



# Strengthening the Character of Caring for the Environment in Elementary Schools through Ecoprint Artwork

Arief Setyo Nugroho<sup>1\*</sup>, Bambang Sumardjoko<sup>2</sup>, Anatri Desstyia<sup>3</sup>, Minsih<sup>4</sup>, Choiriyah<sup>5</sup> 

<sup>1,2,3,4,5</sup> Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

## ARTICLE INFO

### Article history:

Received April 17, 2023

Accepted August 15, 2023

Available online August 25, 2023

### Kata Kunci:

Karakter Peduli Lingkungan, Karya Ecoprint, Penguatan Karakter

### Keywords:

Environmental Care Character, Ecoprint Work, Strengthening character



This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2023 by Author. Published by Universitas Pendidikan Ganesha.

## ABSTRAK

Perkembangan teknologi berdampak pada penurunan kualitas lingkungan. Kondisi menunjukkan banyak tanaman di taman sekolah yang tidak dirawat dengan baik, sampah bekas kemasan makanan dan minuman dibiarkan berserakan. Penelitian tentang penguatan karakter peduli lingkungan sudah banyak dilakukan namun masih sebatas pada substansi pembelajaran dan kegiatan bersih-bersih sekolah. Tujuan penelitian ini adalah menganalisis hasil penguatan karakter peduli lingkungan melalui karya seni ecoprint di sekolah dasar. Untuk mengungkap permasalahan dalam penelitian menggunakan pendekatan deskriptif kualitatif. Untuk kebutuhan pengumpulan data, jenis instrumen yang digunakan adalah wawancara dan observasi. Peneliti menggunakan teknik triangulasi dan sumber untuk menguji keabsahan data. Penelitian dan hal ini dilakukan dengan menggunakan teknik analisis data interaktif, yaitu pengumpulan data, reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa implementasi penguatan karakter peduli lingkungan melalui karya seni ecoprint di sekolah dasar secara umum dapat disimpulkan bahwa penguatan karakter peduli lingkungan melalui karya seni ecoprint memiliki persentase keberhasilan sebesar 88,32%. Selain tujuan utama memperkuat karakter peduli lingkungan, mempunyai dampak lain yaitu mampu membangkitkan jiwa wirausaha mahasiswa dengan menghasilkan produk lukisan dan kain bermotif daun yang dapat mempunyai nilai jual ekonomis.

## ABSTRACT

Technological developments have an impact on decreasing environmental quality. Conditions show that there are a lot of plants in the school garden that are not well cared for, trash used for food and drink packaging is left scattered. There has been a lot of research on strengthening the character of caring for the environment but it is still limited to the substance of learning and on school cleaning activities. The purpose of this study was to analyze the results of strengthening the character of caring for the environment through ecoprint artwork in elementary schools. To reveal the problems in research using a qualitative descriptive approach. For data collection needs, the types of instruments used are interviews and observations. Researchers use triangulation techniques and sources to test the validity of the data. Research on this is done using interactive data analysis techniques, namely data collection, data reduction, data presentation, and drawing conclusions. The results of the study showed that the implementation of strengthening the character of caring for the environment through ecoprint artwork in elementary schools in general, it can be concluded that strengthening the character of caring for the environment through ecoprint artwork has a success percentage of 88.32%. Apart from the main goal of strengthening the character of caring for the environment, it has another impact, namely being able to awaken the entrepreneurial spirit of students by producing paintings and cloth products with leaf motifs that can have economic selling value.

## 1. INTRODUCTION

The environment is a source of life for humans. No matter how much money one has, one cannot live without a supportive environment. Humans need air to breathe from the environment, need water to drink from the environment as well as food ingredients all come from the environment (Cohen et al., 2020; Halili, 2019). As opinion previous study state the environment as everything that is around living things that affect their lives (Effendi, 2018). Activities carried out by humans during their lives directly or indirectly affect their environment. Likewise with the environment that has an influence on the humans who live around it. Thus it can be said that humans will have a quality life if supported by a quality environment as well. Along with technological developments have an impact on decreasing environmental quality. The accumulation of inorganic waste as a result of the creation of modern technology is always increasing every day and it is difficult to destroy it (Christian & Prasida, 2018; Salleh et al., 2020). The use of chemical drugs in all areas of human life also contributes to the decline in environmental quality. Likewise combustion exhaust products. Conditions like this will certainly degrade environmental

\*Corresponding author.

