

The Effect of Coral Reef Comic Media Implementation on Students' Environmental Care Attitude in Indonesia

by Agus Ramdani Dkk

Submission date: 19-Jul-2021 06:04PM (UTC+0700)

Submission ID: 1621549514

File name: C6,-converted.docx (455.36K)

Word count: 2858

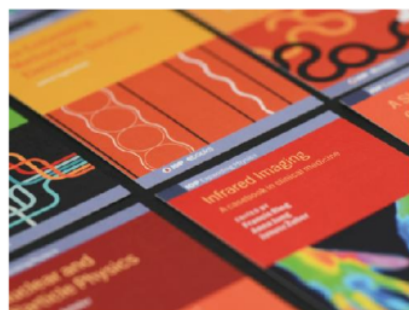
Character count: 15368

PAPER • OPEN ACCESS

The Effect of Coral Reef Comic Media Implementation on Students' Environmental Care Attitude in Indonesia

To cite this article: A Sukri *et al* 2020 *J. Phys.: Conf. Ser.* **1464** 012028

View the [article online](#) for updates and enhancements.



IOP ebooks™

Bringing together innovative digital publishing with leading authors from the global scientific community.

Start exploring the collection—download the first chapter of every title for free.

THE EFFECT OF CORAL REEF COMIC MEDIA IMPLEMENTATION ON STFDENTS' ENVIRONMENTAL CARE ATTITFDE IN INDONESIA

A Sukri^{1*}, I Efendi², R Hastuti³, A Ramdani⁴, M Lukitasari⁵

^{1,2}Department of Biology Education, IKIP Mataram, Indonesia

³Student of Biology Education Department, IKIP Mataram, Indonesia

⁴Department of Biology Education, Universitas Mataram, Indonesia

⁵Department of Biology, UNIPMA, Indonesia

◆corresponding author: akhmad Sukri@ikipmataram.ac.id

Abstract. The purpose of this study was to analyze students' environmental care attitudes towards coral reef ecosystems through the implementation of coral reef comic media in West Nusa Tenggara. This research was a quasi-experimental study that adopted and modified separate sample pretest-posttest designs. Two pilot schools originating from Sumbawa Regency, namely SMAN 1 Alas and SMA Muhammadiyah Alas were randomly selected with a total of 50 students. Attitudes of students' environmental care is collected through a questionnaire. Scores on the questionnaire were then converted into percentages then analyzed by using paired sample t test to see differences in students' attitudes before and after treatment at each school, and independent sample t-test to see differences in student attitudes between observational schools. The results showed that (1) there were differences in the attitudes of students before and after being treated using the coral reef comics media in each observation school ($p < .05$), and (2) there were differences in the attitudes of students' environmental care between the two observation schools ($p < .05$). Based on the results of the study it can be concluded that (1) the implementation of coral reef comic media can increase students' positive attitudes about the environment especially the coral reef ecosystem, (2) students at schools that are geographically close to the coast tend to have a higher caring attitude than students at schools whose geographical location is far from the coast.

1. Introduction

The attitude of environmental caring becomes an important part of education. The attitude of caring for the environment is an attitude to protect and prevent environmental damage [1], develop efforts to repair natural damage that already happened [2], and take actions to preserve the environment for sustainable development [3]. Environmental care is a character [2] and is very important in growing knowledge and awareness and attention to the environment [4]. Environmental care attitude is needed to reduce the possibility of damage to the environment [3], [5], reduce environmental problems [6], and instill a sense of responsibility to the environment [7].



Environmental care will indirectly have an impact on the preservation of natural resources because the attitude of caring will foster positive behavior towards the environment. The current attitude of caring for the environment is very much needed in dealing with environmental problems that are being faced by the Indonesian people, one of which is damage to coral reef ecosystems. The coral reef ecosystem is one of the leading resources [8] and is an asset owned by the Indonesian people [9]. Giyanto [10] report in 2017 revealed that 35.15% of Indonesia's coral reef ecosystems were severely damaged. The results of other studies also revealed that there was damage to coral reef ecosystems in various regions in Indonesia such as in Gili Indah, West Nusa Tenggara Province [11], [11][12], Raja Ampat, West Papua [13], [14], Karimunjawa Island, Central Java [15], Kupang Bay, East Nusa Tenggara [16], and South Sulawesi [17]. Damage to this coral reef ecosystem needs to be addressed because the cause of the damage is not only due to nature but also due to human activities [18].

