



## Making Science and Social Studies Come Alive: The Impact of Canva-Based Digital Media on IPAS Learning Outcomes

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**Abstract:** This study aims to improve Grade V students' learning outcomes in Natural and Social Sciences (IPAS) through the use of technology-based learning media in a primary school context. Employing a Classroom Action Research (CAR) design based on the Kemmis and McTaggart model, the research was conducted in two cycles involving 23 Grade V students of SDN 26 Pakkola. The intervention used Canva-based digital learning materials integrated with images, videos, and interactive quizzes via an online platform. Data were collected through learning achievement tests, classroom observations, and questionnaires on students' interest and engagement, and were analyzed using descriptive quantitative and qualitative approaches. The findings show a steady improvement in student performance: the percentage of students achieving the Minimum Mastery Criterion increased from 22% in the pre-cycle to 47% in Cycle I and 82.6% in Cycle II, accompanied by an increase in the average score from 56.5 to 72 and 81. The results indicate that technology-based media are effective in enhancing both conceptual understanding and active participation in IPAS learning. The study concludes that integrating digital tools such as Canva and interactive quizzes can support more engaging, student-centered instruction and has important implications for classroom practice and teacher professional development in elementary schools.

**Keywords:** digital learning media; elementary school; IPAS; learning outcomes; technology-based instruction

### Introduction

The rapid development of information and communication technology has brought significant changes to various aspects of life, including education (Alenezi et al., 2023; Bilan et al., 2023; Irvani et al., 2020; Pelani et al., 2025). In this context, schools are expected not only to transfer knowledge but also to create learning environments that actively foster students' potential in cognitive, affective, and psychomotor domains. Education should therefore encourage students to think critically, demonstrate self-control, build strong character, and develop useful skills for themselves and society. Contemporary learning is expected to move away from monotonous, teacher-centered approaches towards more engaging, student-centered processes that provide meaningful learning experiences (Paling et al., 2024; Rawal, 2024).

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At the primary school level, Natural and Social Sciences (IPAS) is an integrated subject that combines basic concepts from natural sciences and social sciences (Hanif et al., 2024; Surul & Septiliana, 2023). This integration is intended to help students understand real-world phenomena in a holistic way rather than in fragmented disciplines. IPAS in the current curriculum is designed to cultivate curiosity, support active participation, and build scientific literacy, so that students are able to relate scientific concepts to their daily lives and their environment (Hanik et al., 2023; Yudiana et al., 2025). However, these goals are difficult to achieve if learning still relies on conventional methods that do not optimally involve students in the learning process.

The use of technology-based learning media offers an important opportunity to respond to these challenges (Hagos et al., 2025; Irvani, Dewi, et al., 2025; Paling et al., 2024). Digital learning media such as interactive videos, animations, simulations, and educational applications can help visualize abstract concepts, provide varied learning stimuli, and support active student engagement (Amarulloh & Irvani, 2025; Memon & Memon, 2025). From a constructivist perspective, students construct knowledge through direct experience and interaction with learning resources, including digital media. Interactive multimedia that combines text, images, audio, and video can therefore enrich learning experiences and potentially improve both students' motivation and learning outcomes in IPAS.

Preliminary observations at SDN 26 Pakkola showed that the learning outcomes of Grade V students in IPAS were still relatively low, with many students not yet achieving the minimum mastery criterion (MMC) set by the school. Classroom observation and discussion with the class teacher indicated that IPAS learning was still dominated by traditional, lecture-based methods with limited use of technology-based teaching materials. Learning media used in class tended to be less varied and less attractive, which contributed to low student interest, reduced attention during lessons, and passive participation. This situation highlights an urgent need for more innovative learning media that can make IPAS learning more engaging and meaningful for students.

Several previous studies have reported that digital and interactive media can improve students' understanding and engagement in science learning at the primary school level (Chusna et al., 2024; Ijiga et al., 2021; Khotimah & Hidayat, 2022; Sari et al., 2025a). Interactive multimedia, digital flipbooks, and other technology-based tools have been shown to support concept mastery and increase student participation in learning activities (Hidayah & Irvani, 2025; Mutiani et al., 2024; Nisa & Tyas, 2022). More recently, Canva has emerged as an accessible digital platform that enables teachers to design visually appealing and interactive learning materials by integrating images, animations, videos, and hyperlinks. However, empirical studies that specifically examine the use of Canva-based digital materials integrated with interactive online quizzes in the context of IPAS learning for Grade V students, particularly within a classroom action research framework, are still limited. This indicates a research gap in the systematic evaluation of such technology-based interventions on both learning outcomes and student engagement in IPAS.

