Marginal Community Empowerment in Kampung 1001Night by Using Hydroponic Interactive Video

Oktaviani Tri Saprika[1,*] Lukman Hadi Wibowo[1] Adinda Nur Qomariyah[1] Dinda Ayu Febrika Widayustira[1] Nugraheni Nur Awalia Pratiwi[1] Prima Vidya Asteria[1]

[1] *Indonesian Language Education Surabaya, Universitas Negeri Surabaya, Indonesia*
[*] *Corresponding author. Email: oviani208@gmail.com*

ABSTRACT
This research aims to empower marginalized communities in Kampung 1001 Malam as a creative and innovative village with a hydroponic spinach center program with inorganic waste media through interactive videos. The research model used is an adaptation of the ADDIE model. Developing videos with formats include the beginning (reflection, observation of hydroponic video, and disclosure of content), the beginning (overview of waste, garbage data, the impact of waste on life, waste utilization, hydroponics, hydroponic system with garbage media, and hydroponic benefits with garbage media), and the end (conclusion and motivation to live clean and healthy by utilizing inorganic waste). The media used in the form of interactive videos about the dangers of waste if it is simply spread without being processed into goods that are more economically valuable and environmentally friendly. Videos are designed interactively and interestingly with the aim that people as objects can receive information and messages in the video well.

Keywords: *Marginalized communities, interactive videos, hydroponic spinach*

1. INTRODUCTION

In today's society, there is a term marginalization or marginalized society that is often found in urban areas. Marginalization is a phenomenon of imbalances in social, economic, political, and educational aspects of society. Marginalized societies can also be characterized as small community groups or suburban communities. Marginalized communities rarely get attention from various parties, so the marginal area in branding prosperous living ai requires special attention from various aspects [1]. They run into barriers to voice, expression, and expressing opinions on the rights they should have. The life they have is very limited and beset by problems. So that marginalized communities are often also referred to as suburban communities. Marginalized people can be categorized as groups of people who have backgrounds such as beggars, scavengers, methies in [2][3].

One of the places left behind inhabited by suburban communities is Kampung 1001 Malam, precisely under the dupak toll bridge, Dupak Village, Krembangan Subdistrict, Surabaya City. Kampung 1001 Malam has an area of 5 Ha with a population of 171 heads of families (data observing as in Kampung 1001 Malam Year 2018). The location of the settlement is under the toll bridge so that the state is pitch black even during the day. This is behind the village named "Kampung 1001 Night". This place was hit in 1991 which was initially attached to the stigma as a place of escape for criminals. But as many people inhabited the village, the bad impression slowly faded.

The environmental conditions in Kampung 1001 night are very good. Residing under a bridge that is only blocked by fragile boards so that it can be said to

be an uninhabitable residence. Unlivableis a condition in which the house and its environment do not meet the proper housing for both physical, health, and social life. This is exacerbated by the pile of garbage that mounts because most of the citizens have livelihoods as scavengers [4] [5].

In the past decade, various community empowerment efforts there have been made. However, the garbage problem has not been solved. The community environment in Kampung 1001 night also requires improvements in the quality of the environment in the form of greening, health improvements, and improvements in economic well-being. Therefore, the repair of waste problems requires a solution that supports the suppression of the problem in other aspects.

This healthy and highly nutritious food can be produced by organic k farming methods, including organic vegetables [6]. Therefore, inorganic waste-based hydroponic methods can be used as a solution to improve the suburban community in Kampung 1001 night.

The transfer of knowledge to the periphery community needs to be done with interesting media and contains material that suits the needs and capabilities of the target object. Interactive video has advantages, one of which is easily accepted and understood by the public. Thus, hydroponic interactive video is the right medium to be used as one of the media of information delivery and increase the knowledge of the people of Kampung 1001 Malam about the importance of processing waste, one of which is by making spinach hydroponics.

Based on the above exposure, the purpose of this study is to create a hydroponic interactive video for empowering marginal communities in Kampung 1001 Malam.

