

THE EFFECT OF USING SMART BOX MEDIA ON THE IPAS LEARNING OUTCOMES OF FOURTH-GRADE STUDENTS

Ulya Dorazatun^{1*}, Muhammad Khozinul Huda², Susilawati³

^{1,2,3} Universitas Muhammadiyah Cirebon

¹ulyadorazatun@gmail.com

Abstract

This study was motivated by the low learning outcomes in the IPAS learning subject among fourth-grade elementary school students, which were attributed to the lack of innovative learning media and the prevalence of conventional teaching methods. The study aimed to determine the effect of using the Smart Box media on the learning outcomes of fourth-grade students in the IPAS learning subject regarding the topic "Me and My Needs", as assessed from cognitive, affective, and psychomotor learning outcomes. This study employs a quantitative approach using a quasi-experimental design with an unequal control group. The sample consists of two groups: an experimental group and control group, each comprising 21 students. Data collection techniques included tests, observations, and documentation. Data analysis was conducted using normality tests, homogeneity tests, N-Gain tests, and t-tests for independent samples with the assistance of SPSS. The results showed that the average posttest score for the experimental group was 81.90, higher than that of the control group, which was 67.14. The results of the t-test for independent samples showed a Sig. (2-tailed) value of $0.000 < 0.05$, indicating a significant effect of the use of the Smart Box media on IPAS learning outcomes.

Keywords: Smart Box media, IPAS learning outcomes, interactive learning.

Abstrak

Penelitian ini dilatarbelakangi oleh rendahnya hasil belajar mata pelajaran IPAS di kalangan siswa kelas IV SD, yang disebabkan oleh kurangnya media pembelajaran inovatif serta maraknya penggunaan metode pengajaran konvensional. Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan Smart Box media terhadap hasil belajar siswa kelas IV dalam mata pelajaran IPAS terkait topik "Aku dan Kebutuhanku", yang dinilai dari aspek kognitif, afektif, dan psikomotorik. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kuasi-eksperimental yang melibatkan kelompok kontrol yang tidak seimbang. Sampel terdiri dari dua kelas: kelas eksperimen dan kelas kontrol, masing-masing beranggotakan 21 siswa. Teknik pengumpulan data meliputi tes, observasi, dan dokumentasi. Analisis data dilakukan dengan menggunakan uji normalitas, uji homogenitas, uji N-Gain, dan uji t untuk sampel independen dengan bantuan SPSS. Hasil menunjukkan bahwa nilai rata-rata posttest untuk kelas eksperimen adalah 81,90, lebih tinggi daripada kelas kontrol yang sebesar 67,14. Hasil uji t untuk sampel independen menunjukkan nilai Sig. (2-tailed) sebesar $0,000 < 0,05$, yang mengindikasikan adanya pengaruh yang signifikan dari penggunaan Smart Box media terhadap hasil belajar IPAS.

Kata Kunci: Media kotak pintar, hasil pembelajaran IPAS, pembelajaran interaktif

Received : 2026-05-31

Approved : 2026-07-17

Revised : 2026-07-13

Published : 2026-07-31



Jurnal Cakrawala Pendas is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Introduction

Article 40(2) of Law No. 20 of 2003 on the National Education System stipulates that the role of a teacher in the learning process is to create a meaningful, creative, dynamic, and interactive learning environment, and to demonstrate a professional commitment to improving the quality of education (Susilawati et al., 2018). According to Rahman A, education is a conscious and planned effort to create a learning environment and learning process. The goal is

for students to actively develop their potential (BP Rahman A et al., 2022). The goal is to help students develop their character, skills, and foundational cognitive learning outcomes, thereby providing a solid foundation for their future education (Aini Q et al., 2025). Education is a crucial foundation for building high-quality human resources capable of competing. Every nation seeking development prioritizes education as the central pillar of long-term development (Rizky et al., 2025). Amid global progress, technological advancements, and rapid social change, the education system must continuously innovate to address various new challenges.

As a developing country, Indonesia faces similar challenges, particularly regarding disparities in the quality of education across regions, limited resources, and the need for more appropriate and flexible teaching methods. Recognizing this, the government, through the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), launched the Merdeka Curriculum as an alternative solution. According to Syafriani, the Merdeka Curriculum emphasizes competency-based learning, puts students first, strengthens students' character in accordance with the principles of Pancasila, and develops critical, creative, and collaborative cognitive learning outcomes (Syafriani et al., 2025). In practice, this curriculum also requires teachers to provide interactive, relevant, and context-appropriate learning experiences, using a variety of creative teaching methods and tools, particularly in the Natural and Social Sciences (IPAS learning) subject at the elementary school level.