This study aims to improve the learning outcomes of Grade V students in IPAS at SDN 26 Pakkola through the use of technology-based learning media, specifically Canva-based digital teaching materials integrated with interactive quizzes. In addition, the study seeks to describe changes in students' interest and participation in IPAS learning when technology-based media are implemented.

## Method

This study employed a Classroom Action Research (CAR) design based on the Kemmis and McTaggart spiral model, which consists of four recurring stages: planning, action, observation, and reflection (Felesia & Irvani, 2025; Sari et al., 2025b). The research was conducted in the context of IPAS (Natural and Social Sciences) learning in Grade V at SDN 26 Pakkola. Before the intervention, a preliminary (pre-cycle) assessment was carried out to identify students' initial learning outcomes and to diagnose problems in classroom practice, particularly the limited use of technology-based learning media and low student engagement. Based on this diagnosis, two action cycles were implemented, each comprising one learning session using technology-based instructional media.

The participants in this study were 23 Grade V students of SDN 26 Pakkola, selected as an intact classroom group without random assignment. All students in the class were involved in the learning

activities and in the data collection process. The research context reflects a real classroom setting in which the teacher and students interact in their usual learning environment, so the findings are expected to be directly relevant to classroom practice in similar primary school settings.

Several instruments were used to collect data. First, an observation sheet was developed to document student activities, participation, and interactions during IPAS lessons using digital learning media. Second, a written learning achievement test consisting of 10 essay questions was administered at the end of each cycle to measure students' mastery of the IPAS content. Third, a questionnaire on learning interest and engagement was constructed using a Likert scale to capture changes in students' motivation and involvement in IPAS learning when Canva-based digital materials and interactive quizzes were implemented.

Data analysis combined quantitative and qualitative approaches. Quantitative data from the learning achievement tests were analyzed descriptively by calculating minimum and maximum scores, mean scores, and the percentage of students who achieved the Minimum Mastery Criterion (Kriteria Ketuntasan Minimal, KKM) set at 75. The success criterion of the intervention was defined as at least 80% of students achieving scores  $\geq 75$  by the end of the second cycle. Questionnaire data on interest and engagement were analyzed using descriptive statistics (percentages and mean scores) to identify trends in students' motivational changes. Qualitative data from classroom observations and researcher reflections were analyzed thematically to interpret patterns of student behavior and to inform revisions to the instructional design between cycles.

## Result and Discussion

The implementation of technology-based learning media in IPAS lessons led to a clear improvement in students' learning outcomes across the action cycles. Before the intervention (pre-cycle), only 22% of the 23 Grade V students at SDN 26 Pakkola achieved the Minimum Mastery Criterion (KKM) of 75, with scores ranging from 30 to 83 and an average score of 56.5. After the first cycle, in which Canva-based visual materials integrating images and videos were used, the percentage of students achieving KKM increased to 47%, with a minimum score of 53, a maximum score of 90, and an average score of 72. This indicates that the introduction of digital learning media had a positive initial impact, although the overall mastery target had not yet been reached.

**Table 1.** Summary of Students' IPAS Learning Outcomes per Cycle

Phase	N	Min	Max	Mean	% $\geq$ MMC (75)	Number of Students $\geq$ MMC
Pre-cycle	23	30	83	56.5	22%	5
Cycle I	23	53	90	72	47%	11
Cycle II	23	64	98	81	82.60%	19

Further refinement of the learning media in Cycle II, through the integration of interactive quizzes using the Educaplay platform linked within the Canva slides, resulted in a more substantial improvement. In this cycle, 82.6% of students achieved scores equal to or above the KKM, with scores ranging from 64 to 98 and an increased average score of 81. These results demonstrate that the combination of visually engaging content and interactive assessment features not only enhanced students' conceptual understanding but also helped the class meet the predefined success criterion of at least 80% of students reaching the KKM (Desai & Kulkarni, 2022; Nsabayezu et al., 2025).

The results of this classroom action research show a clear and consistent improvement in students' IPAS learning outcomes from the pre-cycle through Cycle I and Cycle II. At the pre-cycle stage, the low percentage of students achieving the KKM (22%) and the relatively low average score (56.5) indicate that the existing learning approach was not yet able to support most students in mastering the material. This condition is in line with earlier observations that learning was still dominated by conventional, teacher-centered methods with limited use of engaging learning media, which made students less interested and less focused during lessons. From the perspective of constructivist learning theory, such passive learning environments provide few opportunities for

students to actively construct their own understanding through interaction with learning resources and tasks.

