

Development of Comic-Based Teaching Materials in Elementary Schools

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ABSTRACT

This research aims to produce comic-based teaching materials for elementary schools and determine the feasibility of this comic-based teaching material. This research is a type of research and development research (R&D). This research was conducted in elementary schools using fourth-grade students as research subjects. Observation, interviews, and questionnaires were used as data-collecting methods and were all descriptively examined. The findings of this study include comic-based teaching materials, in which material experts have given a feasibility rating of 91%, 93% by language experts, and 94% by media experts. The three expert assessments are included in the "very feasible" category. The experimental class's learning outcomes differ on average from those of the control class, which is 85.47, and the control class, which is 80.63, and 100% of students complete the minimum completeness criteria. Based on the t-test analysis, The experimental class's effectiveness of student learning outcomes is superior to that of the control class where $t \text{ count} = 3.84 > t \text{ table } (\alpha 5\%) = 2.00$. Conclusion: Comic-based teaching materials are ideal for the learning process and for improving learning outcomes for students who can create a fun learning atmosphere.



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1. Introduction

Teachers' use of teaching materials to communicate material is crucial to student learning. The usage of instructional resources can replace the teacher's role in promoting individual learning to encourage student participation and enable students to study independently according to their interests and skills to meet the pre-determined learning objectives. Teachers must make teaching materials to meet learning objectives. The material or subjects used in teaching have been carefully and methodically prepared per the learning principles teachers, and students apply during the learning process. Teaching materials are arranged systematically to facilitate learning for students. In addition, teaching materials are unique and specific. Specific means that the content of teaching materials is made so that it can only be used to acquire specific competencies for certain purposes. Notable shows that teaching materials are only used for certain purposes and in certain learning processes. Every teacher should be able to create teaching materials, but many teachers need to gain these skills. As a result, most learning activities remain traditional, resulting in less diverse and exciting learning (Magdalena et al., 2020).

Teaching materials instruct teachers and students on how to carry out learning process activities. With the availability of teaching materials, students can expand their learning resources and understanding of the subject matter (Asfiah et al., 2013). To raise students' interest in learning content, teaching materials are made by considering their needs. However, many teachers still need to be able to create teaching materials that suit the needs of students (Cahyani et al., 2021). Teaching materials are essential for teachers and students as a learning center and strategic learning tool. Hence, developing teaching materials is necessary to create continuity of learning with innovative and attractive activities (Maskur et al., 2020). However, in reality, not all teachers have the ability and initiative to develop and design contextual or accurate teaching materials. Some teachers still use ready-made printed teaching materials, such as thematic books published by the government, which are the result of a publisher that needs to be in accordance with the environment in which the student is studying. This condition can make it difficult for students to understand the material they should have mastered. Suitable printed teaching materials are designed in such a way as to be able to attract and generate interest in student learning (Dhiku et al., 2023).

Based on observations at Elementary School (SDN) II Karawang Timur, it was revealed that the teacher was still using textbook-based teaching materials, so students needed to be more active in reading. The fourth-grade teacher employs textbooks and does not create instructional materials tailored to students' requirements. Learning resources are only from textbooks; students only transfer learning information to their books. Learning is considered less attractive, tedious, and relatively difficult to understand, and students need more motivation to learn. As a result, student understanding of the learning material still needs to improve, so the learning objectives have not been achieved optimally. The only teacher resources frequently utilized by teachers are the images found in textbooks; moreover, these materials still need to be more appealing and cannot fully pique students' interest and enthusiasm.

Students need teaching materials that can arouse their interest and encourage learning. Teaching materials based on student characteristics, the environment, or the social environment help students find substitute teaching materials other than textbooks, which are sometimes challenging to find and make it easier for teachers to carry out learning. Students should find it easier to remember what they have learned and what information is in their learning materials. According to Budiarmo (2016), there is content in teaching materials that contains knowledge to achieve specific goals. Therefore, teaching materials that facilitate student learning and assimilating all knowledge are needed. To increase students' interest in learning, views and information in teaching materials are presented more interestingly. One way is to package comic-based teaching materials (Al-Adiyah et al., 2018).

