

Development of comic with discovery learning model as a media to increase students' literacy in primary school

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Abstract

The purpose of this study was to develop and test the validity, practicality, and effectiveness of comic media based on Discovery Learning in thematic learning in primary school. This research method is R & D and uses the ADDIE design which has 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation. The validity of the module is analyzed using the expert test, the practicality of the product is seen from the student response questionnaire towards the media while the effectiveness of the module is analyzed using the results of analysis in accordance with the three aspects of literacy namely the process of understanding, reading goals, and reading behavior from the theme and comic books and paired-samples test t-test. The results of research on comic-based learning media with the Discovery Learning approach to improve the literacy of grade III elementary school students. Comics proved valid based on expert tests conducted. Evaluation of the media aspect validator obtained a score of 69 with a percentage of 92%. The material aspect validator got a score of 43 with a percentage of 86% and the learning aspect Validator got a score of 41 with a percentage of 82%. the comics proved to be practical based on the student questionnaire responses to the media, the researchers responded to give questionnaires to 35 grade III students obtained a percentage of 91%. Comics proved effective based on analysis of analysis results in accordance with the assessment of the three aspects of literacy, namely the process of understanding, reading goals, and reading attitudes from theme and comic books with an increase in reading theme books that obtained percentages from 80% to 92% after reading comics. an increase of 12%, and the results of the pretest and posttest at the significance level of 0,000. The average pretest was 62.89 while the posttest average was 86.34. Effectiveness can be seen from the increase in the number of students who achieve grades above the KKM. As many as 100% of students were declared complete at posttest while at pretest the number of students completed was 8.57%.

Keywords: learning media; comic; discovery learning; literacy; primary school

Introduction

The fact that Indonesian Literacy Culture is still very low, based on the results of the Program for International Student Assessment (PISA) research, states that the Indonesian literacy culture in 2012 was the second worst of the 65 countries studied in the world. Indonesia ranks 64th out of 65 countries. In the same study, PISA also said that the reading position of Indonesian students was at number 57 of the 65 countries studied. "PISA said that not even one student in Indonesia won literacy scores at the fifth level, only 0.4 percent of students had literacy skills at the fourth level. The cause of the low literacy culture in Indonesia was that one of the main causes of literacy was not part of the curriculum in the 2013 curriculum.

To overcome this, it is necessary to habituate teachers in creating learning that can improve students' literacy skills. One of them is by utilizing media for learning. The use of appropriate media can prevent students from feeling bored (Annisa & Simbolon, 2018). With

media, students can remember a material for a long time compared to the delivery of material by lecturing and face-to-face without using a tool (Rusman, 2017).

One of the media that can be used is comics. According to Gumelar (2011), comics are sequences of images arranged according to the purpose and philosophy of the maker so that the message of the story can be conveyed well. Comics as a medium are used in thematic learning, especially in class III. More precisely on Theme 6 of Energy and Change, Subtema 1 Energy Sources, Learning 3. Media with comic forms are expected to provide interesting learning experiences. This media will make students not easily bored. In addition, it can also facilitate students to learn because it can be used anytime and anywhere. Agreeing with Wakhyudin and Permatasari (2017), comic media can create enthusiasm for learning and increase students' enthusiasm in participating in learning.

This comic is designed on the basis of Discovery Learning, which is a learning process where students are not given material in the final form but are expected to manage themselves (Wahyudi and Siswanti, 2015). Discovery Learning is done in 6 phases, namely stimulation, statement, data collection, data processing, verification, and drawing conclusions. With comic reading activities during learning, it is expected to improve student literacy. The National Association for the Education of Young Children (NAEYC) has the opinion that literacy is an activity that is able to encourage and inspire children to grow as a reader and writer. Literacy activities can increase students' knowledge through activities such as reading and writing (Izati, Wahyudi, & Sugiyarti, 2018).