2. METHOD

Based on the problems that have been explained earlier, then in this study will be produced an interactive video about making hydroponic spinach with inorganic waste media. Research and development methods are research methods that are used to produce a particular product and test the effectiveness of that product.

This type of research is Research *and Development* (R&D) with an ADDIE model consisting of five stages that include analysis (analysis), design (design), development, implementation (implementation), and evaluation (evaluation) [7][8]. The ADDIE model consists of 5 interrelated and systematically structured components which means that from the first stage to the fifth stage in its application must be systematic and cannot be sorted randomly. The five stages in the ADDIE method include simple, making it easy to implement.

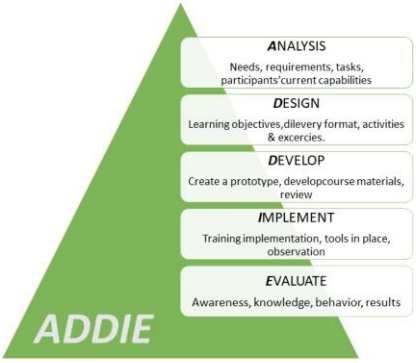

Figure 1. Research and Development model

Adaptation of the ADDIE Model applied by Analysis, Design, and Development is described as follows:

a. Analysis *(analysis)*
In this stage, analysis of the needs of video animation materials, characteristics of the target society, software analysis, and specification analysis.

b. Desain *(design)*
Tahap is not the basis of making storyboard video animation, the preparation of material accompanied by data, the creation of video background (background).

c. Development (*development)*
At this stage, interactive animation media creation, media validation, and media revision are carried out.

d. Iimplementmentasi *(implementation)* Stage of interactive video application

e. Evaluation *(evaluation)*
In the final stage of evaluation, product improvements are carried out based on the results of field trials and the manufacture of final products in the form of interactive Multimedia CD-ROMs.

3. RESULTS AND DISCUSSIONS

Interactive video is a method of transmitting information that forms a unique and interesting storytelling structure. Interactive video is a method of transmitting information that forms a unique and interesting storytelling structure. Interactive video is divided into dua, i.e. linearly and non-linearly. Linear interactive video is a systematically organized and habit-bound video that can include hyperlinking, linking, or adding more information to the video content, depth of information, and flexibility presented, whereas the interactive video is non-linearly unorganized and out of habit. The result of the video can be shown in Figures 2, 3 and 4. Educating

marginalized communities that have low intellectual ability, needs methods of transmitting information that is easy to understand and have a habitual but interactive look. Therefore, linear interactive videos are suitable to be applied to marginalized communities, especially to marginalized communities in villages at 1001 nights.

Linear interactive videos applied to marginalized communities in 1001 nights villages aim to develop their ability to process inorganic waste into hydroponics that can support their health and economy. The video design developed is as follows.

1. Early Part

The first part of the video describes the emblem of the institution or related activities as a profile, such as the Ministry of Education, Merdeka Belajar Merdeka Campus, Surabaya State University, and the Student Association of the Department of Language and Literature Indonesia, as well as the title of the activity.

2. Core Section

The core part of the video contains an overview of waste, waste data, the impact of waste on life, waste utilization, hydroponics, hydroponic systems with waste media, and hydroponic benefits with garbage media. An overview of garbage contains the understanding of garbage. According to who, garbage is something that is not happy, unused, and comes from former human activities. According to the Law of the Republic of Indonesia: Number 18, the year 2008 on waste management is the rest of human daily activities and /or natural processes in the form of solids. Waste is solid waste consisting of organic and inorganic materials that are no longer used and must be managed for the maintenance of the environment and building. Waste is solid waste consisting of organic and inorganic materials that are no longer used and must be processed for the maintenance of the environment and building. From the understanding of garbage above, it can be concluded that garbage is solid used goods that are unused and must be managed for human benefit, environment, and development [8][9][10].