Learning outcomes, as defined in the curriculum, are measured not only by academic grades but also by students' cognitive, affective, and psychomotor domains following the learning process. According to Bloom (1964), as cited by Wirda Yendri, learning outcomes are defined as abilities that encompass the cognitive domain (knowledge and understanding), the affective domain (attitudes and values), and the psychomotor domain (skills) (Yendri Wirda et al., 2020). Achievable learning objectives are closely linked to the assessment of learning outcomes. Learning objectives generally fall into the cognitive, affective, and psychomotor domains categories according to Bloom. Assessment of learning outcomes in IPAS learning lessons should cover all aspects of the learning process, namely cognitive learning outcomes, affective, and psychomotor learning outcomes. However, in reality, grouproom assessment often focuses more on cognitive performance through written exams, while assessment of attitudes (affective) and skills (psychomotor) is often neglected.

Based on initial observations in the fourth-grade group at SD Negeri 2 Sumber, Cirebon Regency, it was found that student learning outcomes in the IPAS learning subject remain relatively low. The majority of students have not yet met the Learning Objective Achievement Criteria (KKTP) set by the school, which is 75. This is due to the fact that the learning process still relies on conventional methods and a lack of variety in learning media. This situation highlights a gap between the demands of the Merdeka Curriculum which emphasizes active and interactive learning and grouproom implementation that remains teacher-centered. Therefore, the gap analysis in this study focuses on the use of the Smart Box media, a learning medium specifically designed for the "Me and My Needs" program, for fourth-grade students at SD Negeri 2 Sumber in Cirebon Regency. Assessment of learning outcomes covers three aspects simultaneously: cognitive, affective, and psychomotor.

The novelty of this study lies in the use of the Smart Box media, which was specifically designed for the IPAS learning material "Me and My Needs" in the Merdeka Curriculum, as well as the comprehensive measurement of learning outcomes covering three aspects: cognitive, affective, and psychomotor. Unlike previous studies that evaluated only cognitive learning outcomes, this study measures the impact of the Smart Box media on all three aspects of learning outcomes simultaneously. Thus, this study provides a more complete picture of the effectiveness

of interactive learning media in enhancing IPAS learning in elementary schools. This study also offers a more realistic learning context by conducting educational game activities using the Smart Box media. Inside the Smart Box media are a matching board, a needs pouch, a problem-solving guide, and an even-odd spinner tailored to the characteristics of fourth-grade students (Oktavia et al., 2024). This study is expected to support the development of IPAS learning materials that are more interactive, contextually appropriate, and aligned with the implementation of the Merdeka Curriculum.

Technological advancements have had a significant impact on the world of education. As technology in the field of education continues to evolve, pedagogical practices often give rise to innovations that support the learning process. With creative ideas, innovation, and the support of educational media, teachers can make the learning process more engaging for their students (Marhamah Siti et al., 2024). Teaching methods that utilize new media, such as games and technology, can engage students in a variety of ways. Furthermore, game-based media and technology in the 4.0 era can provide solutions to the challenges arising from the ongoing revolution (Bestiyana et al., 2024). Today's learning process not only requires teachers to play an active role, but also encourages students to be more active and creative. This fosters dynamic collaboration between students and teachers throughout the learning process (Ulimaz dalam Novella et al., 2024). Therefore, the use of interactive learning materials is essential for achieving the learning objectives of IPAS learning as effectively as possible (Zakarina et al., 2024).

Several previous studies have shown that the use of engaging new learning materials has a positive impact on the learning outcomes of elementary school students. A study conducted by Sudarto and Amin showed that the use of Smart Box media can significantly improve the science learning outcomes of fourth-grade students at SD Negeri 216 Talungeng. The students' average scores on the posttest increased after using Smart Box media in their lessons, compared to their scores on the pretest (Sudarto & Amin, 2024). In addition, research conducted by Erika Natalia Br Surbakti shows that the use of Smart Box media has a significant impact on the science learning outcomes of third-grade students at SD Negeri 101816 Pancur Batu. The average test scores of the experimental group and control group were higher than those of the control group, indicating that Smart Box media is effective in improving students' understanding of the characteristics of living organisms (Erika et al., 2025). Research conducted by Tri Enjang Pratiwi, Siwi Utaminingsyas, and Ratri Shinta Wardhani shows that the use of the Smart Box media can improve student learning outcomes in science for fifth-grade students at Margosari Public Elementary School. This improvement is evident in the rise in students' average scores and the increase in the percentage of students who mastered the material in each learning cycle (Pratiwi et al., 2024).

