Virtual Book-Based Comic Media to Improve Learning Independence of Fifth-Grade Elementary School Students

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ABSTRAK

Media pembelajaran yang digunakan guru sebatas buku berbentuk cetak. Guru belum memanfaatkan teknologi yang ada, sehingga menyebabkan kurang fleksibelnya proses pembelajaran dan kemandirian belajar siswa. Penelitian ini bertujuan untuk menciptakan produk komik berbasis virtual book *yang valid, praktis, dan efektif digunakan dalam proses pembelajaran serta mampu melatih kemandirian belajar siswa kelas V sekolah dasar. Penelitian ini berpedoman pada model pengembangan ADDIE. Subjek penelitian diantaranya ahli materi, ahli media, serta 23 siswa. Metode pengumpulan data adalah metode kuesioner berupa* rating scale *skala lima. Teknik analisis data yaitu analisis deskriptif kuantitatif dan analisis deskriftif kualitatif. Hasil penelitian menunjukkan bahwa penilaian dari ahli materi sebesar 0,96875, penilaian dari ahli media pembelajaran sebesar 0,941667, hasil penilaian dari siswa sebesar 99,04%. Hasil uji efektivitas diperoleh terdapat perbedaan hasil belajar siswa setelah dan sebelum menggunakan produk komik berbasis* virtual book*. Berdasarkan analisis tersebut maka dapat disimpulkan bahwa komik berbasis* virtual book *pada muatan IPAS dinyatakan* valid*, praktis dan efektif digunakan dalam pembelajaran serta efektif dalam meningkatkan kemandirian belajar siswa. Implikasi penelitian ini yaitu, komik berbasis* virtual book *ini dapat digunakan sebagai media pembelajaran untuk siswa dalam proses pembelajaran.*

ABSTRACT

Learning media is a tool that can help in the learning process in class so that the message's meaning is clearer and the educational or learning objectives can be achieved effectively and efficiently using learning media; it is easier for teachers to convey learning content. The learning media used by teachers is limited to printed books. Teachers must utilize existing technology, resulting in a need for more flexibility in the learning process and student learning independence. This research aims to produce comic products that have been tested for validity, practicality, and effectiveness in promoting student learning independence. The ADDIE development model guides this research. Research subjects include material experts, media experts, and students. The data collection method is a questionnaire method in the form of a five-point rating scale. The research results showed that the assessment from material experts was 0.96875, the assessment from learning media experts was 0.941667, and the assessment results from students were 99.04%. The effectiveness test results obtained significance (2-tailed), a result of 0.000<0.005, so h0 was rejected, and he was accepted. Based on this analysis, it can be concluded that virtual book-based comics in IPAS content are declared valid, practical, and effective for learning and increasing students' learning independence. This research implies that virtual book-based comics can be used as learning media for students in the learning process.

1. INTRODUCTION

Learning independence is an effort made in an independent learning activity based on self-motivation to understand a certain material so that it can be used to solve a problem. So, in learning independence, a student must be active and not depend on the teacher or other people. Independence positively impacts achieving learning outcomes (Audhiha et al., 2022; Donna et al., 2021). Students with high learning independence tend to learn better under their supervision, can monitor, supervise, and organize their learning activities effectively, organize in doing their assignments, and organize learning activities and efficiently manage time. Independence in learning is very important because independence

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in learning has a positive effect on students' learning achievement results (Afriani, 2019; Ningtiyas & Surjanti, 2021). Likewise, the low independence of student learning can reduce student learning outcomes. Things that affect the lack of independence in learning are students who are not comfortable studying for a long time, studying only before the exam, skipping class, cheating, and receiving leaked questions.

