JPPIPA (Jurnal Penelitian Pendidikan IPA)
Vol.10 No. 2 2025
http://journal.unesa.ac.id/index.php/jppipa

DEVELOPMENT OF COMICS-BASED LEARNING MEDIA ON MOTION AND FORCE MATERIAL TO IMPROVE LEARNING MOTIVATION OF JUNIOR HIGH SCHOOL STUDENTS

Meyta Hosana[1], Mella Mutika Sari[2], Ratna Yulinda[3]
[1,2,3] Science Education, Faculty of Mathematics and Natural Sciences, Lambung Mangkurat University, Indonesia

Abstract

The rapid changes of the 21st century require educators to adapt and create a creative learning process to enhance motivation in learning and produce high-quality students. However, it has been observed that some students struggle with focus as they become distracted by other activities such as playing or chatting, leading to difficulties in completing assignments, especially in subjects that involve calculations. This study aims to assess the validity, practicality, and effectiveness of instructional media in increasing the learning motivation of junior high school students. The development model applied is ADDIE (Analysis, Design, Development, Implementation, and Evaluation), with validation conducted through validation sheets, practicality assessed using student response questionnaires, and effectiveness measured through learning outcome tests. Validation results from three experts indicated a validity level of 89% (Very Valid), while practicality testing through student response questionnaires reached 84% (Very Practical). The effectiveness test showed an average score of 69, with an N-gain score of 0.6257 (Moderate) and an N-gain percentage of 62.5733 (Effective). Based on the research findings, comic-based learning media for the Motion and Force has been proven to be valid, practical, and effective in enhancing student motivation in junior high school learning.

Keywords: Comic Media, Learning Motivation, ADDIE Development

Article History: Received: June 23rd, 2025. Revised: September 09th, 2025. Published: December 31st, 2025

[1]**Corresponding Address:**
Science Education, Faculty of Mathematics and Natural Sciences,
Lambung Mangkurat University, Indonesia
E-mail: meytahosana@gmail.com

p-ISSN: 2527-7537
e-ISSN: 2549-2209

INTRODUCTION

The 21st century is characterized by the rapid development of technology and information. This transformation presents significant opportunities across various sectors, including education, provided it is managed strategically, systematically, and measurably. However, without proper preparation and the right approach, these changes also have the potential to pose serious challenges within the educational landscape (Rosnaeni, 2021). Education serves as a crucial foundation for individual and societal development. Through well-planned and systematic education, students are expected to develop their potential to the fullest (Desramaza, Sufri, & Pasaribu, 2023). One of the keys to successful learning lies in the support of adequate and relevant learning facilities and media that meet students' needs (Shofa, Redhana, & Juniartina, 2020).

As an essential tool, learning media plays a strategic role in supporting the delivery of material to students and contributes significantly to enhancing the quality of learning comprehension. Through the appropriate use of media, it is hoped that students will be more responsive and capable of absorbing information more effectively, thereby improving the quality of learning (Mukholifah, Tisngati, & Ardhyantama, 2020). Based on interviews with the Grade VII D science teacher and the principal of SMP Negeri 26 Banjarmasin, it was found that the school has implemented the Kurikulum Merdeka (Merdeka Curriculum). Observations also revealed a very neat and clean school environment. The school has several regulations, with a particular point of interest for the author being the prohibition on students bringing mobile phones to school. Learning at the school still relies on traditional methods, using only textbooks and teacher explanations, which has led to a decrease in students' learning motivation. Consequently, Grade VII D students at SMP Negeri 26 Banjarmasin still have difficulty grasping the concepts taught by the teacher.

Achieving high-quality learning requires several efforts. One such effort is providing adequate learning support facilities. A particularly important facility is interactive multimedia (Shofa, Redhana, & Juniartina, 2020). Based on an interview with the principal, it was also mentioned that the school lacks facilities such as projectors to aid in classroom learning. Therefore, the medium developed in this research is a printed comic book, which is an art form that presents a story through a systematically arranged series of static images. Comics are considered effective for conveying information and enhancing student understanding, in addition to their visual appeal. The illustrations can feature cartoon characters such as humans, animals, plants, or inanimate objects (Hidayah & Setyanto, 2021).

Comics not only provide entertainment or serve as light reading but also function as an efficient visual communication medium for conveying information clearly and engagingly. The strength of comics lies in their combination of text and images that form a narrative, making it easier for readers to absorb and retain information more effectively (Yanti, Hardiman, & Budiarta, 2019). Readers can more easily understand the plot of a comic because it uses easily comprehensible, everyday language. Comics are able to capture readers' interest through a combination of engaging text and illustrations (Shomad & Rahayu, 2022). The use of comics as a medium in the learning process plays a very important role in awakening students' interest and motivation (Amalia, 2020). Numerous studies have found that digital comics in mathematics education have significant potential to enhance the teaching and learning process (Hasanah, Syaifuddin, Darmayanti, & In'am, 2022). Comics have great potential to increase their engagement and understanding in the learning process (Reis, et al., 2022).

A person's active engagement in the learning process is driven by motivation, which is a drive that can be both internal and external. This drive can originate from a personal desire to achieve a specific goal or from external factors such as encouragement from parents or rewards for academic achievement. Innovative teaching approaches, the relevance of material to student needs, and the application of various techniques can help students understand material deeply while enhancing their motivation for optimal learning (Setyawan, Suratno, & Sofyan, 2022).

Another problem encountered in education is students' lack of understanding of physics concepts (Nurwahidah, 2022). This aligns with the interview with the Grade VII D science teacher at SMP Negeri 26 Banjarmasin, who stated that students find it more difficult to understand physics, especially the calculations. Nurwahidah (2022) noted that some students experience misconceptions regarding the concepts of motion and force; therefore, the researcher chose the topic of Motion and Force for the comic being developed. This choice is consistent with the results of interviews and observations with the science teacher at SMP Negeri 26 Banjarmasin. The topic covers motion and force for Grade VII junior high school students, with the following sub-topics: 1) Displacement and distance traveled by objects, 2) Relative Motion, 3) Velocity and Acceleration, 4) The Concept of Force, 5) Types of Forces, and 6)

Newton's First Law, Newton's Second Law, and Newton's Third Law.

Innovation in teaching methodologies is crucial, particularly through the strategic use of media that can enhance motivation and capture interest in the educational process. Learning media that are engaging for students can act as a stimulus in the learning process. The management of teaching aids is essential in formal educational institutions (Lestari, Putri, & Mukmin, 2023). This becomes increasingly relevant when considering the multifaceted challenges inherent in modern learning environments.