E-mail addresses: [q200210031@student.ums.ac.id](mailto:q200210031@student.ums.ac.id) (Arief Setyo Nugroho)

functions in a sustainable manner and will have an adverse impact on the survival of living things, including humans. As the opinion which states the exploitation by humans of the natural environment results in a gap in the relationship between humans themselves and also with their environment (Vattam et al., 2011). This results in floods, landslides, erosion, forest fires, acid rain, pollution everywhere, garbage piles up, the emergence of various diseases, erratic weather changes, global warming, and so on (Ahmadalipour & Moradkhani, 2018; Suryawati et al., 2020). If examined more deeply, changes in environmental quality as described above occur due to human actions. Whether we realize it or not, almost every day humans contribute to the decline in environmental quality. In everyday life, whether at home, at school, at work or at a tourist spot, of course humans cannot be separated from what is called garbage. The problem is that some people still dispose of the waste indiscriminately. Conditions like this certainly greatly affect the cleanliness of the environment (Dishon & Gilead, 2020; Hau et al., 2020). The conditions found at SD Negeri 3 Sukoharjo, Wonogiri Regency, were not much different. Observations showed that there were many plants in the school garden that were not well cared for. Moreover, entering the dry season it looks arid and there are even some plants that are left to die. This condition indicates that there is no awareness of students to care for and protect the plants around them. Likewise, used food and beverage packaging trash was left strewn around the school environment. Even though trash cans have been provided in each class. This condition will be cleared by students when the teacher has given an order. This means that this student's concern has not been born from their hearts. They will clean up when there is an order. When there is no order, they are indifferent to the existing environmental conditions. This is in line with the results of research which states that condition ii is triggered by a lack of awareness of some students and a lack of habituation at home (Yudianti et al., 2020).

The lack of awareness of environmental quality makes it a picture if students do not yet have awareness that the environment is the main source of human life. This condition requires a firm step in order to equip the next generation with the character of caring for the environment. The provision of the character of caring for the environment through formal channels since children are at the elementary school level is an important foundation for the continuity of environmental quality later when they are adults (Birhan et al., 2021; Utsman et al., 2022). (Jamhariani 2019) Previous study states that the inculcation of environmental care character education is shown by actions and actions to always try to prevent damage to the surrounding environment (Jamhariani, 2019). This statement is in line with the opinion which states that elementary school is the most basic institution so that it is the starting point in the formation of the character of students with the aim that the character values to be built are well recorded in the minds of students (Ituma, 2011). The need for adjustments to the Javanese character education curriculum which includes the values of honesty, humility, courtesy and cooperation (Ghozali et al., 2021; Surani et al., 2016). However, instilling character education is not easy, requiring planning, implementation and evaluation stages. Caring for the environment is one of the eighteen cultural and character education values of the nation. The environment is an attitude and action that always tries to prevent damage to the surrounding natural environment, and develops efforts to repair the natural damage that has already occurred. The character of caring for the environment is not just a theory that is memorized by students, but in the form of an attitude that is carried out with real activities in protecting the environment where students are. This attitude is also manifested in real action in an effort to restore the environmental damage that has occurred. The formation of the Caring for the environment character aims to train students to care for their environment from an early age (Liyun et al., 2018; Suryani et al., 2019). Caring for the environment character development to shape and grow the character of early childhood. Characters like this are expected to be able to answer the challenges of issues of environmental damage as they are happening at this time so as to realize the continuity of nature is maintained. This character needs to be built in children so that they can have a sensitive attitude towards the social and natural environment. This character will make children understand the condition of fellow human beings and their natural environment. It is undeniable that these two things are a unity that goes hand in hand (Azzet, 2013; Wakhidah & Adiarti, 2014). Cultivating character in students begins with questions that guide students so as to generate enormous student curiosity. In cultivating the character of caring for the environment in schools, especially at the elementary school level, real examples are needed considering that children are still thinking abstractly (Dessty, 2015; McBride et al., 2013).

One strategy that can be done is to introduce environmentally friendly artwork such as the ecoprint coloring technique. Ecoprint is one of the contemporary textile dyeing techniques discovered in the 20th century. The dyeing technique uses natural materials such as flowers, stems, leaves and roots which do not produce waste that is harmful to the environment. The development of the science of coloring the ecoprint technique is an alternative way to support the growth of the world of education and the world of the textile industry so that it can increase knowledge to support activities related to education and industry which still pay attention to the environmentally friendly side (Herlina et al., 2018;

Hikmah & Retnasari, 2021). The use of color pigments produced from turmeric, suji leaves, and teak leaves includes the ecoprint technique, which is a coloring technique on cloth using natural dyes. The formation of a caring character for the environment can be started from the school environment (Ismail, 2021; Pressinawangi & Widiawati, 2014). In the opinion state that education caring for the school environment is expected to provide benefits both cognitively, affectively or motorically (Saifulloh et al., 2020). Art-related research *ecoprint* expect the emergence of the entrepreneurial spirit of students to take advantage of the product *ecoprint* from an economical point of view.