The character reality currently considered weak is independence; this can be seen in many people who still depend on others for their life problems, such as studying; many children still cannot fulfill their responsibilities (Afriani, 2019). The use of lecture methods also causes a lack of independence in student learning and not getting students used to being active and independent (Angga et al., 2020; Putra & Milenia, 2021). Teachers tend to use a teacher-centered approach in learning activities so that the teacher prepares more concepts through memorization and explanations that make students dependent on the teacher. Based on this, many students still need to be independent in the learning process, even though when viewed from the concept of independent learning comes from the concept of adult education. Based on the observations of SD Negeri 1 Kaliuntu, information was obtained that students at SD Negeri 1 Kaliuntu still have low independence characteristics. This can be seen in the interview. Students with low levels of learning independence show several behavioral patterns that reflect challenges in their learning process. First, these students tend to rely on help from parents or teachers to complete their assignments, showing a need for more initiative in starting and pursuing learning independently. Second, they often need clarification and effective learning strategies, especially in managing their time and resources. Third, intrinsic motivation to learn seems low, which is reflected in their lack of courage to overcome obstacles in learning. Fourth, students who are low in learning independence tend to be anxious and not confident in facing difficult tasks, so they often avoid academic challenges. Fifth, they are less able to regulate themselves and need to be more disciplined in following a study schedule, which causes problems in completing homework or preparing for exams. Finally, these students often do not have sufficient awareness of learning goals and do not have preferred learning activities (Ardiyana et al., 2019).

Natural and Social Sciences is one of the subjects that must be studied in Elementary School. Natural and Social Sciences are important in improving students' learning independence. Natural and Social Sciences are two combined materials: Science and Social Sciences (Dewi & Suniasih, 2023; Nurdiana Sari et al., 2023). Science learning is the odd semester, while Social Studies is the even semester. Social Sciences simplify social sciences, state ideology, and other disciplines (Renggani & Priyanto, 2023; Widiari et al., 2023). The results of the study show that in social studies, learning is still dominated by monotonous learning that is only centered on the teacher. The learning that is carried out is also still traditional, which causes students to become bored and less active in the learning process.

However, based on several studies that experts have conducted, independent learning is suitable for all age levels. In other words, independent learning can be started from elementary school, which aims to improve students' learning achievements. Independent learning is in line with the profile of Pancasila students, where students are required to be independent as a process of students being able to take the initiative without the help of others diagnosing their learning needs, formulating learning objectives, identifying students and learning materials, choosing and using appropriate learning strategies or methods, and evaluating their learning outcomes. Thus, teachers are the implementers of lessons in the school environment. Therefore, teachers must be able to create or develop classic lessons that make lessons interesting. Independent learning is very important and needs to be developed since elementary school. Students with independent learning have responsibility for themselves, achieving goals and being willing to complete tasks on time (Ningtiyas & Surjanti, 2021). Students who are doing independent learning have the freedom to find how academic life will fit into everyday life. Independent learning will help students organize, adjust, and so on. Student learning independence is important in learning and everyday life (Uki & Ilham, 2020).

One of the efforts that can be made to improve learning independence in Natural Sciences, Social Sciences, especially Social Sciences, is that it can be implemented through learning media. Learning media is a tool that can help in the learning process in class so that the message's meaning is clearer. The purpose of education or learning can be achieved effectively and efficiently so that by using learning media, teachers can more easily convey learning content (Fauza et al., 2023; Sonia, 2022; Yuliana et al., 2021). Therefore, choosing the right media creates better quality education and an effective learning process (Herliana & Anugraheni, 2020). Learning media can also enable students to learn independently and can increase students' enthusiasm for learning (Lampropoulos et al., 2022; Stewart, 2023). In addition, teachers can utilize the development of technology, which is currently developing rapidly, to develop learning media that can be used to support the learning process, such as the development of digital comics. Technology development is expected to help teachers develop learning tools to support the learning process in schools, such as developing digital comics (Indariani et al., 2018; Ranting & Citra Wibawa, 2022). However, in reality, not all teachers utilize ICT in organizing the learning activities they teach, even though they understand that

learning strategies like this greatly support or help students' level of mastery of the subject matter.

One of the learning media that utilizes technology is comics. Digital comics are an example of technology-based learning media (Angga et al., 2020; Suwarti et al., 2020). Interesting learning media can be used in the learning process, including comics, where many children and adults still like to read comics. Comic learning media can be interesting because it uses cartoon animations consisting of several storylines that can attract readers' attention. It is equipped with images of writing to overcome children's boredom in reading. Digital comics can be used for all levels of education, especially in elementary schools (Sukmanasa et al., 2017). Based on the results of observations and interviews with fifth-grade elementary school teachers at SD Negeri 1 Kaliuntu on May 31, 2023, regarding the needs of teachers with the use of digital comic learning media at SD Negeri 1 Kaliuntu, the results showed that at SD Negeri 1 Kaliuntu, especially in the fifth grade which is still new to using the independent curriculum in the learning process, teachers only use learning media provided by the school, in the form of these books. These devices use books, where students cannot attend school and need help learning the material that has been explained. This shows that technology to support learning has yet to be utilized optimally.