The Smart Box media is an educational tool that includes a combination of picture cards, word cards, reading materials, and educational games. The Smart Box media can spark students' enthusiasm for learning and have a positive impact on their cognitive development. This is because students engage in meaningful learning activities through educational games that support concept understanding (Oktavia et al., 2024). According to Harnanto, as quoted in Handayani, a Smart Box media is a teaching tool in the form of a small box containing learning materials, images, and resources that teachers use during lessons to capture students' attention. Typically, this tool is shaped like a box (Handayani, 2024). From this explanation, we can conclude that a Smart Box media is an educational tool in the shape of a box. Inside, there are pictures, word cards, letters, numbers, and various other visual materials. The purpose of the

Smart Box media is to help teachers teach in a more engaging and interactive way. As a result, students can more easily understand the concepts being taught.

Research Methods

This study employed a quantitative approach with a quasi-experimental design. The research design employed is an unequal control group design, involving two groups: an experimental group and control group and a control group. The experimental group and control group received the treatment using the Smart Box media as a learning aid in IPAS learning instruction, while the control group used conventional teaching methods. Both groups took a pretest before the treatment and a posttest after the treatment to evaluate differences in student learning outcomes (Amaliya & Anas, 2024).

The research procedure was conducted in several stages. The first stage involved administering a pretest to the experimental and control groups to assess the students' initial proficiency in the "Me and My Needs" material. The second stage involved implementing the intervention. In the experimental group and control group, learning was conducted using a Smart Box media containing various interactive activities such as problem identification, matching tables, a needs bag, and an even-odd wheel game related to the IPAS learning material. Meanwhile, the control group conducted learning as usual, using textbooks and a blackboard as teaching aids. The final step was to administer a final exam to both groups to determine whether there was an improvement in learning outcomes following the intervention.

This study was conducted at SD Negeri 2 Sumber during the 2025/2026 school year. The study population consisted of all fourth-grade students at SD Negeri 2 Sumber. The study sample included two groups: one experimental group with 21 students and one control group with 21 students. The sample was selected using a saturated sampling technique, as the entire population was included in the study. Data were collected through three main methods. This study used both test and non-test instruments to assess students' learning outcomes in the cognitive, affective, and psychomotor learning outcomes. First, the test consisted of 10 multiple-choice questions in the pretest and posttest, which were used to assess students' cognitive learning outcomes related to the topic "Me and My Needs". The indicators measured included the ability to recall information, explain concepts in their own words, apply concepts in daily life, and summarize the material that had been studied.

Second, observations were conducted to monitor students' activities during the learning process, particularly regarding the affective and psychomotor learning outcomes (Hasibuan et al., 2023). Non-test instruments, such as observation sheets, are used to measure the affective and psychomotor learning outcomes that emerge during the learning process. The affective learning outcomes includes students' ability to understand the teacher's explanations well, show attention and interest in the learning material, participate actively in learning activities, demonstrate a responsible attitude, and collaborate with peers while respecting others' opinions. Psychomotor learning outcomes include students' ability to carry out activities according to given instructions, use the Smart Box media correctly, choose actions appropriate to the lesson material, and coordinate the use of the Smart Box media during group discussions. Third, documentation is used to collect data such as photos of learning activities, report cards, and other supporting documents (Qomaruddin & Sa'diyah dalam Arikunto, 2024). These three tools are used to gain a comprehensive understanding of students' learning outcomes, so that the effectiveness of the Smart Box media can be evaluated not only based on improvements in cognitive learning outcomes, but also based on the development of students' attitudes and skills throughout the learning process.

Data analysis is defined as the process of grouping data based on variables and respondent types, as well as performing calculations to test hypotheses (Febryanti et al., 2024). Data analysis was conducted quantitatively using SPSS software. The analysis began with preliminary tests, including tests of normality and homogeneity. The purpose was to determine the data distribution and whether the variances of the data were equal. Next, an independent samples t-test was conducted to test for differences in learning outcomes between the experimental and control groups. In addition, improvements in student learning outcomes were analyzed by calculating N-Gain to determine the effectiveness of using the Smart Box media in improving fourth-grade students' learning outcomes in IPAS learning (Ismiyati N, 2024).

Result and Discussion

This study was conducted in fourth-grade groups at SD Negeri 2 Sumber. The researcher selected two groups, namely Group IV-A and Group IV-B, as the sample groups. The purpose of this study was to determine the effect of using the Smart Box media on the IPAS learning outcomes of fourth-grade students at SD Negeri 2 Sumber regarding the topic "Me and My Needs". This study was conducted in two groups, namely the experimental group and control group, each consisting of 21 students. Research data were obtained through pretests, posttests, and observations during learning activities. The data were then processed using SPSS and analyzed through several stages, including normality tests, homogeneity tests, N-Gain tests, and hypothesis testing using the t-test for independent samples.