Recent studies concluded that applying discovery learning would improve the learning process. The method increased cognitive and affective skills students (Balim, 2009). It was really useful in a mathematics class (Prasad, 2011), especially in a geometry class (In'am & Hajar, 2017), moreover with the help of GeoGebra software (Tran et al., 2014). Discovery learning approach was also proved to reduce the misconception in a science class (Tompo, Ahmad, & Muris, 2016). It was believed that the method for visual learners and team workers (Behzadan & Kamat, 2013) because communication was essential in the process of discovery learning (Saab, Joolingen, & Hout-wolters, 2005). Research also emphasizes that students are needed to work in teams and share their prior knowledge to other students (Gijlers & Jong, 2005).

Although many studies are proposed to implement discovery-based learning; however, more empirical studies were still needed (Honomichl & Chen, 2012) to assess the method in various levels of educations. Therefore, in this study, I developed a comic with

discovery learning model and implemented it in a primary school to improve students' literacy.

Materials and Methods

This research is a type of research and development (R & D). This study consists of several steps or stages that refer to the development model according to Borg & Gall. The design used is the ADDIE model where the design model developed has 5 stages, namely: analysis, design, development, implementation, evaluation.

The product being developed will be seen as validity, practicality and effectiveness. To test the validity of a product, it is done by evaluating several experts, namely experts on media, material, and learning. Test experts use questionnaires with Likert scale with a range of scores 1-5 with criteria Very not good (1), Poor (2), Enough (3), Good (4), and Very Good (5). To test the practicality of comics, it was done by giving students a response questionnaire after reading comics and to test the effectiveness of comics seen from the assessment of the three aspects of literacy and differences in the results of the pretest and posttest. Literacy aspects, namely processes of comprehension, reading goals (purposes for reading), reading behaviors and attitudes (reading behaviors and attitudes), theme and comic books.

The data analysis technique used to measure the validity and practicality of media comic-based learning is descriptive percentage and categorical. Measurements were made using a closed questionnaire. The pretest and posttest results of students were tested by paired samples t-test. The average score for each indicator is calculated using the following formula:

$$AP = \frac{\text{actual score}}{\text{ideal score}} \times 100$$

with:

- AP is a Percentage Number.
- Actual scores are scores given by experts.
- The ideal score is the maximum score of the results between the number of items with the maximum score for each item.

The percentage numbers are grouped into 5 categories. According to the percentage category, comic based on discovery learning was categorized valid and practical if the minimum percentage was $\geq 61\%$ with category was high (Table 1).

Table 1. Score category

| Interval | Category |
|----------|-----------|
| 81-100% | Very high |
| 61-80% | High |
| 41-60% | Moderate |
| 21-40% | Low |
| 1-20% | Very low |

The effectiveness test is seen from the assessment of the three aspects of literacy.

The formula used is as follows:

$$AP = \frac{\text{gained score}}{\text{maximum score}} \times 100$$

Results and Discussion

Analyze

At this stage, interviews are conducted to analyze student needs. This is the first step in the development of media to improve students' literacy skills. Interviews were conducted together with teachers and class III students. based on interviews conducted by the teacher to deliver material with lectures, assignments and question and answer without using media or other assistive tools. Learning has taken place smoothly and students are enthusiastic in participating in learning. However, teachers have not developed learning media, especially media that support literacy skills, most students lack interest in reading. Therefore, researchers develop comics with discovery learning models as a medium to improve the ability of student literacy.