Previous research findings related to the development of comic learning media in the content of Natural and Social Sciences for fifth-grade elementary school show that comic learning media is very effective in increasing student learning independence, with a combination of visual and narrative elements, has a strong appeal to students, motivating them to be more actively involved in learning. Comics provide a fun and interesting learning experience, creating emotional involvement that can increase students' intrinsic motivation (Andriani et al., 2022; Candrayani & Sujana, 2023a; Kristin, Firosalia dan Mulia, 2023; Widhinata, 2022). In addition, the ease of accessibility of digital comics allows students to learn independently, according to the time and place of their choice. Digital comics can stimulate imagination and creativity and help students develop learning independence. Educators can create a learning environment that effectively supports student independence development by designing comics that are adaptive to students' learning styles. Other researchers have shown an interest in students' learning interests using digital comic media.

Furthermore, similar research that discusses comic media shows that learning with comic media effectively improves students' character values (Sari et al., 2018; Sukmanasa et al., 2017). The novelty of virtual book-based comics on Natural and Social Sciences content compared to similar products developed previously is that this comic is a digital book containing videos and audio that can arouse students' enthusiasm for reading. In addition, this comic learning media can be used online or offline, depending on the facilities available at the school. This research aims to develop virtual book-based comics on Natural and Social Sciences content. This virtual book-based comic can later be used flexibly by students, meaning it can be used in online or offline learning. In addition, this virtual book-based comic will enable students to learn anywhere because by using virtual book-based digital comics, students can access it anytime. This study aims to create a valid, practical, and effective virtual book-based comic product used in the learning process. It can train the learning independence of fifth-grade elementary school students.

2. METHOD

This research is a research and development (R&D) research with the development research model ADDIE. The ADDIE model is a systematically designed development research model to solve problems in learning activities related to learning media that align with students' characteristics and needs. ADDIE modeling consists of stages: analysis, design, development, implementation, and evaluation. First, carry out the analysis stage where this stage is carried out to understand the needs and objectives of learning. At this stage, an analysis of student characteristics, curriculum analysis, needs analysis, and learning media analysis are carried out. The next stage is the design stage, which is a follow-up to the analysis stage. Compiling a design or sketch of the comic media to be developed is completed at this stage. The design or sketch that has been developed is then consulted with the supervisor to provide input or suggestions. The next stage is the development stage, which is carried out by developing the product to be made. After that, a judge's test was conducted to determine the instrument's validity, and experts performed a product validation test. The next stage is implementation, which carries out the activity of trying out this virtual book-based comic in the field. The final stage is evaluation, where the activities are carried out, and product refinement is done by providing an assessment related to the media that has been created and testing the effectiveness of the media that has been developed. The subjects of the comic validity test in this study were experts consisting of four material experts and four media experts. The subjects of the comic practicality test in this study included 23 fifth-grade students to test the practicality of the learning media. The data collection method in this comic development research uses a questionnaire method. The instrument used

in this study is a questionnaire for expert review and practicality. The questionnaire instrument grid used in this study is presented in Table 1, Table 2, Table 3, and Table 4.

Table 1. Grid of Learning Material Expert Instruments

No.	Aspect	Indicator
1	Materi	a. Clarity of learning materials b. Alignment of virtual book-based comic materials with learning activity objectives c. Alignment of virtual book-based comic materials with materials d. Coherence of materials
2	Bahasa	a. Clarity of information b. Use of language c. Use of punctuation d. The sentences used are easy to understand

Source: (Antara et al., 2022) modified

Table 2. Learning Media Expert Instrument Grid

No.	Aspect	Indicator
1	Desain Cover	a. aAlignment of characters and figures with the target of the story b. Alignment of background images with figures or characters c. Alignment of size, type, color of letters, and position of the title d. Appropriate arrangement of image objects or text
2	Desain Pesan teks	a. Harmony of size, type, color of letters, and spacing b. Sentences used are easy to understand c. Suitability of use of balloons and sentences d. Harmony of text and background color e. balance between images and text
3	Desain Pesan Gambar	a. Alignment of the image with the material or text message b. Quality of the displayed image c. Suitability of the character with the story d. Suitability of the image with the characteristics of the student
4	Suara	a. Clarity of sound b. Accuracy of music