## 2. METHOD

In order to obtain guidelines for the steps in disclosing the problems in the research, a research approach was determined, namely descriptive qualitative. The rationale for this determination is because the data obtained from the respondents is in the form of oral data from what happened, not in the form of numerical data. The qualitative descriptive method aims to describe, describe, explain, explain and answer in more detail the problems to be studied by studying as much as possible an individual, a group or an event (Komariah & Satori, 2012; Sugiyono, 2016). Qualitative research is research conducted to analyze social life by describing the social world from the point of view of the interpretation of individuals (informants) in natural settings. The data used in this research is primary data. Primary data is data collected by researchers themselves directly from the first source. The data source referred to in research is the subject from which data can be obtained. The subjects of this study were teachers, students, and the principal of SD Negeri 3 Sukoharjo who are responsible for managing learning. The object of this study is strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency. For data collection needs, the types of instruments used are: (1) interviews and (2) observation. Interview is a data collection technique through an oral question and answer process that takes place in one direction, meaning that the questions come from the interviewing party and the answers are given by the interviewee. Interview is a way to find out certain situations in the classroom seen from another point of view". In-depth interviews were conducted many times and required a long time with the information available at the location. Observation is the activity of paying attention to an object using all the senses. Data collection instrument is show in Table 1.

**Table 1.** Data Collection Instruments

No	Instrument	Research Subject	Object of Research
1	Interview	Principal of SDN 3 Sukoharjo Classroom teacher	Explore information related to student character in the context of caring for the environment Exploring information related to learning to make ecoprint artwork can strengthen the character of students who care about the environment
2	Observation	Student	Investigation of students' environmental care character during the learning process through ecoprint artwork

The data analysis used was descriptive qualitative data analysis, namely presenting the data collected during the research in a complete form with the presentation of words. The steps taken include 4 stages, namely collecting data, adjusting data, presenting data and formulating conclusions, which is a complete chain of activities that are interrelated during, before and after the implementation of the research process. The environmental care indicators include: Using natural dyes derived from leaves, flowers or plant stems (partial) reference items using alum as a fixation agent so that the color sticks more firmly to the fabric; Love and willingness to take care of the plants around them. When using equipment with 3R principles is not require electricity and lots of water. Meanwhile, to determine the success of strengthening the character of caring for the environment if the process of strengthening the character of caring for the environment reaches more than 75%.

## 3. RESULT AND DISCUSSION

### Result

The character of Caring for the environment can be interpreted as an attitude and action that always tries to prevent damage to the surrounding environment, and increases efforts to repair the damage that has occurred to nature. In cultivating the character of caring for the environment in schools, especially at the elementary school level, real examples are needed considering that children are still

thinking abstractly. One strategy that can be done is to introduce environmentally friendly artwork such as the ecoprint coloring technique. The results of strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency, are as follows: (1) The character of caring for the environment does not use dangerous synthetic dyes. (2) The character of caring for the environment is an indicator of reducing the use of toxic chemicals. (3) Caring for the environment is an indicator of saving energy and water. (4) Caring for the environment is an indicator of caring for and caring for plants. (5) The character of Caring for the environment indicators reduce, reuse, and recycle. The results are presented by the authors in [Table 2](#).

**Table 2.** Observation of Strengthening the Character of Caring for the Environment

Indicator	Observation Aspect	Score	Score (%)
Characteristics Care for the environment indicators do not use harmful synthetic dyes	Thoroughly use synthetic dyes	1	3
	A small number use synthetic dyes	2	(100%)
	Do not use synthetic dyes	3	
Environmental care character indicators reduce the use of toxic chemicals	Many use chemicals for color fixation on fabrics	1	2
	Slight use of chemicals for color fixation on fabrics	2	(66.6%)
	Do not use chemicals for color fixation on fabrics	3	
Caring for the environment is an indicator of energy and water saving.	Many need water	1	3
	Little need water	2	(100%)
	No need for water	3	
Caring for the environment is an indicator of caring for and loving plants.	Never tend to the plants around them	1	4
	Rarely tend to the plants around them	2	(100%)
	Often tend to the plants around them	3	
	Always take care of the plants around them	4	
The character of Caring for the environment is an indicator of reduce, reuse, and recycle	Not using equipment with the 3R principle	1	3
	A small number use equipment with the 3R principle	2	(75%)
	Most of them use equipment with the 3R principle	3	
	The whole uses equipment with the 3R principle	4	
<b>Score Maks</b>		15	
<b>Success Percentage</b>			88.32%

**Table 3.** Results of Strengthening the Character of Caring for the Environment

No	Strengthening the Character of Caring for the Environment Through Ecoprint Artwork		%	Note
	Environmental Care Character Achievements	Indicator		
1	Characteristics Care for the environment indicators do not use harmful synthetic dyes	Using natural dyes derived from leaves, flowers or plant stems	100	Achieved
2	The character of Caring for the environment is an indicator of reducing the use of toxic chemicals	Using alum as a fixation agent so that the color sticks more firmly to the fabric	66.6	TnayAchieved
3	Caring for the environment is an indicator of saving energy and water.	Does not require electricity and lots of water	100	Achieved
4	Caring for the environment is an indicator of caring for and caring for plants	Love and willingness to take care of the plants around them	100	Achieved
5	The character of Caring for the environment is an indicator of reduce, reuse, and recycle	Using equipment with the 3R principle	75	Achieved