Data-data garbage is presented in the form of a vertical or horizontal diagram containing:

1. The country has the biggest waste.

The five highest waste-producing countries in the world are occupied by China, Indonesia, The Philippines, Vietnam, and Sri Lanka. China contributed 262.9 million tons of waste, Indonesia contributed 187.2 million tons of waste, the Philippines contributed 83.4 million tons of waste, Vietnam 55.9 million tons and Sri Lanka contributed 14.6 million tons of waste. When in fact plastic waste can be processed into goods of economic value and can reduce environmental pollution because plastic waste is difficult to decipher[12][13][14].

2. World Waste Use

The world's waste use is used as the packaging of 146 million tons, construction and construction of 65 million tons, textiles 59 million tons, other sectors 47 million tons, customer and institutional products 42 million tons, transportation 27 million tons, electricity 18 million tons, and industrial machinery 3 million tons[15].

3. Indonesia's largest waste-producing city

21 cities in Indonesia have the largest volume of plastic waste deposits {16}. Surabaya occupies the first position of plastic waste contributor in Indonesia. This illustrates the urban conditions of Surabaya that have not been clean and there is a marginalization of the community.

4. Form of waste management in Indonesia.

The problem of waste in Indonesia is an unresolved problem to date [17], Whereas with the increasing number population, it will also follow the increase in the volume of waste generated from human activities Btheform of waste management in Indonesia is divided into 5, namely stockpiled in landfill 69%, buried 10%, composted and recycled 7%, not managed 7%, Burned 5%[18].

The risks of waste that occur in human life are:

1. Air Pollution

Plastic waste takes a long time to decompose naturally, making humans choose to burn it faster. However, the burned plastic will emit carcinogen gas that is harmful to humans and resulting in a greenhouse effect so that the ozone layer thins.

2. Soil Pollution

Soil pollution will occur when soil is polluted by heavy metals (HM) such as mercury (Hg) and cadmium (Cd) that are harmful to humans and the environment. Mercury cd levels (0.24 ± 0.16 mg kg-1) usually accumulate in the upper layer of soil near the incinerator, and this is followed by Hg (0.13 ± 0.09 mg kg-1), most of the health risks due to total HM come from skin contact.[19]

3. Flood

The use of plastics or inorganic goods in today's society is estimated to be approximately 0.52 kg per individual. This results in the accumulation of garbage in areas that are important to humans, one of which is the

waterways. Waterways are important for humans because if the waterways are dammed then the water will overflow and cause flooding. One of the causes of flooding is garbage, floods are caused by garbage not only inundating settlements but polluting the water so that people are susceptible to diseases, such as diarrhea, worms, Muntaner, coli, etc[20][21].

To minimize the risk of waste above, itis necessary to educate people who have low knowledge, such as marginal communities in Kampung 1001 Malam located on the banks of the Kalianak river so as not to throw garbage carelessly and better utilize the garbage, the form of used goods utilization can apply a 3 R strategy (Reduce, Reuse, Recycle)[22]. Waste utilization system, divided into 3 ways. Reduce is a reduction in the amount of waste used to harvest. The benefits of reducing are generating revenue from collecting materials, reducing the purchasing power of materials due to their small amounts, reducing CO2 emissions, reducing the cost of cutting waste into landfills, etc. Reuse is the reuse of used goods to maximize goods to be more useful and reduce the amount of waste. Recycling is the manufacture of new goods through the process of breaking, smelting, and so on from used materials. This activity is commonly called recycling. The benefits of recycling are reducing the amount of waste, reducing CO2 emissions, greenhouse gases, etc.[23]

Marginalized people in Kampung 1001 Malam 63% livelihood as scavengers of used plastic bottles and cups and resold to make ends meet. This condition can be maximized by changing the pattern of the community to process waste into goods that can improve the economy of the community while doing greening in marginal village areas. The form of processing is in the form of reusing bottles or plastic cups into hydroponics.