Source: (Antara et al., 2022) modified

Table 3. Practicality Test Instrument Grid

No.	Aspect	Indicator
1	Digital Comic Presentation	a. Virtual book-based comics are easy to understand b. Virtual book-based displays are attractive c. Virtual book-based comics support learning outcomes d. Virtual book-based comics motivate learning e. Virtual book-based comics make my regional cultural material easy to understand
2	Quality of virtual book-based comics	a. The quality of the content of the material in virtual book-based comics b. The quality of the content of the material of my regional culture in virtual book-based comics

Source: (Antara et al., 2022) modified

Table 4. Grid of Student Learning Independence Questionnaire/Inquiry

No.	Aspect	Indicator
1	Kemampuan Tanggung Jawab	1. Asking about material that has not been studied 2. Able to do assignments independently 3. Able to complete assignments on time
2	Kemempuan Inisiatif	1. Doing assignments yourself 2. Having a desire to learn 3. Looking for additional information related to the material being studied
3		1. Able to find out how to do assignments during the learning process

No.	Aspect	Indicator
	Kemampuan Mengatasi Masalah	2. Have discussions with the teacher if there is something that is still not understood
		3. Discuss with the teacher if there are differences of opinion
4	Percaya Diri	1. Be confident in my abilities
		2. Have a strong belief that I can learn well
		3. Dare to express different opinions
		4. Have confidence in solving a problem
5	Kemampuan Kontrol Diri	1. Have confidence that the learning activities carried out have a good impact
		2. Read the material to be studied next

(Audhiha et al., 2022; Hidayati & Listyani, 2013)

This development research uses two data analysis techniques: quantitative descriptive analysis and qualitative descriptive analysis. Quantitative data analysis is a way of analyzing data in numbers. Qualitative descriptive analysis processes data derived from expert assessments and practicality. It processes data through suggestions, comments, and so on. Furthermore, descriptive statistical analysis is used to calculate the average of the results of expert assessments and student practicality.

3. RESULT AND DISCUSSION

Result

This research produces a development product in the form of Virtual Book-Based Comic media specifically focused on Natural and Social Sciences content in Chapter 7 (My Pride Region) Topic A (What is My Regional Culture Like?) to support the learning of fifth-grade elementary school students. This research aims to develop learning media to help students understand learning materials that can be offline or online. The Virtual Book-Based Comic that is developed is different from other comic media. The developed virtual book-based comic is equipped with instructions for use, audio from each character, supporting audio, supporting videos of learning materials, and questions adjusted to the related material. The developed Virtual Book-Based Comic can be a solution to overcome existing problems. The development of this virtual book-based comic learning media is based on the ADDIE development model, which consists of the analysis, design, development, implementation, and evaluation stages. The first stage, analysis, is carried out by extracting information related to product development needs data. The results of this found problems based on observations and interviews conducted at SD Negeri 1 Kaliuntu, the low independence of student learning where this can be seen from the habits of students who are not on time in submitting assignments, still waiting for teacher explanations, lack of initiative in asking questions and students only study before exams, there is no digital learning media in the Natural and Social Sciences content. Based on the findings at the analysis stage, it can be identified that teachers and students need learning media that can improve learning independence.

The second stage is the design stage, which contains activities to design or create virtual book-based comic designs based on the Natural and Social Sciences content. After creating the design and dialogue for the comic, guidance is carried out with the supervising lecturer to get input and suggestions. After this stage is completed and improved based on input and suggestions, it is continued to the next stage. The third stage involves developing virtual book-based comic products on the Natural and Social Sciences content. This virtual book-based comic is made with the Canva application and the Flip PDF professional application to make this comic a virtual book. Virtual book-based comics consist of the cover section; cover, title page (containing media title, chapter to be discussed, class, subject, and author's name), Material identity and instructions material identity, learning objectives, instructions for use, Character introduction including material or core which includes initial dialogue, core dialogue, final dialogue; Closing which includes evaluation, moral message, conclusion, list of references and developer biodata cover. The results of the design of the learning assessment guide based on design thinking are presented in Figure 1.
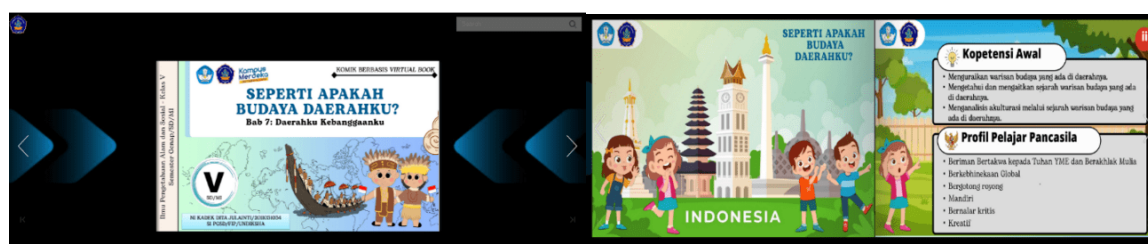
Figure 1. Design of Learning Assessment Guidelines Based on Design Thinking