Based on the aforementioned description, a research and development study was conducted entitled, "The Development of Comic-Based Learning Media on the Topic of Motion and Force to Increase the Learning Motivation of Junior High School Students." This study aims to determine the validity, practicality, and effectiveness of the comic-based learning media, as well as to assess the students' level of motivation using questionnaires and learning outcome tests. Media that have been validated are considered highly suitable for use as a tool in the teaching and learning process, thereby fostering a high-quality learning experience (Liniasari, Yudiana, & Dibia, 2021).

METHOD

This study employed Research and Development (R&D) methodology. The primary objective of this approach was to create and assess the feasibility of a specific product, which then underwent validation by subject-matter experts (Siagian, Sofwan, & Hayati, 2023). Products generated through R&D can encompass a range of educational resources, including modules, textbooks, learning media, assessment instruments, and other tools designed to enhance the learning process.

Research Design

This study's methodological backbone is the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, functioning as a systematic and fundamental framework (Siagian, Sofwan, & Hayati, 2023). This approach transcends a mere guideline, representing a structured and iterative process that meticulously directs each phase in crafting comic-based learning media. The central focus remains on motion and force concepts, with the strategic aim of substantially elevating learning motivation among junior high school students.

The intentional and precise application of the ADDIE model ensures that media development unfolds through distinct and well-defined stages. It commences with a thorough needs analysis, progresses to intricate design planning, followed by the actual product development, subsequent field implementation, and culminates in a comprehensive evaluation. Through strict adherence to these phases, this media is engineered to revolutionize students' learning experiences. This involves fostering learning that is visually engaging, highly interactive via responsive components, and easily comprehensible through clear yet profound information delivery. Consequently, this enriched learning environment is projected to cultivate increased enthusiasm and active student participation, both of which are paramount for attaining optimal educational outcomes. This aligns with Wahyudi's (2021) findings in Figure 1 regarding the ADDIE model.

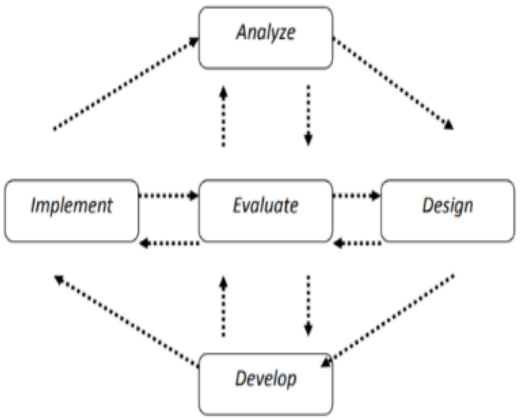

Figure 1. ADDIE model stages
(Wahyudi, 2021)

Analysis

The analysis stage in this study aims to identify problems in the school environment and formulate alternative solutions as a basis for developing comic learning media to increase junior high school students' learning motivation. This stage is carried out by interviews and direct observations at school to obtain accurate data and understand learning conditions in more depth.

Design

The design stage involves several important steps, namely, selecting a topic, the software to be used, collecting product references to form frameworks, media content formats and compiling materials until the media is finished and can be used. At this stage, researchers use the Canva application as a tool for designing designs. The final design phase involves designing the assessment instruments that will be used to evaluate the media and supporting learning devices, including modules.

Development

This stage aims to produce practical and effective development products. This process

includes two main steps, namely expert assessment followed by revision. (Maydiantoro, 2021). At this stage, the media and all learning instruments are validated by experts and revised according to input and suggestions from the validators. The assessment by experts aims to improve the accuracy, effectiveness, and quality of learning devices to be more tested. The trial and revision process is carried out repeatedly to ensure that the resulting learning devices are effective and consistent.

Implementation

At the implementation stage, Comic-based learning media is used directly in the teaching and learning process in the classroom. During this stage, research data is also collected to evaluate the product. Data collection aims to assess the feasibility of the product through a questionnaire that measures the extent to which the media is in accordance with the needs and expectations of users, as well as to assess the effectiveness of the product in improving the learning process.

Evaluation

Evaluations are conducted at each stage of the "ADDIE" model, and these evaluations aim to improve the quality of the media being developed.

Research Objectives

This study involved 28 students of class VIID at SMP Negeri 26 Banjarmasin as research subjects, who were the target users of comic-based learning media. The object of the study was the comic learning media that was developed. The research activities took place from November 19, 2024 to January 15, 2025.

Trial Phase

Purposive sampling was applied in this pilot test phase, allowing researchers to select participants who met certain criteria in accordance with the research needs. Product testing in this development study included validation by experts and testing on students, applying a One-Group Pretest-Posttest pattern. Zhafirah, Erna, & R. Usman, (2021) explained that this pattern was used to test the results of media development. Table 1 shows the pattern used in the trial phase.

Table 1. Trial design

Pretest	Treatment	Posttest
O1	X	O2

(Zhafirah, Erna, & R. Usman, 2021)

Data collection technique

This research uses several methods in collecting data, namely:

a. Interview

Interviews were conducted to find out the condition of the school that would be the location of the research, including the number of students, science textbooks used by teachers, and the curriculum implemented in the school. Interviews are an instrument used to obtain information in the form of oral data. (Herlinda, Darwis, & Dartono, 2021).

b. Documentation

Documentation acts as the main tool in data collection, used to obtain accurate and relevant information according to research needs. (Herlinda, Darwis, & Dartono, 2021).

c. Questionnaire

The assessment of media validity, practicality, and its effect on student learning motivation in using educational comics was conducted through a questionnaire. Table 2 shows the Likert scale applied to the questionnaire to measure the attitudes, opinions, and views of individuals or groups toward certain social phenomena.

Table 2. Category Likert scale

Category	Score
Strongly agree	5
Agree	4
Doubtful	3
Don't agree	2
Strongly disagree	1

(Nisa & Nugraheni, 2021)

d. Test

Testing was conducted through pre-test and post-test, by comparing learning outcomes before and after the use of comic-based learning media. The purpose of this test is to assess the effectiveness of the media in improving students' understanding and motivation to learn.

Data Analysis Techniques

The analysis of validity, practicality, and effectiveness data was obtained through formula 1 based on the research by Rahma & Pujiastuti (2021).

$$P = \frac{\sum x}{N} \times 100\% \quad \text{.....(1)}$$

Information:

P = Percentage gain (rounded result)

$\sum x$ = Total score of each specified criterion.

N = Ideal score total

The assessment criteria used to categorize the percentages obtained from the validation, practicality, and effectiveness of the research instrument are shown in Table 3.

