

ECOBRIK-BASED SCHOOL WASTE MANAGEMENT EFFORTS (PLASTIC BRICK) IN IMPROVING LITERARY CULTURE

Edi Suhendri

Kepala Sekolah Menengah Pertama Negeri 23 Pekanbaru, Riau, Indonesia

ARTICLE INFO

Keywords:

Waste management,
ecobricks, Literacy culture

Email :

edi.suhendri@gmail.com

ABSTRACT

Plastic waste management is a never-ending problem, besides the increasing use of plastic-based materials in various places, is one of the main points that must be immediately eliminated so that the volume of plastic waste accumulation can be suppressed as small as possible. This study uses the school action method with a Research and Development approach, and the results of this previous study explain that the management of plastic waste in the SMP Negeri 23 Pekanbaru school environment through the ecobrick method has been successfully applied, the students and the teacher utilize the plastic waste into products. which have high value, for example, such as tables, benches, pots and several other school tools, the solution is considered very appropriate to be applied to students because in addition to reducing the accumulation of plastic waste in the school environment, it turns out that the ecobrick method can also be used as a learning medium. new to the students. The results of the application of other ecobrick methods can be seen from the construction of school facilities called literacy parks, and the literacy corner where the entire material framework comes from plastic waste that exists in the school environment and is successfully recycled in a simple way, to produce something that is useful, especially in terms of handling plastic waste and developing students' abilities through the ecobrick method

Copyright © 2022 Eduhot Journal. All rights reserved is Licensed under a [Creative Commons Attribution- NonCommercial 4.0 International License \(CC BY-NC 4.0\)](https://creativecommons.org/licenses/by-nc/4.0/)

1. INTRODUCTION

The increasing number of population and living standards of people in the current era of globalization also has an impact on increasing the amount of waste that is increasingly out of control, coupled with the existence of various types of waste so that it is difficult to decompose in a short time. This condition exacerbates the burden of handling waste in various environments, especially in densely populated residential areas. In addition to causing prolonged environmental problems, waste can also threaten public health if not handled properly, for this reason, systematic, comprehensive, sustainable waste management is needed and involves the participation of various elements of society (Alamprabu, 2007).

One of the biggest problems for humans in this century is the increasing use of plastic in various places, such as malls, hospitals, offices and schools, this is what is considered to have caused the volume of plastic waste to increase to an alarming stage, as we previously knew that Plastic waste is indeed included in the category of types of waste that are difficult to decompose in the near future. The impact of the increase in plastic waste causes environmental pollution that occurs in almost various regions in Indonesia, and one of them is in Pekanbaru City, where the total production of waste entering the Pekanbaru City TPA reaches 1,100 tons every day, and most of this waste comes from markets, offices, and schools.

Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture Edi
Suhendri

Waste management in various places must be handled quickly, it is considered very important because in addition to reducing the buildup of the volume of waste that is increasing every day, handling waste in the best way will also present a beautiful, well-maintained and far from disease environmental condition. . As one of the government institutions that almost always donates various types of waste to various places, schools become a means for teachers and students to gather, which in turn has the potential to produce millions of tons of waste if not managed properly, for that waste management in the school environment certainly requires attention. This is very serious because most of the children at school do not understand the procedures for classifying the types of waste, and there is even the behavior of children who have not implemented a clean lifestyle by littering (Antico et al., 2017).

However, waste can also be used as a learning medium in schools, especially to increase students' knowledge about the procedures for recycling waste using the 3R principle. Because schools that manage waste well are indicators for other schools to be able to implement the same thing, namely instilling environmental insight to all students, especially in terms of managing waste into compost, then processing it in a simple way. Compost from organic waste can be a learning medium for students, because the material contains natural science learning content, namely to find out how microorganisms decompose waste naturally, so students can learn to respect and protect the environment so that the ecosystem becomes balanced, then students can also learn utilizing waste into useful goods because waste is not something dirty and disgusting but can be of economic value and contains high aesthetic value if managed properly.

