



Modernizing Education: Empowering the Potential of E-Comic Media for Improved Learning Interest and Learning Outcomes

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ABSTRAK

Rendahnya minat belajar siswa berdampak pada hasil belajar yang rendah pula diakibatkan oleh kurangnya penggunaan media pembelajaran elektronik. Kajian ini memiliki tujuan mengembangkan media e-komik yang lolos uji keberterimaan dan efektif untuk meningkatkan minat belajar dan hasil belajar Ilmu Pengetahuan Alam dan Sosial (IPAS) pada siswa kelas V Sekolah Dasar. Kajian ini mengembangkan media pembelajaran e-komik dengan topik materi Indonesiaku Kaya Hayatinya mempergunakan pemodelan pengembangan ADDIE. Populasi pada kajian ini sebanyak delapan sekolah. Pemilihan sampel dengan teknik random sampling sehingga diperoleh satu kelompok kontrol dan satu kelompok eksperimen. Subjek kajian ini ialah siswa dari sekolah sampel. Data penelitian dalam bentuk hasil belajar IPAS diperoleh melalui tes dalam bentuk tugas dan keberterimaan media e-komik serta minat belajar siswa diperoleh melalui kuesioner. Hasil uji keberterimaan pengembangan media e-komik dinyatakan layak berdasarkan review oleh pakar ahli materi pembelajaran, ahli media pembelajaran, dan dua ahli praktisi pembelajaran. Uji respons siswa diperoleh rata-rata produk sebesar 4,8 dengan kualifikasi kepraktisan sangat baik. Hasil uji efektivitas pengembangan media e-komik untuk meningkatkan minat belajar dan hasil belajar terdapat perbedaan yang signifikan antara kelompok siswa yang mempergunakan media e-komik dengan kelompok siswa yang tidak mempergunakan media e-komik. Kajian ini berimplikasi pada e-komik yang mampu meningkatkan minat membaca siswa dengan elemen grafis menarik, memperkaya pengalaman belajar melalui penyajian informasi visual, dan membantu pemahaman konsep.

ABSTRACT

Low student interest in learning has impact on low learning outcomes due to the lack of use of electronic learning media. This study aims to develop e-comic media that passes acceptability test and effective to increase learning interest and learning outcomes of science and social studies in fifth grade elementary school. This research develops e-comic learning media on the topic of Indonesiaku Kaya Hayatinya using the ADDIE model. The population in this study were eight schools. Sample selection using random sampling technique so as to obtain one control group and one experimental group. The subjects of this study are students from the sample schools. Research data in the form of science and social sciences learning outcomes were obtained through tests in the form of assignments and the acceptability of e-comic media and student interest in learning were obtained through questionnaires. The results of the e-comic media development acceptance test were declared feasible based on reviews by learning material experts, learning media experts, and two expert learning practitioners. The student response test obtained an average product of 4,8 with very good practicality qualifications. The results of the effectiveness test of e-comic media development to increase learning interest and learning outcomes are significant differences between groups of students who use e-comic media and groups of students who do not use e-comic media. This study has implications for e-comics that able to increase students' interest in reading with attractive graphic elements, enrich experience through the presentation of visual information, and help understanding concepts.

1. INTRODUCTION

Social science is a subject that is given in primary schools. However, in the independent curriculum, science and social studies subjects that have been standing alone, in the curriculum of the new paradigm, these two subjects are simultaneously taught under the name of science and social studies. Integration of science and social studies is one of the learning solutions to improve literacy and numeracy competencies. Science and social studies when viewed in content are very closely related to nature and human activities. Science and social studies learning needs to present a context that is relevant to the nature and environment that surrounds students. That way, students can be helped in understanding the content and context of science and social studies subjects, strengthening mastery of literacy and numeracy and becoming life skills in everyday life (Anisah et al., 2023; Septiana & Winangun, 2023). The social science curriculum endeavours to cultivate students' proficiency in: (1) comprehending concepts pertinent to societal existence and its surroundings; (2) developing fundamental logical and critical thinking abilities, fostering curiosity, honing inquiry and problem-solving skills, and cultivating social aptitude; (3) instilling commitment and awareness of social and human values; and (4) fostering the capacity to engage in effective communication, collaboration, and competition within a diverse society, spanning local, national, and global contexts (Rahmad, 2016; Sulfemi & Nurhasanah, 2018). Social science lessons are often regarded as rote learning only and not making students become active. If students already think that social science is a boring subject and memorization, then students will be difficult to have a desire to learn social science, with a low enthusiasm for learning will affect the learning outcomes (Hartini & Sukadari, 2021; Lestari et al., 2021). The lecture method is a technique that has often been used by teachers to deliver content in the classroom. This is in line with research conducted by (Mu'minin & Humaisi, 2021; Rahmawati & Zidni, 2019), which mentions the problems found in social studies lessons, namely inadequate infrastructure such as the lack of learning media and teachers using learning methods that are less varied, using more lecturing methods. Research from (Komar & Winarsih, 2020; D. Susanti et al., 2023) mentioned in social studies lessons, teachers deliver material in a textbook without variation, monotonous, still using conventional methods, namely lectures that tend to be boring, besides that another cause is the lack of optimal use of learning media. If continuously using the preaching method will make students less active in learning. If the teacher frequently uses the lecture method, the students will quickly feel bored and will have an effect on student learning outcomes. One way to improve success in learning is for teachers to utilize technology in the learning process so that students are more enthusiastic about learning (Mudi & Hardini, 2023; Wandini et al., 2022).

The rapid development of science and technology has brought changes to human life. Science and technology are constantly evolving from period to period. Of course, this has a significant impact on various aspects of life (Camelia, 2020; Nuraeni & Dewi, 2022). One aspect that is affected by the development of science and technology is education. Education is a need that cannot be separated from human life, with education humans can develop all the potential and skills that exist in themselves according to their talents, interests, desires and also their environment. Education is an important factor for a nation, because to become a developed nation, it must be built by educated, intelligent, and skilled humans (Abidin, 2019; Dodiya, 2018).

The progression of science and technology in education is known as e-learning, which is an education system oriented towards electronic media. The implementation of science and technology in the world of education will certainly produce a technology-oriented learning system, specifically learning media (Darma Wisada et al., 2019; Syamsuar & Reflianto, 2019). Educational media serves as a conduit facilitating the instructional process, elucidating conveyed messages, and ensuring the effective and efficient attainment of educational objectives. The incorporation of educational media not only clarifies the meaning of instructional messages but also cultivates student interest, thereby facilitating a more comprehensive understanding of learning materials (Magdalena et al., 2021; Winarto et al., 2020). Learning media can be used as a tool and can replace the task of a teacher in presenting material. The selection of media in learning supported by the suitability of the material plays an essential role in achieving the desired learning objectives. A teacher is guided to be creative in making learning media. Creative teachers must incorporate technology in learning, develop diverse learning media, and create an effective and conducive learning environment for students (Apriansyah et al., 2023; Wulandari et al., 2023).