Table 3. Assessment criteria

Score	Category
81 – 100%	Very Valid/Practical/Effective

Score	Category
61 – 80%	Valid/Practical/Effective
41 – 60%	Quite Valid/Practical/Effective
21 – 40%	Less Valid/Practical/Effective
0 – 20%	Not Valid/Practical/Effective

(Rahma & Pujiastuti, 2021)

This study incorporates the N-gain test to evaluate the developed product's effectiveness in facilitating learning. Consistent with the methodology proposed by Ramadhani & Amudi (2020), the N-gain test is specifically employed to assess the degree of improvement in learning outcomes using a One Group Pretest-Posttest Design. The next section explains the formula and criteria for the N-gain test shown in formula 2 and Table 4 and Table 5, as described in the research mentioned above.

$$N - gain(g) = \frac{\text{posttest score} - \text{pretest score}}{\text{maximum score} - \text{pretest score}} \quad \text{.....(2)}$$

Table 4. N-gain score criteria

N-gain	Criteria
0.7 ≤ N-gain ≤ 1	High
0.3 ≤ N-gain < 0.7	Medium
N-gain < 0.3	Low

(Ramadhani & Amudi, 2020)

Table 5. Interpretation of N-gain effectiveness

Percentage (%)	Category
< 40	Ineffective
40-55	Less Effective
56-75	Fairly Effective
> 76	Effective

(Juniayanti & Susila, 2022)

RESULTS AND DISCUSSION

The main focus of this study is the development of comic-based learning media relevant to the topic of Motion and Force, with the aim of enhancing the learning motivation of junior high school students. The development process was conducted based on research (Ali, Acquah, & Esia-Donkoh, 2021) by applying the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation. Each stage of this model was systematically evaluated to ensure that the resulting media met expert validation standards and could address issues that arose during the learning process.

The analysis stage is carried out through interviews and observations, with data obtained covering the condition of the school environment, characteristics of students, and the material being studied. This stage is after collecting data and evaluating the data so that it gives rise to the idea of creating learning media that are suitable for the school environment and in accordance with the needs of students. The idea is to create comic-based learning media on the material of movement and style. During the interview it was said that the school did not allow students to bring or play with cellphones so the researcher decided to create comic media in printed form.

After finding a solution to the problems found, then enter the design stage. This design stage is carried out by making a material arrangement, looking for suitable references, determining the format and making learning media. The material is taken from the science textbook for class VII issued by the Ministry of Education and Culture. The material is arranged using references from YouTube videos. Figure 2 shows the printed form of the comic book that has been created.

Figure 2. Printed comics

The structure and presentation of the comic content were intentionally crafted based on analytical findings indicating that students require learning media capable of enhancing their motivation. Motivation, as described by Setyawati, Suratno, and Sofyan (2022), stems from both internal and external factors that drive individuals to actively engage in the learning process. Figure 2 displays the cover design of the comic book developed for this purpose.

Figure 3. Comic display design

Learning motivation is an important factor that involves both internal and external motivation, which encourages students to feel enthusiastic and enjoy the learning process. With strong motivation, students can be more focused, enthusiastic, and strive to achieve the best achievements in their education (Nurrawi, Zahra, Aulia, Greis, & Mubarok, 2023). The characteristics of this comic

media are specifically designed to increase students' learning motivation so that the selection of colors, images and designs are made as attractive as possible in order to attract students' enthusiasm for learning.

Utilization Comic media for the learning process provides many benefits. Comics can increase students' motivation to learn and make the learning process more effective, as well as increase their interest and appreciation for the material being studied. The benefits are numerous, ranging from stimulating motor sensors with colorful images, introducing various colors to students, providing opportunities for them to imagine and express their opinions. By using comics, the learning process becomes more fun and interactive. It's not just about reading and looking at pictures, but also about understanding the stories and concepts conveyed through the comics. So, comics can be a very effective learning medium in improving the quality of the learning process in the classroom (Kurniawarsih & Rusmana, 2020).

Social issues related to the material on motion and force presented include speed and velocity which are often considered the same by many people, especially students, even though speed and velocity have different meanings. From the material on speed and velocity, there is also often debate about "Why do people rarely mention speed". This comic-based learning media will present an explanation that will play with students' imaginations through brief explanations in the form of conversations and supported by pictures that interesting as in Figure 3, so it is hoped that it can increase students' learning motivation.

Figure 4. Comic content design

Comics are not only designed to present material in the form of illustrated stories. In this study, comics were also designed to increase student activity by adding crossword puzzles equipped with movement and style elements. These comics also include practice questions, as shown in Figure 4, with the aim of providing a deeper impression and experience of the material presented when learning using comic-based learning media.

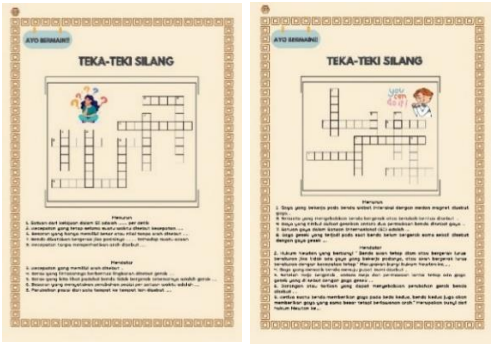

Figure 5. Crossword puzzle design

This comic design was developed specifically to meet the needs of students, facilitate understanding of lesson material, and increase motivation to learn. Figure 6 shows access to the complete comic design.

QR Google drive
https://drive.google.com/drive/folders/1oCHZkzssP6RzHdeYpeNkBws697bZww2V?usp=sharing

Flipbook
https://heyzine.com/flip-book/1094707647.html

Figure 6. Complete comic design QR

The evaluation of this design stage is the importance of having a media to integrate comics into learning, so a module is made for teacher guidance in integrating comic-based learning media into the learning process. The module is made according to learning objectives and indicators in the learning comic book. The learning outcome questionnaire was also designed to determine how effective the use of comic-based learning media is when used in the learning process. Furthermore, to assess the ease of use of comic-based learning media, a questionnaire was prepared to measure student responses, as well as a validation sheet that includes learning media, modules, and student response questionnaires, and a validation sheet for the learning outcome test to determine whether it is feasible to use in the field.

The next stage is development, where learning media, modules, student response questionnaires, and learning outcome test questions are validated by three validators. The validated aspects include the appropriateness of content, material, presentation, and language. (Firliani & Utami, 2023). According to Gistituati & Atikah

(2022), Validity is the main concern in developing quality teaching materials so that they can be used effectively by teachers and students. So before being taken to the field, all research materials need to be validated by experts.

The validators were taken from two lecturers from science education and a science teacher at a junior high school. The media validation sheet contains 6 aspects and 12 assessment indicators, then the module validation sheet contains 6 aspects and 19 assessment indicators, the learning outcome test validation sheet contains an overall appearance assessment with 3 indicators and an assessment table of 20 questions, finally for the student response questionnaire validation sheet there are 4 aspects and 8 assessment indicators. All instruments are designed with scoring guidelines, so that they can help in correcting and assessing answers fairly and avoiding subjective assessments, especially in the learning outcome test instrument. The validation results are shown in Table 5, with the average results falling into the "Very valid" category.