In terms of waste management, schools usually apply a learning pattern to students by separating types of waste such as cans, paper and bottles then the recycled results are used by students by selling them to people in need, because cans, paper and bottles are indeed has its own charm if it is successfully utilized properly, of course this is inversely proportional to the type of plastic waste, which lacks benefit and is of course very difficult to decompose. As we know that almost 90% of the food and drinks sold in the school environment are packaged in plastic, causing a very large pile of garbage, the waste is left scattered and generally not managed optimally. Therefore, there is a need for very serious attention from school residents to be able to decompose various types of waste, one of which is by applying the ecobrick pattern (Apsari, 2007; Achmad, 2021).

Ecobricks. itself is a waste management by utilizing plastic that is packed into bottles of mineral water and then developed into a building called a literacy park where all the materials come from the ecobrick system. the. The literacy park built using ecobricks is expected to increase students' understanding of waste management so as not to pollute the environment, besides that the existence of a literacy park is expected to improve the reading culture for students at school. Waste management through the ecobrick system has indeed become a new alternative, especially in the school environment, and one of the State Junior High Schools in Pekanbaru City has also implemented the ecobrick pattern. This is where the average total plastic waste in SMP Negeri 23 Pekanbaru City reaches 1432 kg/per day, and has been successfully utilized with the help of all school residents (Burhanuddin & Darmanijati, 2018; Aryanto, 2019).

Ecobricks are a solution that can be applied in schools, especially in terms of managing plastic waste such as plastic bags, plastic snacks and plastic drink sachets where several types of these products enter into waste that is difficult to decompose. Ecobricks can be produced into various objects such as tables, chairs, building walls, stages and flower pots with various innovations and beautiful creations, the plastic waste in the bottle will be stored properly and will last longer. Simply put, the ecobrick technique is made by converting plastic into small parts (brick) and then putting it in a plastic bottle and then combining it with the help of small wood. Ecobricks are compacted so that there is no empty space in the bottle so that the intensity becomes large, plastic waste in the bottle will be stored and maintained properly so that the waste does not need to be burned or left to build up but can be utilized in a variety of simple ways.

Utilization of waste into ecobricks is expected to be the right solution, especially in reducing plastic waste in the school environment. Ecobricks can also be developed into various kinds of building furniture products and several other products. As for the results of using ecobricks in schools, they can be used as park benches, garden tables, flower pots, art stages and school fences, so that the use of

Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture Edi
Suhendri

bricks can be reduced and material costs can be more efficient. So based on the description of the background above regarding efforts to manage ecobrick-based school waste in the SMP Negeri 23 Pekanbaru City, researchers can formulate a problem point on how to manage ecobrick-based plastic waste in its efforts to form a literacy culture among students of SMP Negeri 23 Pekanbaru City.

2. METHOD

This type of research is included in school action research using Research and Development (R&D) development. Research and Development itself is a research method used to produce certain products and test the effectiveness of these products, besides that Research and Development can also be said as a process or steps to develop a new product or improve an existing product, which can be accounted for, so that a hypothetical product can be produced. To test the hypothetical product, experiment or action research is used before the product is applied. The process of product testing with this experiment is called applied research. The instrument of data collection was carried out using several stages such as observation, documentation and temporary interviews for the research place itself which was carried out in the school environment of SMP Negeri 23 Pekanbaru City (Arikunto, 2006).

3. RESULTS AND DISCUSSION

Ecobrick-Based Literacy Park in the School Environment

Literacy parks built in ecobrick-based schools can activate the School Literacy Movement (GLS) for all school members, including students, teachers, school administration staff and parents. We can use the park as a place to relax while reading to improve knowledge at any time. Making a literacy park is a participatory business or activity involving all elements of educators and education staff. In addition to increasing knowledge and skills, the existence of an ecobrick-based literacy park is expected to increase our awareness to manage plastic waste properly and make it something useful so that it does not cause environmental pollution (Darmono, 2001).