Design

The design was carried out in 2 stages, namely composing comics and compiling a Learning Implementation Plan (RPP). The compilation of comics is done in 4 steps, namely: (1) Establishing the material to be contained in the comic. The material is taken from the theme 6 of energy and its amendments, Subtem 4 Energy Savings, Learning 1. There are three contents of the lesson discussed, namely Indonesian, SBdP and Mathematics; (2) Making story scripts by determining the characters, determining the storyline that is adjusted

to the learning model, and setting or setting the story; (3) Creating image designs using the Manga Studio EX application; and (4) Selecting tools and materials for comics. The type of paper used is ivory 260. Researchers need material that is easily removed to make experiments, researchers chose to use a Double Side Whiteboard. To fill in a number of questions in the experiment, researchers chose a small black marker that was modified by attaching a flannel cloth to the tip of the cap marker as an eraser. Then comics are also modified to play puzzles, researchers choose Yellow Board material to make puzzles. Spiral-bound comics to be stronger and last longer.

Preparation of lesson plans is carried out with the following steps: (1) Writing down identity; (2) Writing down Core Competencies; (3) Writing down Basic Competencies and Indicators; (4) Formulate learning objectives; (5) Determine the substance of learning material; (6) Determine methods and models; (7) Determine media, tools, and learning resources; (8) Prepare steps for learning activities; (9) Assessment.

Development

At this stage comics are developed and produced so that they are ready to be implemented. The development phase begins with making the initial draft of the product, which is making comics in accordance with the concept of discovery learning (Fig. 1). The comic draft was validated by experts and then revised. Experts who validate comics are media experts, material experts and learning experts. Products developed must be validated by experts to find out whether the product is worth testing or not.

Suggestions on aspects of language for making windmills in the fourth step, the language is not understandable. From the previous one, "puncture the straw in the middle with the tacks for the windmill" to "Lubricate the middle of the windmill using tacks, then plug it in the straw" and give the pictures so that students understand better (Fig. 2). In addition, the researcher made revisions in the display aspects based on criticisms and suggestions from media experts (Fig. 3).



Figure 1. Comic cover (left) and first page (right)

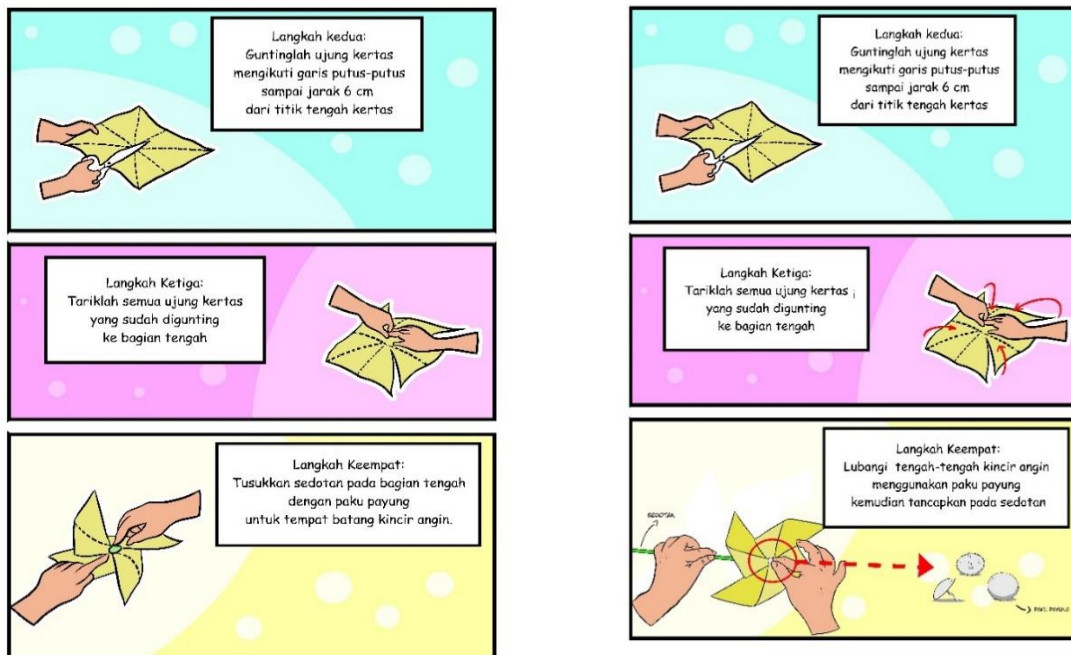


Figure 2. Language revision, before (left) and after (right)