Derived from the outcomes of systematic observations and interviews conducted at the SD Negeri Gugus 3 Sukasada District, observations and interviews are aimed at fifth grade teachers in elementary schools. Then it can be seen that: (1) Students' interest in learning in class in Science and Social Sciences subjects is still very low. Most students are less active when participating in learning activities, so that the impact on the learning outcomes of Science and Social Sciences from students is low; (2) Teachers in explaining material rarely use electronic learning media, teachers only use the lecture method, so students tend to feel bored and uninterested in learning Science and Social Sciences. Teachers only use student

packet books as the main source in implementing learning; (3) The facilities and infrastructure at school are complete, such as the availability of projectors and laptops. Teachers have been able to operate the facilities and infrastructure in the school, but the learning media for Science and Social Sciences, especially social studies, are few in number.

Drawing from the outcomes of fifth-grade teacher observations and interviews, it becomes apparent that a requirement exists for instructional materials capable of enhancing students' engagement. Elevated interest among students is anticipated to yield positive effects on their academic performance (Berutu & Tambunan, 2018; Heri, 2019). One of the media that can attract students' interest in learning is e-comics media. Comics are visual communication media with an attractive appearance, arranged in sequence to convey information to readers. Comic media featuring colorful images has its own appeal for children so that it can make them happy to read (Rosalinda et al., 2019; Siregar et al., 2018). E-comics are illustrated stories with characters that contain information and are presented through electronic media (Mariana, 2023; Widari & Putra, 2022). The advantages of e-comics as learning media include the ability to generate student interest in learning, present educational material in a more engaging manner, and facilitate a better understanding of abstract concepts (Dasi & Putra, 2022; Muhaimin et al., 2023). In line with the research conducted by (Aeni & Yusupa, 2018; Nazhiroh et al., 2021), which e-comic learning media can help the learning process to be more effective, this can happen because the teaching is not teacher-centered, but the students will be involved actively in the teaching process. This is also aligned with studies carried out by (Angga et al., 2020; Kristianto & Sri Rahayu, 2020), which the research shows that e-comic media is feasible to apply to the learning process and can recover student learning outcomes. Research conducted by (Arwati & Oktaviani, 2023; Wicaksana et al., 2020), the research shows that e-comic media has an influence on student interest in learning. E-comics as learning media can be accessed by students using cellphones, laptops, and can be displayed on projectors during the learning process in class.

This study aims to describe the acceptability of e-comic learning media in increasing learning interest and learning outcomes of science and social science students in fifth grade elementary school. In addition, this study also aims to determine the effectiveness of e-comic learning media in increasing learning interest and learning outcomes of science and social science students in fifth grade elementary school. The gap and novelty of this study lie in its unique approach to addressing the current limitations in science and social studies education. While traditional methods may lack the engagement necessary for effective learning, this study aims to bridge that gap by introducing an innovative and interactive e-comic media platform. The novelty further emerges in the intersection of technology, pedagogy, and content, offering a fresh perspective on how these elements can synergize to elevate both learning interest and learning outcomes in the specific domains of science and social studies.

2. METHOD

This research develops e-comic learning media with the topic of Indonesiaku Kaya Hayatinya material in science and social science content using the ADDIE development model. This model consists of five steps, which are: (1) analyze, (2) design, (3) analyze: (4) implementation and (5) evaluation (Hidayat & Nizar, 2021; G. Y. M. A. Putra et al., 2021). In the analysis stage, which consists of (1) analysing the students characteristics who will later use this media is necessary to ensure that the development of this media has clear and accurate objectives; (2) conducting curriculum analysis in accordance with competency demands to identify and analyse the material to be developed; (3) performing needs analysis in the use of learning media, including observations and interviews with fifth-grade teachers of elementary school Cluster III in Sukasada District; and (4) conducting media analysis by referring to guidelines on the characteristics or criteria of decent media. In this design stage, it is carried out after analyzing the necessary needs. In this design stage, several steps are carried out such as determining the right tools in designing e-comic media, compiling a story script used in e-comic media in the form of flowcharts and storyboards, then compiling product assessment instruments and compiling teaching modules.

In the development stage, the activity of designing e-comic learning media is undertaken. The design of e-comic media includes making background images that will be used in media displays and making character images. After the medias have been made, the next step is the assessment. This assessment is performed to identify the validity level of the acceptance instrument, learning outcomes test and learning interest. Improvements need to be made if there are criticisms and additions from the judges. Furthermore, the assessment of e-comic media products in science and social studies lessons is done to determine the acceptability of e-comic media. E-comic media has an acceptance level based on the analysis obtained from the assessment by two lecturers, two teachers (practitioners) and student responses, at the next product development stage product revisions will be carried out. In the implementation phase, the media that has been prepared is then implemented in the learning process to determine the impact, qualities and results

of the developed media. This stage aims to obtain feedback on the media developed. The activities carried out in this implementation stage are conducting field tests. The outcome of the field trial is then used as the foundation to establish the effectiveness of the media so that the final product is produced.

The evaluation phase is implemented to furnish constructive feedback to the developer, ensuring that the ongoing development aligns with the assessment outcomes or fulfills unmet requirements identified during the product development. This evaluative process is systematically conducted at each developmental stage. In this study, two types of evaluation were carried out related to the media developed, namely formative evaluation and summative evaluation. Product testing was performed to investigate the acceptability and effectiveness of the e-comic media developed. The effectiveness test given to students used a Pretest-posttest control group design. The subjects in this case are students. The population of this study came from all fifth grade students in cluster 3 Sukasada District spread over 8 schools. The sample selection used as the control group and the experimental group was carried out by random sampling technique. So that 2 schools were obtained which would be used as samples in this study, which are SD Negeri 2 Padangbulia as the experimental group and SD Negeri 1 Padangbulia as the control group.

The methods used for data collection in this study are test and questionnaire methods. The test method was carried out by giving a pre-test and posttest to analyze the success rate of student learning outcomes through the application of e-comic learning media. Questionnaires to find out how the acceptance of e-comic media and learning interest of students who use e-comic media and those who are not using e-comic media. The grids of instruments used in this study can be observed in [Table 1](#), [Table 2](#) and [Table 3](#).