Students can be motivated to learn by being exposed to comics in the form of pictures, which will aid them in understanding the subject being delivered (Subroto et al., 2020). Comics are pictures in the form of cartoons equipped with colors, and text arranged sequentially. Comic media are stories with exciting pictures and colors; in comics, some texts are presented with simple-to-understand illustrations for students. Children mainly like the interesting picture because they are filled with high imagination and creation in this childhood. Comics can be used as exciting teaching materials for students (Darniyanti et al., 2022). The material contained in Theme 8 of My Living Area is material in Grade 4 of elementary schools about ethnic, religious, and cultural diversity and the unity and integrity of Indonesia. The theme includes several integrated subjects. Because of this, it is sometimes difficult for students to remember and understand all the content that has been presented. The availability of comic-based teaching materials is expected to add a new style to learning, encourage students' interest and encouragement in learning, and make it easier for students to understand learning.

Teachers must create comic-based teaching materials because comics have many benefits, including making learning enjoyable by incorporating them into lessons (Santi & Setiyani, 2022). Additionally, learning is made more interesting by incorporating real-world stories with the information found in theme 8, My Living Area. The simple design and lively graphics help increase students' interest in reading, enhancing their motivation to learn.

2. Methods

2.1. Research Design

This research employs research and development. Creating and validating research products is known as the research and development technique. Sugiyono (2014) states that "research and development methods are methods used to produce certain products and test the effectiveness of these products." The result of this project is a comic book-based teaching material for grade IV of elementary school with the theme "My Living Area." Sugiyono has modified the research and development procedures that are being employed. as seen in the picture below:

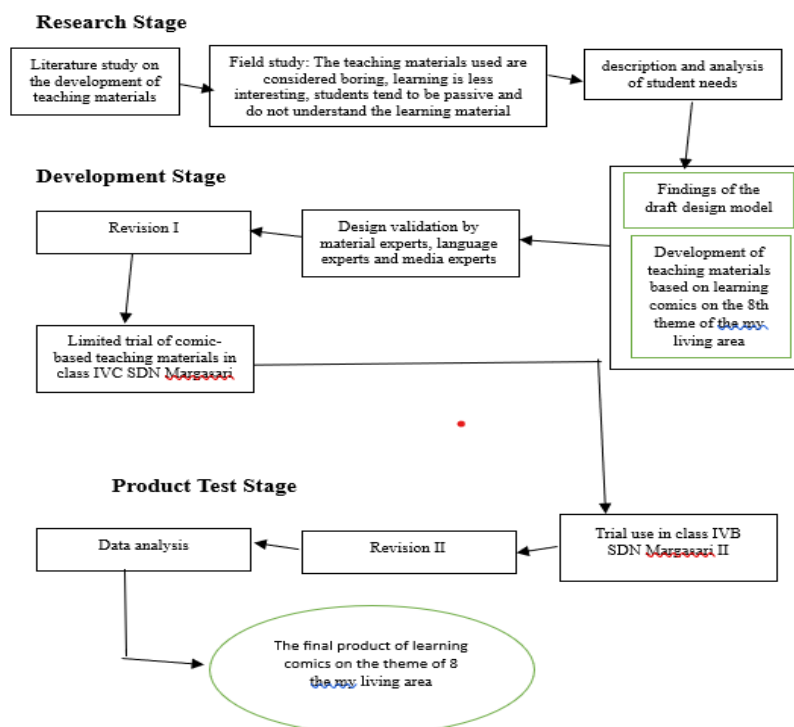


Figure 1. Research steps (modified from research and development steps (Sugiyono, 2014)

The steps of research and development of teaching materials based on comics are described as follows:

