

IMPROVING THE ENVIRONMENTAL CARE POTENTIAL THROUGH SCIENCECOMIC

Ratih Laila Istiqomah¹⁾, Slamet Subiyantoro²⁾, Peduk Rintayati³⁾

¹⁾ Universitas Sebelas Maret, Surakarta

²⁾ Universitas Sebelas Maret, Surakarta

³⁾ Universitas Sebelas Maret, Surakarta

Email:ratihistiqomah729@gmail.com¹⁾, Email:s.biyantoro@yahoo.co.id²⁾, Email:pedukrintayati@ymail.com³⁾

Abstract: The objectives of this article to provide a solution about one of the ways that can be done to increase the potential for loving the environment through the use of sciencecomic. Indonesia is one of the regions that has been named as the world's lungs because 10% of the world's rainforests are located in Indonesian territory, but the fact shows that sixty-four million hectares of forests have been cleared over the past 50 years. Therefore, to overcome this, the need for planting an environmental care attitude early on. As the planting of environmental care for students, it is necessary to strengthen the concept of environmental care for students first. One of the ways to plant an effective concept is through sciencecomic in which there are interesting illustrations. The writing method uses literature studies on some relevant literature through library books, national and international journals. The literature search results show that based on Dale's Cone of Experience, sciencecomic utilization by displaying illustration images can help students understand and remember learning by 30%.

Keywords: environmental care, potential, sciencecomic

1. Introduction

The Indonesian region is known as emeralds of the equator, this nickname is given because if seen through space satellites, the Indonesian archipelago looks green to cool the eyes like Emerald stone. The beauty of Indonesia is also equipped with the potential of the sea in which there are coral reefs with an area of 750,000 m² or about 14% of the total area of coral reefs in the world (Arini, 2013: 147).

But the natural greenness of Indonesia has shrunk every year due to uncontrolled forest utilization. Matt Hansen from the University of Maryland stated that Indonesia experienced a loss of forest cover of 15.8 million hectares between 2000 and 2012, ranking fifth after Russia, Brazil, the United States and Canada in terms of forest loss. In the same period, Margono et al in a report entitled Primary forest cover loss in Indonesia over 2000-2012 stated that the average deforestation that occurred in Indonesia in the 2000-2012 period ranged from 0.8 million hectares per year. The latest data on forest area in Indonesia in 2017 is only 93.6 million ha (Menlhk: 2018).

Besides that, the condition of coral in Indonesia at this time seems worrying, it is noted that 4% are in critical condition, 46% have been damaged, 33% are still in good condition and only 7% are in very good condition (Menlhk: 2018).

One of the efforts to overcome environmental problems that are increasingly alarming is the planting of environmental care through the world of education. Education is considered effective because in it there is a learning process that strengthens the concept of environmental care for students, a form of concept strengthening by the teacher that is understanding students that humans and nature have interdependent and mutually beneficial relationships (Moreno, et al: 2011).

The learning process will be quality if there is practical and innovative communication between the teacher and students. Communication in learning will run smoothly when using learning media, according to Munadi (2012: 7-8) learning media is anything that can convey and channel messages from sources in a planned manner so as to create a conducive learning environment. While Riyana (2008: 40) argues that learning media has a function to generate motivation to learn and present basic concepts that are true, concrete and realistic.

Sciencecomic is a learning media that can be developed to help convey the concept of caring for the environment more real and fun. Based on Tatalovic's (2009) research, sciencecomic is an effective and potential medium to convey a concept. This fact is reinforced by Dale's Cone of Experience, which states that sciencecomic utilization by displaying illustrative images can help students understand and remember learning by 30%.

2. Literature Review

Environmental care

Environmental care behavior can be done by respecting and loving nature which is shown by always maintaining the environment, not littering, carrying out activities related to environmental awareness (Rahmawati & Suwanda, 2015: 74).

The attitude of caring for the environment is the attitude shown by someone towards the environment, the indicator is knowing the environment that is balanced, sustainable and free from pollution, knowing the consequences of environmental damage and pollution caused by humans, knowing various kinds of environments caused by humans, knowing various kinds activities that can make the environment better, play an active role in community activities aimed at preserving the environment (Santoso: 2013).