The observation [Table 2](#) shows the results of each indicator with a percentage for each aspect. In more detail, the level of achievement of the results of strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo is shown in [Table 3](#) with indicators that become aspects of the character of caring for the environment. Based on [Table 3](#) strengthening the character of caring for the environment through works of *artecoprint* in SD Negeri 3 Sukoharjo it was stated that it was achieved if it covered the specified standard, namely 75%. There is one indicator of the character of caring for the environment that is not achieved and is below the standard of 66.6%, namely the use of toxic chemicals because in these activities they still use alum as a fabric fixative so that the color sticks better. On average, the level of achievement of strengthening the character of caring for the environment through works of *artecoprint* in SD Negeri 3 Sukoharjo it has reached the standard (88.32%) based on the specified environmental care character achievement indicators. In addition to the 5 achievement indicators for these characters, the activities to strengthen the character of caring for the environment at SD Negeri 3 Sukoharjo also produced works of *art.ecoprint* generated by students. The results of the students' work from these activities were in the form of leaf motif fabrics with the natural creativity of each student.

## Discussion

### ***The character of Caring for the environment indicators does not use harmful synthetic dyes***

The results of the implementation of strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency, were first able to cultivate the character of caring for the environment not using synthetic dyes. Based on the information obtained from the accompanying teacher, batik waste using synthetic indigosol, naptol, remasol, and similar dyes is classified as not environmentally friendly. If the wastes flow into the soil, these materials certainly damage the soil ecosystem. This is because soil bacteria are unable to degrade chemicals. Even if carcinogenic substances enter the body, they can endanger human health ([Rahayu & Setiadi, 2023](#); [Song, 2014](#)). Besides being harmful to humans, naptol and indigosol dyes can cause organisms in the water to die. Based on information from the accompanying teacher for the implementation of ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency, natural dyes come from leaves, flowers or plant stems that are easy to find in the student environment. This activity will certainly have a positive impact on students related to environmental control. Students receive new knowledge about natural dyes in the process of making batik. It is hoped that this activity will foster a culture of caring for the environment by applying natural dyes as a substitute for synthetic dyes which are harmful to the environment ([Dewi et al., 2017](#); [Harun et al., 2020](#)). Based on the results of observations in this activity students used leaves they brought from their respective home environments such as teak leaves, guava, manga and others. This activity has directly contributed to the nation's generation in saving the environment from damage caused by the use of synthetic dyes that are harmful to the environment. As conveyed by the accompanying teacher that this activity aims to provide awareness to students of the importance of every action taken by humans for the impact it causes. As the decision to use dyes even a little will have an impact on the environment. Chemical waste from dyes is often highly toxic - Azo dyes which account for 60-70% of all dyes used become carcinogenic when broken down and metabolized ([Haj Kacem et al., 2018](#); [Üce & Ceyhan, 2019](#)). And the binders used, which can contain formaldehyde and chlorine compounds, are no better – both of which have been linked to allergies and cancer, not only harmful to humans but also to the environment.

### ***The character of caring for the environment is an indicator of reducing the use of toxic chemicals***

The results of the implementation of strengthening the Caring for the environment character through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency were able to cultivate the Caring for the environment character not using toxic chemicals. As we know that many industrial processes use toxic chemicals. Of course, this material will dissolve in water and eventually pollute the environment if absorbed by plants, it will eventually have an impact on animals and humans ([Cohen et al., 2020](#); [Handayani et al., 2021](#)). The introduction of ecoprint to students of SD Negeri 3 Sukoharjo Wonogiri Regency has provided students with experience that in producing something you don't have to use toxic chemicals. Based on the results of observations, the chemicals used in the ecoprint process are only alum as a fixation agent so that the color sticks more firmly to the fabric. As stated by one of the accompanying teachers, in this modern era, it is time to develop ways to replace toxic materials and their production methods in ways that are more sustainable and reduce the impact that damages health and the environment. The people who suffer the worst from toxic chemical pollution are the workers in the industry itself. In addition, it is the people who live nearby and those who cannot move to a safer location. The best solution is to ban the use of highly toxic substances and to impose strict regulations on the use of toxic substances where necessary and there is no safer substitute. The action taken at SD Negeri 3

Sukoharjo, Wonogiri Regency, was by introducing ecoprint as a vehicle for developing the character of caring for the environment. Has introduced students to the importance of using environmentally friendly materials. Eco-friendly is another word for harmless to the environment (Baker et al., 2014; Gumbira & Harsanto, 2019). In terms of product production, everything has some sort of negative impact on the environment (such as water use, energy and product waste) and that means no product really fits the definition of eco-friendly. Environmentally friendly goods and materials are goods that are not harmful to the environment. These products promote green living or green manufacturing methods that reduce the amount or type of resources used.