Before the researcher began the learning process, a pretest was first conducted in group IVA and group IVB. The results showed pretest data with an average score of 60.95 for the experimental group (IVA) and 56.67 for the control group (IVB). Based on the frequency tables of pretest scores for group IVA and group IVB, the data can be grouped into absolute and relative frequency tables to determine learning outcomes from instruction using Smart Box media and instruction without Smart Box media (conventional instruction) prior to the intervention. Based on the pretest data obtained, it can be concluded that the abilities of students in group IVA and group IVB are comparable.

After administering the pretest, the researcher conducted instruction in the experimental group using Smart Box media and in the control group using conventional teaching methods. To determine the effect of Smart Box media on learning outcomes and to identify which group benefited most from the use of Smart Box media, a posttest was administered after the instruction process was completed. The posttest results showed that the average score for the experimental group (IV-A) was 81.90, while the average score for the control group (IV-B) was 67.14. These results indicate that the improvement in learning outcomes in the experimental group was greater than in the control group. The pretest and posttest data obtained from the control group and experimental group were then normalized using a normality test; the results of the normality test for the pretest and posttest data in the control group and the experimental group are presented in the following table:

Table 1. Results of the normality test for the pretest and posttest data in the control group and the experimental group

Data	Group	Kolmogorov-Smirnov Sig.	Shapiro-Wilk Sig.	Description
<i>Pretest</i>	Control	0,053	0,060	Normal
<i>Posttest</i>	Control	0,098	0,105	Normal
<i>Pretest</i>	Eksperiment	0,077	0,137	Normal
<i>Posttest</i>	Eksperiment	0,085	0,101	Normal

Based on the table of normality test results for the pretest and posttest data in the control and experimental groups above, it can be seen that the pretest results for the control group have a calculated Sig. (2-tailed) of 0.060, the pretest results for the experimental group have a calculated Sig. (2-tailed) of 0.137, the posttest results for the control group have a calculated Sig. (2-tailed) of 0.105, and the posttest results for the experimental group have a calculated Sig. (2-tailed) of 0.101. The significance values for the pretest and posttest results obtained by the control and experimental group can be considered normally distributed, since their significance values are > 0.05 .

After confirming that all values follow a normal distribution, the next step is to test for homogeneity of variances between the two groups group IV-A and group IV-B—using a test for homogeneity of variances. The results of the test for homogeneity of variances for the pretest data of the control group and the experimental group are presented in the data below:

Table 2. Results of the homogeneity of variance test for pretest data in the control and experimental groups

Data	Levene Statistic	df1	df2	Sig.	Description
Value	0,045	1	40	0,833	Homogen

The results of the test for homogeneity of variances on the posttest data for the control and experimental group are presented in the table below:

Table 3. The results of the test for homogeneity of variances on the posttest data for the control and experimental group

Data	Levene Statistic	df1	df2	Sig.	Description
Value	0,170	1	40	0,682	Homogen

Based on the two tables above, the results of the homogeneity test for the pretest and posttest data of the control group and the experimental group indicate that the variances are homogeneous, since the significance values for the pretest data (0.833) and the posttest data (0.682) are both greater than $\alpha = 0.05$.

After testing, the final test data for group IV-A and group IV-B were found to be normally distributed and homogeneous; therefore, the analysis can proceed with the N-Gain and hypothesis testing using the t-test for independent samples. The results of the N-Gain test for student learning outcomes in the IPAS learning program are presented in the following table:

Table 4. Results of the N-Gain test for the control and experimental group

Data	N	Minimum	Maximum	Mean	Std. Deviation
N Gain Control	21	0	50	24,68	14,420
N Gain Eksperiment	21	20	100	58,25	23,175

Based on the table above, the N-gain test results show that the average N-gain score for the control group was 24.68, or 24.7%, which falls into the “less effective” category. N-gain scores range from a minimum of 0% to a maximum of 50%. Meanwhile, the N-gain test results show that the average for the experimental group is 58.25, or 58.3%, which falls into the effective category. N-gain scores range from a minimum of 20% to a maximum of 100%. Therefore, it can be concluded that the use of the Smart Box media is effective in improving learning outcomes in the IPAS subject compared to conventional learning among fourth-grade students at SD Negeri 2 Sumber. The N-gain test results for student learning outcomes in IPAS learning (pretest and posttest) in the experimental group showed an average value of 0.5825. This means that the N-gain test results meet the criterion of $g \leq 0.7$, which is groupified as moderate. A comparison of the posttest average scores between the control group and the experimental group is presented in the table below:

Table 5. Comparison of posttest average scores between the control group and the experimental group

Group	N	Mean	Standar deviasi	Difference
Control	21	67,14	11,019	-14,762
Eksperiment	21	81,90	12,091	

As shown in the table above, the mean score for the control group was 67.14 with a standard deviation of 11.019, while the mean score for the experimental group was 81.90 with a standard deviation of 12.091. These results indicate that the average learning outcomes of students in the experimental group are higher than those in the control group, with an average difference of 14.762.

