Kasetsart Journal of Social Sciences

Thematic comic to cultivate eco-literacy for young learners

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Article Info

Abstract

This study aimed at developing comics as a learning material to cultivate eco-literacy for elementary school students. Specifically, this study identified the design of an appropriate comic to cultivate eco-literacy for young learners, the content validity and appropriateness, and the practicality of the comic. The researchers conducted the study by following the 4D research and development model that consisted of defining, designing, developing, and disseminating. The researchers applied various data collection techniques, observation, interview, documentation, questionnaire, and expert judgment. The data analysis was also varied based on the type of data and the objectives of the study. The observation, interview, documentation results were analyzed qualitatively while the results of the questionnaire and expert judgment were analyzed using the mean score and inter-rater agreement model. This study found three significant results. First, the design of the comic should be in line with the curriculum and young learners' characteristics. Second, the result of the expert judgment sheet showed that the comic was valid in terms of its content validity and it was appropriate for young learners. Third, from its practical perspective, the students enjoyed the learning process using the comic, and there were no problems found during the implementation of the comic for an instructional process.

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Introduction

Human care and sensitivity towards living environment issues is a form of morality, behavior and individual human character. This is impossible to be cultivated in humans instantly. Therefore, education is a strategic way to improve knowledge, skill and personal human attitude as a learner at an early age. Many believe that education can shape students' personality and character (Rokhman, Hum, Syaifudin, & Yuliati. 2014). Through education, a human can become an environment literate character, have green behavior and have a positive character towards the environment (Varela-Candamio et al., 2018). Through an education program that integrates environment material into the curriculum and habitual program, it is expected that a learner becomes a character as part of society who has a high awareness of the environment and the impacts.

An elementary school in Indonesia already has thematic material content that includes living environment education in various lesson contents (science, social

study, civics, Indonesian language, religion) starting from basic grades (1st, 2nd, and 3rd grade) until higher grades (4th, 5th, and 6th grade). However, some studies have found that many elementary students in Indonesia discarded their food/snack wraps carelessly (Anifa et al., 2017; Hestiyantari, 2020; Ninsih et al., 2018). This means that there is something wrong with character education in elementary schools in Indonesia.

To identify the problem in character education in elementary schools, the researchers conducted a preliminary study in one of the state elementary schools in Indonesia. Based on the result of the questionnaire and interviews on the initial study, it was found that the character education learning materials for the elementary school students were not interesting for the students. From the questionnaire results, most of the students (83.6%) felt that the materials were not interesting since there were too many explanations and a lack of interesting pictures. Therefore, most of them said that they did not like to read the materials.

Learning materials for young learners should be attractive. Children love to have colorful materials full of pictures, and they also like to study from a story (Aura et al., 2021; Cekaite et al., 2018). Thus, providing young learners with those kinds of materials will help them to enjoy their studies and, at the same time, improve their understanding of the content of the materials (Ebersbach & Brandenburger, 2020). Besides, giving appropriate materials for the students has been proven to positively affect students' achievement (Abubakar, 2020).

Considering the importance of learning materials, character education and the needs of young learners on interesting materials, this study aimed at developing thematic comics with eco-literacy. The researchers decided to develop the learning materials in comics because comics will provide young learners with fun stories and colorful pictures. In addition, the use of comics has also been proven to have a positive effect on students' learning motivation and achievement (Cimermanová, 2015). Specifically, this article explains the design of the developed comics, the validity and practicality of the developed comics.

Literature Review

Characteristics of Young Learners

Young learners like to play, imitate, and have short attention spans (Hashemi & Azizinezhad, 2011). Children are creative and imaginative. They love to get involved in exciting activities such as games, singing songs, and drawing pictures (Uysal & Yavuz, 2015). In addition, the young learners also love to have stories (Cekaite et al., 2018). Thus, teachers who teach young learners should be creative in designing learning materials and classroom activities to make the students enjoy the instructional process.

Comic for Teaching Young Learners

A comic is a blend of pictorial characters and written verbal utterances that create a visual narrative (Cimermanová, 2015). The use of comics for teaching young learners can make the teaching and learning process more interesting (Koutníková, 2017). In addition, the use of comics will help the children to understand an abstract concept better (Grootens-Wiegers et al., 2015). Therefore, comics can be used as an alternative form of school literature for young learners (Wallner, 2020).

Eco-Literacy

Eco-literacy is a friendly lifestyle to the surrounding environment through value education practices (McBride et al., 2013). Eco-literacy has a vital role in ensuring sustainable development (Locke et al., 2013). Environmental issues that trigger natural disasters, such as climate change and global warming, are crucial issues that need to be solved. To solve the problem, people should work together and to ensure that the efforts of solving those problems run well, people's understanding of the importance of taking care of the environment is a must (Bouman et al., 2020). Thus, eco-literacy becomes a must for students, especially young learners, since characters are formed during the childhood period (Paulus, 2020). If we can ensure that the students have a good understanding of eco-literacy, there is a higher possibility that the future generation will have more awareness of the environment.