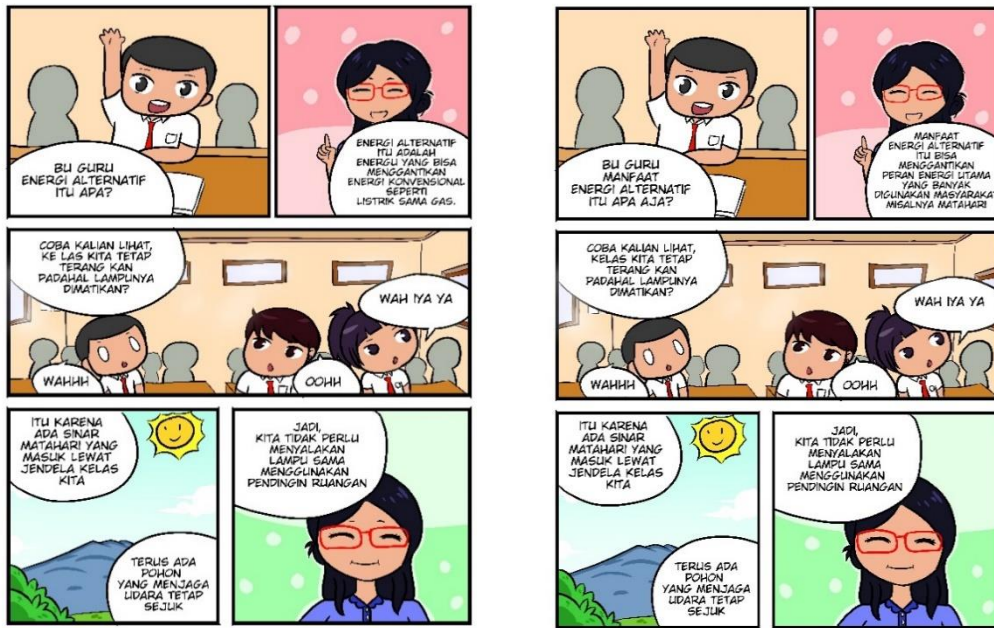


Figure 3. Display revision, before (left) and after (right)

Implementation

Comics are implemented in learning activities theme 6 Energy and Change sub-class Energy Saving 1 theme sub-theme in Kedungjenar Blora Elementary School after obtaining approval from the validator and supervisor. Implementation was carried out in May 2019. Field trials were carried out through teaching practices carried out in class III of SDN Kedungjenar Blora.

Evaluation

After being implemented, comics are evaluated based on validity, practicality and effectiveness. Based on the media eligibility criteria, comics developed in the category of very high and high with a percentage value of $\geq 61\%$ (Table 2) so that this comic was declared fit for the trial.

Based on the observation sheet of teacher activities, a percentage of 100% is obtained. In other words, researchers can implement 10 indicators or all indicators that have been well prepared. The teacher also assesses the media by using a validation sheet. Based on the results of the teacher's response to the media, a percentage of 92% was obtained. It can be concluded that according to the teacher the media developed is feasible to use. To find out students' responses to the media, researchers responded to give a questionnaire to 35 grade III

students. Based on the results of the analysis of student responses to the media, a percentage of 91% (Table 3) was obtained and included in the very high category. With this large percentage, it shows that students respond to comics very well. So, it can be concluded that comics are practical to use.