1. Research Stage, (a) Literature review. An initial study examined relevant theories and research findings related to the development of teaching materials. (b) Field research Before product development, researchers research elementary school students. Research is carried out by observing during learning, interviewing teachers and students, and looking at student test results.
2. Development Stage: (a) Draft findings. Starting with analyzing the material, determining appropriate teaching materials for elementary school students, and then creating a model in the form of packaging based on comics. (b) Validation. At this stage, product validation involves experts related to the research product being developed. This aims to determine whether the research developed is ready for field testing. Validation in developing teaching materials based on comics is carried out by expert validation of material, language, and media. (c) First revision. The validation results by material, language, and media experts are used to revise teaching materials based on comics in learning theme 8, "My Place of Residence." (d) product testing. According to students, product testing is carried out to assess whether there are any deficiencies in teaching materials based on comics. If there are still deficiencies, revision is necessary, and the revised results are considered better than before and are ready to be tested for effectiveness. However, the teaching material based on comics is considered appropriate, and revision is unnecessary. In that case, it is considered ready to be tested for its effectiveness in large-scale use.
3. Product Testing Stage, (a) Usage testing This testing is carried out to ensure that teaching materials based on comics are effectively applied to learning. This usage testing is carried out on elementary school students (SDN) in Margasari II, with class IV A as the control group and class IV B as the experimental group. At this stage, a post-test is carried out at the end of the learning process. Specifically, a questionnaire is given to the experimental group to assess their response to teaching materials based on comics. (b) Revision II. This revision is carried out to reduce the level of the weakness of the comic product so that it is suitable for use as an alternative for solving the researched problem. (c) Data analysis. The data from expert assessments and field usage testing is analyzed and used for report preparation. (d) the final product. This is in the form of revision III teaching materials that are considered perfect and effectively applied to elementary school students.

2.2. Research Subject

This research was conducted at SD Negeri Margasari II Karawang Timur. The respondents were 4th-grade students in Indonesia. Participants in this study were selected using the purposive sampling method. Purposive sampling is a technique that selects samples among the chosen population (Aningsih et al., 2022). The participants in this study consisted of 32 4th-grade SD students. They were chosen as research subjects because they were considered students who studied the material of theme 8, "My Place of Residence."

2.3. Data Collection

2.3.1. Research Phase Data

Data on implementing learning using comic -based teaching materials are taken using observation and interview techniques with teachers and students. Observation techniques are carried out by observing an object or phenomenon directly in connection with learning using teaching materials based on comics. Then, to support observational data, this research also uses interview techniques. Interviews are conducted with teachers and students to get input on the effectiveness of

using comic-based teaching materials in class. Teachers and students can provide their opinions and experiences in using this teaching material, as well as suggestions and input on how to use and improve teaching materials to be more suitable for elementary school learning needs. In addition, to see students' responses regarding comic-based teaching materials using questionnaire techniques.

Meanwhile, validators are carried out to see data on the reliability of comic-based teaching materials, namely material experts, linguists, and media experts. This validation questionnaire is designed to assess the feasibility of comic-based educational resources. The following grid is used to validate material, linguists, and media experts.

2.3.2. Product Test Phase Data

At the product test stage, a written test was carried out to determine student learning outcomes' effectiveness using comic-based teaching materials. Furthermore, to see the response of teachers and students to comic-based teaching materials using a questionnaire approach. By conducting tests on students and seeing the responses of teachers and students, researchers can find out whether the product is suitable for use or not.

2.4. Data Analysis Technique

The researcher's data is then checked to ensure the feasibility of the teaching materials that have been compiled. The data analysis technique used is as follows.

- a. Material experts, media experts, and linguists validated data on the validity of comic-based teaching materials. The results are analyzed with the following formula:

$$N = \frac{k}{Nk} \times 100\%$$

Information:

N = score percentage

k = acquisition score

Nk = max score

- b. Data about student learning outcomes were analyzed using the t-test method.

After the product is declared feasible for application in the field based on preliminary and main tests, the next step is to conduct operational tests by conducting experiments. This activity is intended to see the effectiveness of the product being developed. Even though previously the teaching products had been validated and declared feasible in expert validation, the learning device products developed had yet to show their effectiveness in learning without being experimented with.

3. Results and Discussion

3.1. Results

Before field testing, professionals validate the product, including material experts, linguists, and media experts. Expert validation is performed so that the created comic-based teaching material goods have an assurance that the first product may be tested on students.

Table 1. Results of material expert assessment

Indicator	Score	Maximum Score
Material coverage	6	6
Material accuracy	5	6
Update	3	3
Stimulate curiosity	6	6
Presentation of Learning	10	12
Total score	30	33
Percentage	30/33 x 100% = 91%	
Category	very good	

Based on the validation findings, comic-based teaching material products obtain a percentage value of 90%, so the material in comic-based teaching materials is very well used. Comic-based teaching materials have good material coverage, covering all relevant topics. The teaching materials are also accurate, providing correct and timely information about the topics covered. In addition, these teaching materials have a cutting-edge value that includes the latest and most up-to-date information so that students can learn about the latest developments in the studied material. Furthermore, this teaching material can stimulate curiosity, which can challenge students to learn more about the topics discussed, provide an engaging description, and encourage students to explore further.