The third stage, the designed virtual book-based comic learning media, was then tested for validity, practicality, and effectiveness using a questionnaire instrument. The validity of learning material expert obtained a validity index of 0.96875, which is included in the range ≥ 0.8. According to Aiken's criteria, if the validity index shows a number ≥ 0.8, the product developed is included in very high validity. The feasibility analysis of the media expert obtained a validity index of 0.941667, which is included in the range ≥ 0.8. According to Aiken's criteria, if the validity index shows a number ≥ 0.8, the product developed is included in very high validity. The assessment of student responses obtained an achievement level of 97.39% and was included in the range of 91-100% based on the conversion of the achievement level of the five-scale achievement. After implementing the validity test and the student's practicality test, the product was revised. Input and suggestions by experts and students were used as references for revising the virtual book-based comic product.

The fourth stage is implementation. After the virtual book-based comic had been declared feasible and practical to be used in the learning process, a field trial was carried out, which was then used as a basis for determining the effectiveness of virtual book-based comic products on the learning independence of fifth-grade elementary school students in the subjects of Natural and Social Sciences. Effectiveness testing was conducted on fifth-grade students of SD N 1 Kaliuntu. The fifth stage is evaluation, which is the last stage. At this stage, conclusions are drawn regarding the effectiveness of the developed virtual book-based comic. Based on the normality test analysis results using the IBM SPSS 25 program in Table 4. The pretest data's significance score (Shapiro-Wilk) is 0.247, and the posttest data is 0.151. Based on these results, it can be seen that the sig. Score> 0.05 for all data groups. So, the two data groups are normally distributed. The results of the homogeneity test of the variance of the effectiveness test data in this study using the IBM SPSS Statistic 25 program showed that the significance score (Based On Mean) was 0.91. Based on these results, it can be seen that the sig. Score. > 0.05. So, the variance of the data is homogeneous. All analysis prerequisites related to the Paired Sample T-Test analysis / Correlated Sample t-test have been met, so the Paired Sample T-Test analysis / Correlated Sample t-test can be used to test the hypothesis of this study. The results of the hypothesis submission in this study using the Paired Sample T-Test / Correlated Sample t-test. Based on the Paired Sample T-Test analysis / Correlated t-test results using the help of IBM SPSS Statistics 25, a significance score (sig. 2-tailed) of 0.000 was obtained. Based on these results, it can be seen that the sig. <0.05. So, it can be concluded that H0 is rejected and Ha is accepted. In other words, there is a significant difference in student learning independence before and after participating in learning using

virtual book-based Comic media on Natural and Social Sciences content. Thus, using virtual book-based Comic media on Natural and Social Sciences content effectively increases student learning independence.

Discussion

This research produces a development product as a Virtual Book-Based Comic media specifically focused on the Natural and Social Sciences content in Chapter 7 (My Pride Region) Topic A (What is My Regional Culture Like?) to support the learning of fifth-grade elementary school students. This research aims to develop learning media to help students understand learning materials that can be offline or online. The Virtual Book-Based Comic that is developed is different from other comic media. The developed virtual book-based comic is equipped with instructions for use, audio from each character, supporting audio, supporting videos for learning materials, and questions adjusted to the related material. The developed Virtual Book-Based Comic can be a solution to overcome existing problems. The development of virtual book-based comic products in this study follows the ADDIE development model, which has implications for the products' feasibility. The ADDIE development model has systematic stages and allows for evaluation activities at each stage (Hendi et al., 2020). The ADDIE model also allows each stage of development to refer to previous steps so that the resulting product is an effective and high-quality product (Bancin et al., 2019; Suryaningtyas et al., 2020). The ADDIE model consists of five related stages: the analysis stage, design stage, development stage, implementation stage, and evaluation stage (Dwiqi et al., 2020; Maghfiroh & Sholeh, 2022). The activities carried out at each stage are analysis that analyzes the needs of students and teachers related to the comic products to be developed, the design stage is to create a design in the form of a product design from the comic, the development stage is to create and develop comic products, the implementation stage is to test the comic product on students in the learning process, and the evaluation stage is to collect data for later analysis of the development of the comic product so that a valid and suitable product can be produced.