Restanti (2012) argues that environmental care is a positive behavior to maintain and maintain the quality and sustainability of organisms. The attitude of caring for the environment that humans have as a result of the learning process, can increase human concern for the sustainability of the carrying capacity of the natural environment.

Sciencecomic

Meaning

The Indonesian Dictionary of Large Languages (2008: 742) states comic means picture story. Ajidarma (Meijayanti, 2015: 22) states the term comic comes from the word comic which has a funny meaning, usually in the form of narrative and is found on special pages in newspapers. Another opinion expressed by Sudjana & Rivai (Meijayanti, 2015: 27) that comics can be defined as a form of cartoon that expresses character and portrays a story in a sequence that is closely related to images and designed to provide entertainment to readers. Meanwhile, according to Mc Cloud (Yulianti, et al: 2016: 2), comics are images and other symbols that are close or close together in certain words that aim to convey information and achieve aesthetic responses from the reader. Comics are forms of art that do not use moving images arranged in shaping and constructing stories.

Sumaji (Yulianti, et al: 2016: 2) argues that science is part of our lives and environmental interaction is a key feature in the learning process (Sumaji, 2004). Meanwhile, according to the Big Indonesian Dictionary, science is a systematic knowledge obtained from something observation, research, and testing that leads to the determination of the nature or principle of something that is being investigated, studied, and so on.

Then the conclusion can be drawn, sciencecomic is a pictorial story that contains knowledge aimed at conveying information and achieving aesthetic responses from readers.

Sciencecomic elements

According to Berger (Shadily: 2013) comic elements, as follows:

- a. The method used to draw characters
Characters in comics are the main thing, as a description of something that will be explained in the comic.
- b. Character Face Expressions
Determination of facial expressions of animated characters is very important, because it can help confirm what is conveyed by the character.
- c. Speech bubble
Images and words in comics are the main elements because they describe each other. In this word the material we will convey will be put in accordance with the characters who speak, so that it shows dialogue between characters.
- d. Motion Line
The line of motion will make the image look alive in the reader's imagination.
- e. Background
Shows the reader the context of the material presented in the comic. Action in cartoons contained in the panel.
- f. Panel
The panel in the comic can be said as a sequence of each picture or material and to maintain the continuation of the ongoing story.

In addition to the six elements, there are other elements, namely verbal language elements. Where verbal language here may not be used in every comic, but the verbal language function can help the reader to understand the theme or discussion that is being explained in the comic.

The whole element is very important in sciencecomic, in order to create a good sciencecomic it is also able to convey a message to students, so that students can easily remember the material being taught.

Sciencecomic Making Stage

According to Budiningsih (Fitria: 2010), the stages that we must take in the manufacturing process include:

a. Target Identification Stage

The first stage in making comics is to identify the target or reader, the identification stage aims to understand the tastes and character of readers based on age. Children at school age (6-12 years) tend to like comics that contain stories of adventure, mystery and tension. Because at this age children prefer things that smell adventurous along with their social development in socializing with the surrounding environment.

b. Color Identification Stage

The color to be chosen must adjust the taste and character of the reader. School children (6-12 years old) they still tend to like various types of colors. But at the age of 12 they only like a few colors. Therefore the contrast of the colors to be chosen is a bit simple.

c. Scenario Making Phase

Scenarios are at the heart of the comic making process because of scenarios that provide direction for making comic stories. The things that must be considered in making comic scenarios include: (1) Themes, (2) Grooves, (3) Settings in comics, (4) Windows, (5) Pages and (6) Characters (Emotions). These six things play an important role in the process of making comic scenarios because among one another has a dependency in the perfection of the message to be delivered. determine the scenario must adjust the material to be delivered.

d. Language Selection Phase

School-age language style is usually children tend to like languages that are full of motivation and spur adrenaline. School-age children have not mastered difficult and complicated language terms so that the use of language styles is a little easier.

e. Visual Element Setting Phase

- 1) Letter, the letters used must be easy to read and clear.
- 2) Forms and Lines, avoid complicated lines and shapes.
- 3) Balance, in the use of shapes, lines, colors and letters must be arranged in a balanced manner, for example letters that want to be arranged symmetrically / asymmetrically.
- 4) Unity, the unit unity should be clearly visible, for example the title must be in accordance with what will be explained in the comic.
- 5) Emphasis, in presenting messages or learning material in the form of comics, it is necessary to emphasize the main elements of the message to be delivered.
- 6) Layout (arrangement, layout), the arrangement must be able to put all elements in harmony.