Table 6. Validation data

No	Validators	Validation	∑x (Total Score)	N (Ideal Score)	P (Presentation)	Category
1	Validator I	Media	57	60	95%	Very Valid
		Module	80	95	84%	Very Valid
		Student Response	29	40	73%	Valid
		Pretest-Posttest	88	92	96%	Very Valid
2	Validator II	Media	51	60	85%	Very Valid
		Module	92	95	97%	Very Valid
		Student Response	38	40	95%	Very Valid
		Pretest-Posttest	68	92	74%	Valid
3	Validator III	Media	56	60	93%	Very Valid
		Module	89	95	94%	Very Valid
		Student Response	37	40	93%	Very Valid
		Pretest-Posttest	87	92	95%	Very Valid
Average					**89%**	**Very Valid**

All of the data were averaged and got a result of 89% with the category "Very Valid". All of these categories are in accordance with the validation category. In the range of 80%-100% it is stated as "Very Valid" so that all data obtained with a figure above 80% falls into the category "Very Valid". This is in accordance with the opinion of Rahma & Pujiastuti (2021), regarding the validity category of teaching materials. This is also in accordance with the research of Kurniawarsih & Rusmana (2020). That the validation results are suitable for use in the field. Evaluation of the development stage is carried out by collecting feedback and recommendations from validators. Then from the input and suggestions, researchers can improve the instruments developed so that the quality of the research instrument is better than before, so that the instrument is in accordance with the research objectives and in accordance with the needs of the participants so that the learning objectives set by the curriculum can be achieved. After a series of revisions, the product is ready for use.

The subsequent phase involves implementation, where the comic-based learning media is integrated into classroom instruction to evaluate its effectiveness and practicality. This stage aims to determine how well the media enhances learning quality, using both learning outcome assessments and practicality questionnaires. The media was applied in a single class of 28 students, with the learning activities conducted across two separate sessions. To measure the impact on student achievement, pre-test and post-test instruments were employed. Figure 7 illustrates students engaging with the

comic-based learning media during lessons on the topic of Motion and Force.

Figure 7. Learning using comic media

The results of the pre-test indicate that students' comprehension of the concepts of motion and force was initially low, as evidenced by scores that fell well below the established passing criteria. To address this issue, an intervention was implemented by integrating the validated comic-based learning media into the instructional process.

Furthermore, a posttest was carried out again. The post-test results showed an increase in student scores. The average score obtained was 83, this score was higher than the pre-test results which showed an average of 56. The summary of student scores calculated using the formula based on the research by Rahma & Pujiastuti (2021) is as follows,

$$P = \frac{\sum x}{N} \times 100\% \quad \text{.....(3)}$$

Information:
P = Percentage gain (rounded result)
$\sum x$= Total score pretest/posttest
N= Number of students
with the calculations presented using Excel, which can be seen in Table 7.

Table 7. Learning outcome test data

	Average Student Score		
	Pre-test	**Post-test**	**Information**
Average	56	83	Effective

Table 7 shows that the average posttest score of students reached 83, much higher than the average pretest score of only 56. This indicates that the use of learning media was able to have a positive impact on improving student learning outcomes. Based on the effectiveness test criteria, this improvement falls into the "Very Effective" category. To determine the extent to which students' abilities improved after participating in the learning process, an analysis was conducted using the N-Gain test. This method is used to compare pretest and posttest results quantitatively, so that the level of learning effectiveness can be determined more accurately. The higher the N-Gain score obtained, the greater the increase in student competence. Details of the N-Gain test results can be seen in Table 8.

Table 8. The results of the pretest-posttest test

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
N-Gain score	28	.17	1.00	.6257	.18750
N-Gain Percentage	28	16.67	100.00	62.5733	18.74970
Valid N (listwise)	28				

The N-Gain test is used to measure the effectiveness of using comic learning media in the learning process. Comparison of pre-test and post-test results is the basis for analysis, then the mean value that meets the research criteria is calculated. (Ramadhani & Amudi, 2020), The N-Gain test result is $0.3 \leq \text{Ngain} < 0.7$, indicating that the effectiveness of this learning medium is "medium". At this time, N-Gain percentage is displayed as 62.5733, between 61% and 80%, which is at the "effective" level. The N-Gain test result is $0.3 \leq \text{N-Gain} < 0.7$, indicating that the effectiveness of this learning medium is "medium". At this time, N-Gain percentage is displayed as 62.5733, between 61% and 80%, which is at the "effective" level.

The N-gain test results demonstrate that using comic media for Motion and Force material effectively boosts students' learning motivation. This media has proven applicable in the learning process, helping students grasp the material more engagingly and interactively. This finding aligns with Sihombing et al.'s (2021) research, which indicates that learning motivation influences learning outcomes. The pre-test and post-test completion process can be seen in Figure 8 and Figure 9.

Figure 8. Pre-test completion

Figure 9. Post-test completion

Upon concluding the entire learning cycle, students were prompted to complete a response survey. This instrument was specifically crafted to enable them to convey their authentic experiences and perceptions. The primary objective of this response survey was to quantify the perceived practicality of the implemented learning media and assess its substantial impact on enhancing student motivation throughout the implementation phase. The data gathered from this survey offers profound insights into students' direct perspectives on the learning media, encompassing both its ease of use and its contribution to their learning enthusiasm. The results of the student response survey are presented in Table 9.

Table 9. Student response questionnaire data

Aspect	Participant	∑x (Total Score)	N (Ideal Score)	P (Presentation)	Category
Material Language Format/View	28 People	1288	1540	84%	Very Practical

The student response questionnaire showed a value of 84%, which is in accordance with the practicality test criteria in the range of 80%-100% and is categorized as "Very Practical". The results of this data confirm that comic-based learning media for Motion and Force material have proven to be effective and practical in supporting the learning process. This comic medium not only increases students' motivation to learn but also makes it easier to understand concepts through an attractive visual approach. This is in accordance with the findings of Irawan & Hakim (2021), that the use of comic teaching materials in the learning process is practical.

The student response questionnaire also contains motivation indicators, so that in addition to the questionnaire proving that the media used is practical, the questionnaire also provides an increase in learning motivation. Evaluation at this implementation stage, namely regarding how to integrate learning media into learning activities, must be as creative as possible, so that the delivery of the material is not limited to just reading, but the learning media that is developed already has more facilities to create exciting and memorable learning activities.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the validation test analysis with comic-based learning media validation sheets, modules, tests for learning outcomes, and student response questionnaires after being verified by three validators, the total validity value was 89%. According to the validation test criteria, this figure is included in the "Very Valid" category. This means that the learning media and all research instruments that have been created are suitable for use.