The environmental damage by human activities is caused due to lack of awareness in protecting and preserving the environment. Therefore, the attitude of caring for the environment becomes very important in the growing awareness of the environment. One way to provide a good understanding of the environment can be done through education [2]. Students as part of the education community must get environmental education to change behavior and ways of thinking, so they can be a savior of future environmental damage [19]. This environmental education model can be in the form of instilling environmental attitudes that need to be applied as early as possible to students [20]. Efforts to improve students' attitudes to care for the environment can be done through the implementation of learning media that can be intriguing and interesting for students [19], one of which is comic media.

The use of comic media in learning can develop literacy, critical thinking, problem solving and creative activities of students [21], comic media can inspire students to take responsible actions and provide solutions to environmental problems both locally and globally [22]. Recent research results reveal that the use of comic media can improve learning outcomes and attitudes to care for students' environment [23]. The use of comic media in this study is different from previous studies. The comic media that is developed is about Indonesia's superior resource, namely the ecosystem of coral reefs. Therefore, the results of this study will not only strengthen previous research but also will reveal how students' care attitudes related to coral reef ecosystems in Indonesia. This article describes the results of the implementation of comic media and their influence on students' environmental care attitudes.

2. Methodology

This study adopted and modified the separate sample pretest-posttest design [24]. The subjects of this study were high school students in Sumbawa Island, West Nusa Tenggara Province, namely SMAN 1 Alas and SMA Muhammadiyah Alas. The two experimental schools were chosen randomly with the total number of students of 50 people. Both schools were given the same treatment, namely using coral reef comic media. The attitude of environmental care is collected through a closed questionnaire consisting of 25 statements that have a score of a range of 1-4. Scores on the questionnaire were then converted into percentages [25]. To see differences in students' attitudes before and after treatment, a

paired sample t-test analysis was performed [26], while to see differences in student attitudes between observational schools a independent sample t-test [27] was conducted.

3. Results and Discussion

To find out the difference in students' environmental care attitudes before and after treatment, a paired sample t-test was conducted. But previously the normality and homogeneity of data had been tested as a prerequisite test. The results of the analysis of normality and homogeneity of the data are shown in Tables 1 and 2 while the results of paired sample t-tests are shown in Table 3.

Table 1. Data normality test results

Variable	School	Kolmogorov-Smirnov		
		statistic	df	sig
Student's attitude	SMAN 1 Alas	.134	31	.164
	SMA Muhammadiyah	.170	19	.150

Table 2. Homogeneity of variance test results

		Levene statistic	df	sig
Student's attitude	Based on Mean	.989	48	.325
	Based on Median	.654	48	.423
	Based on Median and with adjusted df	.654	47.997	.423
	Based on trimmed mean	.975	48	.328

The results of the analysis in Table 1 show that the probability value is greater than 0.05 ($p > .005$), this shows that the data of students' environmental care attitudes for the two schools of observation are normally distributed. The same results are also shown in Table 2 which reveals that the probability value is greater than 0.05 ($p > .005$) which means that students' environmental care attitude data has a homogeneous variance for both school observations. After conducting a normality and homogeneity test, the next step is to do a paired sample t-test (Table 3). A paired sample t-test analysis was performed to determine whether there were differences in student attitudes before and after treatment using coral reef comics was given.