Table 2. Media validation by experts

| Indicator | Ideal score | Actual score | AP, % | Category |
|------------------|-------------|--------------|-------|-----------|
| Learning media | 75 | 69 | 92 | Very high |
| Learning content | 50 | 43 | 86 | Very high |
| Learning process | 50 | 41 | 82 | Very high |

Table 3. Students' response

| No | Indicator | Total score |
|-------|--|-------------|
| 1 | The colors used in comics are very interesting to me | 35 |
| 2 | The images used in comics are very interesting to me | 32 |
| 3 | Interesting comic title for me to read | 33 |
| 4 | This comic made me more enthusiastic about reading | 30 |
| 5 | The writing used in comics is very interesting to me | 28 |
| 6 | I understand the sentences in comics | 30 |
| 7 | I like to learn to use comic media | 34 |
| 8 | Using comics makes it easy for me to learn to read | 34 |
| 9 | The size of the comic is not too large so I can easily carry it everywhere | 30 |
| 10 | Media comics are very useful for me | 33 |
| Total | | 319 |
| % | | 91 |

To see whether comics can improve literacy skills or not, researchers used questionnaires and observations. PIRLS (Progress in International Reading Literacy Study) focuses on three aspects of literacy, namely processes of comprehension, purposes of reading (purposes for reading), reading behavior and attitudes (reading behaviors and attitudes). The first aspect of literacy is the process of understanding seen from the process of understanding the skills of retelling the contents of a reading. The second aspect of literacy is the purpose of reading which can be seen from the questionnaire given. The third aspect of literacy is the reading attitude seen from the observation sheet.

Based on the results of increased literacy, it can be stated that comics are effective in increasing student literacy. When reading the theme book get a percentage of 80%. While reading comics, get a greater percentage of 92% (Fig. 4). Thus, there was an increase from the one originally included in the good category, then becoming a very good category.

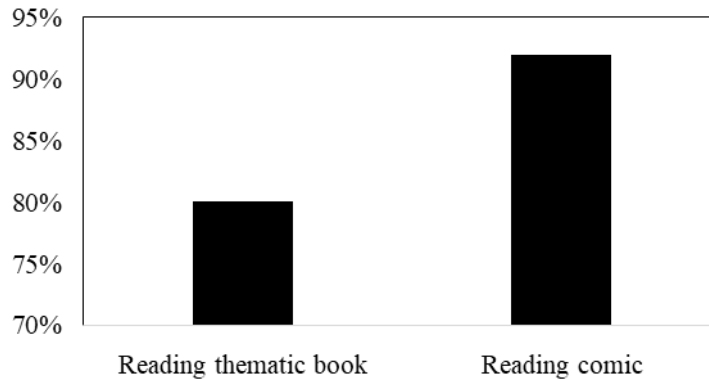


Figure 4. Students' Literacy

The pretest results showed that the number of students in the interval class 57-61 was 18 children or 51.4%. The number of students in the interval 62-66 class is 10 children or 28.6%. The number of students in the interval class 67-71 is 4 children or 11.4%. The number of students in the 72-76 interval class is 2 children or 5.7%. The number of students in the 77-81 interval class is 0 children or 0%. The number of students in the interval class 82-86 is 1 child or 2.9%.

Tabel 4. Result of pretest

| Interval | Frequency | % |
|----------|-----------|------|
| 57 – 61 | 18 | 51.4 |
| 62 – 66 | 10 | 28.6 |
| 67 – 71 | 4 | 11.4 |
| 72 – 76 | 2 | 5.7 |
| 77 – 81 | 0 | 0 |
| 82 – 86 | 1 | 2.9 |

The posttest results show that the number of students in the 77-80 interval class is 1 child or 31.4%. The number of students in the 81-84 interval class is 7 children or 20%. The number of students in the 85-88 interval class is 8 children or 22.8%. The number of students in the 89-92 interval class is 3 children or 8.6%. The number of students in the 93-96 interval class is 3 children or 8.6%. The number of students in the 97-100 interval class is 1 child or 2.9% (Table 5).