Table 1. Acceptability Test Instrument Grid

No	Aspect	Indicator
1	Utility	1) The utility of media for teachers 2) The usability of media for students. 3) The utility of media is to facilitate the teaching and learning process. 4) The utility of media to increase students' interest in learning and learning outcomes
2	Feasibility	1) The media display is able to interest students in studying. 2) Easy to understand the language that is used in the media. 3) Easy to use the media. 4) Ease of accessing the media
3	Accuracy	1) Comprehensiveness of information/material included in the media. 2) Alignment of the materials contained in the media. 3) Alignment of content with learning objectives. 4) The contents in the media are packaged coherently. 5) The appropriateness of using the media with student characters.

Table 2. Grid of Science and Social Science Learning Outcomes Test Instruments

No	Learning Objectives	Flow of Learning Objectives
1	Identify biodiversity and its distribution	1) Detect the flora of eastern, central and western Indonesia. 2) Detect the fauna of eastern, central and western Indonesia. 3) Attribute reasons why similar living things can have differences from each other. 4) Select the characteristics of flora and fauna in western, central and eastern Indonesia.
2	Analyze the benefits of having biodiversity	1) Select the types of utilization of Indonesia's natural resources. 2) Relate natural resources in accordance with their respective utilization. 3) Detect natural resources that are in accordance with their respective utilization. 4) Detect economic activities related to the utilization of biodiversity

Table 3. Grid of Learning Interest Instruments

No	Indicator	Descriptions
1	Feeling Attention Interest	Students' feelings during learning Students' attention during learning Interest in learning material Interest in e-comic media
2	Engagement	Activeness during learning Awareness about studying at home

Content validity is a requirement for the feasibility and quality of the instrument. Content validity is used to identify the degree of validity of the instrumental grids. Content validity was tested by two judges. This validity uses the Gregory formulas to determining the content validity coefficient. To classify the content validity coefficient category using a range of scores such as (1) score 0.00 until 0.19 indicates that very low content validity; (2) score 0.20 until 0.39 indicates that low content validity; (3) score 0.40 until 0.59 indicates that medium content validity; (4) score 0.60 until 0.79 indicates that high content validity; and (5) score 0.80 until 1.00 indicates that very high content validity.

In the study, the instruments utilized were tested first with content validity, reliability, test difficulty level, and test discriminating power. At the analysis stage, the data that has been gathered will be analyzed using descriptive qualitative analysis, descriptive quantitative analysis, and statistical inferential analysis. The descriptive qualitative method is utilized to classified the information from the qualitative data in the forms of feedback, criticisms, and suggestions as well as revisions to the electronic comic media development product. Qualitative descriptive techniques are also used to describe the average value of learning interest before and after treatment. Quantitative analysis techniques are used to process data obtained from the results of acceptance tests by two experts and two practitioners / teachers. The descriptive quantitative analysis method was also used in analyzing the assessment of student responses in the form of scores. On the other hand, inferential statistics play a role in generalizing research findings generated from samples, so that they can be applied to the population as a whole. Inferential statistics were implemented through t-test for Equality of Means and MANOVA test, which previously followed the prerequisite analysis stages such as normality test, and homogeneity test.

3. RESULT AND DISCUSSION

Result

Analysis Stage. At this stage, the analysis was carried out with the aim of obtaining information about the things needed in the development of e-comic media. The main problem faced by students and teachers in SD Negeri Gugus 3 Sukasada District is the low interest in learning and learning outcomes in science and social sciences. Most students are less active when participating in learning activities, so that the impact on students' learning outcomes is low. Teachers in explaining material rarely use electronic learning media, so students tend to feel bored and uninterested in learning. Furthermore, the availability of learning media in schools is still limited. Facilities and infrastructure such as projectors and LCDs are already available in some schools. This certainly provides an opportunity to expand the use of more interesting learning media. These facilities and infrastructure can support more visual, technology-based learning, and of course support the active involvement of students in the learning process. Teachers strongly agree if learning media is developed to increase interest in learning and learning outcomes in science and social sciences, hereinafter referred to as e-comic learning media.

Design Stage. This stage needs to be carried out to facilitate the next stage, namely the product development stage so that it can be carried out according to plan and run systematically. The product developed uses characters and backgrounds made using the Medibang Paint Pro application (64 bit). All materials that have been collected are compiled using the Canva application. Editing conversation boxes, text and colors on each character also uses the Canva application. After that the e-comic is saved in PDF form. In the finishing stage, the e-comic in PDF form is converted into a digital flipbook with the help of Fliphtml5. In this study using a product assessment instrument in the form of a validation sheet to test the acceptability of the media developed and in the form of a learning interest questionnaire and learning outcomes test to determine the effectiveness of product development. The acceptability of the product was assessed by four experts, namely media expert, material expert, and practitioner experts (teachers). Furthermore, the effectiveness test was carried out on fifth grade elementary school students by distributing questionnaires of learning interest and learning outcomes tests.

Development Stage. At this stage, e-comic learning media production activities are carried out in accordance with the previously determined product design. The product in the form of e-comic learning media produced from this development stage can then be evaluated by experts. More specifically, the e-comics that are developed are separated into three main components, which are the prefix, main content and closing. In the opening or prefix contains the cover, title and introduction of the characters in it, this can be observed in [Figure 1](#).



Figure 1. Cover and Character Introduction

The core or main section contains a number of conversations between characters that discuss biodiversity in Indonesia. The words that are used is simplified so that easily understandable and the colors used are pastel colors so that not too flashy and has a good contrast. Preview of the content section can be observed in Figure 2.



Figure 2. Preview of The Main E-Comic Content Section

The closing section contains questions for students to evaluate students' understanding after reading the e-comic. The final section contains the profile of the developer and supervisor. The closing section can be observed in Figure 3.



Figure 3. E-Comic Closing Section

The acceptability of this e-comic media was obtained from the assessment results of two expert lecturers, the assessment results of two practitioners, and three students. The validity instrument of the acceptability test gained a validity coefficient of 1.00 thus the validity of the content of this instrument is included in the category of very high. The content validity instrument of the learning outcomes test and learning interest obtained a validity coefficient of 1.00 so the validity of the content of this instrument is in the category of very high content validity. The outcome of student responses gained an average product of 4.8 with a very good practicality qualification. Suggestions and comments given can be observed in Table 4.

Table 4. Suggestions and Comments

No	Subject	Suggestions and Comments
1	Learning Material Expert	In general, the media developed is good, the material presented is complete, my suggestion is to add pictures of flora and fauna so that students can imagine the flora and fauna that exist in each subregion.
2	Learning Media Expert	The cover is designed to emphasize the lesson content (biodiversity). More directed to the language style of everyday conversation by mentioning the character's name to make it more familiar. The flow and position of the dialog box, starting from left to right. The language should be more effective.