Table 3. Paired sample t-test results

School	Variable	N	t	df	Standart Deviation	Std. Error Mean	Sig (2-tailed)
SMAN 1 Alas	Pretest-posttest	31	-5.445	30	7.05859	1.26776	.000
SMA Muhammadiyah	Pretest-posttest	19	-3.188	18	10.86520	2.49265	.005

The analysis results in Table 3 reveal that the probability value is smaller than 0.05 both for SMA 1 Alas ($p = .000 < .05$) and for SMA Muhammadiyah Alas ($p = .005 < .05$). These results indicate that there are differences in the attitude of students before and after treatment using coral reef comic media where the average value of environmental care attitudes of students after being given treatment is higher than before treatment was given to the two experimental schools. This results

revealed that the intervention of coral reef comic media in learning could increase students' caring attitude towards reef ecosystems coral.

Several factors are thought to be the cause of the increase of students' attitude of environmental care after being treated using coral reef comics media, i.e. First (1), comics are arranged with material levels ranging from the simplest to the most complex material and adapted to students' cognitive levels. This is important to make it easier for students to understand the structure of comics and the content contained there in [28]. By delivering learning that is done clearly, coherently, and interestingly, it will make learning communication to the maximum [29]. Second (2), the coral reef comics media is presented contextually, so that the material in the comics is a representative picture of the conditions that occur in the field. The content aspect in comics also gets a model of green education through the presentation of real problems and alternative solutions in solving these environmental problems, so it can encourage positive students' attitudes towards the environment. Third (3), comics are arranged with attractive drawing designs and are easily understood by students. This is important so students are motivated in learning [30], the learning atmosphere is more fun and makes students learn more actively [31].

To find out the differences in students' attitudes in each school of observation, an analysis of the independent sample t-test is shown in Table 4.

Tabel 4. Independent sample t test result

Variable	Levene's Test for Equality Of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Mean Difference	Std. Error Difference	Sig (2-tailed)
Student's attitude	.989	.325	3.908	48	5.99066	1.53277	.000

The results of the analysis in Table 4 revealed that there were differences in student attitudes in the two trial schools. Furthermore, these results revealed that the mean attitudes of students at SMAN 1 Alas (mean = 85.81) were higher than that of SMA Muhammadiyah Alas (mean = 79.81). A temporary assumption that causes differences in student attitudes in the two trial schools is a geographical location. SMAN 1 Alas is a school located close to the coast, while SMA Muhammadiyah Alas has a geographical location far from the coast. Because the location of the school is close to the coast, students can have better knowledge about coral reefs compared to other schools located far from the coast. However, further research is needed to prove and strengthen this assumption.

4. Conclusion

Based on the results of the study, it can be concluded that there are differences in the attitudes of students before and after being given treatment using coral reef comics media at the two observation schools. This indicates that the implementation of coral reef comic media can enhance students' positive attitudes about the environment. Besides, students at schools that have a geographical location close to the coast tend to have a higher caring attitude than students at schools whose geographical location is far from the coast.

5. Acknowledgment

The authors would like to express their sincere gratitude to the Ministry of Research and Higher Education of the Republic of Indonesia for funding research with contract number 0286/L8/KM/2019.