The school literacy movement is a social movement with the collaborative support of various elements. Efforts taken to make it happen in the form of habituation to read students. This habit is generally carried out in public junior high schools throughout Pekanbaru City through 15 minutes of reading before entering the classroom. If the habit of reading has been formed, then it will be directed to the stage of development and learning. The variety of activities can be a combination of developing receptive and productive skills. The implementation of literacy activities can be carried out at certain scheduled periods and then an assessment is carried out so that the impact of the existence of GLS can be known and continues to grow. GLS is expected to be able to mobilize school members, stakeholders, and the community to jointly own, implement, and make this movement an important part of life.

Several programs have been implemented in Pekanbaru City schools to improve literacy skills, including: reading fiction and non-fiction books 10 minutes before class starts, providing a literacy corner in the classroom, literacy terrace and a comfortable literacy garden. in the school environment. Scheduling literacy activities (reading, writing, storytelling, playing drama, drawing, crafts) for every school is the greatest desire for every student, but it is unfortunate that not all schools have adequate literacy facilities with innovations that are not boring. The development of a literacy park should utilize existing resources in schools so that it can reduce costs in its construction, especially the use of used goods and plastic waste generated from the school canteen (Dwiyanto, 2009; Sidiq, 2019).

Positive activities to support the literacy program must provide a more natural and comfortable atmosphere, therefore each school should provide a literacy park so that students are free to read both during school hours and outside school hours, but currently there are still many schools that do not yet have a literacy park. SMP Negeri 23 Pekanbaru has the freedom to shape, modify, and decorate areas that are not utilized to be used as literacy parks. To build a literacy park, schools can use used goods such as plastic and bottles that are used as ecobricks, which are then modified into something interesting to build a reading garden. A literacy garden consists of a stage, table, chairs and ornamental plants.

Figure 1. Ecobrick literacy garden design

Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture Edi Suhendri



The capacity of the literacy park can accommodate 30 students with details in the room consisting of 15 people and around the building can accommodate 15 people. To add to the aesthetics of the building, the ecobrick material is painted with bamboo motifs and uses green paint to add a cool atmosphere to the eye. In addition to the pictures of the ecobrick making procedure, there are also pictures of various 3R (reduce, reuse and recycle) activities in the management of various plastic wastes that provide education for students in schools. The literacy park building that was built at SMPN 23 Pekanbaru as shown in the picture above uses 3,601 ecobricks with a total reduced waste of almost one ton, which is 900.25 kg. Therefore, it is hoped that every school has an ecobrick-based literacy park so that educational units can not only use waste into something useful but also help the government in managing the plastic waste produced in schools into gardens, fences, flower pots and other buildings needed in schools. The use of ecobricks is one of the recycling efforts to reduce the amount of plastic waste. Ecobricks are made from used plastic bottles filled with materials such as soil, foam, food wrapping plastic, plastic bags, and other plastic materials. Ecobricks can also be used to create works of art. This artwork proposes the concept of recycling and new ideas in making eco-friendly bricks.

The creation of ecobricks also allows collaboration between students, parents, teachers and school staff in creating beautiful green spaces without expensive costs. Ecobrick making activities can also be included in the school curriculum because it contains natural science learning content and provides several benefits to students such as, ecobricks are an efficient way to treat plastic waste and can be done by everyone because it is easy to manufacture, then protects environment by reducing the amount of plastic waste, making ecobricks used as building materials or furniture can reduce production costs when compared to using other materials (Fatchurrahman, 2018).

Literacy parks in schools can be built by utilizing plastic waste produced by schools. The plastic waste is collected and used as ecobricks that can be used to make various kinds of buildings in schools such as stages, tables, chairs, school fences and so on. Literacy gardens can be decorated with a variety of student-created products such as posters, recycled materials and educational paintings. The development of an environmentally friendly literacy park must pay attention to several things, including at the initial stage the problem of garden design, how the arrangement (plan), the layout and shape of the building, how it is in harmony with nature and the surrounding environment. The method that can be done is to allocate 30-40% of the land area to be used as green open space, can be planted with grass or various other plants.