No	Subject	Suggestions and Comments
3	Practitioner I	This e-comic learning media really innovates the learning of fifth graders, so it needs to get a positive response from various stakeholders.
4	Practitioner II	This e-comic media is very interesting and useful in increasing students' knowledge
5	Students	I really enjoy using e-comics media E-comic media is very interesting Learning becomes less boring

Implementation Stage. This implementation stage includes the application of the developed product in learning activities to find out the effects of the development product on the results of the teaching and learning activity that has been carried out. This implementation stage is carried out to test the effectiveness of the products developed. To see the effectiveness of e-comic learning media to increase the interest in learning science and social studies of grade V students, pretest and posttest tests were conducted to see if there are differences in learning interest among students who are taught with e-comic media developed with students who are conventionally taught. The results of descriptive statistical testing can be observed in [Table 5](#).

Table 5. Descriptive Statistical Test Results of Learning Interest and Learning Outcomes

Descriptive Statistics	Learning Interests				Learning Outcomes			
	Pretest		Posttest		Pretest		Posttest	
	Experiment	Control	Experiment	Control	Experiment	Control	Experiment	Control
Average Value	47.73	49.46	56.32	45.29	14.37	13.12	18.26	15.70
Variance	3.49	3.79	2.93	4.29	2.56	2.17	2.23	2.91
Maximum Value	53	56	62	54	18	18	23	23
Minimum Value	40	42	48	39	9	7	14	12

The prerequisite test results obtained in this research includes the normality of distribution of data and homogeneity test of posttest results of experimental and control classes on learning interest and learning outcomes. The results of testing the normality of data distribution in testing the effectiveness in this research are shown in [Table 6](#).

Table 6. Normality Test Results of Learning Interest and Learning Outcomes

Student Group	Learning Interest (Sig.)	Learning Outcomes (Sig.)
Experiment Group	0.066	0.070
Control Group	0.200	0.200

According to [Table 6](#), it is possible to infer that all observation units have a significance value of more than 0.05, so they are declared to have a normal distribution of data. Next is the homogeneity test. The variance homogeneity test intends to explain that two or more sample data groups come from populations that have the identical variance. The homogeneity of variance tests utilizes Levene's Test of Equality of Error Variance. The test results can be observed in [Table 7](#).

Table 7. Homogeneity Test Results of Learning Interest and Learning Outcomes

Variables	Levene Statistics	Sig
Learning Interest	3.977	0.053
Learning Outcome	2.392	0.130

Based on [Table 7](#), all analysis units for Levene's Test have a significance of more than 0.05 so it is concluded that the posttest scores of the control group and experimental group have a homogeneous variance. After passing all assumption tests, then proceed with hypothesis testing. The first and second hypothesis testing uses the independent T test whose results can be viewed in [Table 8](#). The third hypothesis testing uses the MANOVA test whose results can be observed in [Table 9](#).

Table 8. T-test for Equality of Means

Variables	t	df	Sig
Learning Interest	9.553	41	0.000
Learning Outcome	3.158	41	0.003

Table 9. One-way MANOVA Results

Effect	Intercept		Group	
	F	Sig.	F	Sig.
Pillai's Trace	4033.534	0.000	45.033	0.000
Wilks' Lambda	4033.534	0.000	45.033	0.000
Hotelling's Trace	4033.534	0.000	45.033	0.000
Roy's Largest Root	4033.534	0.000	45.033	0.000

Based on [Table 8](#) and [Table 9](#), it is known that the significance value for each dependent variable, and the effect in the MANOVA test is less than 0.05 so that it is stated that there are differences in learning interest and learning outcomes between groups of students who use e-comics media and groups of students who are not using e-comics media both partially and simultaneously.

Evaluation Stage. At the evaluation stage, it is carried out formatively, namely product improvement and refinement, this is done at each stage of development with the aim of avoiding errors in the final product. The methods used in the evaluation at the analysis stage are through observations and interviews with teachers to find out the situation and conditions when carrying out learning activities and to find out the needs and characteristics of students in learning. Evaluation at the design phase is conducted by looking at the completeness of the making of the e-comic media itself which includes making storyboards, and flowcharts. It also determines the hardware and software used in making e-comic media. Evaluation at the e-comic media development stage is undertaken by improving the media in accordance with expert input. While at the implementation stage, the evaluation is conducted by giving a questionnaire of learning interest and learning outcomes test to students to determine the extent of the influence of e-comic media development on increasing students' learning interest and learning outcomes.

Discussion

E-comic learning media on the topic of *Indonesiaku Kaya Hayatinya* material developed based on acceptance tests from two experts and two practitioners with a score of 1.00 which is in the category of very high validity range and limited student response of 4.8 with very good predicate. This achievement means that the media has great potential as a tool in the teaching process. For teachers, the usefulness of e-comics is not only limited to the ease of material delivery, but also involves increased student engagement and support in explaining complex concepts. From the students' perspective, an engaging and interactive learning experience is an added value of this media. E-comics not only facilitate understanding of the material, but also create a fun learning atmosphere. The use of visual elements and interactivity in e-comics helps to present concepts clearly, facilitate student comprehension and increase interest in learning. Attractive and interactive media displays not only have the potential to increase student interest, but are also expected to contribute to improved learning outcomes. The material must be relevant, in-depth, and in line with the learning objectives in order to provide a comprehensive understanding. Understanding student characteristics, including learning styles, interests, and comprehension levels, is an important factor in developing an appropriate learning design ([Janawi, 2019](#); [Septianti & Afiani, 2020](#)). The success of e-comic learning media is not only measured in technical terms, but also by its positive impact on students' interest and learning outcomes.

E-comic learning media on the topic of *Indonesiaku Kaya Hayatinya* material that was developed is effective for increasing interest in learning science and social sciences. Effective e-comic media in the context of this research is able to present content that is appropriate and relevant to the material. At the development stage, e-comics are expected to be able to provide in-depth explanations related to scientific concepts, natural phenomena, and social processes with an approach that is not only informative but also captivates readers' attention. The selection of topics that are accurate and aligned with the curriculum is an essential step in an effort to obtain the success of this media, because it can make a positive influence in growing student interest and involvement in the learning process. In order to achieve the success of e-comics in increasing interest in learning science and social sciences, the main strategy can be pursued through the use of attractive concept visualization. The use of graphics and other visual elements is expected to be an effective tool to help students understand complex concepts more easily ([Sabrina et al., 2023](#); [Ulfah et al., 2024](#)). By presenting these visual elements, e-comics are expected to provide a clear and interesting

representation, so that students will be able to obtain a greater comprehension of science and social science materials.

