Journal of Aesthetics, Design, and Art Management
Volume 1 Number 1, October 2021
https://ejournal.catuspata.com/index.php/jadam

Wood Waste Materials for Early Childhood Educational Toys in New Normal Era, Case Study: Toys for Pos PAUD Fathonah

Rizka Rachmawati[1], Imtihan Hanom[2], Rara Siti Raudhoh[3]
[1,2,3]Telkom University, Bandung, Indonesia
Email: [1]rizkarach@telkomuniversity.ac.id, [2] imtihanhanum@telkomuniversity.ac.id,
[3] rarasitiraudhoh@student.telkomuniversity.ac.id

Received on	Revised on	Accepted on
04 August 2021	7 September 2021	10 September 2021

Abstract
Purpose : In this new normal era, social distancing is acknowledged as one of virus-spreading prevention acts that must be complied with. Early childhood institutions, without exception, need to provide new utilities for each student, for example, education toys. They cannot use a single toy for a group as they did before. It becomes the problem faced by educational institutions of Early Childhood, especially for Pos PAUD Fathonah. To meet the needs of educational toys, innovative materials that are suitable for a given condition are needed. This study aims to consider the wood waste utilization for educational toys.
Research methods : The qualitative method is used by doing literature review about wood waste that can provide economical, safety, and durability aspects for educational toys**.**
Findings : The result of the wood waste utilization research is expected not only to become valuable education toys, but also can reduce the environmental effect caused by wood waste itself.
Implications : This research helps develop eco-friendly toys.

Keywords : wood waste, toys, early childhood, new normal

INTRODUCTION

The pandemic Covid-19 era is a period when all parties are doing various forms of new adaptation in many sectors to prevent the spread of the virus, including in the education sector. This situation has been going for eighteen months, when the government and community have been conducting many kinds of adjustments, such as pursuing the health protocol and vaccination program policy. Especially in Indonesia, after the vaccination program is finished, the Ministry of Education and Culture was considering the possibility of offline learning [1].

Even though the government has been planning offline learning, the health protection aspect still needs to be implemented by each educational institution. In order to support health protection in this new normal era, schools need to make an effort, not only to keep the sustainability and safety process of learning but also physical distancing and keeping hygiene environment. This situation could be a big challenge for schools, especially for early childhood education. In Indonesia, people call it PAUD (Pendidikan Anak Usia Dini).

Children in the early childhood stage tend to play games with other kids [2]. Before a pandemic, using a toy for a group of children could increase their enthusiasm and happiness. However, in this new normal era, children should keep their physical distance from each other. So, they couldn't use a toy together with the other

friends. Therefore, schools need to provide many toys to make the children play together and keep physical distancing. This could be the biggest challenge for institutions to make some innovative education toys.

On the other hand, that's not easy for institutions when they provide a lot of educational toys. It's because school' revenue is decreasing in this pandemic era. So, the teachers should think about how many toys should be prepared but still considering the economical materials. One of the best solutions is to provide an instrument of educational toys derived from unused objects. This is consistent with the basic definition of educational toys, which should be made from materials that are no longer used or affordable materials [3]. Production of educational toys from waste materials can be carried out with low investment [4].

The waste materials that help children reach some new experiences, ideas, and creativities can be one of the options for educational toys material selection [5]. They also have another advantage for the children. The children could learn how the recycled materials can be used for their daily toys. They gain a sense of texture, form, space, and weight through the toys. The waste materials that are used as children's educational toys usually come from unused materials. One of the materials that are unused is wood. The use of wood waste materials can be a science lesson for children. Teachers could inspire children to explore their toys from wood that is closely related to nature [6].

In this study, one of the early childhood educational institutions that faced this research problem is Pos PAUD Fathonah. It is located in Lengkong village, Bandung, West Java. This school has about 60 students divided into four classrooms. Pos PAUD Fathonah is a school under the supervision of public community, so they need some support to develop an alternative of educative toys.

Figure 1. Pos PAUD Fathonah preparation for New Normal Era after Pandemic
[Source. Personal Document, 2021]

RESEARCH METHOD

The research method used is a qualitative method, in which an analysis of the latest literature review of wood waste materials for educational toys. It is then associated with user experience in Pos PAUD Fathonah, which has an experience about children's activities when they were playing in class during the new normal situation. The first step is collecting wood waste data and educative toys aspects, then creating the design of the toys based on that literature analysis. The next step is capturing the phenomenon experienced by students (3-7 years old) in Pos PAUD Fathonah while they were playing it in classrooms, obtained through questionnaires answered by their caregivers (50 people). After that, further analysis is carried out on the needs of the toys that have been done so far, especially from wood waste

materials. The analysis result will be a foundation to design educational toys that can provide economical, safety, and durable aspects for early childhood in the new normal era.

