomes. Based on the results of the normality test showing that students' physics learning outcomes are not normally distributed, the hypothesis test was subsequently conducted using the nonparametric Mann-Whitney U test. The Mann-Whitney U test is designed to assess whether there are differences between two groups of data that are not paired together. The results are shown in Table 8 below:

Table 8 Results of the Mann-Whitney U Test of Students' Physics Learning Motivation Data

Test Statistics[a]

	Hasil Belajar Fisika
Mann-Whitney U	483,000
Wilcoxon W	1149,000
Z	-2,044
Asymp. Sig. (2-tailed)	,041

a. Grouping Variable: Kelas

According to Table 8, the Mann-Whitney U test resulted in an asymptotic significance value (two-tailed) of 0.041. Since the value is below 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted. From the data provided, it is clear that there is a difference in the average learning results

between the control group and the experimental group, suggesting that using the Advance Organizer learning model has a meaningful impact.

DISCUSSION

This experimental study was conducted at MAN 2 Jember during the second semester of the 2025/2026 academic year. A homogeneity test was performed prior to sample selection, using the raw scores from the physics exam in the first semester. The results of the homogeneity test indicated that the students' learning outcomes data were homogeneous. The samples used in the study were Class X-A and Class X-I, designated as the experimental and control classes, respectively. The research activities were carried out over a two-week period, comprising a total of three face-to-face sessions. The first and second sessions consisted of instructional activities, while the third session involved administering a posttest to measure students' learning outcomes and assess their achievement in the learning process. There are 7 stages in the Advance Organizer learning model: 1) setting objectives and motivating students, 2) presenting information, 3) organizing students into learning groups, 4) guiding group work and learning, 5) developing and presenting work products, 6) analysis and evaluation, and 7) providing rewards. The research was conducted with the assistance of two observers whose role was to monitor the implementation of the learning process.

1. The Effect of Implementing the Advance Organizer Learning Model Supported by the Book Creator Interactive Media on High School Students' Motivation to Learn Physics

Using the Advance Organizer learning model along with Book Creator interactive media can help make physics more interesting and motivate students to learn better. The Mann-Whitney U test showed a significance level of 0.000 on the two-tailed test. This value is less than 0.05, which means we should reject the null hypothesis, H0, and accept the alternative hypothesis, Ha. This shows that using the Advance Organizer learning model with Book Creator interactive media can significantly boost the motivation of MA students to learn physics.

The differences in students' scores on physics learning motivation are closely linked to the influence of the instructional models and media implemented. These differences can be seen in Table 4.3, where several indicators show higher percentages; for instance, the indicator of persistence in completing tasks in the experimental class yielded a percentage of 79.50%, compared to 74.77% in the control class. The experimental class achieved higher scores due to the use of the Advance Organizer model, which helped students understand the relationship between their existing knowledge and the material being studied, thereby making it easier for them to follow the learning activities and complete the tasks. According to Ausubel's theory of meaningful learning, learning is more effective when new information can be linked to students' prior knowledge (Parenta, 2020b). This condition can encourage students to be more persistent in completing the tasks assigned during learning activities.

The results of the survey on perseverance in facing challenges showed a percentage of 77.93% for the experimental class and 75% for the control class. This is believed to be influenced by the implementation of the Advance Organizer model, which provides a more structured initial understanding, enabling students to connect their prior knowledge with the material being studied and to grasp concepts more easily. This is supported by Ausubel's theory, as cited in (Parenta, 2020a), which states that students' cognitive structures determine their ability to learn new ideas and relationships. By strengthening these cognitive structures, students become better equipped to handle learning challenges and are less likely to give up when encountering difficulties.

The questionnaire results indicate a high level of interest, with the experimental class scoring 82.21% and the control class scoring 77.78%. The high level of student interest in the experimental class suggests that instruction in that class was more effective at capturing students' attention. The use of a learning model accompanied by interactive media makes learning activities more engaging, less monotonous, and can stimulate students' curiosity about the material being studied. This situation can encourage students to be more focused, active, and enthusiastic during the learning process. This is consistent with the research by Syabrina & Arrazi, (2025), which states that Book Creator can increase students' interest in learning; approximately 83% of students reported that this medium helps them understand concepts. Additionally, teachers reported that the medium provides innovative alternatives, thereby creating an engaging and effective learning environment. This is also consistent with the findings of Mige et al., (2023) who state that an Advance Organizer-based learning model can enhance students' understanding and application of concepts, as well as encourage them to be more active in problem-solving. This indicates an increase in students' interest and engagement in the learning process, particularly in problem-solving activities.