The presence of elements such as interactive questions and answers or simulations can create a dynamic and responsive learning experience. Through this interactivity, e-comics are not only a source of information, but also a means to invite students to actively participate in the learning process. Thus, the use of concept visualization and interactivity in e-comics is a strategic step in achieving the goal of increasing interest in learning science and social sciences. The interactive approach is expected to create a dynamic learning experience and motivate students to develop a deeper understanding of the material (Novarita et al., 2023; L. D. Putra & Pratama, 2023). Each student has a unique learning style. Therefore, an effective e-comic should be designed with attention to and support various learning styles, including visual, auditory, and kinesthetic aspects. At the design stage, this can be achieved through the application of variations in the presentation of material that can provide auditory stimulus, as well as the preparation of interactive activities that involve kinesthetic elements. Thus, e-comics designed with this approach are expected to provide a more inclusive and effective learning experience, according to the needs of various learning styles of students. These results are in line with study conducted by (Arwati & Oktaviani, 2023; Wicaksana et al., 2020), the study found that e-comic media affects student interest in learning.

E-comic learning media on the topic of Indonesiaku Kaya Hayatinya material that was developed was effective for improving science and social sciences learning outcomes. The research findings show that the e-comic media developed specifically is able to make a significant contribution in improving student learning outcomes in science and social sciences. The results of data analysis showed a significant increase in students' learning outcomes after engaging in learning using e-comic media. The effectiveness of this media is reflected in students' improved understanding of complex science and social sciences concepts, as evident from the significant values in the uncorrelated t-test. The use of attractive concept visualization and interactive features in e-comics has an important role in facilitating students' understanding of learning materials (Afifah & Arisca Dewi, 2022; Rahayu et al., 2022). The presence of these elements does not simply provide the presentation of information, but actively helps students form stronger connections with science and social sciences concepts.

Attractive visualization of concepts through e-comics media provides a clearer illustration and makes it easier for students to perceive complex information (Aeni & Yusupa, 2018; Kurniawati, 2023). With interactive features, students can be directly involved in the exploration of these concepts, creating a dynamic learning experience. The interactivity also provides space for students to test their understanding, which in turn contributes to improved comprehension of the material. The effectiveness of this media in increasing learning outcomes and attracting students' interest shows that technology integration, especially through e-comics media, can be a good strategy in enhancing the learning quality in the class (Amaliyah et al., 2023; Handayani, 2021). By utilizing the potential of e-comics media, educators can develop learning strategies that are more relevant to technological developments. The use of this technology not only works as a tool, but also as a booster of learning activities that are sustainable and actively involve students. By understanding the importance of technology integration, especially e-comics media, education stakeholders can consider curriculum development that is more up-to-date and relevant to digital trends. These results are in line with the study by (Angga et al., 2020; Kristianto & Sri Rahayu, 2020), where their research shows that e-comic media is feasible to apply in the learning process and can increase student learning outcomes.

This study provides significant findings related to the effectiveness of e-comics media in improving learning interest and learning outcomes of science and social sciences in fifth grade elementary school students. The results of data analysis showed an increase in students' learning outcomes after engaging in learning using e-comics media, as reflected in the MANOVA test results which obtained a significance of less than 0.000. The effectiveness of the e-comic media is manifested through its positive impact on students' interest in learning. The attractive e-comic design and interactive features contained in it have succeeded in creating a learning experience that captivates, invites curiosity, and generates student interest in complex science and social sciences concepts (Nugraha, 2020; Zaharah et al., 2020). The combination of engaging visualization and interactivity not only makes learning more interesting, but also creates a learning environment that stimulates students' deep interest.

In the process, increasing student interest plays an important role in changing the dynamics of learning. The e-comic design that presents information in an interesting and differentiated way creates a special appeal to the subject. With stimulated curiosity, students become more proactive and engaged in the exploration of the concepts presented in the e-comics. Increased interest provides additional encouragement for students to explore the learning material more intensively and thoroughly. In line with the increase in interest, students' active participation in the learning process also increased (Habibullah, 2021; N. Susanti & Putri, 2021). The more active involvement indirectly contributes positively to the improvement of learning outcomes. Students who are engaged and excited to learn tend to be more effective

in retaining information, memorizing, and understanding the concepts. Therefore, the overall positive impact of e-comics media creates a learning dynamic that benefits not only the level of interest in learning, but also the learning outcomes of students.

Furthermore, the increase in learning outcomes provides a strong indication that the e-comics media not only succeeded in creating a higher interest in learning, but also had a significant positive impact on students' understanding and mastery of science and social sciences materials. The design not only triggers students' interest, but also effectively helps students to more deeply understand and master of the concepts. Attractive concept visualization provides a clear and easy-to-understand illustration, while interactive features provide opportunities for students to actively participate in the learning process. Students are not just passive recipients of information, but also players who are involved in the exploration of the concepts. In this way, learning becomes more interactive and customized according to the needs and level of understanding of each student. These results are in line with research conducted by (Hisbiyati & Khusnah, 2017; Mujahadah et al., 2021) which found that e-comics or visual media can increase student interest and learning outcomes.

Talking about implications, this research is expected to have implications in the field of education, particularly in the implementation of technology-based learning in schools. The development of e-comic media in this study is anticipated to have a positive impact on students. Firstly, e-comics can enhance students' reading interest through the use of captivating graphic elements. Moreover, this media can enrich students' learning experiences by presenting information visually, aiding in a better understanding of concepts. In utilizing this media, teachers design learning tools tailored to the use of e-comics. One of the learning models employed in implementing e-comic media is cooperative learning. This is because, in this method, students are divided into several groups, each consisting of 3 students, and each student plays a role presented in the e-comic. Consequently, students actively engage in the learning process, reinforcing their understanding of the taught material

The limitation of this research lies in the content developed in the e-comic, which is solely focused on the theme Indonesiaku Kaya Hayatinya. Considering this limitation, which revolves around the focus on biodiversity in Indonesia, it is advisable for future research to consider the development of other materials in the field of science and social sciences for elementary schools. The aims are to expand learning horizons by introducing diverse and relevant topics to the curriculum. Through presenting varied and interesting materials, aim to stimulate students' interest, allowing them to explore their own preferences in science and social sciences. Considering material diversity aligns closely with elementary school curriculum needs, enhancing comprehensive learning aligned with basic education goals. Diverse materials empower teachers with adaptable tools, offering flexibility to select and customize engaging content for students.