The ecological values contained in the literacy park that utilize ecobricks include: a) utilization and reuse of plastic waste. A literacy park with a size of 5 m x 3 m can utilize plastic waste produced from wrapping food and beverage packaging of approximately 1 ton; b) building an environmentally friendly literacy park by using the principle of reuse and saving energy due to building lighting from the sun; c) alternative building materials as a substitute or match for bricks; d) protect or prevent environmental damage due to exploration of a brick factory that does not follow the principles of sustainable development. While the social values contained in literacy parks that use ecobricks include:

Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture Edi
Suhendri

a) literacy parks can convey environmental education messages to students to utilize plastic waste and behave pro-environmentally; b) the use of literacy parks as a place to learn, a place to interact between students so that good social skills are formed among students (Ferguson, 2001).

Construction of a literacy garden with a size of 5m x 3m using 2016 ecobricks, for the supporting space around the building consisting of 183 circular seats, 314 flower pots, 38 tables and 1050 paving blocks, the total number of ecobricks used for construction 3,601 literacy parks with a total reduced waste of 900.25 kg. To produce ecobricks can be done in every household, institution and educational institution. Because basically the raw materials we need are always available and will not be lost in the market. If we look at all food and beverage packaging in general, they use plastic packaging. In addition, the use of bricks may experience a decline and will eventually run out.

The economic values contained in a literacy park that utilize ecobricks include: a) the use of ecobricks for building materials for a literacy park can be carried out by 5 workers, which is carried out for 40 working days and can be used as a livelihood for workers (40 days/5 person); b) the use of ecobricks can save material use by up to 71%, thereby reducing costs for the purchase of cement and sand. If you look at the use of materials from ecobricks, the amount per square meter only requires 36 pieces, while for red bricks 70 pieces. Even though the unit price is more expensive, ecobricks are Rp. 1,200,- compared to red brick Rp. 500,-, but in the process of installing red brick requires plaster and plaster on the outside and inside, while ecobricks do not need to be plastered. The cost of plaster per square meter is Rp. 50.000,- and the cost of filling per square meter is Rp. 10,000,-, the cost of plastering and filling can be saved if we use ecobricks, in addition to giving an aesthetic impression, it also adds to the coolness of the room when using ecobricks (Futurarch, 2008).

Ecobrick-based Literacy Corner in School Environment

The literacy corner or reading corner is a corner of the room that is used as a place to store and place a collection of books from students in each class. The availability of a reading corner in the classroom is expected to instill a reading culture in students. Considering that the reading culture of the Indonesian population is relatively low, educational institutions should try to create a reading corner by utilizing the corner of the classroom as a book collection place in each class so that if the teacher is unable to attend, students can read the collection of books in the reading corner (Istirokhatun & Nugraha, 2019).

This reading corner is expected to stimulate students to be more fond of reading and do other activities that can develop their potential and thinking power. When using library books for the reading corner, it is best to replace the books once every three days so that students do not get bored with the existing collection of books. Based on the results of an interview with one of the teachers, information was obtained that the class reading corner is open every day, the teacher is obliged to carry out student activities in the reading corner every morning, the existence of a reading corner is provided in each class with the aim of increasing students' reading interest.



Figure 2. The literacy corners are located in the corners of the classroom, using a set of tables and chairs made of ecobricks

In general, every class has a literacy corner in the back corner of the classroom. This literacy corner functions as a place to read to absorb various information from the texts they read, generally the *Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture* Edi Suhendri