Table 2. Results of linguistic expert assessment

Indicator	Score	Maximum Score
Depending on the pupils' developmental stage	5	6
Communicative	3	3
Dialogic and interactive	6	6
Total score	14	15
Percentage	14/15 x 100% = 93%	
Category	very good	

Based on the validation results of linguists, comic-based teaching material products obtained a percentage value of 93%, so teaching materials have excellent language and are to students' abilities. This teaching material is also considered communicative, which can facilitate communication between students and teachers and between students. It contains a dialogue between students and teachers and between students so that it is more interactive and exciting.

Table 3. Results of media expert assessment

Indicator	Score	Maximum Score
Text clarity and relevance	6	6
Depiction	5	6
Appearance	15	15
Material font and size	8	9
Total score	34	36
Percentage	34/36 x 100% = 94%	
Category	very good	

Based on the validation results of media experts, comic-based teaching material products obtained a percentage value of 94% and were categorized as very good. Teaching materials can

provide clear explanations and interrelationships between concepts, use appropriate pictures and videos, have an attractive appearance, and choose the right font and size of material. The following are the results of the revised comics teaching material product:

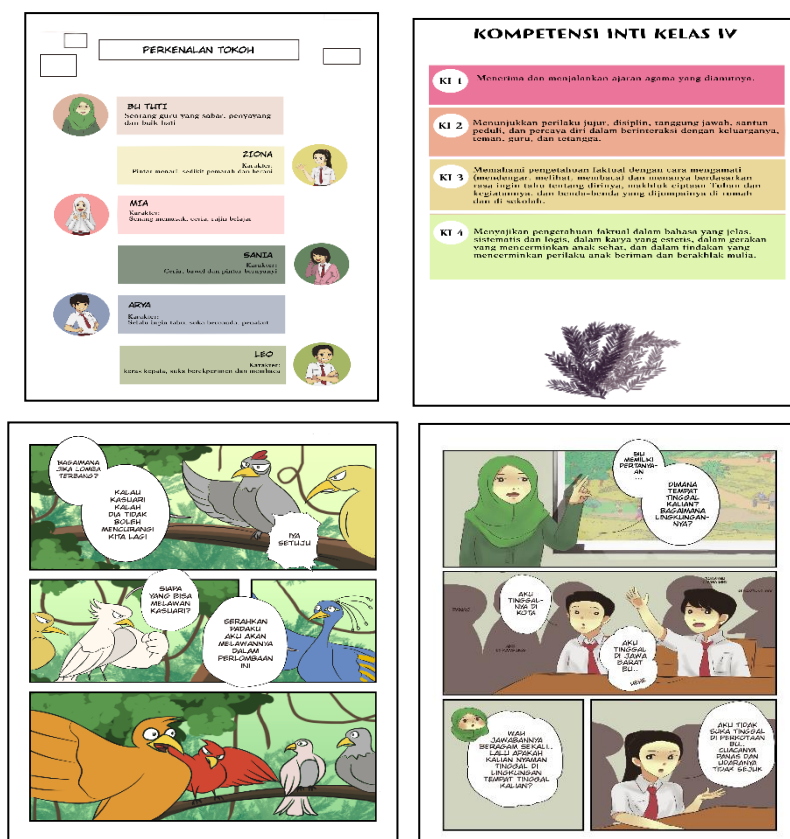


Figure 2. Display of comic-based teaching materials

The trial was conducted with students of Elementary School (SDN) Margasari II class IV A as the control group and class IV B as the experimental group. Each class has 32 students. A post-test was given at the end of the session, and the experimental class was given a response questionnaire to comic-based teaching materials.