Sciencecomic advantages

According to Yang Gene (Meijayanti, 2015: 27) there are several strengths of Sciencecomic, namely: (1) motivating, (2) visualizing interesting stories, (3) permanent visual components, (4) as intermediaries to facilitate material, (5) popular for students, and (6) developing thinking skills. Espada (2003) argues that sciencecomic has the ability to make it easier for readers to understand and remember the contents of the story as a video display. Juanda, et al (2015: 12) suggested that comics function to stimulate and shape characters and teach good habits to students.

The above opinion is strengthened by research conducted by Hutchinson (Arjuna: 2011), which found that 74% of teachers surveyed thought that comics helped motivate "while 79% said comics increased individual participation. DC Comics, Thorndike, and Downes also found that comics can provide interest and be able to motivate students to complete the given task (Arjuna: 2011).

3. Methodology

The method of writing this article uses literature studies from book literature, research journals, national and international related to the material to be delivered. Analysis of article writing

using analysis and synthesis. Analysis is defined as a method by which steps break a substance into parts or components or elements. Akhadiyah and Listyasari (2011), argue that synthesis is a method that combines parts or components or elements that are separated into one unit that is related or intact. Analysis and synthesis is carried out on some literature on environmental, media and scienceeconomic concerns.

4. Results And Discussion

National development priorities as outlined in the National Long-Term Development Plan (RPJP) of 2005-2025 (Law No 17 of 2007), among others, are in realizing a noble, moral, ethical, cultured and civilized society based on the philosophy of Pancasila. Based on these objectives, character education is developed as moral cultivation, ethical values, aesthetics, noble character that are expected to be practiced and become a habit in everyday life (Gunawan, 2012: 12). Environmental care is one of the eighteen characters that are a priority in Indonesian education. Environmental issues that are increasingly alarming, such as global warming, burning of forests, air, water and soil pollution, garbage problems, etc. make environmental care a priority for the characters formed in students.

The character building efforts, contained in Undang-Undang Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional BAB II Pasal 3 states that: National education functions to develop the ability and shape of dignified national character and civilization in order to educate the life of the nation, aims to develop the potential of students to become faithful and fearful people of God Almighty, noble, healthy, knowledgeable, capable, creative, independent and become a democratic and responsible citizen.

According to Adisendjaja (Yulianti, 2014: 1), education is the right means to build a community that applies environmental principles and ethics. This opinion was reinforced by Karyanto (2013) who stated that education is the key to the formation of people and people who are wise to the environment. Education is considered effective because in it there is a learning process that strengthens the concept of environmental care for students, a form of concept strengthening by the teacher that is understanding students that humans and nature have interdependent and mutually beneficial relationships (Moreno, et al: 2011).

The learning process will be quality if there is practical and innovative communication through the use of learning media. Learning media has a function to generate motivation to learn and present basic concepts that are true, concrete and realistic Riyana (2008: 40). Scienceeconomic is a learning media that can be developed to help convey the concept of caring for the environment more real and fun. Scienceeconomic can present events that are more real and fun because there are characters in the form of images with attractive colors and easy-to-understand languages. Of course this can cause motivation in students to read, so that the delivery of the concept of caring for the environment in students will run effectively (Tatalovic: 2009). This fact is reinforced by Dale's Cone of Experience, which states that scienceeconomic utilization by displaying illustrative images can help students understand and remember learning by 30%.