#### ***Caring for the environment character as an indicator of saving energy and water***

The results of the implementation of strengthening the Caring for the environment character through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency were able to cultivate the Caring for the environment character as indicators of saving energy and water. Based on information from the accompanying teacher that the ecoprint process does not require electricity, it is different from the use of synthetic dyes, which must use a lot of electricity and water in the process. This character is important to be instilled in students at SD Negeri 3 Sukoharjo, Wonogiri Regency in order to realize the character of caring for the environment. Excessive use of electricity and water will certainly disrupt the sustainability of the environment in sustaining human life. Bearing in mind that almost every year there is always a crisis of clean water and a shortage of electricity supply. Based on information from one of the accompanying teachers, this character states that energy saving or energy conservation is an act of reducing the amount of energy used. Saving energy means not using electrical energy for something that is not useful. Energy savings can be achieved by using energy efficiently where the same benefits are obtained by using less energy, or by reducing consumption and activities that use energy. Energy savings can lead to reduced costs, as well as increased values for the environment, national security, personal security and convenience. Organizations as well as individuals can save costs by saving energy, while commercial and industrial users can increase efficiency and profits by saving energy

#### ***Caring for the environment is an indicator of caring for and caring for plants***

The results of the implementation of strengthening the Caring for the environment character through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency were able to cultivate the Caring for the environment character as an indicator of caring for and caring for plants. As it is known that ecoprint uses raw materials from plants, thus students of SD Negeri 3 Sukoharjo will directly understand and recognize the benefits of plants for humans. The impact of course will bring out the attitude in students to love more and the willingness to take care of the plants around them (Kumandaş et al., 2018; Prodjosantoso & Hertina, 2019). As conveyed by the supervising teacher that before students take part of the plants for ecoprint needs, the teacher asks students to identify these plants.

As conveyed by the supervising teacher, caring for plants is very important to instill in students. Caring for plants is one of our manifestations of caring for nature. In fact, nature has given us everything we need to live, at least by caring for plants we can be grateful to nature. Based on the results of observations, this activity has trained students to interact with nature. The existence of this interaction will certainly bring students in the form of a positive reciprocal relationship. To make students aware of the importance of trees in life. An effort that should be made to show our concern for the Earth and the life on it. Why is that, because trees offer a lot of life, both to humans, animals and plants. As conveyed by the supervising teacher, this character will make students aware that trees produce oxygen (O<sub>2</sub>) during the day. This oxygen is a source of life, an essential compound element that is needed by humans and animals in the process of respiration, when breathing. Lack of oxygen supply, humans and animals are already suffering from pain and shortness of breath. Moreover, without oxygen at all, humans and animals cannot carry out their life processes.

#### ***The character of Caring for the environment indicators reduce, reuse, and recycle***

The results of the implementation of strengthening the character of Caring for the Environment through works of artecoprint in SD Negeri 3 Sukoharjo, Wonogiri Regency, was able to cultivate the Caring for the Environment indicator character reduce, reuse, and recycle. This can be seen in the implementation of ecoprints at SD Negeri 3 Sukoharjo, Wonogiri Regency, students using equipment with the 3R principle. Based on the results of observations, students brought used cans to place leaves, brought used bottles to place water as well as the cloth used was clothes that were still suitable for use. Information obtained from accompanying teachers states that this step was taken so that students are familiar with the 3R principles. The results of the research above are in accordance with the opinion state schools can play a more active role in creating areas that care about the environment and can create students who are aware

of the environment (Afriyeni, 2018). Furthermore other study mentions that a child who has concern for the environment will have a positive effect on the survival of the surrounding environment and last until he is an adult, because positive habits are carried out in daily activities in children from an early age will continue until he grows up (Wulandhari et al., 2019). Regarding the ecoprint method used, it is in line with the opinion. Previous study stated that this product is very environmentally friendly because it uses natural ingredients (Hikmah & Retnasari, 2021). With this product, we hope to reduce textile waste which is very troubling to the community. Exploration of ecoprinting for sustainable fashion products based on the problems of the textile industry which pollutes the environment (Herlina et al., 2018; Pressinawangi & Widiawati, 2014). Starting from choosing materials that are not environmentally friendly, using synthetic dyes, to production processes that use large amounts of water and energy. The principles of sustainable design can be used as the basis for the production process of textile products which will be able to produce sustainable fashion products. An attitude of caring for the environment means a form of behavior that cares for, maintains, repairs, and prevents environmental damage which is manifested in everyday life. Furthermore previous study defines Caring for the environment as affection for all things both in the form of objects and conditions that exist around living things and affects their survival so that they have the will to care for the environment (Naziyah et al., 2021). Strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo has exceeded the specified achievement indicators. On the other hand, this activity cannot be left out, it also produces natural works of art as a result of student creativity. From these results it allows art ecovering as a feature of SD Negeri 3 Sukoharjo, it produces natural patterned fabric products. Fine art works of coloring cloth with the ecovering This has the potential to awaken the entrepreneurial spirit of students, because the original elements of natural materials are believed to be able to make the work have a selling value.