The effectiveness of comic-based learning media was evaluated using a learning outcome test instrument designed in alignment with instructional objectives and indicators. Based on the results, the media was classified as "Very Effective," as determined by the effectiveness test formula referenced in Rahma & Pujiastuti (2021). This classification is supported by the increase in student scores, from a pretest average of 56 to a posttest average of 83, as shown in Table 3.

Further analysis using the N-Gain test revealed an average N-Gain score of 0.6257, which falls into the "Moderate" category according to the criteria established by Ramadhani & Amudi

(2020), as presented in Table 4. Additionally, the N-Gain percentage value reached 62.5733, placing it in the "Fairly Effective" category based on the classification by Juniayanti & Susila (2022), as shown in Table 5. These findings indicate that comic-based learning media, particularly for the topic of motion and force, can be effectively utilized to enhance student learning outcomes.

The practicality test, conducted using a student response questionnaire that had undergone prior validation, yielded a score of 84%, placing it within the "Very Practical" category. This result aligns with the standard range of 81%–100% for high practicality. It suggests that the comic-based learning media used for the topic of Motion and Force is not only pedagogically effective but also plays a significant role in enhancing student motivation. By presenting content in an engaging and accessible format, this media serves as a valuable instructional resource that supports both teachers and learners in exploring physics concepts through a more interactive and enjoyable experience.

Suggestion

Development of comic-based learning media with the material of movement and style in order to increase the motivation of junior high school students to learn, it is expected that the dissemination stage can be carried out in several classes and in several schools. To further researchers, considering the limitations of researchers in the design stage, it is hoped that there will be further research for this study so that the design is more attractive and not monotonous and all sentences used are easy to understand by students.

REFERENCES

Aida, L. N., Maryam, D., Febiola, F., Agami, S. D., & Fawaida, U. (2020). Inovasi Media Pembelajaran Pendidikan Agama Islam Melalui Media Audiovisual. *Terampil: Jurnal Pendidikan Dan Pembelajaran Dasar*, 7(1), 43-50. Https://Doi.Org/10.24042/Terampil.V7i1.6081.

Akbar, M. S., Hidayat, O. S., & Hasanah, U. (2023). Analisis Kebutuhan Pengembangan Media Komik Digital Penerapan Sila Pancasila Berbasis Masalah Dalam Pembelajaran Ppkn Sekolah Dasar. *Kompetensi*, 16(1), 160-167. Https://Doi.Org/10.36277/Kompetensi.V16i1.133.

Alfian, A. N., Putra, M. Y., Arifin, R. W., Barokah, A., Safei, A., & Julian, N. (2022). Pemanfaatan Media Pembelajaran Audio Visual Berbasis Aplikasi Canva. *Jurnal Abdimas (Pengabdian Kepada Masyarakat)*, 75 – 84. Https://Doi.Org/10.31599/Mwdwxy87.

Ali, C. A., Acquah, S., & Esia-Donkoh, K. (2021). A Comparative Study Of Sam And ADDIE Models In Simulating Stem Instruction. *African Educational Research Journal*, 2354-2160. Https://Eric.Ed.Gov/?Id=Ej1324100.

Amalia, L. Z. (2020). 15pengembangan Komik Online Berbasis Website Sebagai Media Pembelajaran Bahasa Arab Keterampilan Membaca (Maharoh Qiro'ah) Di Madrasah Aliyah Kelas X. *Seminar Nasional Bahasa Arab Mahasiswa Iv*, 16-26.

Apipah , S., Pasani, C. F., & Hafizah, E. (2022). Pengembangan Bahan Ajar Gerak Dan Gaya Berbasis Literasi Sains Dan Bermuatan Karakter Kerja Keras Untuk Siswa SMP. *Indonesian Journal Of Science Education And Applied Science*, 24-33. Https://Doi.Org/10.20527/I.V2i1.5242.

Apipah, S. (2020). Pengembangan Bahan Ajar Gerak Dan Gaya Berbasis Literasi Sains Dan Bermuatan Karakteer Kerja Keras Untuk Siswa SMP. *Skripsi*, 96-97.

Arsitawati, N., Suharta, I., & Juniantri, M. (2020). Pengembangan Media Komik Berbasis Pendidikan Karakter Pada Siswa Sma Kelas X. *Jurnal Pendidikan Dan Pembelajaran Matematika Indonesia*, Vol. 9 No. 2 :52-61. Https://Doi.Org/10.23887/Jppmi.V9i2.1690.

Awi, N. L., & Zulkifli, H. (2021). Amalan Kreativiti Guru Pendidikan Islam Dalam Pembelajaran Abad Ke-21. *Asean Comparative Education Research Journal On Islam And Civilization*, Vol.4, No.1, 40-54. Https://Spaj.Ukm.My/Acerj/Index.Php/Acer-J/Article/View/67.

Casnan, Purawan, Firmansyah, I., & Triwahyuni, H. (2022). Evaluasi Proses Pembelajaran Dengan Pendekatan Systems Thinking. *Jurnal Pendidikan Dan Kebudayaan*, Vol. 12 No. 1 : 31-38. Https://Doi.Org/10.24246/J.Js.2022.V12.I1.P31-38.

Christian, N., Manurung, N. S., & Purba, H. G. (2022). Analisis Kondisi Sosial, Ekonomi, Dan Politik Negara Belanda Yang Merupakan Bagian Dari G10. *Jurnal Ilmiah Ekonomi Dan Bisnis*, 96-112. Https://Doi.Org/10.51903/E-Bisnis.V15i1.699.

Daniyati, A., Saputri, I. B., Wijaya, R., Septiyani, S. A., & Setiawan, U. (2023). Konsep Dasar Media Pembelajaran. *Journal Of Student Research*, Vol.1, No.1: 282-294. Https://Doi.Org/10.55606/Jsr.V1i1.993.

Daryanto, J., Rukayah, Sularmi, Budiharto, T., Atmojo, I. R., Ardiansyah, R., & Saputri, D. Y. (2022). Meningkatkan Motivasi Belajar Peserta Didik Sekolah Dasar Melalui Pemanfaatan Media Lkpd Interaktif Berbasis Liveworksheet Pada Masa Revolusi Industri 4.0. *Jurnal Hasil Pengabdian & Pemberdayaan Kepada Masyarakat*, Vol. 3, No.2, 319-326. Https://Doi.Org/10.33394/Jpu.V3i2.5516.

Dermawan, F., Tanjung, S., Ginting, R. A., Sembiring, Y. B., & Lubis, H. S. (2024). Analisis Pengembangan Media E – Komik Materi Kerajaan Sriwiaya Dalam Pembelajaran Sejarah. *Jim: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah*, 9(2), 407-414. Https://Doi.Org/10.24815/Jimps.V9i2.29762.