4. CONCLUSION

The e-comic media in *Indonesiaku Kaya Hayatinya* material has passed the acceptance test and is suitable for use in learning activities in elementary schools with a very high validity category seen from expert and practitioner assessments. The results of the effectiveness test of developing e-comic media to increase learning interest and learning outcomes stated that there were significant differences between the group of students who used e-comic media and the group of students who did not use e-comic media. Therefore, it can be used to optimize learning interest and learning outcomes.

5. REFERENCES

- Abidin, M. (2019). Penerapan Pendidikan Karakter Pada Kegiatan Ekstrakurikuler Melalui Metode Pembiasaan. *DIDAKTIKA : Jurnal Kependidikan*, 12(2), 183–196. <https://doi.org/10.30863/didaktika.v12i2.185>.
- Aeni, W. A., & Yusupa, A. (2018). Model Media Pembelajaran E-Komik untuk SMA. *Jurnal Kwangsan*, 6(1), 1. <https://doi.org/10.31800/jtpk.v6n1.p1--12>.
- Afifah, A., & Arisca Dewi, P. (2022). Pengembangan Media E-Komik Untuk Meningkatkan Pemahaman Konsep Matematika Siswa. *Jurnal Axioma : Jurnal Matematika Dan Pembelajaran*, 7(1), 24–34. <https://doi.org/10.56013/axi.v7i1.1194>.
- Amaliyah, R., Murtafiah, Amin, N., Rahma, N., Radiah, Nurhikma, Rahmawati, L., & Rahma, S. (2023). Workshop Media Pembelajaran Berbasis Kurikulum Merdeka untuk Meningkatkan Technological Knowledge (TK) Guru SDN No. 60 Lembang. *Pêrdikan: Journal of Community Engagement*, 5(2), 94–111. <https://doi.org/10.19105/pjce.v5i2.10493>.
- Angga, P. M. W., Sudarma, I. K., & Suartama, I. K. (2020). Pendidikan Untuk Membentuk Karakter Dan Meningkatkan Prestasi Belajar Siswa. *Jurnal Edutech Undiksha*, 8(2), 93.

- <https://doi.org/10.23887/jeu.v8i2.28920>.
- Anisah, A. S., Widyastuti, R., Mubarakah, G., & Istiqomah, I. (2023). Pemetaan Materi IPA dan IPS dalam Kurikulum Merdeka (Studi Kasus di Sekolah Penggerak SDN 04 Sukanegla Kabupaten Garut). *Jurnal Tunas Pendidikan*, 6(1), 196–211. <https://doi.org/10.52060/pgsd.v6i1.1190>.
- Apriansyah, R., Azahra, Y., Insani, F. N., & Setiawan, U. (2023). Kajian Terhadap Pemilihan Media dan Pengimplementasiannya bagi Peserta Didik Jenjang Sekolah Dasar. *Jurnal Edukasi*, 9(1), 33–48. <https://doi.org/10.51836/je.v9i1.472>.
- Arwati, A., & Oktaviani, A. M. (2023). Pengaruh Penggunaan Media Komik Untuk Meningkatkan Minat Baca Siswa Dalam Pembelajaran IPS. *Jurnal Pelita Calistung*, 4(1), 121–138. <https://doi.org/10.59605/jpc.v4i2.538>.
- Berutu, M. H. A., & Tambunan, M. I. H. (2018). Pengaruh Minat Dan Kebiasaan Belajar Terhadap Hasil Belajar Biologi Siswa SMA Se-Kota Stabat. *Jurnal Biolokus*, 1(2). <https://doi.org/10.30821/biolokus.v1i2.351>.
- Camelia, F. (2020). Analisis Landasan Ilmu Pengetahuan dan Teknologi dalam Pengembangan Kurikulum. *SAP (Susunan Artikel Pendidikan)*, 5(1). <https://doi.org/10.30998/sap.v5i1.6474>.
- Darma Wisada, P., Komang Sudarma, I., & Sukmana, I. W. I. Y. (2019). Pengembangan Media Video Pembelajaran Berorientasi Pendidikan Karakter. *Journal of Education Technology*, 3(3), 140–146. <https://doi.org/10.23887/jet.v3i3.21735>.
- Dasi, N. L. K., & Putra, S. (2022). Pengembangan Media Pembelajaran E-Komik Berbasis Pendekatan Kontekstual Pada Materi Perubahan Wujud Benda Muatan IPA Kelas V SD. *Jurnal Pendidikan Dan Konseling*, 4(3), 354–362. <https://doi.org/10.31004/jpdk.v4i3.4311>.
- Dodiya, R. S. (2018). The Factors affecting the Education System of a Nation. *International Journal of Research in Multi Subjects in Multi Languages*, 6(2), 87–91. https://www.riajmr.com/ijrsm/ wp-content/uploads/2018/06/IJRSM_2018_vol06_issue_2_Eng_18.pdf.
- Habibullah, M. (2021). Meningkatkan Minat Belajar PAI Menggunakan Model Pembelajaran Kooperatif Tipe Think Pair Share. *Jurnal Pembelajaran Dan Riset Pendidikan*, 1(2), 501–512. <https://doi.org/10.28926/jprp.v1i2.161>.
- Handayani, T. (2021). Pengembangan Media Komik Digital Berbasis STEM untuk Meningkatkan Literasi Sains Siswa Sekolah Dasar. *Jurnal Didaktika Pendidikan Dasar*, 5(3), 737–756. <https://doi.org/10.26811/didaktika.v5i3.343>.
- Hartini, S., & Sukadari. (2021). Pengaruh Lingkungan Belajar, Motivasi Guru dan Perhatian Orang Tua Terhadap Prestasi Belajar IPS. *Jurnal Sosialita*, 15(1), 1–18. <https://journal.upy.ac.id/index.php/sosialita/issue/view/169>.
- Heri, T. (2019). Meningkatkan Motivasi Minat Belajar Siswa. *Rausyan Fikr: Jurnal Pemikiran Dan Pencerahan*, 15(1), 59–79. <https://doi.org/10.31000/rf.v15i1.1369>.
- Hidayat, F., & Nizar, M. (2021). Model ADDIE (Analysis, Design, Development, Implementation and Evaluation) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Inovasi Pendidikan Agama Islam (JIPAI)*, 1(1), 28–38. <https://doi.org/10.15575/jipai.v1i1.11042>.
- Hisbiyati, H., & Khusnah, L. (2017). Penerapan Media E-Book Berekstensi Epub Untuk Meningkatkan Minat Dan Hasil Belajar Siswa SMP Pada Mata Pelajaran Ipa. *Jurnal Pena Sains*, 4(1). <https://doi.org/10.21107/jps.v4i1.2775>.
- Janawi. (2019). Memahami Karakteristik Peserta Didik dalam Proses Pembelajaran. *Tarbawy: Jurnal Pendidikan Islam*, 6(2), 68–79. <https://doi.org/10.32923/tarbawy.v6i2.1236>.
- Komar, A., & Winarsih, N. (2020). Problematika Pembelajaran Ilmu Pengetahuan Sosial di Tingkat Sekolah Dasar: Studi Kasus SDN Kebonsari Kulon 3 Kota Probolinggo Tahun Ajaran 2020-2021. *Al-Fikru Jurnal Pendidikan Dan Sains*, 1(2), 237–248. <https://ejournal.inzah.ac.id/index.php/alfikru/article/view/517>.
- Kristianto, D., & Sri Rahayu, T. (2020). Pengembangan Media Pembelajaran E-Komik untuk Meningkatkan Kemampuan Pemecahan Masalah Matematika Kelas IV. *Jurnal Pendidikan Tambusai*, 4(2), 939–946. <https://doi.org/10.31004/jptam.v4i2.553>.
- Kurniawati, R. D. (2023). Meningkatkan Pemahaman Siswa Pada Muatan IPA Tentang Siklus Hidup Hewan Menggunakan Media Komik. *Jurnal Mitra Indonesia : Jurnal Pendidikan, Sosial, Humaniora, Dan Kesehatan*, 2, 69–77. <http://jurnal.mitrasmart.co.id/index.php/jm/article/view/51/57>.
- Lestari, S., Sriarta, I. P., & Astawa, I. B. M. (2021). Model Pembelajaran Discovery Learning Berbantuan Subak Sebagai Sumber Belajar Terhadap Literasi Ekologis Dan Hasil Belajar Ips. *Jurnal Pendidikan IPS Indonesia*, 5(1), 44–54. <https://doi.org/10.23887/pips.v5i1.243>.
- Magdalena, I., Fatakhatu Shodikoh, A., Pebrianti, A. R., Jannah, A. W., & Susilawati, I. (2021). Pentingnya Media Pembelajaran Untuk Meningkatkan Minat Belajar Siswa SDN Meruya Selatan 06 Pagi. *EDISI : Jurnal Edukasi Dan Sains*, 3(2), 312–325.