#### 4. CONCLUSION

The results of strengthening the character of caring for the environment through ecoprint artwork at SD Negeri 3 Sukoharjo, Wonogiri Regency, are as follows; students with environmental care character indicators do not use dangerous synthetic dyes because in coloring students use materials from plants. The character of caring for the environment indicators of reducing the use of toxic chemicals, students do not use chemicals in color fixation, only use Tawaas; Character Caring for the environment energy and water saving indicators, students in these activities do not need a lot of water. Caring for the environment is an indicator of caring for and caring for plants, students after being given reinforcement become more concerned about caring for plants in the environment of SD Negeri 3 Sukoharjo. The character of Caring for the environment indicators reduce, reuse and recycle makes students more able to reuse used goods, process used goods into other goods that are more useful. Ecoprint art has had a very good impact, namely increasing the caring character of students towards the surrounding environment. Students are more moral to take advantage of the existence of available natural resources. It is concluded with certainty that ecoprint art can be applied in strengthening the character of caring for the environment in elementary school students.

#### 5. REFERENCES

- Afriyeni, Y. (2018). Pembentukan Karakter Anak Untuk Peduli Lingkungan Yang Ada Di Sekolah Adiwiyata Mandiri SDN 6 Pekanbaru Yeni Afriyeni Sekolah Tinggi Persada Bunda Pekanbaru. *Jurnal PAUD Lectura*, 1(2), 123–133. <http://www.seminar.uad.ac.id/index.php/senimas/article/view/11574>.
- Ahmadalipour, A., & Moradkhani, H. (2018). Escalating heat-stress mortality risk due to global warming in the Middle East and North Africa (MENA). *Environment International*. <https://doi.org/10.1016/j.envint.2018.05.014>.
- Azzet, A. M. (2013). *Urgensi Pendidikan Karakter Di Indonesia*. Ar-Ruzz Media.
- Baker, M. A., Davis, E. A., & Weaver, P. A. (2014). Eco-friendly attitudes, barriers to participation, and differences in behavior at green hotels. *Cornell Hospitality Quarterly*, 55(1), 89–99. <https://doi.org/10.1177/1938965513504483>.
- Birhan, W., Shiferaw, G., Amsalu, A., Tamiru, M., & Tiruye, H. (2021). Exploring the context of teaching character education to children in preprimary and primary schools. *Social Sciences & Humanities Open*, 4(1). <https://doi.org/10.1016/j.ssaho.2021.100171>.
- Christian, I. V., & Prasida, A. S. (2018). Developing Board Game as Learning Media about Waste Sorting for Fourth Grade Students of Elementary School. *Jurnal Prima Edukasia*, 6(1), 78–88. <https://doi.org/10.21831/jpe.v6i1.17148>.