Desramaza, A., Sufri, & Pasaribu, F. T. (2023). Desain Media Pembelajaran Berbasis Project Based Learning Berbantuan Smart Apps Creator. *Pedagogy: Jurnal Pendidikan Matematika*, 8(1), 59-72. Https://Repository.Unja.Ac.Id/44148/.

Dickson. (2024, 11 27). *Profil Negara Portugal*. Diambil Kembali Dari Ilmu Pengetahuan Umum: Https://Ilmupengetahuanumum.Com/Profil-Negara-Portugal-Portugis/

Febrianto, K., Yustitia, V., & Iranto, A. (2020). Aktivitas Siswa Dalam Pembelajaran Dengan Menggunakan Media Flashcard Di Sekolah Dasar. *Buana Pendidikan: Jurnal Fkip Unipa Surabaya*, 92-98. Https://Doi.Org/10.36456/Bp.Vol16.No29.A2273.

Firliani, N., & Utami, L. (2023). Desain Dan Uji Coba Media Komik Berbantuan Pixton Berbasis Android Pada Materi Tata Nama Senyawa Kimia. *Journal Of The Indonesian Society Of Integrated Chemistry*, Vol. 15 No. 1: 12-20.

Firliani, N., & Utami, L. (2023). Desain Dan Uji Coba Media Komik Berbantuan Pixton Berbasis Android Pada Materi Tata Nama Senyawa Kimia. *Journal Of The Indonesian Society Of Integrated Chemistry*, 12-20. Https://Doi.Org/10.22437/Jisic.V15i1.19518.

Gawise, Nurmaya G, A. L., Jamin, M. V., & Azizah, F. N. (2022). Peranan Media Pembelajaran Dalam Penguatan Pembelajaran Pendidikan Kewarganegaraan Di Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, Vol. 4,No.1:3575-3581. Https://Doi.Org/10.31004/Edukatif.V4i3.2669 .

Geografi, G. (2024, April 06). *Geografi Negara Portugal*. Diambil Kembali Dari Guru Geografi: Https://Www.Gurugeografi.Id/2017/04/Geografi-Negara-Portugal.Html

Gistituati, N., & Atikah, N. (2022). E-Module Based On Rme Approach In Improving The Mathematical Communication Skills Of Elementary Students. *Jurnal Ilmiah Sekolah Dasar*, 106-115. Https://Doi.Org/10.23887/Jisd.V6i1.42314.

Haddar, G. A., & Juliano, M. A. (2021). Analisis Media Pembelajaran Quizizz Dalam Pembelajaran Daring Pada Siswa Tingkat Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, Vol. 3, No. 6 :4794 - 4801. Https://Doi.Org/10.31004/Edukatif.V3i6.1512 .

Hariandi, A., Oktaviani, L., Rahmadhani, S. P., Ningrum, E. D., & Ningrum, R. R. (2023). Analisis Nilai-Nilai Pendidikan Dalam Serial Komik Digital "Pupus Putus Sekolah" Karya Kurnia Harta Winata. *Reseacrh And Development Journal Of Education*, 9(1), 152-160. Http://Dx.Doi.Org/10.30998/Rdje.V9i1.14687.

Hasanah, N., Syaifuddin, M., Darmayanti, R., & In'am, A. (2022). Analysis Of The Need For Mathematics Teaching Materials "Digital Comic Based On Islamic Values" For Class X Sma Students In Era 5.0. *Numerical: Jurnal Matematika Dan Pendidikan Matematika*, 231-240. Https://Doi.Org/10.25217/Numerical.V6i2.2584.

Herlinda, V., Darwis, D., & Dartono. (2021). Analisis Clustering Untuk Recredesialing Fasilitas Kesehatan Menggunakan Metode Fuzzy C-Means. *Jurnal Teknologi Dan Sistem Informasi (Jtsi)*, Vol. 2, No. 2, 94 - 99.

Hidayah, R. N., & Setyanto, A. E. (2021). Analisis Semiotika Komik Sebagai Media Kritik Sosial (Studi Semiotik Komik Lucunya Hidup Ini Di Line Webtoon). Https://Digilib.Uns.Ac.Id/Dokumen/Detail/87109/.

Husna, K., & Supriyadi, S. (2023). Peranan Media Pembelajaran Untuk Meningkatkan Motivasi Belajar Siswa. *Al-Mikraj, Jurnal Studi Islam Dan Humaniora*, 981-990.

Inabuy, V., Sutia, C., Maryana, O. F., Hardanie, B. D., & Lestari, S. H. (2021). *Ilmu Pengetahuan Alam SMP Kelas Vii.* Jakarta: Pusat Kurikulum Dan Perbukuan Badan Penelitian Dan Pengembangan Dan Perbukuan Kementerian Pendidikan, Kebudayaan, Riset, Dan Teknologi.

Irawan , A., & Hakim, M. R. (2021). Kepraktisan Media Pembelajaran Komik Matematika Pada Materi Himpunan Kelas Vii SMP/Mts. *Jurnal Program Studi Pendidikan Matematika*, 10(1): 91-100.

Irawan, A., & Hakim, M. R. (2021). Kepraktisan Media Pembelajaran Komik Matematika Pada Materi Himpunan Kelas Vii SMP/Mts. *Jurnal Program Studi Pendidikan Matematika*, 91-100. Https://Doi.Org/10.33373/Pythagoras.V10i1.2934.

Juhaeni, Safarudidin, Nurhayati, R., & Tanzila, A. N. (2020). Konsep Dasar Media Pembelajaran. *Journal Of Islamic Education At Elementary School*, Vol. 1, No. 1 : 38-46. Http://Jiees.Alkhoziny.Ac.Id/Index.Php/Jiees.

Juniayanti, D., & Susila, I. D. (2022). Efektivitas Penggunaan Media Pecs Untuk Meningkatkan Kemampuan Berkomunikasi Anak Autis Di Slb Negeri 1 Gianyar. *Jurnal Pendidikan Dan Konseling*, 1-7. https://www.neliti.com/publications/440541/efektivitas-penggunaan-media-pecs-untuk-meningkatkan-kemampuan-berkomunikasi-ana

Kurniawarsih, M., & Rusmana, I. M. (2020). Pengembangan Media Pembelajaran Komik Matematika Siswa Kelas Iv Sekolah Dasar Berbasis Budaya. *Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika*, Vol.1,No.1, 39-48. Https://Www.Researchgate.Net/Publication/341027524.

Lestari, W. P., Putri, K. E., & Mukmin, B. A. (2023). Analisis Kebutuhan Media Pembelajaran Berbasis Video Animasi Materi Gaya Dan Gerak Kelas Iv Sdn $ Bajulan. *Seminar Nasional Pendidikan Dan Pembelajaran Ke-6*, 1516-1522. Https://Doi.Org/10.29407/8hs2c102.