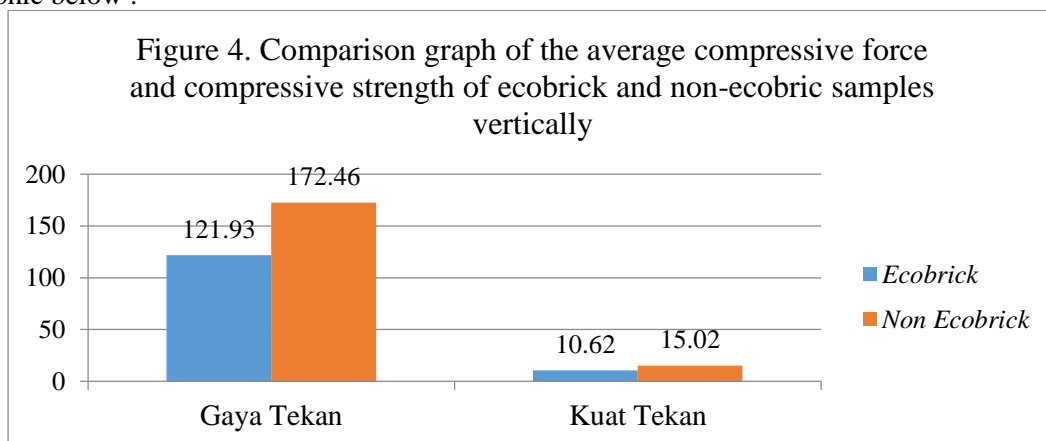
available textbooks are in the form of story books or general knowledge. The materials for the literacy corners in schools are generally made of wood, iron, plastic and streoform and a set of ecobrick tables and chairs made of plastic waste (Lenkiewicz & Webster, 2017).



Picture 3. a set of ecobrick tables and chairs made of plastic waste

In the beginning, waste in schools, especially plastic waste, was not managed properly with the save our earth movement, so it was required that every student be able to control and manage their waste properly both at school and at home, even wherever they are. To control plastic waste in schools, students are required to pack and collect one ecobricks in one week. Students are trained to make ecobrick tables and chairs with various forms of tables and chairs for the literacy corner at school and at their respective homes, so that plastic waste at school and at home can be managed properly and for the literacy corner in the class, the collection of reading textbooks should be more so that students' knowledge increases both fiction and non-fiction books equipped with wall decorations in the form of decorative patches, paper flowers and live flowers placed in pots (Mujahiddin, 2015).

The results of laboratory tests show that the average compressive force and compressive strength of the specimens are between ecobricks and non-ecobrick specimens. The test object that is not added with ecobricks is less strong because its density is smaller than that of the non-ecobrick test object. The mass of the non-ecobrick sample is higher than that of the sample containing ecobrick, but the test object added with ecobrick can save the use of cement and sand as much as 600 cm³ or about 71% of material use. Comparison of the compressive force of the test object in which there is an average ecobrick of 121.93 kN and that without an ecobrick of an average of 172.46 kN there is a difference of 50.53 kN which is greater than the compressive force of the test object with an ecobrick as shown in the graphic below .



The test object containing ecobricks is an environmentally friendly product because it contains a very high ecological value to save the biotic and abiotic environment from plastic waste. When compared with the strength classification of bricks based on SNI 15-2094-1991 as shown in the picture above, the quality of the ecobricks is equivalent to that of grade I bricks. The density of the ecobricks is higher when the ecobricks are filled with very dense plastic. The high density of ecobricks indicates that more plastic waste can be accommodated in bottles, so it is better to reduce the amount of plastic waste in the environment. In addition, the high density of ecobricks makes ecobricks stronger against pressure, so they are not easily damaged. Dense ecobricks can have a density of approximately 200 ounces per bottle with a volume of 600 ml (Asih, 2018). Due to the large amount of plastic waste that can be accommodated in an ecobrick, this simple technology is expected to reduce the amount of plastic waste that is brought to the landfill and prevent plastic waste from contaminating water (rivers, seas) and soil (Mukti & Fitriani, 2018).