- <https://ejournal.stitpn.ac.id/index.php/edisi/article/view/1373/958>.
- Mariana, D. (2023). Pengembangan Media E-Komik dalam Pembelajaran PAI Berbasis Kontekstual Materi Kisah Sahabat Rasulullah SAW Kelas 5 SDN Plumbungan Sukodono Sidoarjo. *EDUKASIA: Jurnal Pendidikan Dan Pembelajaran*, 4, 2031–2038. <https://mail.jurnaledukasia.org/index.php/edukasia/article/view/542>.
- Mu'minin, M. I., & Humaisi, M. S. (2021). Pemanfaatan Media Pembelajaran Audio Visual Dalam Mengembangkan Motivasi Belajar Siswa Pada Mata Pelajaran IPS Terpadu. *JIIPSI: Jurnal Ilmiah Ilmu Pengetahuan Sosial Indonesia*, 1(1), 1–12. <https://doi.org/10.21154/jiipsi.v1i1.45>.
- Mudi, M., & Hardini, A. T. A. (2023). Upaya Meningkatkan Hasil Belajar dan Motivasi Siswa Menggunakan Media Audiovisual pada Pembelajaran Tematik Kelas II Sekolah Dasar. *JiIP - Jurnal Ilmiah Ilmu Pendidikan*, 6(12), 9956–9962. <https://doi.org/10.54371/jiip.v6i12.2503>.
- Muhaimin, M. R., Ni'mah, N. U., & Listryanto, D. P. (2023). Peranan Media Pembelajaran Komik Terhadap Kemampuan Membaca Siswa Sekolah Dasar. *Jurnal Pendidikan Dasar Flobamorata*, 4(1), 399–405. <https://doi.org/10.51494/jpdf.v4i1.814>.
- Mujahadah, I., Alman, A., & Triono, M. (2021). Pengembangan Media Pembelajaran Komik untuk Meningkatkan Hasil dan Minat Belajar Matematika Peserta Didik Kelas III SD Muhammadiyah Malawili. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, 3(1), 8–15. <https://doi.org/10.36232/jurnalpendidikandasar.v3i1.758>.
- Nazhiroh, S. A., Jazeri, M., & Maunah, B. (2021). Pengembangan Multimedia Interaktif E-Komik dalam Meningkatkan Hasil Belajar Bahasa Jawa. *Jurnal Ilmiah Profesi Pendidikan*, 6(3), 405–411. <https://doi.org/10.29303/jipp.v6i3.193>.
- Novarita, Rosmilani, Agnes, Jome, I., & Tikadang, E. (2023). Analisis Pelaksanaan Teori Progresivisme John Dewey dalam Pembelajaran Pendidikan Agama Kristen. *Jurnal Pendidikan Dan Keguruan*, 1(6), 529–540. <https://jpk.joln.org/index.php/2/article/view/60/69>.
- Nugraha, D. A. (2020). Pengembangan Komik Kimia Sebagai Media Pembelajaran Berbasis CET (Chemo-Edutainment). *Chemistry in Education*, 9(2), 1–7. <http://journal.unnes.ac.id/sju/index.php/chemined>.
- Nuraeni, I., & Dewi, D. A. (2022). Peranan Pancasila Sebagai Landasan Perkembangan Ilmu Pengetahuan dan Teknologi. *Jurnal Pendidikan Tambusai*, 6(2), 9986–9991. <https://doi.org/10.31004/jptam.v6i2.4003>.
- Putra, G. Y. M. A., Suarjana, I. M., & Agustiana, I. G. A. T. (2021). E-LKPD Materi Pecahan dalam Pembelajaran di Sekolah Dasar. *MIMBAR PGSD Undiksha*, 9(2), 220. <https://doi.org/10.23887/jjpgsd.v9i2.35813>.
- Putra, L. D., & Pratama, S. Z. A. (2023). Pemanfaatan Media dan Teknologi Digital Dalam Mengatasi Masalah Pembelajaran. *Journal Transformation of Mandalika*, 4(8), 323–329. <https://ojs.cahayamandalika.com/index.php/jtm/article/view/2005/1586>.
- Rahayu, N. W. G. W., Suparta, I. N., & Parwati, N. N. (2022). Pengembangan Media Pembelajaran E-Komik Berorientasi Problem Based Learning Untuk Meningkatkan Pemahaman Konsep Aritmatika Sosial. *Jurnal Teknologi Pembelajaran Indonesia*, 12(1), 68–78. https://doi.org/10.23887/jurnal_tp.v12i1.792.
- Rahmad. (2016). Kedudukan Ilmu Pengetahuan Sosial (IPS) pada Sekolah Dasar. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, 2(1), 67–78. <https://doi.org/10.31602/muallimuna.v2i1.742>.
- Rahmawati, F., & Zidni, B. (2019). Identifikasi Permasalahan-Permasalahan dalam Pembelajaran IPS. *Fajar Historia: Jurnal Ilmu Sejarah Dan Pendidikan*, 3(1), 1–10. <https://doi.org/10.29408/fhs.v3i1.1844>.
- Rosalinda, H., Susanti, K., & Nuriyanti, W. (2019). Nilai Nasionalisme dalam Komik: Kajian Semiotika Komik Rengasdengklok. *Jurnal Desain*, 06(02), 89–98. <https://doi.org/10.30998/jurnaldesain.v6i2.3010>.
- Sabrina, N. A., Maharaja, L. R., Naingglan, M. M., & Gaol, M. L. (2023). Pengaruh Pengembangan Media Ajar Visual Terhadap Siswa Sekolah Dasar dalam Memahami Konsep Matematika Secara Visual. *Jurnal Pendidikan Matematika*, 1(1). <https://doi.org/10.47134/ppm.v1i1.113>.
- Septiana, A. N., & Winangun, I. M. A. (2023). Analisis Kritis Materi IPS Dalam Pembelajaran IPAS Kurikulum Merdeka di Sekolah Dasar. *Widyaguna: Ilmiah Pendidikan Guru Sekolah Dasar*, 1(1), 43–54. <https://stahnmpukuturan.ac.id/jurnal/index.php/pgsd/article/view/3479/2331>.
- Septianti, N., & Afiani, R. (2020). Pentingnya Memahami Karakteristik Siswa Sekolah Dasar di SDN Cikokol 2. *As-Sabiqun: Jurnal Pendidikan Islam Anak Usia Dini*, 2(1), 7–17. <https://doi.org/10.36088/assabiqun.v2i1.611>.
- Siregar, H. F., Siregar, Y. H., & Melani. (2018). Perancangan Aplikasi Komik Hadist Berbasis Multimedia. *JurTI (Jurnal Teknologi Informasi)*, 2(2), 113–121. <https://doi.org/10.36294/jurti.v2i2.425>.
- Sulfemi, W. B., & Nurhasanah. (2018). Penggunaan Metode Demontrasi Dan Media Audio Visual dalam Meningkatkan Hasil Belajar Peserta Didik Mata Pelajaran IPS. *Jurnal Pendas Mahakam*, 3(2), 151–158. <https://doi.org/10.31227/osf.io/qrhshf>.