Table 4. Value of student learning outcomes

Score	Class IV B (Experiment)	Class IV A (Control)
Highest	96,7	93,3
Lowest	76,7	76,7
Average	85,4	80,5
Completed KKM	100%	100%

Table 5. T-Test calculation results

Class	\bar{x}	$dk(n_1 + n_2 - 2)$	t_{count}	$t_{table}(\alpha 5\%)$
IV A (Control)	80,63	62	3,84	2,00
IV B (Experiment)	85,47			

Based on the table above, if $t_{count} > t_{table} (5\%)$, i.e., $3.84 > 2.00$, then there is a difference in the average value between the experimental class and the control class, indicating that the experimental class is superior to the control class. The responses of teachers and students were obtained from a questionnaire sheet; through the questionnaire, it can be seen the level of suitability of comic-based

teaching materials with the needs of elementary school students for exciting and fun teaching materials when studied. The responses of teachers and students are shown in the following table.

Table 6. Results of teacher responses to comic-based teaching materials

No.	Statement	Category				
		A	B	C	D	E
1.	The learning process becomes interesting and fun.	√				
2.	Make it easier for students to understand the material.		√			
3.	The material in the comic is by the learning objectives.	√				
4.	Able to provide a fun new learning experience for students	√				
5.	The use of sentences and grammar used are easy to understand	√				
6.	The composition of the use of images and writing in comics is balanced.	√				
7.	Stories that are raised by the daily life of students	√				
8.	The printed letters (writing) used can be read clearly and easily.	√				
9.	Agree if the teaching materials in the form of comics are used to study similar material that is abstract.	√				
10.	Students can learn quickly, both at home and during learning activities.	√				
Conclusion: Used comics		√		Good	Normal	Bad

Information:

A = strongly agree B = Agree C = Uncertain D = Disagree E = strongly disagree

Based on the table above, the result is that of the 10 statements that have been submitted, the teacher gives 90% answer A (strongly agree) and 10% answer B (agree) with the conclusion that the comics that have been used are stated to be good and in accordance with the needs of students.

In addition to the teacher's response questionnaire, students were also given response sheets to assess comic-based teaching materials. The following is the recapitulation of student responses.

Table 7. Results of student responses to comic-based teaching materials

No.	Parameter	Score	Criteria	Percentage
1.	81%-100%	41-50	Very good	59,4%
2.	61%-80%	31-40	Well	40,6%
3.	41%-60%	21-30	Enough	-
4.	21%-40%	11-20	Not enough	-
5.	0%-20%	1-10	Bad	-

Based on the table above, the results showed that of the 32 students who had been given a response questionnaire, as many as 59.4% or 19 students chose- answer A (very good), and 40.6% or 13 students chose answer B (good). As a result, comic-based teaching materials meet primary school children's demands. Handayani & Koeswanti (2020) have shown that pupils can like comic media because the graphics in comics may bring a sequence of textual sentences to life.

3.2. Discussion

The current learning process is teacher-centered. Teachers are expected to be more than just facilitators. Before entering the classroom, they must prepare a variety of learning tools for their pupils. Lesson plans, assessment tools, teaching materials, and the necessary instruments are all examples of learning resources. One of the aspects that influences student success in understanding a lesson is the teacher's ability to transmit the information. Students and instructors can both help to improve the quality of learning. Students will readily grasp the content if it is fascinating and straightforward. Learning media may be an alternative to providing students with fascinating and simple educational resources (Naufal, 2020; Safitri et al., 2020; Setyani et al., 2020; Sunzuma & Maharaj, 2019; Yulianti & Wulandari, 2021).

All topics in schools require teaching materials to help students grasp concepts and solve issues. Some of the teacher's functions can be replaced by teaching materials, making learning student-centered rather than teacher-centered. Using proper instructional materials will drive students to produce engaging and enjoyable learning experiences (Rahim et al., 2022; Rahmawati et al., 2019; Suciana, 2018). Comics are one type of teaching material that can be made using pictures. As a learning medium, a comic is a functional tool for conveying learning messages. If learning messages are presented clearly and attractively, the communication process between students and learning materials will run smoothly. Comics have the potential to attract students' attention, with interest in teaching materials that can affect student learning outcomes (Rahim et al., 2022; Rismawati et al., 2022). This is proven by the results of students' and teachers' responses to comic-based teaching materials getting positive responses. However, this study also wanted to see how effective the use of comic-based teaching materials was, so the results of the t-test analysis can prove this. The experimental class outperformed the control class regarding student learning outcomes, with $t_{count} = 3.84 > t_{table} (5\%) = 2.00$. Obtaining optimal results in the experimental class is possible because comic-based teaching materials used as learning resources have several advantages. Student involvement in learning material is beneficial for student learning outcomes. As a result, the use of appropriate teaching materials significantly impacts the learning process. Providing interesting learning materials can increase student motivation and interest in learning. Visuals in comic books help revive students' interest in learning. Students will find reading complex explanations of learning topics more accessible and entertaining. Comics are a practical choice for developing teaching materials and can increase student creativity and improve students' numeracy skills and reading literacy (Darniyanti et al., 2022; Rahim et al., 2022; Sari et al., 2022).