- Cohen, J., Wong, V., Krishnamachari, A., & Berlin, R. (2020). Teacher coaching in a simulated environment. *Educational Evaluation and Policy Analysis*, 42(2), 208–231. <https://doi.org/10.3102/0162373720906217>.
- Dessty, A. (2015). Penguatan Karakter Siswa Sekolah Dasar Melalui Pembelajaran IPA Strengthening The Character Of Elementary School Students Through Learning Science [Strengthening The Character Of Elementary School Students Through Learning Science]. *Jurnal Aktualisasi Bimbingan Dan Konseling Pada Pendidikan Dasar Menuju Peserta Didik Yang Berkarakter*, 6(4), 5994–6004. <http://hdl.handle.net/11617/6018>.
- Dewi, I. ., Poedjiastoeti, S., & Prahani, B. (2017). ELSII Learning Model Based Local Wisdom To Improve Students' Problem Solving Skills and Scientific Communication. *International Journal of Education and Research*, 5(1), : 107-118. <https://doi.org/http://www.ijern.com/journal/2017/January-2017/09.pdf>.
- Dishon, G., & Gilead, T. (2020). Adaptability And Its Discontents : 21st- Century Skills And The Preparation For An Unpredictable Future. *British Journal of Educational Studies*, 00(00), 1–21. <https://doi.org/10.1080/00071005.2020.1829545>.
- Effendi. (2018). *Hukum Pengelolaan Lingkungan*. Indeks.
- Ghozali, A. L., Sumardjoko, B., Fathoni, A., & Rahmawati, L. E. (2021). Program Pembentukan Karakter Disiplin Peserta Didik Selama Pembelajaran Daring di Sekolah Dasar. *AULADUNA: Jurnal Pendidikan Dasar Islam*, 8(2), 216–231. <https://doi.org/10.24252/auladuna.v8i2a8.2021>.
- Gumbira, G., & Harsanto, B. (2019). Decision Support System for An Eco-Friendly Integrated Coastal Zone Management ( ICZM ) in Indonesia. *International Journal on Advanced Science Engineering Information Technology*, 9(4), 1177–1182. <https://livrepository.liverpool.ac.uk/3064750/>.
- Haj Kacem, S., Galai, S., Pérez de los Ríos, A., Hernández Fernández, F. J., & Smaali, I. (2018). New efficient laccase immobilization strategy using ionic liquids for biocatalysis and microbial fuel cells applications. *Journal of Chemical Technology and Biotechnology*. <https://doi.org/10.1002/jctb.5337>.
- Halili, S. H. (2019). Technological Advancements in Education 4.0. *The Online Journal of Distance Education and E-Learning*, 7(1), 63–69. <https://tojdel.net/journals/tojdel/volumes/tojdel-volume07-i01.pdf#page=70>.
- Handayani, T., MS, Z., & Yudha, C. B. (2021). Pendidikan Karakter Peduli Lingkungan Melalui Program Adiwiyata Berbasis Ekopedagogik. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 13(1), 36–42. <https://doi.org/10.17509/eh.v13i1.25735>.
- Harun, Jaedun, A., Sudaryanti, & Manaf, A. (2020). Dimensions of early childhood character education based on multicultural and community local wisdom. *International Journal of Instruction*, 13(2), 365–380. <https://doi.org/10.29333/iji.2020.13225a>.
- Hau, N. H., Cuong, T. V., & Tinh, T. T. (2020). Students and Teachers' Perspective Of The Importance Of Arts In STEAM Education In Vietnam. *Journal of Critical Reviews*, 7(11), 666–671. <https://doi.org/10.31838/jcr.07.11.121>.
- Herlina, M. S., Dartono, F. A., & Setyawan. (2018). Eksplorasi Eco Printing Untuk Produk Sustainable Fashion. *Dinamika Kerajinan Dan Batik: Majalah Ilmiah*, 15(2), 118–130. <https://doi.org/10.22322/dkb.v40i1.7766>.
- Hikmah, A. R., & Retnasari, D. (2021). Ecoprint Sebagai Alternatif Peluang Usaha Fashion Yang Ramah Lingkungan. *Jurnal Abdimas ADPI Sains Dan Teknologi*, 6(1), 1–5. <https://doi.org/10.47841/saintek.v4i1.273>.
- Ismail, M. J. (2021). Pendidikan Karakter Peduli Lingkungan Dan Menjaga Kebersihan Di Sekolah. *Guru Tua : Jurnal Pendidikan Dan Pembelajaran*, 4(1), 59–68. <https://doi.org/10.31970/gurutua.v4i1.67>.
- Ituma, A. (2011). An evaluation of students' perceptions and engagement with e-learning components in a campus-based university. *Active Learning in Higher Education*, 12(1), 57–6. <https://doi.org/10.1177/1469787410387722>.
- Jamhariyani, R. (2019). Penanaman Pendidikan Karakter Cinta Lingkungan Pascapandemi Covid-19 Pada Anak Sekolah Dasar. *Seminar Nasional Pascasarjana 2020*, 268–272. <https://proceeding.unnes.ac.id/index.php/snpsasca/issue/view/23>.
- Komarlah, A., & Satori, D. (2012). Metodologi Penelitian Kualitatif. In *Alfabeta*.
- Kumandaş, B., Ateskan, A., & Lane, J. (2018). Misconceptions in biology: a meta-synthesis study of research. *Journal of Biological Education*, 2000–20014. <https://doi.org/10.1080/00219266.2018.1490798>.