FINDINGS

This section contains the results of the analysis of wood waste that would be implemented as educative toys. From previous studies, wood waste materials are claimed as an eco-friendly resource for educational products for children. There are some categories of wood waste that are resulting from the rest of the furniture industry. It includes peels of log core, the rest of veneer, the piece of woodblocks, peels of a sheet, veneer that is broken, the rest of the pieces of plywood, sawdust, and sanding powder [7]. Wood waste material has the potential aspect that can be used as an instrument of educational toys for early childhood. Another aspect that deserves consideration is the safety of wooden toys finishes [8]. Safety is condition free from psychological and physical injury [9]. The analysis from several literatures leads us to design and produce educational toys that fulfilled the criteria.

The process starts from choosing and collecting the piece of woodblocks from furniture manufacture. Google sketch up as the drawing software is used for producing the three-dimensional drawing design of the toy. The design of educational toys that was selected, namely “House of Geometry”. It has the nature of gaming console like unloading, tide aligning, mixing, looking for the same form, stringing, forming, complete, design or draw up with a perfect [10]. The following pictures are designing processes from the raw wood waste materials to become educational toys.

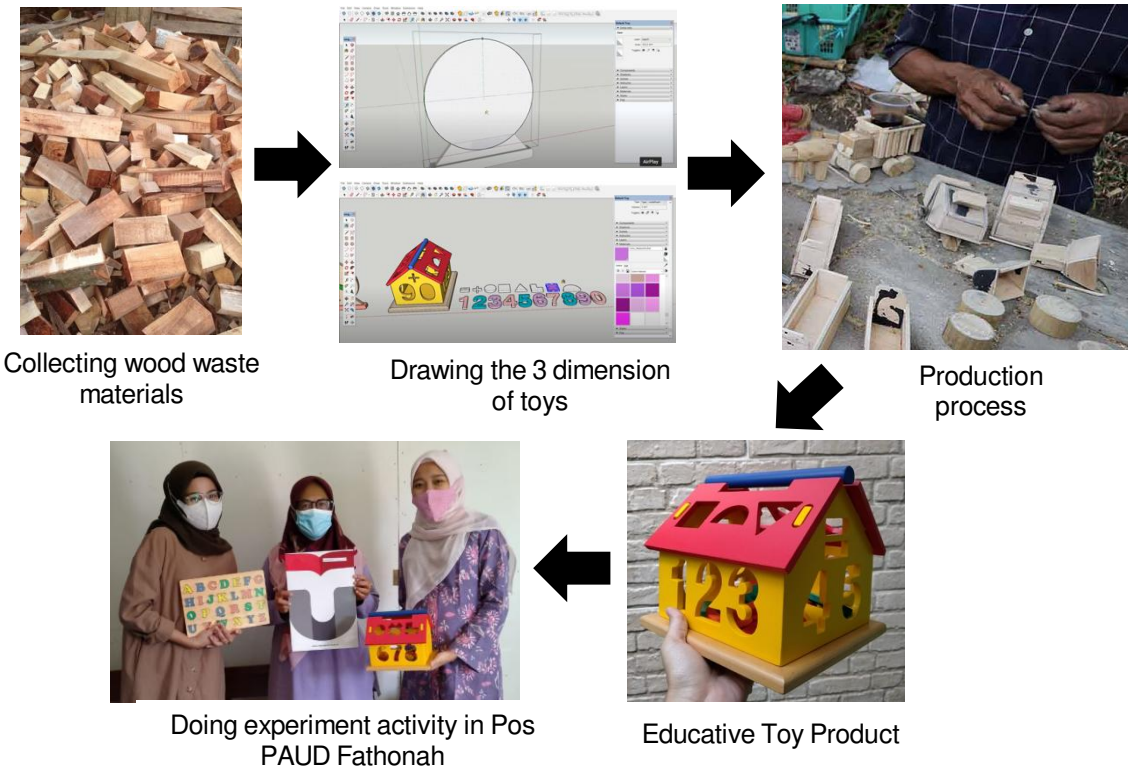

Figure 2. Producing an Instrument of Educational Toys from Wood Waste Materials [Source. Personal Document, 2021]

This educational toy is one of the games that can stimulate sensory and motoric aspects. The product surface was painted with eco-friendly wooden paint, so it is safe for early childhood. This kind of toy also helps children to develop and increase their memory. It is expected to become alternative toys that can provide activities for children to improve children's cognitive learning and psychomotor development in terms of children's play. Hopefully, children are able to handle problems independently and teachers can guide children more quickly so that children are not easily bored when playing alone.

After the designing and production process finished, this study continued with the experiment about the use of educational toys. It was performed by students from age 3 to 5 and caregivers. The playing steps are pairing various existing forms with the shapes at every side of the house. Then students put the match shapes into the house toys until all of the shapes are inside the house. Below is the table of the response result while they were playing it.