Hydroponics is a farming system with water as the main medium of soil replacement. The advantages of farming using a hydroponic system are maintained cleanliness, do not require soil and weed arrangement, land efficiency, water, and fertilizer, can be done out of season, and is easily controlled. One example of a plant that can be cultivated with a hydroponic system is spinach. In addition to being easy to grow, spinach has high economic and health value[24][25]. The main material of hydroponics manufacturing can use used goods, such as inorganic waste in the form of bottles and plastic cups. The use of this waste material can lower the cost of making hydroponics, reduce the waste of plastic bottles and cups, and create a clean and healthy environment.

In the end, it contains conclusions and motivations to live clean and healthy by utilizing inorganic waste as spinach hydroponics to improve the welfare of marginalized communities in Kampung 1001 Malam, as well as quoting the Statement of the Minister of

Figure 2. The Video about the benefit of Hydroponic

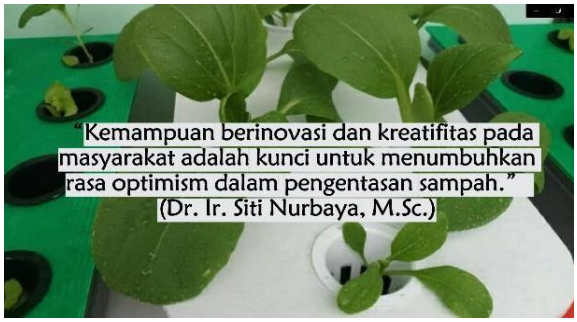

Figure 3. Video of Hydroponic

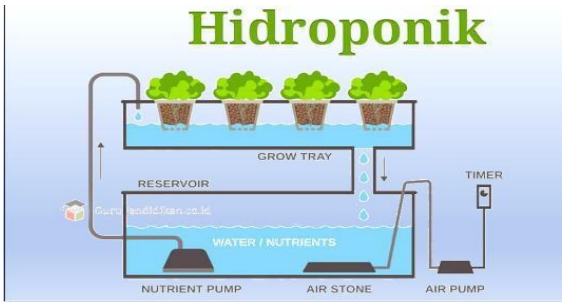

Figure 4. The Hydroponic Process

Environment and Forestry Dr. Ir. Siti Nurbaya,M.Sc. "The ability to innovate and creativity in society is the key to fostering a sense of optimism in optimizing a clean and healthy environment".

Marginalized people in Kampung 1001 Malam 63% livelihood as scavengers of bottles and plastic cups bekas and resold to make ends meet. This condition can be maximized by changing the pattern of the community to process waste into goods that can improve the economy of the community while greening in marginal areas. The form of processing is in the form of reusing bottles or plastic cups into hydroponics [25][26].

Hydroponics is a farming system with water as the main medium of soil replacement. The advantages of studying a plan for a hydroponic system are maintained

cleanliness, do not require soil and weed arrangement, land efficiency, water, and fertilizer, can be done out of season, and is easily controlled. One example of a plant that can be cultivated with a hydroponic system is spinach. In addition to being easy to grow, spinach has high economic and health value[27]. The main material of hydroponics manufacturing can use used goods, such as inorganic waste in the form of bottles and plastic cups. The use of this waste material can lower the cost of making hydroponics, reduce the waste of plastic bottles and cups, and create a clean and healthy environment.

Advantages of interactive video hydroponic making

1. Material

The material in this video is the utilization of waste into hydroponic planting media to improve the health and economy of the people of Kampung 1001 Malam. Almost every waste can produce economic value after it is processed. This video starts from the problem of waste in the community accompanied by relevant and factual data to the impact caused by waste for survival. However, this video also explains how to alleviate the problem of waste is to using garbage bottles and plastic cups as a hydroponic planting medium.

2. Illustration Design

The video uses interesting illustrations so that the intent and purpose in the video can be conveyed properly to the target object. With the use of such illustrations, people will more easily understand them.