- Liyun, N., Khasanah, W. N., & Tsuraya, N. A. (2018). Menanamkan Karakter Cinta Lingkungan Pada Anak Melalui Program "Green And Clean." *Polymers Paint Colour Journal*, 1(1), 135-140. <https://doi.org/10.5771/9783828867246>.
- McBride, B. B., Brewer, C. A., Berkowitz, A. R., & Borrie, W. T. (2013). Environmental literacy, ecological literacy, ecoliteracy: What do we mean and how did we get here? *Ecosphere*, 4(5). <https://doi.org/10.1890/ES13-00075.1>.
- Naziyah, S., Akhwani, A., Nafiah, N., & Hartatik, S. (2021). Implementasi Pendidikan Karakter Peduli Lingkungan di Sekolah Dasar. *Jurnal Basicedu*, 5(5), 3482-3489. <https://doi.org/10.31004/basicedu.v5i5.1344>.
- Pressinawangi, R. N., & Widiawati, D. (2014). Eksplorasi Teknik Ecoprint Dengan Menggunakan Limbah Besi dan Pewarna Alami Untuk Produk Fashion. *Jurnal Tingkat Sarjana Bidang Seni Rupa Dan Desain EKSPLOKASI*, 3(1), 1-7. <https://doi.org/10.30737/jatimas.v1i2.2094>.
- Prodjosantoso, A. K., & Hertina, A. M. (2019). The Misconception Diagnosis on Ionic and Covalent Bonds Concepts with Three Tier Diagnostic Test. *International Journal of Instruction*, 12(1), 1477-1488. <https://eric.ed.gov/?id=EJ1201190>.
- Rahayu, H. M., & Setiadi, A. E. (2023). Isolation and Characterization of Indigenous Lactic Acid Bacteria from Pakatikng Rape, Dayak's Traditional Fermented Food. *Jurnal Penelitian Pendidikan IPA*, 9(2), 920-925. <https://doi.org/10.29303/jppipa.v9i2.2801>.
- Saifulloh, M., Wahyuddin, W., Soedarso, S., Suryani, A., Muhibbin, Z., Hanoraga, T., Nurif, M., Trisyanti, U., Rahmawati, D., & Rahadiantino, L. (2020). Pengembangan Karakter Cinta Lingkungan Sekolah Melalui Eco-School Branding dan Peer Teamworking. *Sewagati*, 4(2), 108. <https://doi.org/10.12962/j26139960.v4i2.7184>.
- Salleh, N. A., Anwar, A., Satori, M., Teo, P. T., Shah, A., Othman, Z., & Zulhumadi, F. (2020). Biodegradable material in composting: Green initiatives in northern Malaysia and Indonesia. *Journal of Critical Reviews*, 7(8), 1642-1645. <https://doi.org/10.31838/jcr.07.08.321>.
- Song, P. (2014). A handful of bacteria: A simple activity that engages students to think and write like a scientist. *Journal of Technology and Science Education (JOTSE)*, 4(1), 3-11. <https://doi.org/10.3926/jotse.89>.
- Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.
- Surani, S., Sumardjoko, B., & Narimo, S. (2016). Pengelolaan Pendidikan Karakter Bangsa Berbasis Budaya Jawa di TK Negeri Pembina Surakarta. *Manajemen Pendidikan*, 11(2), 186-195. <https://doi.org/10.23917/jmp.v11i2.2661>.
- Suryani, L., Tute, K. J., Aje, A. U., Pendidikan, J., & Universitas, M. (2019). Penumbuhan Karakter Cinta Lingkungan Hidup. *Jurnal Lentera Pendidikan Pusat Penelitian LPPM UM Metro*, 4(2), 23-34. <http://ojs.ummetro.ac.id/index.php/lentera/article/view/1082>.
- Suryawati, E., Suzanti, F., Zulfarina, Putriana, A. R., & Febrianti, L. (2020). The implementation of local environmental problem-based learning student worksheets to strengthen environmental literacy. *Jurnal Pendidikan IPA Indonesia*, 9(2), 169-178. <https://doi.org/10.15294/jpii.v9i2.22892>.
- Üce, M., & Ceyhan, İ. (2019). Misconception in Chemistry Education and Practices to Eliminate Them: Literature Analysis. *Journal of Education and Training Studies*, 7(3), 202. <https://doi.org/10.11114/jets.v7i3.3990>.
- Utsman, A., Rahmawati, L. E., & Widyasari, C. (2022). Thematic Learning Plans with the RADEC Learning Model in Building Students' Environmental Care Character in Elementary Schools. *International Journal of Elementary Education*, 6(3), 672-681. <https://doi.org/10.23887/ijee.v6i4.54493>.
- Vattam, S. S., Goel, A. K., Rugaber, S., Hmelo-Silver, C. E., Jordan, R., Steven, G., & Sinha, S. (2011). Understanding complex natural systems by articulating structure-behavior-function models. *Educational Technology and Society*, 14(1), 66-81. <https://www.jstor.org/stable/pdf/jeductechsoci.14.1.66.pdf>.
- Wakhidah, K., & Adiarti, W. (2014). Pengaruh Penanaman Nilai-Nilai Konservasi Terhadap Karakter Peduli Pada Lingkungan Anak Usia Dini. *BELIA: Early Childhood Education Papers*, 3(2), 38-45. <https://journal.unnes.ac.id/sju/index.php/belia/article/view/3718>.
- Wulandhari, C. A., Zulfiati, H. M., & Rahayu, A. (2019). Peran guru dalam pembentukan karakter peduli lingkungan melalui pembelajaran tematik di kelas IV SD 1 Sewon. *Prosiding Seminar Nasional PGSD 2019*, 1(April), 85-96. <https://jurnal.ustjogja.ac.id/index.php/sn-pgsd/article/view/4734>.
- Yudianti, O. F., Irianto, A., & Rosidah, C. T. (2020). Penanaman Karakter Peduli Lingkungan Melalui Program Sekolah Adiwiyata. *Jurnal Pendidikan Dasar*, 11(1), 109-117. <http://journal.unj.ac.id/unj/index.php/jpd/article/view/15397>.