Table 1. Response of The Used of Educational Toys made from Wood Waste Materials. [Source : Personal Document, 2021]

Setting	Very Disagree	Disagree	Agree	Very Agree
Durability			68%	32%
Easy to carry / Lightweight			64%	36%
Interactive		2%	10%	88%
Colourful			16%	84%
Safety			42%	58%
Independent games	2%	6%	8%	84%
Economically			48%	52%

Based on the table above, 68% of respondents agree that educational toys from wood waste is durable. Due to its durability, wood waste can be increasing in various uses [11], especially for children's toys. The respondents also chose very agree (88%) in interactive aspect. They said that students are not easily bored of it so that they can play longer. It shows that students are quite happy while playing with these toys. And for the safety aspect, it received a good response from respondents. 58% of respondents agreed if the toy made from waste material is safe for children in early childhood. The surface was covered with eco-friendly wooden paint. It has anti-mercury and chromate that makes it safe for babies, children, and adults [12].

The economic aspect has become one of the essential issues that also required by Pos PAUD Fathonah. 52% of respondents are accepting that the toy is affordable. Production of this toy can be reproduced at a low cost, so that every child can have their own toys. It could become valuable because children can enjoy playing it without making groups or switching toys. This can clearly support one of the health protocol aspects in a new normal situation after the pandemic.

CONCLUSION

Educational toys can be tools that support early children's activities as individuals in this new normal era. They can play it without having a group with other friends. It can be applied in teaching and learning activities in the classroom of Pos PAUD

Fathonah. Therefore, excellent quality and economical toys are needed for every child. As the result of some literature reviews and respondent surveys, it can be concluded that wood waste can be an excellent option for early childhood institutions that need more affordable educational toys material. This study shows that one of the wood waste types that can be used is woodblocks. And based on the results of the survey analysis, it can be proven that more than half of toy users agree that this toy has good durability and safety aspects for children. Furthermore, hopefully in the future, despite reducing the negative impact of wood waste, the community can use wood waste as an alternative material that is also beneficial for early childhood institutions in the post-pandemic era.

ACKNOWLEDGMENTS

This Paper was a research continuation from the Telkom University Community Service activity. And this research wouldn't have achieves its results without the data provided by Pos PAUD Fathonah.

REFERENCES

[1] D. Maulipaksi, "Kemendikbud Siapkan Kebijakan Pembelajaran Tatap Muka Terbatas," *Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi*, Mar. 19, 2021. https://www.kemdikbud.go.id/main/blog/2021/03/kemendikbud-siapkan-kebijakan-pembelajaran-tatap-muka-terbatas (accessed Oct. 13, 2021).

[2] D. Mutiah, *Psikologi bermain anak usia dini*. Kencana, 2015.

[3] W. Adiarti, "Alat Permainan Edukatif Berbahan Limbah Dalam Pembelajaran Sains Di Taman Kanak-Kanak," *Lembaran Ilmu Kependidikan*, vol. 38, no. 1, 2009.

[4] L. F. P. Bispo, A. M. Nolasco, E. C. de Souza, D. Klingenberg, and A. F. D. Júnior, "Valorizing urban forestry waste through the manufacture of toys," *Waste Management*, vol. 126, pp. 351–359, 2021.

[5] O. Uyanik, G. Inal, F. Calisandemir, M. Can-Yasar, and A. Kandir, "New Explorations with Waste Materials in Early Childhood Education.," *Online Submission*, 2011.

[6] J. Siraj-Blatchford, K. C. Smith, and I. P. Samuelsson, *Education for sustainable development in the early years*. OMEP, World Organization for Early Childhood Education, 2010.

[7] C. W. Rachman, T. Abas, and Y. Jubaedah, "Design Of Eco-Creative Wood-Equipment Products For Product Design Learning Media In SMK Negeri 14 Bandung," *FamilyEdu: Jurnal Pendidikan Kesejahteraan Keluarga*, vol. 4, no. 1, pp. 56–62.

[8] R. Rachmawati, I. Hanom, and S. Salayanti, "THE INFLUENCE OF CHILDREN'S PLAYROOM INTERIOR ASPECT IN REGARD TO PARENTAL SAFETY PERCEPTION. CASE STUDY: CHILDREN'S PLAYROOM AT 23 PASKAL BANDUNG, INDONESIA," *Malaysian Journal of Public Health Medicine*, vol. 20, no. Special1, pp. 51–59, 2020.

[9] A. G. Perry, P. A. Potter, and W. Ostendorf, *Clinical nursing skills and techniques*. Elsevier Health Sciences, 2013.

[10] A. Sudono, "Peranan Alat Edukatif bagi Anak Usia Dini." Makalah: Semlok Nasional Pendidikan Anak Usia Dini. Jakarta: Ditjen …, 2004.

[11] S. Ulubeyli, A. Kazaz, and V. Arslan, “Construction and demolition waste recycling plants revisited: management issues,” *Procedia Engineering*, vol. 172, pp. 1190–1197, 2017.
[12] I. Indarto and A. F. Ariyanto, “STUDI PUSTAKA FINISHING RAMAH LINGKUNGAN PEKERJAAN INTERIOR,” 2018.