- Susanti, D., Septi Wahyuni, Y., & Ayu Anastasha, D. (2023). Problematika Pembelajaran Ilmu Pengetahuan Sosial di Tingkat Madrasah Ibtidaiyah Negeri Tahun Ajaran 2022-2023. *Innovative: Journal Of Social Science Research*, 3(6), 5769–5781. <https://doi.org/10.31004/innovative.v3i6.6640>.
- Susanti, N., & Putri, R. R. (2021). Implementasi Lesson Study Sebagai Upaya Meningkatkan Partisipasi Aktif Siswa Dalam Pembelajaran Virtual. *Jurnal Pembelajaran Fisika*, 10(2), 77. <https://doi.org/10.19184/jpf.v10i2.23780>.
- Syamsuar, S., & Reflianto, R. (2019). Pendidikan Dan Tantangan Pembelajaran Berbasis Teknologi Informasi Di Era Revolusi Industri 4.0. *E-Tech: Jurnal Ilmiah Teknologi Pendidikan*, 6(2). <https://doi.org/10.24036/et.v2i2.101343>.
- Ulfah, S. W., Sertiawan, N., & Nst, K. A. (2024). Analisis Penggunaan PPT Bergerak dalam Pembelajaran Sosiologi dan Ekonomi terhadap Semangat Belajar Siswa (Studi pada Siswa Kelas X Madrasah Aliyah Islamic Centre). *Jurnal Pendidikan Tambusai*, 8, 68–74. <https://jptam.org/index.php/jptam/article/view/12342/9503>.
- Wandini, R. R., Sipahutar, D. A., Rahmawati, I., Diah, R., & Harpani, S. (2022). Merubah Pandangan Siswa yang Menganggap Pembelajaran PKn Membosankan Menjadi Pembelajaran PKn Yang Menyenangkan. *Jurnal Pendidikan Dan Konseling*, 4. <https://doi.org/10.31004/jpdk.v4i4.5557>.
- Wicaksana, I. P. G. C. R., Agung, A. A. G., & Jampel, I. N. (2020). Pengembangan E-Komik Dengan Model Addie Untuk Meningkatkan Minat Belajar Tentang Perjuangan Persiapan Kemerdekaan Indonesia. *Jurnal Edutech Undiksha*, 7(2), 48. <https://doi.org/10.23887/jeu.v7i2.23159>.
- Widari, N. M. P. A., & Putra, I. B. K. N. S. (2022). Pengembangan Media Pembelajaran E-Komik Berbasis Pendekatan Konstruktivisme pada Muatan IPA Materi Siklus Hidup Hewan Siswa Kelas IV SD. *Jurnal Pendidikan Dan Konseling*, 4(2), 1–7. <https://doi.org/10.31004/jpdk.v4i2.4220>.
- Winarto, W., Syahid, A., & Saguni, F. (2020). Effectiveness the Use of Audio Visual Media in Teaching Islamic Religious Education. *International Journal of Contemporary Islamic Education*, 2(1), 81–107. <https://doi.org/10.24239/ijcied.vol2.iss1.14>.
- Wulandari, B., Maryani, S., Defini, A. D., April, N. L., & Dela. (2023). Analisis Kreativitas Guru Dalam Pengembangan Media Pembelajaran IPS di MI Munawariyah Palembang. *JIMR: Journal Of International Multidisciplinary Research*, 2(2), 218–229. <https://azramedia-indonesia.azramediaindonesia.com/index.php/JIMR/article/view/875/746>.
- Zaharah, E., Murniviyanti, L., & Pratama, A. (2020). Pengembangan Perangkat Pembelajaran Berbasis E-Komik Kelas V Sekolah Dasar. *Jurnal Persada*, 6(3), 176–181. <https://doi.org/10.37150/perseda.v6i3.2124>.