Table 5. Result of posttest

| Interval | Frequency | % |
|----------|-----------|------|
| 77 – 80 | 11 | 31.4 |
| 81 – 84 | 7 | 20 |
| 85 – 88 | 8 | 22.8 |
| 89 – 92 | 3 | 8.6 |
| 93 – 96 | 3 | 8.6 |
| 97 – 100 | 3 | 8.6 |

The pretest results showed the lowest score of 57 and the highest score of 86 with an average of 62.89. At posttest, the lowest value is 77, the highest value is 100, and the average value is 86.34 (Table 6). Learning completeness also experienced a very drastic increase from 8.57% to 100% (Table 7).

Table 6. Descriptive statistics of pretest and posttest

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|----|---------|---------|-------|----------------|
| Pretest | 35 | 57 | 86 | 62.89 | 6.365 |
| Posttest | 35 | 77 | 100 | 86.34 | 6.877 |
| Valid N (listwise) | 35 | | | | |

Table 7. Completeness of the study

| Completeness | Pretest | | Posttest | |
|--------------|---------|-------|----------|-----|
| | No | % | No | % |
| Complete | 3 | 8,57 | 35 | 100 |
| Not complete | 32 | 91,43 | 0 | 0 |

Analysis of the results of the pretest and posttest were tested statistically by paired-sample t-test because both data were normally distributed. The mean difference test was conducted to determine whether there was a difference in the mean between the results of the pretest and posttest. Based on the paired-sample t-test sig. (2-tailed) shows the number 0,000 so that it can be said that comic media is effectively used with differences between pretest and posttest (Table 8).

Table 8. Paired-sample t-test

| | | Paired Differences | | | | t | df | Sig. (2-tailed) | |
|--------|--------------------|--------------------|----------------|-----------------|---|---------|---------|-----------------|-------|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | | Lower | | | | Upper |
| | | | | | | | | | |
| Pair 1 | pretest - posttest | -23.457 | 9.237 | 1.561 | -26.630 | -20.284 | -15.024 | 34 | .000 |

The results of the study show that comic based discovery learning as a medium can improve the literacy of elementary school students. This can occur because students get the opportunity to use media that can facilitate the process of understanding. In line with Untari & Saputra (2016) who argue that comics can help understand the contents of a reading with the images contained in it. So that after reading, students are able to retell the content or information contained in the comic.

In addition, comics can make students have the purpose of reading not just for fun, but also to obtain information (Nugraheni, 2017). When reading comics, student attitudes become more focused in reading (Saputro, 2016). Things that happen when students read comics as described, according to literacy aspects of reading. PIRLS focuses on three aspects of literacy, namely the process of understanding, the purpose of reading and the attitude of reading.

Good literacy can be owned if students have an interest in reading and available media that can be used to read. Growing interest is not easy, one way that can be done is to develop media in the form of cartoon-shaped images that have a story and character called comics (Sudjana & Rivai, 2013).

Students' interest in reading depends on the appearance and content of a reading. If a material is only presented in written form, students will feel bored quickly. The use of comics as an attractive-designed media can make students feel happy, making students not easy to feel bored, and motivating students to be enthusiastic in learning (Ambaryani & Airlanda, 2017).

The success of this study is supported by an increase in scores from reading reading to reading comics. So, there are differences when before using comics (reading reading) and after using comics. Based on the results of the study, comics proved effective to be used to improve literacy. These results corroborate the results of several studies, namely Fahyuni & Fauji (2917), Pitaloka (2017), Wakhyudin & Permatasari (2017) which states that comics can

be used as learning media that can make students interested in learning and can improve reading literacy.

Conclusion

The products produced in the study are comic-based learning media with the Discovery Learning approach in learning energy sub-themes and changes that are developed using ADDIE learning design models (analysis, design, development, implementation, and evaluation). The comics developed have been declared valid by experts and are practically used in learning. In addition, this module has also proven effective for increasing students.

Acknowledgement

I thank the principal and the teacher in class III at the Kedungjenar Blora Public Elementary School for giving permission to conduct research.

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