Liniasari, A. A., Yudiana, K., & Dibia, I. (2021). Comic-Based Learning Media With The Topic Of Natural Resources. *International Journal Of Elementary Education*, 80-88. Https://Doi.Org/10.23887/Ijee.V5i1.34327.

Maharani, E., Sumanti, & Fitrah, H. (2024). *Motivasi Belajar Dalam Pendidikan.* Malang: Pt. Literasi Nusantara Abadi Grup.

Maydiantoro, A. (2021). Research Model Development: Brief Literature Review. *Jurnal Pengembangan Profesi Pendidik Indonesia (Jpppi).*, 29-35. Https://Www.Researchgate.Net/Profile/Albet-Maydiantoro/Publication/359645354_Research_Model_Development_Brief_Literature_Review/Links/624653745e2f8c7a034eeb02/Research-Model-Development-Brief-Literature-Review.Pdf.

Mbuik, H., & Benu, A. (2023). Aktualisasi Budaya Literasi Mata Pelajaran Ips Dalam Pembentukan Karakter Nasionalis Siswa Sekolah Dasar . *Journal On Education*, Volume 06, No. 01, 7906-7910 .

Mikamahuly, A., Fadieny, N., & Safriana. (2023). Analisis Pengembangan Media Komik Pembelajaran Untuk Meningkatkan Minat Belajar Peserta Didik. *Jurnal Pendidikan Dan Ilmu Fisika*, Vol. 3; No. 2; 256-263. Http://Dx.Doi.Org/10.52434/Jpif.V3i2.2818.

Mukholifah, M., Tisngati, U., & Ardhyantama, V. (2020). Mengembangkan Media Pembelajaran Wayang Karakter Pada Pembelajaran Tematik. *Jurnal Inovasi Penelitian*, Vol.1 No.4 673-682. Https://Ejournal.Stpmataram.Ac.Id/Jip/Article/View/152.

Mongi, N. S., & Hendry. (2021). Analisis Pengembangan Dan Implementasi System E-Learning Untuk Meningkatkan Pengetahuan Agent Menggunakan Metode ADDIE Model (Study Kasus: Pt.Global Infotech Solution). *Jurnal Sistem Komputer Dan Informatika (Json)*, Vol 2, No 3. 269-276. Https://Pdfs.Semanticscholar.Org/825f/21affd95cf048bd6b5daa09a2244dcad96aa.Pdf.

Nafala, N. M. (2022). Implementasi Media Komik Dalam Pembelajaran Untuk Meningkatkan Motivasi Belajar Siswa. *Jurnal Pendidikan Dan Sains,* 3(1), 114-130. Https://Pdfs.Semanticscholar.Org/13ef/Bdcb196739c6adce0d19a141b20da4b886df.Pdf.

Nasrah, & Muafiah, A. (2020). Analisis Motivasi Belajar Dan Hasil Belajar Daring Mahasiswa Pada Masa Pandemik Covid-19. *Jurnal Riset Pendidikan Dasar*, 3(2), 207-213. Https://Ojs3.Unismuh.Ac.Id/Index.Php/Jrpd/Article/View/4219/2854.

Nasri, M., Marhamah, & Haritani, H. (2021). Pengembangan Bahan Ajar Ilmu Pengetahuan Alam (Ipa) Berbasis Problem Based Learning (Pbl). *Jurnal Ilmiah*

Biologi, 297-317. Https://Doi.Org/10.33394/Bioscientist.V9i2.4010.

Nisa, A. R., & Nugraheni, A. S. (2021). Efektivitas Model Pembelajaran Berbasis Proyek Dalam Pjj Terhadap Pemahaman Materi. *Jurnal Bahasa Sastra Dan Pengajaran*, 10 (1), Hal. 61-66. Https://Www.Academia.Edu/Download/81849224/1253.Pdf.

Novianti, C., Sadipun, B., & Balan, J. M. (2020). Pengaruh Motivasi Belajar Terhadap Hasil Belajar Matematika Peserta Didik. *Science And Phsics Education Journal*, Vol.3, No.2 :57-75. Https://Www.Academia.Edu/Download/95228569/862.Pdf.

Nurgiansah, T. H. (2022). Meningkatkan Minat Belajar Siswa Dengan Media Pembelajaran Konvensional Dalam Pembelajaran Pendidikan Kewarganegaraan. *Jurnal Pendidikan Dan Konseling*, Vol.4, No.3: 1529-1534. Http://Download.Garuda.Kemdikbud.Go.Id/Article.Php?Article=2851940&Val=16247&Title.

Nurrawi, A. E., Zahra, A. T., Aulia, D., Greis, G., & Mubarok, S. (2023). Motivasi Belajar Siswa Terhadap Hasil Belajar Matematika. *Jurnal Pendidikan Matematika*, 3(1), 29-38. Https://Www.Researchgate.Net/Publication/381716801.

Nurwahidah, I. (2022). Analisis Pemahaman Konsep Gerak Dan Gaya Pada Mata Kuliah Fisika Dasar. *Jurnal Jendela Pendidikan*, 93-100. Https://Doi.Org/10.57008/Jjp.V2i01.151.

Rachmawati, E., Sulistiyono, R., & Widyastuti, N. S. (2020). Kemampuan Pemecahan Masalah Matematis Pada Pembelajaran Matematika Melalui Model Generatif Berbantuan Media Word Wall. *Prosiding Pendidikan Profesi Guru*, 1395-1408. Https://Eprints.Uad.Ac.Id/21485/1/28.%20evri%20rachmawati%20(1395-1408).Pdf.

Rahma, N. A., & Pujiastuti, H. (2021). Efektivitas Pembelajaran Daring Matematika Pada Masa Pandemi Covid-19 Di Kota Cilegon [The Effectiveness Of Mathematics Online Learning During The Covid-19 Pandemic In Cilegon City]. *: Journal Of Holistic Mathematics Education*, 1-12. Https://Doi.Org/10.19166/Johme.V5i1.3811.

Rahman, A. A., Lengkana, A. S., & Angraeni, A. (2021). Pembekalan Dan Implementasi Pembelajaran Abad 21 Bagi Guru Bahasa Inggris SMP Kabupaten Sumedang. *Jurnal Widya Laksana*, Vol.10, No.2, 202-210. Https://Doi.Org/10.23887/Jwl.V10i2.32352.

Ramadhani, R., & Amudi, A. (2020). Efektifitas Penggunaan Modul Matematika Dasar Pada Materi Bilangan Terhadap Hasil Belajar. *Jurnal Program Studi Pendidikan Matematika*, 64-71. Https://Doi.Org/10.24127/Ajpm.V9i1.2443.