This difference in mean scores indicates that the use of the Smart Box media device yields better learning outcomes compared to conventional teaching. Students who learned using the Smart Box media appeared to find the material easier to understand, found the process more enjoyable, and were more actively engaged in IPAS learning, which ultimately resulted in better learning outcomes. Furthermore, a hypothesis test was conducted to validate the comparison of posttest scores between the control and experimental group. The hypothesis test was conducted using an independent t-test; the results are presented in the following table:

Table 6. Results of the t-test for independent samples on the posttest scores of the control and experimental group

Data	t	Sig.(2-tailed)	Description
Posttest for the Control Group and the Experimental Group	-4,135	0,000	There is a significant difference in average learning outcomes

Based on the results of the independent t-test calculation table above, the t-value is -4.135 and the Sig. (2-tailed) (two-tailed) is 0.000; this means that the calculated t-value of -4.135

is smaller than the critical t-value of 2.021. Since the Sig. value of 0.000 is less than 0.05, it can be concluded that H_a is accepted and H_o is rejected, meaning there is a significant difference in the posttest results between the control group and the experimental group.

Table 7. Observation Result

Aspect	Percentage	Category
Affective	90.48%	Very Good
Psychomotor	92.86%	Very Good

Based on Table 7 above, the study shows that the affective learning outcomes of students in the experimental group reached an average percentage of 90.48%, placing them in the “very good” category. This percentage was derived from observations of indicators such as listening to the teacher’s explanations, showing attention and curiosity toward the lesson, active participation, taking responsibility, and the ability to collaborate and respect peers’ opinions. High scores on the affective learning outcomes indicate that the use of the Smart Box media successfully created an engaging and enjoyable learning atmosphere. Throughout the learning process, students appeared more interested and enthusiastic about participating in every activity presented through the Smart Box media. Learning activities presented in the form of educational games encouraged students to actively participate in the learning process, whether during discussions, answering questions, or completing group assignments. The observation results show that the students’ psychomotor learning outcomes achieved an average score of 92.86%, placing them in the “very good” category. This score was determined based on observations of the students’ ability to use the Smart Box media, follow activity instructions, complete learning tasks, and coordinate group activities effectively. The high psychomotor scores indicate that the students were actively engaged in the learning process and were able to use the Smart Box media effectively as a learning tool. Throughout the activity, the students appeared capable of using the medium appropriately, grouping the needs cards by category, and successfully overcoming various challenges presented by the Smart Box media.

Instructional media are tools that help explain the information conveyed by teachers during the learning process. As a supporting tool, media are understood to be very important and must align with the overall learning process. In other words, selecting media as a learning tool allows students to interact with their chosen media (Novita et al., 2020). Efforts to improve learning activities and student learning outcomes depend heavily on the teacher’s role in using instructional media. One type of learning media that is increasingly being used is the Smart Box media. The Smart Box media is a learning tool frequently used by teachers. This “Smart Box media” contains various images (Sukaryanti et al., 2023). Each side of this Smart Box media contains teaching materials prepared by the teacher for presentation to students. The goal is to spark students’ interest so they can achieve effective learning outcomes. With the Smart Box media, it is hoped that students will be more engaged and active in group and that it will help them understand the concepts being taught in a fun way (Maulidina Nadila et al., 2025).

Research shows that the use of Smart Box media has a significant impact on improving the learning outcomes of 8th-grade students in social studies. This is evident from the higher average scores on the post-treatment test in the experimental group compared to the control group. Learning outcomes improved because Smart Box media makes the learning process more active, interactive, and enjoyable. This facilitates students’ understanding of the lesson topic “Me and My Needs”. The Smart Box media helps students understand the concepts of the topic “Me and My Needs” through practical activities conducted via educational games. Examples

include a board for identifying problems, a matching board, a bag containing objects representing needs, and an even-odd wheel game. Learning that involves hands-on activities can make students more active and engaged during the learning process. This view aligns with research conducted by Oktavia, which states that the Smart Box media can boost learning motivation and have a positive impact on cognitive learning outcomes. This occurs because students are not only learning but also playing (Oktavia et al., 2024).