The scores for the job satisfaction indicator, for both individual and group work, were 72.07% for the experimental class and 70.14% for the control class. This difference is attributed to the fact that the experimental class had a more enjoyable learning atmosphere; furthermore, student engagement during learning, combined with a variety of learning activities using interactive media, can enhance a sense of togetherness and comfort during the learning process, whether working individually or in groups. This is supported by research by S. Purwanti et al., (2025), which states that the Advance Organizer model is highly effective in developing students' social skills, as it involves students in discussions, group work, and presentations. This active engagement provides students with opportunities to interact, exchange opinions, and build shared understanding, thereby allowing them to enjoy learning activities whether individual or group-based.

In the indicators, the rapid saturation of routine tasks has an experimental class student learning motivation level of 63.29%, while the control class is 59.03%. This indicator is measured by statements that are mostly positive, so a higher score indicates that students do not easily get bored doing tasks. Therefore, the percentage showed that the student's level of saturation of the task

in the experiment class was higher than that of the control class, which meant that the student learning motivation of the experiment class tended to be better. The use of Advance Organizer and Book Creator media models can make learning conditions more enjoyable and less boring, so students remain enthusiastic when faced with repeated tasks. In line with Mardiana et al., (2024) research, which states that Book Creator media equipped with animation, sound, video can increase students' enthusiasm for learning. The diversity of features makes learning activities more interesting, which makes students less easily saturated and still actively participate in learning.

The results of the percentage indicators were able to maintain opinions in the experimental classes of 68.47% and 70.60% in the control class. This difference is due to the characteristics of applied learning, where control classes using conventional learning allow students to express opinions more often directly through Q&A or discussion, making the ability to maintain opinions more sound. Meanwhile, in the experimental class that uses the Advance Organizer model assisted by the media Book Creator. Based on Ausubel's theory, the learning process emphasizes the provision of a preliminary framework (initial organization) that helps students understand concepts in a structured manner (Parenta, 2020a).

The percentage score of the indicator did not easily release what the experimental class believed to be 71.40% beyond the 69.68% control class. The percentage in high experimental classes is influenced by the model and learning used. This Advance Organizer model can help students in structured understanding of concepts from the beginning of learning. This is in line with Sani, (2013) which states that with the initial structured framework, students are more easily associated knowledge possessed with newly learned knowledge, so that the understanding formed becomes stronger and more unchanged.

Indicators were happy in finding and solving problems in experimental classes at 71.40%, while control classes were 67.82%. The high percentage of experimental classes can be influenced by the application of an Advance Organizer learning model that provides a preliminary overview of the material, so students are better prepared to accept the material and solve the problem on the given problem. The statement was supported by Gapari, (2023) which stated that models can create a conducive learning atmosphere and encourage students to think and solve problems with an open attitude.

The average result of learning motivation lift scores after the implementation of the Advance Organizer model assisted by the Book Creator media has improved. This result is in line with Rafuhal et al., (2024) The study found that using the Advance Organizer learning model has a notable impact on students' academic performance and that this approach has proven to be effective. In the study of Maryam et al., (2025) stated that using interactive media such as Book Creator can make learning facilities more interactive, contextual, and fun, so that they can positively influence students' motivation to learn. The use of the Advance Organizer learning model along with the Book Creator media has a considerable impact on students' motivation to learn.

2. The Effect of Implementing the Advance Organizer Learning Model Supported by the Book Creator Interactive Media on the Motivation and Physics Learning Outcomes of Senior High School Students

The implementation of the Advance Organizer learning model supported by the Book Creator interactive media can promote improvements in students' physics learning outcomes. This is evidenced by the results of the Mann-Whitney U test, which yielded an Asymp.value. Sig.(2-tailed) of 0.04. Since this value is below 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted.Therefore, it can be concluded that the use of the Advance Organizer learning model supported by the Book Creator interactive media significantly affects the physics learning outcomes of MA students. This result suggests that the variation in how much each class learned is due to the specific learning model that was applied.