6. References

- [1] Badarudin 2018 Peningkatan Sikap Peduli Lingkungan dan Prestasi Belajar IPA menggunakan Model Problem Based Learning Berbasis Literasi pada Subtema Lingkungan Tempat Tinggalku di Kelas IV MI Muhammadiyah Kramat *Junal Pendidik. Dasar Indones.* 50–6
- [2] Al-anwari A M 2014 Strategi Pembentukan Karakter Peduli Lingkungan Di Sekolah Adiwiyata Mandiri *Ta'dib* **19** 227–52
- [3] Mahlianurrahman M 2017 Pengembangan Perangkat Pembelajaran SETS Untuk Meningkatkan Pemahaman Konsep dan Sikap Peduli Lingkungan Siswa Sekolah Dasar *Prem. Educ. J. Pendidik. Dasar dan Pembelajaran* **7** 58
- [4] Desfandi M 2015 Mewujudkan Masyarakat Berkarakter Peduli Lingkungan Melalui Program Adiwiyata *SOSIO Didakt. Soc. Sci. Educ. J.* **2** 31–7
- [5] Purnamasari I 2019 Perbandingan Sikap Peduli Lingkungan antara Mahasiswa yang Mempelajari Matakuliah PKLH dengan Mahasiswa yang tidak Mempelajari Matakuliah PKLH FKIP Universitas Sriwijaya *Bhineka Tunggal Ika* 1117–33
- [6] Rahayu R 2017 Peningkatan Sikap Peduli Lingkungan Siswa Melalui Metode Tugas dalam Pembelajaran IPS *International Journal Pedagogy of Social Studies.* **1** 145–163
- [7] Djuandi D 2016 Pengaruh Pembelajaran Berbasis Masalah Terhadap Sikap Siswa Pada Lingkungan (Studi Eksperimen Quasi Pada Mata Pelajaran Geografi di SMA Negeri 1 Purwadadi) *J. Geogr. Gea* **16** 24
- [8] Arini D I D 2013 Potensi Terumbu Karang Indonesia “ Tantangan Dan Upaya Konservasinya ” (The Challenge and Conservation Efforts of Indonesian Coral Reefs) wilayahnya adalah lautan . Selain diberikan gelar sebagai negara bahari , dikenalebagai negara yang kaya akan kerag *INFO BPK Manad.* **3** 147–73
- [9] Darsono P 1999 Pemanfaatan Sumber Daya Laut dan Implikasinya Bagi Masyarakat Nelayan *Oseana* **XXIV** 1–9
- [10] Giyanto A M, Hadi T A, Budiyo A, Hafizt M, Salatalohy A and Iswari M.Y 2017 Status Terumbu Karang Indonesia 2017 Jakarta: Pusat Oseanografi LIPI
- [11] Setiawan F, Muttaqin A, Tarigan S , Muhidin M, Hotmariyah M, Sabil A and Pinkan J 2017 Dampak Pemutihan Karang Tahun 2016 Terhadap Ekosistem Terumbu Karang: Studi Kasus Di TWP Gili Matra (Gili Air, Gili Meno dan Gili Trawangan) Provinsi NTB *JFMR-Journal Fish. Mar. Res.* **1** 39–54
- [12] Aulia S, Pardede S, Setiawan F, Hernawati, Aviandhika S, Hotmariyah, Suniri, Surjadi, W T, Saha, E P and Ardiansyah F 2018 Status Ekosistem Terumbu Karang di Nusa Tenggara Barat. *Prosiding Seminar Nasional Biologi Wallacea*