This study also shows that the use of the Smart Box media has a significant impact on improving learning outcomes in the ipas learning outcomes program, not only in cognitive aspects but also in affective and psychomotor learning outcomes. High affective outcomes indicate that the Smart Box media is not only used as a tool for delivering material but also successfully enhances the quality of students' learning interactions. Through problem-based orientation activities, matching games, "needs bag" activities, and odd-even wheel games, students have the opportunity to speak, exchange ideas, and collaborate in groups. These conditions provide a more meaningful learning experience compared to conventional teaching methods, which are generally more teacher centered. Furthermore, the Smart Box media can spark students' enthusiasm for learning because they feel challenged to complete each task within the platform. Students' interest in visual and interactive media makes it easier for them to concentrate during the learning process. As a result, improvements in the affective learning outcomes are clearly evident not only in their high motivation to learn but also in the development of a sense of responsibility, cooperation, and self-confidence throughout the learning process.

The improvement in psychomotor learning outcomes occurs because the Smart Box media tool allows students to learn through hands-on experience that is, by working and doing various tasks on their own. Students do not merely listen to the teacher's explanations but also participate in various activities that require physical skills and the ability to coordinate their body movements. Activities such as matching cards, placing pictures into the correct pockets, and answering questions while playing an even-odd matching game require students to actively use their motor skills. These results indicate that the use of the Smart Box media enhances students' ability to apply the concepts they have learned to everyday activities. Learning that involves hands-on practice helps students understand the material more clearly and deeply. This finding is supported by Mauliza research, which states that students' active engagement in learning activities can improve learning outcomes and overall learning activity. Skills acquired through hands-on practice tend to be more lasting because students experience the learning process firsthand, rather than simply listening to the teacher's explanations (Mauliza, 2020). In addition, media literacy, teamwork, and attention to detail in completing tasks indicate that learning with Smart Box media successfully maximizes the development of students' psychomotor learning outcomes. Overall, the research results show that the Smart Box media not only helps improve cognitive learning abilities but also has a positive impact on the development of students' attitudes and skills. These results indicate that the use of interactive learning media can help achieve comprehensive learning objectives across three aspects cognitive, affective, and psychomotor in line with the characteristics of ipas learning outcomes learning in the Merdeka Curriculum.

The findings of this study are consistent with those of a study conducted by Sudarto and Amin, which showed that the use of the Smart Box media can significantly improve the learning outcomes of elementary school students in science. The study revealed that students' average scores improved after using the Smart Box media in their science lessons (ipas learning outcomes) (Sudarto & Amin, 2024). In addition, research conducted by Erika Natalia Br

Surbakti shows that the Smart Box media can effectively improve learning outcomes. This is because the tool can increase students' attention and enthusiasm for learning (Erika et al., 2025). The improvement in learning outcomes in the experimental group was also influenced by the use of learning media that combines play with learning. Students felt more enthusiastic during lessons because the Smart Box media provided a learning experience different from conventional methods. This aligns with Rusman's assertion that interactive learning media can boost students' enthusiasm, attention, and engagement in the learning process (Marde Education, 2022).

In addition to strengthening critical cognitive learning outcomes, the use of Smart Box media also influences students' emotional development and motor skills. Observations during the learning process show that the grouproom atmosphere has become more active and interactive. Teachers are no longer the sole source of information. They now serve as facilitators who help students explore the material being studied. This aligns with the constructivist approach, which emphasizes that cognitive learning outcomes is constructed by students themselves through direct experience and active engagement in the learning process (Tira, 2025). Students are now more confident in expressing their opinions, asking questions, and reporting their observations. This engagement not only helps students better understand the material but also has a positive impact on their attitudes and enthusiasm for learning. Jean Piaget explains that students are in the concrete operational stage, so they need tangible materials to help them understand abstract concepts (Jean, 2024). This finding aligns with Saofah's research, which explains that the Smart Box media can increase student engagement in the learning process, thereby improving learning outcomes (Saofah et al., 2024).

Learning with the Smart Box media is ideal for elementary schools, particularly for subjects that require a clear understanding of concepts, such as science. Using this tool can serve as an alternative solution to address low student achievement caused by teaching methods that are too theoretical and unengaging. However, the success of this tool depends heavily on the teacher's ability to design and manage interactive learning processes, as well as adequate support from the school.