Methodology

This research intended to produce a thematic comic that contained eco-literacy. This research followed the 4D research and development model that consisted of four steps: define, design, develop and disseminate stages (Thiagarajan, 1974). The research was carried out at the Elementary School District Waru, County Sidoarjo, East Java-Indonesia. The study's objectives were identifying: the appropriate design for the learning materials in the

form of a comic with eco-literacy for the targeted students; the validity and practicality of the comic. Considering the objectives of the study, the data of the study were collected using various methods. First, to identify or define students' needs, the researchers used interviews, questionnaires and documentation techniques. Second, to determine the validity of the developed comics, the researchers used an expert judgment sheet. Third, while assessing the appropriateness of the comic in terms of its appearances, the researchers also involved two design and media experts. Finally, in identifying the practicality, the researchers implemented the materials in a small group of students and collected the data using observation.

The data from the observation, interview, and documentation during the need analysis and the practicality evaluation were analyzed qualitatively using an interactive data analysis model (Miles et al., 2014). The data from the expert judgment sheets to identify the content validity of the comics were analyzed using the inter-rater agreement model (Gregory, 2015). The result of the expert judgment sheets was classified based on the criteria shown in Table 1. According to Tavares, Hamamoto Filho, Ferreira, and Avila (2018), the coefficient of content validity should be ≥ .78, and the formula to get the coefficient of content validity is:

$$\text{Content validity} = \frac{D}{A + B + C + D}$$

To determine the result of the questionnaire from the design and media experts, the researchers quantified the

results and found the mean score. Then, using the theoretical ideal reference assessment theory by Nurkencana and Sunartana (1992), the comic will be considered appropriate if the mean score is > 3.25.

Results and Discussion

The Design of the Developed Comic

The comic combined text, graphics, images and eco-literacy content. In designing the comic, the researchers classified the design based on some aspects, namely: design, color, cover, types of images and writing. The design of the comic was adjusted with the result of the need analysis (see Table 2). The following is the explanation of those aspects.

Layout

Layout is a frame or an outline that describes the entire book content systematically. In this study, the thematic comic that contained eco-literacy was designed on a book size of 14.8cm x 21cm. The size was adjusted to the common comic size since the result of the questionnaire and interview showed that most of the students wanted to have a comic that resembled an actual comic. Deciding the size of a book is vital since the size of a book may influence the young learners' intention to read (Gabaron, 2017; Mohr, 2006). Therefore, the researchers decided the size of the book based on the students' requests.

Table 1   Inter-rater Agreement Model of Content Validity (Gregory, 2015)

		Expert judge #1	
		Weak Relevance (item rated 1 or 2)	Strong Relevance (item rated 3 or 4)
Expert Judge #2	Weak Relevance (item rated 1 or 2)	A	B
	Strong Relevance (item rated 3 or 4)	C	D

Table 2   The Summary of the Developed Comic Design

Aspect	Need Analysis
Layout	• A book size of 14.8cm x 21cm • Follow the topics stated in the curriculum • The material, activity, task, and supporting illustration have contextual traits and are close to the student's world
Color and Writing	• Colorful • Use Arial Black font
Cover	• Describe the comic content
Types of Images	• The images were adjusted with the characters and the stories. The comic's main character followed thematic lessons such as Siti, Dayu, Lani, Edo, and Beni. The supporting characters are Siti's parents, Dayu's parents, Lani's parents, Udin's parents, Edo's parents, Beni's parents and the teachers.

The teachers suggested that the content of the comic should follow the topics stated in the curriculum. The researcher followed the teachers' suggestions and the curriculum because learning materials should be valid for the instructional process. This validity is vital to ensure that the learning materials can help students achieve the learning objectives (Betschart et al., 2019; Castro et al., 2007). Based on the curriculum for 1st grade, the topics included *"My Self."* Based on the curriculum, the material in theme 1 consisted of 4 sub-themes, i.e., sub-theme 1 "A new friend and I," sub-theme 2 "My Body," sub-theme 3, "I take care of my body," and sub-theme 4, "I am perfect."

The material, activity, task and supporting illustrations have contextual traits and are close to the student's world according to the 1st-grade characteristics. Based on the result of the interviews, the teachers suggested that the activity should be authentic. Some studies found that authenticity and prior knowledge can help students build their understanding of the learning materials and engagement during the instruction (Dong et al., 2020; Sánchez Gilar-Corbi et al.,2020; Sari et al., 2020).

Color and Writing

To a child, color is a need that can represent an emotion and a colorful book can improve students' interest to read (Veszeli & Shepherd, 2019). Therefore, this comic was designed to be colorful to attract students' interest. However, the colors chosen were soft so that they were comfortable to read. The font type used was Arial Black so that the students could read the letters. The front part of the cover contained the title, author and publisher, whereas the back cover consisted of the blurb, publisher identity and ISBN of the textbook.