- [13] Sagai B, Roeroe K and Manembu I 2017 Kondisi terumbu karang di pulau Salawati Kabupaten Raja Ampat Papua Barat *J. Pesisir Dan Laut Trop.* **2** 47-52
- [14] Witomo C M, Firdaus M, Soejarwo, P A, Muawanah U, Ramadhan A, Pramoda R and Koeshendrajana S 2017 Estimasi Kerugian Ekonomi Kerusakan Terumbu Karang Akibat Tabrakan Kapal Caledonian Sky di Raja Ampat. *Buletin Ilmiah Marina Sosial Ekonomi Kelautan dan Perikanan*, **1** 7-19
- [15] Yusuf M 2013 Kondisi Terumbu Karang Dan Potensi Ikan Di Perairan Taman Nasional Karimunjawa, Kabupaten Jepara *Bul. Oseanografi Mar.* **2** 54–60
- [16] Foenay R I, Mardani N K and Wiryatno J 2015 Penilaian Efektifitas Pengelolaan Taman Wisata Alam Laut (TWAL) Teluk Kupang Nusa Tenggara Timur. *ECOTROPIC: Jurnal Ilmu Lingkungan (Journal of Environmental Science)*, **6** 133-138
- [17] Ayyub F R, Rauf A and Asni A 2018 Strategi Pengelolaan Ekosistem Terumbu Karang di Wilayah Pesisir Kabupaten Luwu Timur. *Jurnal Pendidikan Teknologi Pertanian*, **4** 56-65
- [18] Uar N D, Murti S H and Hadisusanto S 2016 Kerusakan Lingkungan Akibat Aktivitas Manusia pada Ekosistem Terumbu Karang. *Majalah Geografi Indonesia*, **1** 88-96
- [19] Kasi K, Sumarmi and Astina K 2018 Pengaruh model pembelajaran service learning terhadap sikap peduli lingkungan *J. Pendidik. Teor. Penelitian, dan Pengemb.* **3** 437–40
- [20] Yeni L F 2015 Pengembangan Media Film Berliterasi Lingkungan Untuk Meningkatkan Hasil Belajar dan Kepedulian Siswa Terhadap Lingkungan. *SEMIRATA 2015*, **1** 536-545
- [21] Pelton L F and Pelton T 2009 The Learner as Teacher: Using Student Authored Comics to “Teach” Mathematics Concepts *EdMedia World Conf. Educ. Media Technol.* 1–9
- [22] Toledo M A, Yangco R T and Espinosa A A 2014 Media Cartoons: Effects on Issue Resolution in Environmental Education *Int. Electron. J. Environ. Educ.* **4** 19–51
- [23] Munawwaroh E L, Priyono B and Ningsih M R 2018 The Influence of Science Comic Based Character Education on Understanding the Concept and Students’ Environmental Caring Attitude on Global Warming Material *J. Biol. Educ.* **7** 167–73
- [24] Campbell, D T and Stanley, J C 2015 Experimental and Quasi-experimental Designs for Research. Ravenio Books
- [25] McCluskey A and Lalkhen A G 2007 Statistics I: Data and correlations *Contin. Educ. Anaesthesia, Crit. Care Pain* **7** 95–9
- [26] Xu M, Fralick D, Zheng J Z, Wang B, Tu X M and Feng C 2017 The differences and similarities between two-sample t-test and paired t-test *Shanghai Arch. Psychiatry* **29** 184–8
- [27] Gerald B 2018 A Brief Review of Independent, Dependent and One Sample t-test *Int. J. Appl. Math. Theor. Phys.* **4** 50
- [28] Sukri A, Rizka M A, Sakti H G, Maududy K U and Hadiprayitno G 2018 Designing an integrated curriculum based on local primacy and social reconstruction perspectives of West Nusa Tenggara, Indonesia *J. Pendidik. IPA Indones.* **7** 467–75
- [29] Haka, N B and Suhandi, S 2018 Pengembangan Komik Manga Biologi Berbasis Android Untuk Peserta Didik Kelas Xi Ditingkat SMA/MA. *Journal Of Biology Education*, **1** 17-32

- [30] Danaswari, R, Kartimi, Roviati E 2013 Pengembangan Bahan Ajar Dalam Bentuk Media Komik Untuk Meningkatkan Hasil Belajar Siswa Kelas X Sman 9 Cirebon Pada Pokok Bahasan Ekosistem *Sci. Educ.* **2** 93-110
- [31] Pratama I, Gunarhadi G and Priyono P 2017 Pengaruh Penggunaan Media Grafis Komik Terhadap Prestasi Belajar Ipa Siswa Tunarungu Pada Materi Fungsi Alat-Alat Tubuh Siswa Kelas V *Paedagogia* **20** 1-10

The Effect of Coral Reef Comic Media Implementation on Students' Environmental Care Attitude in Indonesia

ORIGINALITY REPORT

7%

SIMILARITY INDEX

%

INTERNET SOURCES

7%

PUBLICATIONS

%

STUDENT PAPERS

MATCHED SOURCE

1

Dian Hartika, Sariwulan Diana, Ana Ratna Wulan. "Relationship between naturalist intelligence with environmental attitude", AIP Publishing, 2019

Publication

2%

2%

★ Dian Hartika, Sariwulan Diana, Ana Ratna Wulan. "Relationship between naturalist intelligence with environmental attitude", AIP Publishing, 2019

Publication

Exclude quotes On

Exclude bibliography On

Exclude matches < 5 words

The Effect of Coral Reef Comic Media Implementation on Students' Environmental Care Attitude in Indonesia

GRADEMARK REPORT

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8