The experimental class utilized the Advance Organizer model in learning activities covering cognitive domains C1 through C5. The first stage of this model involves orienting students toward the objectives and motivating them; this learning activity falls under cognitive domain C1 (remembering). The research results indicate that the use of the Advance Organizer model, supported by the Book Creator app, enables students to better recall basic concepts. At this stage, students are invited to review previous material and recall prior knowledge relevant to the upcoming lesson. Additionally, during this first session, the teacher provides motivation by connecting the material to students' daily experiences (Sani, 2013). The second stage involves presenting information; at this stage, students engage in learning that targets cognitive level C2 (understanding). Research data indicates a more significant improvement in students' learning outcomes. At this stage, students do not merely receive information but begin to understand the concepts explained through concept maps and the teacher's explanations. In line with this, Penggabean and Suyanti (2012) in Parenta, (2020a) state that Advance Organizers guide students to stimulate and strengthen their cognitive structures through various means, one of which is using concept maps. Additionally, supported by the Book Creator learning platform, which includes examples, students are able to understand concepts more deeply.

In the third stage, students are organized into study groups, which corresponds to cognitive level C3 (application). The research results indicate that students at this stage demonstrate greater proficiency in solving problems related to the concepts. At this stage, students are organized into study groups, and the teacher explains the process for forming these groups. Subsequently, using their existing knowledge and with the assistance of the Book Creator tool, students are guided to discuss, complete tasks, and apply concepts to the problems presented in groups. Furthermore, the C3 cognitive level (applying) also applies to the fourth stage, which involves guiding work and study groups. The research results indicate that students actively engage in discussions, are able to solve problems, complete tasks, and apply concepts with their groups with the assistance of the Book Creator tool and the teacher's guidance as a facilitator. This aligns with the view of Parenta, (2020a) who argues that the Advance Organizer model can guide students to discover or rediscover concepts, and that students

become active knowledge constructors, with the aim of enabling students to respond to instruction productively.

In the fifth stage, it is inhibiting and presenting the results of a career that hinders the cognitive path of C4 (analyzing). The research results show that students are able to process information, discuss, and present the results of their group's work, thus submitting an analyst to the problem solved. Presenting the results of his career here students were given the task of loading posters related to the material studied, as well as presenting work results. Subsequently analyzed and evaluated, this activity is at cognitive level C5 (evaluating). Research results show that students demonstrate their ability to better clean up arguments and assess problems. This statement is supported by Purwanti, (2024) which states that the Advance Organizer Model Works as a Contextual Karangka that helps students link early years with new information so that Learning Becomes Meaningful. A good understanding of organizational conservation allows students to assess a more critical problem, give arguments for suggesting the Right concept, and make the Right Decisions Based on Done Analysis. At the end of the lesson, it is realized to encourage and participate as actively as possible in learning.

Several studies have shown that using the Advance Organizer learning model positively affects learning outcomes. One such study was conducted by Rafuhal et al., (2024) The findings of their research indicated that the model had a significant impact on students' performance, demonstrating its effectiveness in improving learning results. In some studies related to the influence of the use of Advance Organizer learning models and the use of Book Creator media show that the models and media are significant enough to improve student learning outcomes.

The impact of the Advance Organizer learning model supported by Book Creator media on learning outcomes aligns with the findings of Mardiana et al., (2024) which has research results, namely the implementation of Book Creator media, has an impact on students' learning outcomes, so students show a positive reaction to the media. Not only that, the study of Putra et al., (2023) The study showed that the learning tool based on the Advance Organizer model works well, is easy to use, and helps improve students' physical learning results. These findings are also supported by Murihati et al., (2024), Someone showed that using a mind-mapping approach in the Advance Organizer learning model affects how well students learn and helps them develop better thinking skills.

CONCLUSIONS AND RECOMMENDATIONS

As for the results and discussions, the conclusions that can be drawn are as follows: There is an influence of the Advance Organizer learning model with the help of interactive media book creator on the physics learning motivation of X-grade students at MAN 2 Jember, and There is an impact of the Advance Organizer learning model with the help of interactive media book creators on the physics results of X-grade students at MAN 2 Jember.

FURTHER STUDY

This study has several constraints such as limited time for learning, as well as a solution to this problem by maximizing learning time. Infrastructure such as internet networks is also an obstacle to research, because not all students have internet networks, and the solution to this problem is to frequently contact and remind teachers and technicians to turn on class wifi early, so that by the start of lesson hours the class wifi can already be used and accessed by the internet. The disadvantage of this study is that there is only one validator in learning media validation, where the media validation in this study is only in one validator.

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