Cover

The cover design was also made to describe the comic content. The cover part described the students' character in the comic. The illustration design was simply made to not be too congested and distract the title. Cover design and illustration are fundamental in attracting students' attention to books (Nolen, 2007). Thus, the cover of the comic was designed to be attractive.

Types of Images

The images in the comic were adjusted with the characters and the stories. The comic's main character followed thematic lessons such as Siti, Dayu, Lani, Edo, and Beni. The supporting characters were Siti's parents, Dayu's parents, Lani's parents, Udin's parents, Edo's parents, Beni's parents and the teachers (see Figure 1).

The comic was developed to be a rich illustration book as comic-based supporting teaching material. The comic was designed with colorful illustrations on every page because from the questionnaire and the interview, it was found that the students wanted to have many colorful pictures to help them visualize the story. Since young learners learn better through concrete things than abstract things, the pictures would make it easier to understand the story. Besides, the use of colorful pictures makes the comic interesting for young learners (Veszeli & Shepherd, 2019).

The Content Validity and the Appropriateness of the Developed Comic

Expert validation try-out test was done by the *content, design and media expert judges*. The content validity was measured to make sure that the developed comic already represented the learning objectives, the themes and the eco-literacy aspects that needed to be fulfilled as it was designed. This content validity evaluation is crucial because good learning materials should help the students achieve the learning objectives (Beydogan, 2011). The assessment result from the content experts proved that the developed comic was valid. It can be seen from the content validity coefficient based on the results of the expert judgment sheets from the two content experts. The content validity coefficient was $1.00 > 0.78$. It means that, based on Tavares et al. (2018), when the coefficient is higher than 0.78, the product is considered to have valid content validity. Besides the score, the content experts also gave some comments related to the content of the comic. The researchers used those comments to revise the content of the comic.

The design and media evaluation were conducted to ensure that the developed comic had already fulfilled the criteria of a good comic and accommodated the young learners' characteristics as it was designed. The evaluation of learning materials for young learners becomes crucial because they need attractive learning materials, and some contents are sometimes not appropriate for young learners

Figure 1   Cover, character and sample of the setting in the developed comic

(Kirkgöz, 2009). From the design and media experts, the developed comic was considered suitable for young learners. This can be identified from the mean score of the questionnaire results that was 3.7 out of 4. Since the mean score is higher than 3.25, the developed comic was considered appropriate. Similar to the content experts, the design and media experts also gave some suggestions related to the appearances of the comic. The researchers used those comments to revise the comic before it went to the practicality evaluation.

The Practicality of the Developed Comics

The practicality of the comic was evaluated using a field trial in two phases. The objective of this evaluation was to make sure that the students and the teachers faced no problems during the use of the comic in the instructional process. This evaluation is crucial to conduct because low-quality learning materials can be a source of error (French et al., 2019). The first phase of the practicality evaluation was done in one-to-one evaluation. During this first phase of practicality evaluation, the researchers involved three students and one teacher. The students were taken as the representative of the fast learners, moderate learners and slow learners. The implementation was conducted in three meetings. The field test result on the one-to-one evaluation showed that the students and the teacher did not face any significant problems. However, the students commented that some pictures needed to be revised to make them more attractive.

When the comic had been revised, the researchers conducted the second phase of evaluation by involving more students. The researchers conducted small group evaluation that involved one teacher and 16 students. The implementation was conducted in three meetings. During the implementation, it could be seen that the students enjoyed the instruction (see Figure 2). They were enthusiastic about reading the comic with their friends. It could be seen from their expressions and their request to

Figure 2 The Situation during the Teaching and Learning Process Using the Developed Comic

have more stories to be read. This finding is supported by the previous studies, which found that comics could make the learning process becomes more interesting (Aura et al., 2021; Cekaite & Björk-Willén, 2018; Cimermanová, 2015). The students and the teachers found no specific problems during the implementation. Based on the field trial that was conducted, it can be understood that the comic has good practicality. However, to ensure that the comic is significantly effective in improving students' understanding of the materials and eco-literacy, further study is needed. Since this study only involved a small number of students and teachers as the respondent, more respondents are required in order to draw a conclusion using an inferential statistic calculation so that the effectiveness of the comic can be measured and the result can be generalized.

Conclusion

Based on the thematic comic containing eco-literacy for the 1st grade of elementary school research and development formula problems, it can be concluded that the design of the comics with eco-literacy should take into account young learner's characteristics to make it interesting. The developed comic with eco-literacy was considered valid in terms of its content validity, and there were no problems found by the students and teachers in implementing the comics during the instructional process. However, this study was limited to formative evaluation. This means that the developed comics should be evaluated further to determine their effectiveness. Thus, a further study in the form of a summative evaluation study to measure the effectiveness of the comic needs to be done. By doing that summative evaluation study, the researcher can decide whether or not the comic is ready for mass production and implemented in an actual teaching and learning process in other elementary schools in Indonesia.

Conflict of Interest

There is no conflict of interest.

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