Conclusion

Based on the research findings, it can be concluded that the use of the Smart Box media had a positive impact on the learning outcomes of fourth-grade students at SD Negeri 2 Sumber in the "Me and My Needs" unit of the IPAS learning curriculum. The Smart Box media made the learning process more engaging, interactive, and enjoyable, thereby helping students better understand the material being taught. The use of this media has been proven to help improve students' cognitive learning outcomes, as evidenced by higher test scores following the learning process, and is also more effective than conventional teaching methods. In addition, the Smart Box media also has a positive impact on the students' emotional and physical well-being. The students demonstrated better behavior in group: they participated actively, took responsibility, and collaborated with their groupmates. They also become more skilled at using various media, completing assignments, and applying learning concepts through hands-on activities. These results indicate that the Smart Box media not only helps students acquire cognitive learning outcomes but also plays a role in shaping their effective learning outcomes and psychomotor learning outcomes holistically, in line with the learning objectives of the ipas learning outcomes subject in the Merdeka Curriculum. Therefore, the Smart Box media can be considered an effective learning tool for improving the quality of teaching in elementary schools. Future research should focus on developing a Smart Box media that utilizes

digital technology and then testing it with various types of content and at different educational levels so that its benefits can be better understood.

This study has several limitations because the sample size included only one school and the learning materials were limited to the topic "Me and My Needs". Furthermore, the duration of this study was relatively short, making it impossible to evaluate the long-term impact of using the Smart Box media on student learning outcomes. Therefore, future research could involve a larger sample, utilize various learning media, and develop a Smart Box media based on digital technology. This would help make IPAS learning outcomes instruction more innovative and in line with modern educational trends.

References

- Amaliya, N. D., & Anas, N. (2024). Pengaruh Metode Eksperimen Terhadap Kemampuan Berpikir Kritis Peserta Didik Usia Madrasah Ibtidaiyah. *Didaktika: Jurnal Kependidikan*, 13(2), 2037–2048.
- BP Rahman A, Munandar Asri S, Fitriani Andi, Karlina Yuyun, Y. (2022). Pengertian Pendidikan, Ilmu Pendidikan dan Unsur-Unsur Pendidikan. *Al Urwatul Wutsqa: Kajian Pendidikan Islam*, 2(1), 1–8.
- Dina Yuliy Bestiyana, Susilawati, J. (2024). Pengaruh model Problem Based Learning (PBL) Menggunakan Media Wordwall Terhadap Motivasi Belajar IPAS Learning Siswa Kelas V Sekolah Dasar Pada Kurikulum Merdeka. 10(September).
- Erika, D., Br, N., Quality, U., & Pgsd, P. (2025). Pengaruh Penggunaan Smart Box media Terhadap Hasil Belajar IPAS learning outcomes Siswa Kelas Iii Sd Negeri 101816 Pancur Batu T . P 2024 / 2025 *Science Learning Outcomes Group Iii State Elementary School 101816 Pancur Batu Accademic Year 2024 / 2025*. 4, 1–5.
- Febryanti, R., Huda, M. K., Wahyuningsih, A., & Learning, S. (2024). Pengaruh Media Pop Up Book Terhadap Hasil Belajar Siswa pada Mata Pelajaran Matematika Kelas IV di SDN 3 Sumber. *Jurnal Cendekia Ilmiah*, 3(5), 3715–3722.
- Handayani, S. (2024). Penerapan Media Bahan Ajar Smart Box media Dalam Pembelajaran BIPA Pada Materi Pengenalan Kuliner Etnis Simalungun. *JICN: Jurnal Intelek Dan Cendekiawan Nusantara*, 1(3), 3303–3304. <https://jicnusantara.com/index.php/jicn>
- Hasibuan, M. P., Azmi, R., Arjuna, D. B., & Rahayu, S. U. (2023). Analisis Pengukuran Temperatur Udara Dengan Metode Observasi. *Jurnal Garuda Pengabdian Kepada Masyarakat*, 1(1), 8–15. <https://doi.org/10.55537/gabdimas.v1i1.582>
- Ismiyati N, P. I. b. (2024). Efektivitas Pembelajaran Blended Learning Bermuatan Soft Skills Pada Pembelajaran Metode. 7(1), 1–10.
- Jean, K. (2024). *Jurnal Review Pendidikan dan Pengajaran*, Volume 7 Nomor 4, 2024 | 16376. 7, 16376–16383.
- Maulidina Nadila, Faulia Azni, & Oktaviani Dita. (2025). Penggunaan Media Pembelajaran Smart Box media Terhadap Peningkatan Hasil Belajar Siswa Fase a Pada Mata Pelajaran Ips. *Jurnal Multidisiplin Ilmu Akademik*, 2(1), 179–191. <https://doi.org/10.61722/jmia>.
- Mauliza. (2020). Improving Students ' Learning outcomes Using Numbered Heads Together