Although the experimental class has an average score higher than the control class, which has an average score of 80.5, the control class also gives 100% results students can obtain a minimum standard in the assessment of student learning outcomes in schools. This shows that using textbooks is an essential learning resource or compulsory teaching material for students and can make it easier for students to understand abstract material. What distinguishes it is that this comic-based teaching material can make a student learning atmosphere while learning more fun. Comics in the form of cartoons can activate students' seriousness and attract students' attention to learning activities in class. Most students like to read comic books because they contain many anime images and animal characters, preventing them from getting bored (Hidayah, 2017; Rahim et al., 2022).

Comic books are visual media arranged in panels to communicate information. The use of comic books in the classroom has been shown to increase student engagement and understanding of the material. Presenting cartoons to students can help them become more engaged and communicative. Things like this go against students' interests, who want to use exciting learning tools. One way is to use technology that can be built into various media and then used to transmit the content as needed. Furthermore, students will be more adept at recognizing and exploring learning information. Through media technology, students will

form character values (Darmayanti et al., 2022; Fadella et al., 2018; Huda, 2020; Nurrita, 2018; Taufiqulloh et al., 2018; Wicaksono et al., 2020; Wolski, 2020).

Comics, as a learning medium, is an excellent tool for transmitting learning messages. The communication process between students and learning materials will function more smoothly if the learning messages are delivered clearly and aesthetically. The mix of graphics and words may help children grasp subjects better, while the characters in comic books are utilized as applications to impart character qualities. Comics, as a learning medium, contain solid visual elements and stories. Visualized expressions make the reader emotionally involved so that the reader continues to read it until it is finished. As a result, apart from arousing children's interest in reading, comic media is also very good at conveying character qualities through characterizations in comic stories (Febrianti et al., 2022; Saputro & Soeharto, 2015).

Students followed the learning well from the first to the last day of this research process. So the advantages and disadvantages of developing comic-based teaching materials are that they can direct students' attention to learning excitingly, and comic teaching materials can increase student enthusiasm for learning. However, comic teaching materials also have drawbacks, namely that not all students can effectively learn with a visual style (Alia Rohani & Anas, 2022; Kustianingsari, 2015). In addition, this comic only discusses one theme. Likewise, in the learning process, children are constrained by time and space, so they are not relaxed when reading comics. Even by looking at the characteristics of comics, it will be easier to understand the story's contents to read in everyday situations and conditions that are not limited by time. This weakness is in line with the opinion of teachers who express doubts if the comic-based teaching materials used require a relatively long time to be read in class so that the available time allocation could be more optimally utilized. Therefore, it is better to use comic-based teaching materials that students do or learn outside of class hours, read at home, or store in the library to meet students' needs for exciting and interesting things. Teaching materials are fun and easy for students to understand the material to enable them to improve their learning outcomes.

4. Conclusion

Based on the data analysis and discussion results, comic-based teaching materials benefit learning. Comics are a medium for teachers to use in their teaching and learning activities. Appropriate comic media has succeeded in making learning more enjoyable to create a more effective and conducive classroom atmosphere. This is because the teacher's activities in the classroom play a fundamental role in improving the quality of learning. The teacher's ability to use the developed comic media has an effect on the success of learning because it can make students more interested in learning it and create a fun learning atmosphere and facilitate student learning.

As for the suggestions that can be given; namely, comic-based teaching materials Theme 8 My Living Area as a result of this development research can be used as an effective alternative learning resource in improving student learning outcomes, and it is better to use comic-based teaching materials carried out outside class hours so as not to reduce comfort and a pleasant learning atmosphere for students.

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