In order for students to be more concerned with the surrounding environment, the illustration of the picture and the events described are situations that are close to the student's environment. In accordance with the opinion of Trianto (2010: 107) which states that learning by learning a subject by directly relating it to real situations will help students more easily understand the concepts of learning and learning material to be more meaningful

In addition, so that the scienceeconomic will have a wider impact, it will also be complemented by environmental care projects that must be carried out by students in their daily lives. So that scienceeconomic can stimulate and shape characters and teach good habits to Juanda students, et al (2015: 12).

5. Conclusion

Scienceeconomic can increase the potential for environmental care for students because it contains interesting images, daily events, language use that is easy to understand and equipped with

environmental care projects. So that students will easily understand the concepts of matter caring for the environment and who can especially familiarize the environmentally caring attitude in everyday life.

References

- Arjuna. 2011. *Komik sebagai Media Pembelajaran*. <https://arjunabelajar.wordpress.com/2011/04/30/komik-sebagai-media-pembelajaran/>. Diakses pada tanggal 2 Mei 2018.
- Depdiknas. 2008. *Kamus Besar Bahasa Indonesia Pusat Bahasa Edisi Keempat*. Jakarta: PT. Gramedia.
- Fitria. 2010. *Komik sebagai Media Pembelajaran*. <http://rizcafitria.wordpress.com/2010/07/05/komik-sebagai-media-pembelajaran/>. Diakses pada tanggal 2 Mei 2018.
- Gunawan, I. (2012). *Pendidikan Karakter*. Bandung: Alfabeta.
- Juanda, et al. (2015). Perancangan Komik Pembelajaran Bertemakan Fabel untuk Pembentukan Karakter pada Anak. Surabaya: Universitas Kristen Petra.
- Karyanto, P. (2013). *Membangun Perilaku Masyarakat Arif Lingkungan Hidup*. Makalah Seminar Nasional Pendidikan Biologi FKIP UNS Suarkarta.
- Moreno, et al. (2011). Education For Environment Care: Contrough Ribution Through Human Ecology. *Procedia Social and Behavioral Sciences* 15 (2011)3912-3915.
- Munadi, Y. (2012). *Media Pembelajaran: Sebuah Pendekatan*. Jakarta: Gaung Persada Press.
- Rahmawati & Suwanda. (2015). *Upaya Pembentukan Perilaku Peduli Lingkungan Siswa Melalui Sekolah Adiwiyata di SMP Negeri 28 Jakarta*. *Jurnalmahasiswa.unesa.ac.id*.
- Riyana, C. (2008). *Konsep dan Aplikasi Media Pembelajaran*. Diunduh dari http://file.upi.edu/Direktori/./08_Media_Pembelajaran_pdf. diakses pada 28 Agustus 2018.
- Restanti, R. (2012). *Pembelajaran Biologi dengan Pendekatan CTL Melalui Model Formal dan Informal Hands On Activities Ditinjau dari Kreativitas Siswa dan Sikap Peduli Lingkungan*. Tesis. PPs UNS Surakarta. Tidak diterbitkan.
- Santoso, A, M. (2013). *Penerapan Model STS Melalui Eksperimen Lapangan dan Eksperimen Laboratorium Ditinjau dari Sikap Peduli Lingkungan dan Kreativitas Verbal Siswa*. Tesis. PPs UNS Surakarta. Tidak diterbitkan.
- Shadily. 2013. *Komik Pembelajaran*. <https://manusiapurbaa.wordpress.com/tag/komik-pembelajaran/>. Diakses pada tanggal 3 Mei 2018.
- Tatalovic, M. 2009. *Science comic as Tools for Science Education and Communication: a Brief, Exploratory Study*. *Journal of Science Communication*, 8 (4): 1-16. Tersedia di <http://jcom.sissa.it/archive/A02.pdf>
- Trianto. (2010). *Model Pembelajaran Terpadu Konsep, Strategi, dan Implementasinya dalam KTSP*. Jakarta : Bumi Aksara.
- Yulianti, T. (2014:1). *Pengembangan Modul Berbasis Problem Based Learning Materi Pencemaran Lingkungan untuk Membiasakan Sikap peduli Lingkungan Siswa SMPN 1 Bulu Sukoharjo*. Syarakarta: Universitas Sebelas Maret. Skripsi tidak dipublikasikan.