The introduction of Canva-based visual learning materials in Cycle I led to a meaningful increase in learning outcomes, with the percentage of students reaching the KKM rising to 47% and the average score increasing to 72. This suggests that incorporating digital media such as images and videos linked to YouTube helped make abstract IPAS concepts more concrete and accessible. These findings are consistent with Patiño et al. (2023) view that technology-based educational media can represent complex or abstract concepts in a more engaging and easily understood form, and with Hasanah et al. (2023) who highlight the potential of interactive multimedia to enhance conceptual understanding in science learning. From a theoretical standpoint, the use of multimedia aligns with constructivist perspectives (Désiron et al., 2025; Irvani, Warliani, et al., 2025; Sasan & Rabillas, 2022) which emphasize that learners build knowledge through active interaction with rich, meaningful stimuli.

Further refinement in Cycle II, through the integration of interactive quizzes using Educaplay embedded within Canva slides, resulted in an even more substantial improvement, with 82.6% of students achieving the KKM and the mean score increasing to 81. This shift indicates that combining visually rich content with interactive assessment features strengthened both students' cognitive engagement and their motivation to participate actively. The interactive quiz format likely provided immediate feedback and a more game-like learning experience, which can increase attention, persistence, and interest in learning. These findings reinforce previous research showing that Canva-based media can enhance student engagement and learning outcomes, such as the studies by Arifah et al (2024) and Hinchcliff & Mehmet (2023), who reported that Canva-supported learning models positively influenced students' participation and achievement in elementary school contexts.

The pattern of improvement from pre-cycle to Cycle I and then to Cycle II also supports the idea that instructional technology is most effective when it is not only visually attractive but also pedagogically integrated with active learning and assessment strategies. The gradual increase in the percentage of students achieving mastery suggests that the combination of multimedia presentation, opportunities for interaction, and formative assessment created a more supportive learning environment for diverse learners. This is in line with the notion that learning achievement is closely linked to student interest and engagement (Girwidz & Kohnle, 2022; Sulastrri et al., 2024)), as observed in this study where more engaging digital media were associated with both improved scores and higher participation. The findings indicate that systematically designed, technology-based learning media can effectively address initial learning problems and contribute to better IPAS learning outcomes at the primary school level.

## Conclusion

This classroom action research demonstrated that the systematic use of technology-based learning media can substantially improve Grade V students' IPAS learning outcomes. Across two intervention cycles, the proportion of students achieving the Minimum Mastery Criterion (MMC) increased from a low baseline in the pre-cycle to above the predefined success threshold in Cycle II. The integration of Canva-based digital materials and interactive quizzes not only raised average test scores but also supported more active student participation in IPAS lessons. These findings confirm that thoughtfully designed digital media can help address initial problems related to low achievement, limited engagement, and predominantly teacher-centered instruction.

The study also has important practical implications for classroom practice and school-level decision-making. For teachers, the results highlight the value of using accessible platforms such as Canva and interactive quiz tools to design learning experiences that are visually rich, interactive, and aligned with curricular goals. Such media can make abstract concepts more concrete, provide varied learning pathways, and foster a more student-centered environment. For schools and education stakeholders, the findings suggest that investments in basic digital infrastructure and professional development related to instructional technology can yield tangible benefits for learning quality, especially in subjects like IPAS that require conceptual understanding and real-world connections.

Looking ahead, several recommendations can be proposed. Teachers are encouraged to continue exploring and refining technology-enhanced learning designs, combining multimedia presentation

with formative assessment and opportunities for collaboration among students. Future research could replicate this study in different grade levels, subjects, or school contexts to examine the robustness and generalizability of the findings. More rigorous designs – such as quasi-experimental studies or longer-term follow-up – could be used to investigate the impact of Canva-based and other digital media not only on immediate test scores but also on higher-order skills, such as critical thinking, scientific literacy, and long-term retention. In addition, researchers may explore how student characteristics, such as prior digital familiarity or learning preferences, interact with technology-based interventions to inform more personalized and equitable learning strategies.

### Conflicts of Interest

Declare conflicts of interest or state “The authors declare no conflict of interest.” Authors must identify and declare any personal circumstances or interest that may be perceived as inappropriately influencing the representation or interpretation of reported research results. Any role of the funders in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript; or in the decision to publish the results must be declared in this section. If there is no role, please state “The funders had no role in the design of the study; in

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