- Model. *Internasional Journal for Education and Vocational Studies*, 2(3), 301–303.
- Novita, L., Sukmanasa, E., & Cahya, D. (2020). Hubungan Penggunaan Media Pembelajaran. *Jurnal Pendidikan Dan Pengajaran Guru Sekolah Dasar (JPPGuseda)*, 03, 34–37.
- Oktavia, J., Zahra, V., Hanifah, N., & Nugraha, R. G. (2024). Penerapan Smart Box mediamedia untuk Meningkatkan Hasil Belajar Kognitif Kelas IV SD Materi Hak dan Kewajiban. *Didaktika: Jurnal Kependidikan*, 13(1), 545–554. <https://jurnaldidaktika.org/contents/article/view/425/293>
- Pratiwi, A., Kirana, A., & Amrullah, A. K. (2024). Penerapan Smart Box mediamedia untuk Meningkatkan Pemahaman Siswa Materi Hak dan Kewajiban Kelas VI. *Journal of Education and Pedagogy*, 1(2), 106–114. <https://doi.org/10.62354/jep.v1i2.15>
- Putri Novella, Susilawati, D. (2024). Pengaruh Model Problem Based Learning Berbantuan Media Assemblr Edu terhadap Kemampuan Pemecahan Masalah Siswa Kelas V. 5(10), 4074–4080.
- Qomaruddin, Q., & Sa'diyah, H. (2024). Kajian Teoritis tentang Teknik Analisis Data dalam Penelitian Kualitatif: Perspektif Spradley, Miles dan Huberman. *Journal of Management, Accounting, and Administration*, 1(2), 77–84. <https://doi.org/10.52620/jomaa.v1i2.93>
- Rizky, F., Nitami, S., Wildanah, F., Padang, U. N., Barat, A. T., & Padang, K. (2025). Peran kurikulum merdeka dalam meningkatkan kualitas pembelajaran. 3(6).
- Salsabila Quratu Aini, Nur Asyiah, M. K. H. (2025). Pengaruh Model Inkuiri Terbimbing Berbantuan Media Google Site Terhadap Kemampuan Berpikir Kritis Siswa Pada Mata Pelajaran IPAS Learning. *Jurnal Ilmiah Pendidikan Dasar*, 10(September).
- Saofah, T., Uswatun, D. A., & Sutisnawati, A. (2024). Pengembangan Smart Box mediamedia berbasis Science Environment Technology Society (SETS) dalam Pembelajaran IPA Sekolah Dasar. *Ideguru: Jurnal Karya Ilmiah Guru*, 10(1), 357–365. <https://doi.org/10.51169/ideguru.v10i1.1301>
- Siti Marhamah, Nur Asyiah, M. K. H. (2024). Pengaruh Model Discovery Learning Berbantuan Media Audio Visual Terhadap Hasil Belajar Siswa Kelas V Pada Materi Sistem Pernapasan Manusia di SDN 1 Panambangan. *Jurnal Pendidikan Dan Pengajaran*, 2(9), 213–220.
- Sudarto, O., & Amin, M. (2024). Pengaruh Smart Box mediamedia Terhadap Hasil Belajar IPAS Learning Peserta Didik Kelas IV SD Negeri 216 Talungeng. *JPDSH Jurnal Pendidikan Dasar Dan Sosial Humaniora*, 3(10), 757–763. <https://bajangjournal.com/index.php/JPDSH>
- Sukaryanti, A., Murjainah, M., & Syaflin, S. L. (2023). Pengembangan Media Pembelajaran Kotak Pintar Keragaman Di Indonesia Untuk Siswa Kelas Iv Sd. *Jurnal Pendidikan : Riset Dan Konseptual*, 7(1), 140. https://doi.org/10.28926/riset_konseptual.v7i1.675
- Susilawati, Widia Nur Jannah, D. (2018). Efektivitas Project Based Learning Terhadap Keterampilan Menulis Bahan Ajar IPA Calon Guru SD. 10(1), 38–49.
- Syafriani, D., Amalia, A., Davina, S., Dewi, A., & Ramadani, S. (2025). Pembelajaran Kurikulum Merdeka di Indonesia. 2(1), 22–31.

Tira, F. V. M. (2025). Penerapan Smart Box Mediamedia Untuk Meningkatkan Hasil Belajar Ipa Siswa Kelas V. *Jurnal Pendidikan Sultan Agung*, 5(2), 126–135.

Wirda Yendri, Ikhyia Ulumudin, F. W. (n.d.). *Faktor-Faktor Determinan Hasil Belajar Siswa*.