The social aspect of processing plastic waste into ecobricks can create new job opportunities, encourage community participation, and use collective goods and services more efficiently than individually. Utilization of plastic waste into ecobricks creates new livelihoods for the community and creates a home industry in the household, namely creating productive households (creative economy) by activating small economic activities with ecobrick product businesses. Each household produces an average of 1 kg/day of plastic waste, meaning that one day it can produce 4 ecobricks. If it is calculated in one month the amount of plastic waste produced by one household is 30 kg. In one alley in a housing complex, which consists of 10-20 families, can produce 3000 ecobricks/month, it will absorb 3-5 people. So far, many have judged that used plastic packaging is part of waste, but for some it is part of their income for life. Because behind used plastic packaging, it can improve the quality of human life. Workers in the waste management industrial sector have absorbed millions of workers and many parties depend on the recycling industry, one of which is scavengers, who depend on piles of plastic waste for their lives (Nasichah & Harmanto, 2019).

Processing plastic waste into ecobricks is one of the efforts to develop a circular economy because the need for conventional stone construction is increasing every day while the availability of raw materials is decreasing every day, on the contrary, the availability of ecobricks is increasing every day. Therefore, the use of ecobricks as a raw material for replacing bricks is a very promising business and can absorb new jobs. So the use of ecobricks as a building material has economic, social and ecological values (Nugroho et al., 2016).

The link between ecological and social aspects in producing ecobricks is to save the environment from plastic waste while increasing students' creativity. In addition, it instills educational value in students about environmental conservation and keeping the environment free from pollutant substances and managing pollutant substances wisely. The processing of school plastic waste into ecobricks is something that is useful in schools, namely a literacy park whose material from waste is proof that waste if managed properly can be something useful and its quality is not inferior to conventional materials, namely bricks. The relationship between social and economic aspects in producing ecobricks can increase the economic needs of the community which is called a circular economy by reprocessing plastic waste produced by humans. Saving the environment from waste is an important component of the economic system, because without the environment, the economic system will not function. Development that places too much emphasis on economic growth alone, often clashes with the interests of the wider community who want justice and sustainability (Rahmawati et al., 2019).

4. CONCLUSION

Based on the results of the analysis and discussion on waste management using the ecobrick method in the school environment as an effort to minimize the use of plastic waste so that it can be recycled to produce products that are useful for school residents, then this process can also be made into a new learning agenda. among students because it contains natural science learning content. As for the results obtained through the application of the ecobrick method, students and teachers succeeded in building a school facility, where all parts of the framework came from recycling plastic waste, the existence of a literacy park at SMP Negeri Pekanbaru City which consisted of 45 schools, it can be

*Ecobrick-Based School Waste Management Efforts (Plastic Brick) In Improving Literary Culture Edi
Suhendri*

concluded that The ecobrick literacy park model is an environmentally friendly building utilizing plastic waste, saving energy, utilizing solar lighting and adequate air circulation.