The results of the analyzed expert assessment show that the developed virtual book-based comic media obtained a feasibility analysis from media experts with a very high validity predicate/qualification. This can be seen from the aspect of learning media; virtual book-based comics are very well-qualified and worthy of implementation in the learning process. The development of virtual book-based comics is arranged based on a comic development strategy that can be an alternative enrichment in the learning process for teachers and students in elementary schools. Second, from the aspect of content/learning material, virtual book-based comics on Natural and Social Sciences content are very well qualified and worthy of being implemented in the learning process because the comics developed have presented very good quality in the curriculum aspect with indicators of the existence of lesson content identity, learning indicators, and learning objectives. So, if teachers can formulate learning objectives in teaching materials effectively and efficiently, the learning process will run smoothly (Kurniasari et al., 2020; Suh & Ahn, 2022). Using this comic can increase students' activeness in participating in learning. Learning followed by students is more meaningful because this comic contains video and audio. Supported by the facilities available in elementary schools, this comic can be applied to facilitate the learning process for teachers. In addition, using comics will reduce teachers' burden in presenting material (face-to-face). With the availability of adequate comics, it is hoped that learning can run efficiently and effectively and ultimately increase student learning independence (Kristanto & Pradana, 2022; Ningtiyas & Surjanti, 2021). The use of virtual book-based comics in Natural and Social Sciences content can effectively increase the learning independence of fifth-grade elementary school students. The comics are equipped with several images so that students are more interested in reading comics, and the learning process will be more effective. With the selection of attractive colors, adding animation and images to this comic will make students interested in using comics in their learning process and enthusiastic to participate in learning (Andriani et al., 2022; Ni Putu Sintya Dewi & Sujana, 2022; Wicaksana et al., 2020).

There is a significant difference in fifth-grade students' learning independence before learning virtual book-based comics and after learning virtual book-based comic media. Based on this, virtual book-based comic learning media effectively improves the learning independence of fifth-grade elementary school students. This is because by implementing learning, students can learn anytime and anywhere, allowing them not to wait for explanations from the teacher and to learn according to their wishes. This finding is reinforced by previous studies stating that comic learning media effectively improves students' learning independence to be more actively involved in learning (Candrayani & Sujana, 2023b; Indriasih et al., 2020). Comics provide a fun and engaging learning experience, creating emotional engagement that can increase students' intrinsic motivation. This virtual book-based comic can be accessed offline or online anytime and anywhere. In this comic, there are also evaluation questions where students can directly answer questions after they read the comic. This virtual book-based comic is also interactive because students can interact directly with it, thus providing a new atmosphere for students and increasing their

interest and motivation in following the learning process in class. This study's limitations lie in the material's scope, level, and content of learning developed in the comic and the number of subjects used in the product effectiveness test. This comic is only limited to the material of the Science lesson in Chapter 7 (My Pride) Topic A (What is My Regional Culture Like?) in the fifth grade of Elementary School.

Moreover, for the number of subjects involved in the effectiveness test, only 1 class totaled 23 people using the One Group Pre-Test-Post-Test research design. The implication is to create an inclusive and stimulating learning environment where students can learn independently while remaining involved and inspired by the content presented. It is recommended that virtual book-based comic learning media for Natural and Social Sciences content be used to support the learning process and make it easier to understand the material. Teachers are advised to use virtual book-based comic learning media for Natural and Social Sciences content in the learning process and always improve their competence in utilizing technology in learning.

4. CONCLUSION

The development of learning media in the form of virtual book-based comics on the Natural and Social Sciences content for fifth-grade elementary school students using the ADDIE development model has produced valid, practical, and feasible development products for use in the learning process as one of the right efforts to facilitate students in understanding learning materials so that they can improve the quality of learning and student learning independence. The discovery of virtual book-based comics offers great potential to improve student learning independence interestingly and interactively. Through a visual and narrative format, comics can help students understand complex concepts better and motivate them to take the initiative in learning.

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