Reis, F., Palermo, T. M., Acalantis, L., Nogueira, L. C., Meziat-Filho, N., Louw, A., & Ickmans, K. (2022). "A Journey To Learn About Pain": The Development And Validation Of A Comic Book About Pain Neuroscience Education For Children. *Brazilian Journal Of Physical Therapy*, Vol. 26, 100348. Https://Doi.Org/10.1016/J.Bjpt.2021.04.009.

Rifa'i , I. J., Yuhandra, E., Budiman, H., & Hidayat, S. (2024). Komparasi Konstitusi Negara Portugal Dengan Negara Uzbekistan Berdasarkan Sifat, Prosedur Perubahan Konstitusi, Bentuk Negara Serta Sistem Pemerintahan. *Indonesia Journal Of Criminal Law*, 21-26. Https://Ejournal.Unisi.Ac.Id/Index.Php/Das-Sollen/Article/View/3318.

Rosnaeni. (2021). Karakteristik Dan Asesmen Pembelajaran Abad 21. *Jurnal Basicedu*, Vol. 5 No, 5 Halaman 4334 - 4339. Https://Www.Neliti.Com/Publications/450084/Karakteristik-Dan-Asesmen-Pembelajaran-Abad-21.

Sari, N. P., Suhirman, & Walid, A. (2020). Pengembangan Modul Pembelajaran Ipaberbasis Etnosains Materi Interaksi Makhluk Hidup Dengan Lingkungannya Untuk Menanamkan Jiwa Konservasi Siswa Kelas Vii SMP. *Bio-Edu: Jurnal Pendidikan Biologi*, 62-73. Https://Doi.Org/10.32938/Jbe.V5i2.554.

Sartini, & Mulyono, R. (2022). Analisis Implementasi Kurikulum Merdeka Belajar Untuk Mempersiapkan Pembelajaran Abad 21. *Jurnal Ilmiah Pgsd Fkip Universitas Mandiri*, Vol.8, No.2, 1348-1363. Https://Doi.Org/10.36989/Didaktik.V8i2.392.

Setyawati, E., Suratno, S., & Sofyan, S. (2022). Pengembangan Bahan Ajar Ips Berbasis Tpack Untuk Meningkatkan Motivasi Belajar Peserta Didik SMPn 30 Muaro Jambi. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, Vol. 3, No. 2, 1043-1053. Https://Doi.Org/10.38035/Jmpis.V3i2.1343.

Shofa, M. I., Redhana, I. W., & Juniartina, P. P. (2020). Analisis Kebutuhan Pengembangan Media Pembelajaran Ipa. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia*, 31-40. Https://Ejournal.Undiksha.Ac.Id/Index.Php/Jppsi/Article/View/24620.

Shomad, M. A., & Rahayu, S. (2022). Efektivitas Komik Sebagai Media Pembelajaran Matematika. *Journal Of Techonolgy Mathematics And Social Science*, 2(2):1-5. Https://Ejurnal.Ikippgribojonegoro.Ac.Id/Index.Php/Jthoms/Article/View/2952.

Siagian, R. S., Sofwan, M., & Hayati, S. (2023). Media Pembelajaran Komik Menggunakan Aplikasi Canva For Education Pada Pembelajaran Matematika Kelas V Sekolah Dasar. *Jurnal Pendidikan Dan Konseling*, 5(2), 5222-5230. Https://Repository.Unja.Ac.Id/48842/.

Sihombing, S., Silalahi, H. R., Sitinjak, J. R., & Tambunan, H. (2021). Analisis Minat Dan Motivasi Belajar, Pemahaman Konsep Dan Kreativitas Siswa Terhadap Hasil Belajar Selama Pembelajaran Dalam Jaringan. *Jurnal Pendidikan Matematika : Judika Education*, 41-55. Https://Doi.Org/10.31539/Judika.V4i1.2061 .

Sujono Ar, H. (2022). Mengembangkan Penggunaan Media Pembelajaran Audio Visual Dalam Meningkatkan Motivasi Belajar Siswa. *Jurnal Penidikan Islam Dan Isu-Isu Sosial*, Vol.20, No.1 : 25-42. Https://Www.Researchgate.Net/Publication/367590546.

Sumiadi, R., & Asma'iyah. (2019). Penerapan Multimedia Interaktif Microsoft Powerpoint Untuk Meningkatkan Hasil Belajar. *Jurnal Ilmu Sosial Dan Pendidikan*, Vol. 3 No. 1. 1-4. Http://Dx.Doi.Org/10.58258/Jisip.V3i1.589 .

Supriyah. (2019). Media Pembelajaran Dalam Proses Belajar Mengajar. *Prosiding Seminar Nasional Pendidikan Fkip*, Vol. 2, No.1, Hal. 470 - 477. Https://Jurnal.Untirta.Ac.Id/Index.Php/Psnp/Article/View/5798.

Titin, & Safitri, E. (2021). Studi Literatur: Pengembangan Media Pembelajaran Dengan Video Animasi Powtoon. *Jurnal Inovasi Penelitian Dan Pengabdian Masyarakat*, Vol. 1, No. 2 :74-80. Https://Www.Neliti.Com/Publications/431473/Studi-Literatur-Pengembangan-Media-Pembelajaran-Dengan-Video-Animasi-Powtoon.

Wahyudi, M. D. (2021). *Mengoptimalkan Pelatihan Melalui Desain Pembelajaran Model ADDIE.* Lembaga Pengembangan Dan Konsultasi Nasional (Lpkn).

Wibowo, S. A., & Koeswanti, H. D. (2021). Pengembangan Media Pembelajaran Berbasis Komik Untuk Meningkatkan Karakter Kemandirian Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, Vol.5 No.6: 5100-5111. Https://Doi.Org/10.31004/Basicedu.V5i6.1600.

Wikaningtyas, D. U. (2019). *Msdm Mewujudkan Sdm Unggul Dan Kompetitif.* Klaten: Lakeisha.

Yanti , F., Hardiman, & Budiarta, I. M. (2019). Analisis Komik Web Karya Wildan Ridho Sajali. *Jurnal Pendidikan Seni Rupa Undiksha*, Vol. 9(1) :24-35. Https://Www.Academia.Edu/Download/85710560/11219.Pdf.

Zhafirah, T., Erna, M., & R. Usman, R. (2021). Efektivitas Penggunaan E-Modul Hidrokarbon Berbasis Problem Based Learning Untuk Meningkatkankemampuan Pemecahan Masalah Peserta Didik. *Prosiding Seminar Nasional Penelitian Dan Pengabdian 2021,*, 206-216. Http://Prosiding.Rcipublisher.Org/Index.Php/Prosiding/Article/View/135.