REFERENCES

- Achmad, W. (2021). Monitoring dan Evaluasi Program Corporate Social Responsibility Berbasis Pemberdayaan Masyarakat. *Komitmen: Jurnal Ilmiah Manajemen*, 1(2), 29-37.
- Alamprabu, D. 2007. *Pembangunan Pertanian Berkelanjutan dengan Pertanian Organik*. Direktorat Perlindungan Perkebunan.
- Antico, F. W, Araya L,G, and Retamal, R. 2017. Eco-bricks: A Sustainable Substitute For Construction Materials. *Revista de la Construcción. Journal of Construction*, 16(3): 518-526. doi:10.7764/RDLC.16.3.518. Diakses 04 September 2020
- Apsari, J. 2007. *Kajian Pengembangan 'Roof Garden' di Metropolitan Dalam Upaya Mengatasi Fenomena Urban Heat Island (Studi kasus: DKI Jakarta)*. Bogor. Program Studi Arsitektur Landkap, Fakultas Pertanian, Intitut Pertanian Bogor
- Arikunto, S. 2006. *Metode Penelitian Kualitatif*. Jakarta: Bumi Aksara
- Aryanto, S. 2019. *Ecobrick sebagai Sarana Pengembangan Diri Berbasis Ecopreneurship di Sekolah Dasar*. Dwija Cendekia: *Jurnal Riset Pedagogik 3 (1)*. Diakses 24 Agustus 2020
- Asih, HM dan Fitriani S. 2018. Penyusunan Standard Operating Procedure (SOP) Produksi Produk Inovasi *Ecobrick*. *Jurnal Ilmiah Teknik Industri*. Turkey 17 (2)
- Burhanuddin, B. dan Darmanijati, M.R.S. 2018. Pemanfaatan Limbah Plastik Bekas Untuk Bahan Utama Pembuatan Paving Block. *Jurnal Rekayasa Lingkungan*. 18(1): 1-7. Diakses 04 September 2020
- Darmono. 2001. *Manajemen Perpustakaan Sekolah*. Jakarta: Grasindo.
- Dwiyanto, A. 2009. Kuantitas dan Kualitas Ruang Terbuka Hijau di Permukiman Perkotaan. *Journal Teknik*, 30(2), pp.88-93.
- Fatchurrahman. 2018. *Manajemen Pengelolaan Sampah Berkelanjutan Melalui Inovasi "Ecobrick" Oleh Pemerintah Kota Yogyakarta*. *Manajemen Pengelolaan Sampah Berkelanjutan Melalui Inovasi Ecobrick Oleh Pemerintah Kota Yogyakarta*. Diakses 24 Agustus 2020
- Ferguson, B. 2001. *Information Literacy. A Primer for Teachers, Librarians, and other Informed People*. Diakses 26 Agustus 2020
- Futurarch, 2008. *Paradigma Arsitektur Hijau*. Diakses 28 Desember 2020
- Istirokhatun, T. dan Nugraha, W.D. 2019. Pelatihan Pembuatan *Ecobricks* Sebagai Pengelolaan Sampah Plastik di RT 01 Rw 05, Kelurahan Kramas, Kecamatan Tembalang, Semarang. *Jurnal pasopati*. Vol. 1, No. 2. Diakses 24 Agustus 2020
- Lenkiewicz, Z., and Webster, M. 2017. *Making Waste Work: A Toolkit How to Turn Mixed Plastic Waste And Bottles Into Ecobrick A Step-by-Step Guide*. UK: CIWM.
- Mujahiddin. 2015. Faktor-Faktor yang Mempengaruhi Upaya Pemberdayaan Masyarakat dalam Mengelola Sampah Anorganik di Bank Sampah Simpan Jadi Mas. *Jurnal Keskap Fisip*, 13(1): 305-331.
- Mukti, A. dan Fitriani, S. 2018. Penyusunan Standard Operating Procedure (SOP) Produksi Produk Inovasi *Ecobrick*. *Jurnal Ilmiah Teknik Industri*, 7(2), 144-150. Diakses 24 Agustus 2020
- Nasichah, N. dan Harmanto. 2019. Peran Sanggar Hijau Indonesia dalam Mengembangkan Sikap Peduli Lingkungan Peserta Didik Melalui Program *Ecobrick* di SMA Negeri Mojoagung Jombang. *Jurnal Kajian Moral dan Kewarganegaraan*, Vol.7. Diakses 25 Agustus 2020
- Nugroho, Alfian H, Ratna P, dan Euis P. 2016. Implementasi Gemar Membaca Melalui Program Pojok Baca Dalam Mata Pelajaran IPS Pada Siswa Kelas VIII Di SMPN 2. *Jurnal Edueksos*, Vol. V, No. 2
- Rahmawati A. dan Mulyadi, Supriatna N. 2019. Ecoliteracy in Utilizing Plastic Waste to *Ecobrick* Through Project Based Learning on Social Studies Learning. *International Journal Pedagogy of Social Studies*, 4 (2), 2019, 101-106. Diakses 24 Agustus 2020

Sidiq, R. S. S. (2019). Environmental Protection To Mitigate The Annual Forest And Land Fires Crisis In Riau Province Indonesia. *International Journal on Social Science, Economics and Art*, 9(3), 164-172.