3. Waste Utilization Strategy

The increasing existence of waste will be better if the community wants to process waste to be recycled and reused. Waste and other waste products can be more useful if recycled again. Processing waste with the 3R (Reduce, Reuse, Recycle) method is a sustainable strategy to overcome climate change mitigation, one of which is Greenhouse Gas Pollution (GHG). Utilization of waste in this video using reuse techniques. Reuse is a method of reusing wasteland by reusing. Waste that can be reused for example is garbage bottles and plastic cups that can be used as planting media. The manufacturing process can be done i.e: used bottles are perforated with perforated according to the size of the plant and the size of the pipe, used bottles are arranged parallel and evenly by following a pipe hole 0.5 inches in diameter, make a hole in the pipe o.5 inn by using solder as large as the diameter of a water hose 0.5 cm for the circulation of water to the reservoir and used bottles of mineral water are filled with water and the pump is turned on to check whether or not anything is leaking in the circulation of water.

4. CONCLUSION

The interactive video created aims to empower marginalized communities in Kampung 1001 Malam as a creative and innovative village with a hydroponic spinach center program with inorganic waste media through interactive videos. The research model used is an adaptation of the ADDIE model. Developing videos with formats including the beginning (reflection, observation of hydroponic videos, and disclosure of content), the beginning (overview of waste, garbage data, the impact of waste on life, waste utilization, hydroponics, hydroponic systems with waste media, and hydroponic benefits with garbage media), and the final (conclusions). and motivation to live clean and healthy by utilizing inorganic waste). Media that is in the form of interactive videos about the dangers of waste if left alone without being processed into goods that are more economically valuable and environmentally friendly. Videos are designed interactively and interestingly with the aim that the community as objects can understand the information and messages in the video well.

REFERENCES

[1] Rahman, Ratnah, The role of religion in marginalized societies. Socioreligious, 2019.

[2] Fadillah, Sarah. 2018. Study of Physical Conditions, Social Conditions and Economic Conditions in Slums Kampung 1001 Malam, Dupak, Krembangan, KotaSurabaya

[3] Passandaran, Yosi Maeleona, et al. English And Handicraft Training for Marginal Group Residents in Cipinang Besar Selatan East Jakarta. National Symposium on Science & Call for Paper Unindra (Symphony),2019. Santoso, Jo. 2006. It's a city without citizens. Jakarta: KPG and Centropolis Issuers

[4] Rahman, Ratnah, The role of religion in marginalized societies. SOCIORELIGIUS, 2019, 4.1ZAMRONI, M., et al. The waste management program of 3R (Reduce, Reuse, Recycle) by economic incentive and facility support. In: Journal of Physics: Conference Series. IOP Publishing, 2020. p. 012048.

[5] Santoso, Jo. 2006. Get around a city without citizens. Jakarta: KPG and Centropolis Issuers

[6] Mayrowani H. 2012. Development of organic farming in Indonesia. Agro-Economic Research Forum 30(2): 91– 108.

[7] Sugiyono. (2013). Quantitative, Qualitative and R&D. Bandung Research Methodlogy: Alfabeta.

[8] ROSMIATI, Mia. Interactive Animation as an English Learning Medium Using the ADDIE Method. Paradigm-Journal of Computers and Informatics,2019, 21.2:261-268.

[9] Hansen, E. J. (1995). Interactive Video for Reflection. Computers in Human Services, 11(1–2), 31–47. https://doi.org/10.1300/J407v11n01_04

[10] Petan, U.S., Petan, L., & Vasiu, R. (2014). Interactive Video in Knowledge Management: Implications for Organizational Leadership. Procedia - Social and Behavioral Sciences, 124,478–485. https://doi.org/10.1016/j.sbspro.2014.02.510

[11] Chandra, Budiman. 2006. Introduction to Environmental Health. EGC. Jakarta Subekti I. (2009)

[12] BPK RI. 2008. Law (UU) on Waste Management. Jakarta: Central Government.

[13] National Standardization Agency. (2002). Operational Procedures for Urban Waste Processing. ciptakarya.pu.go.id.

[14] Jambeck, Jenna R.; Gayer, Roland; et al. 2015. Plastic Waste inputs from Land into the Ocean. AAAS, 2015, 347.6223: 768-771

[15] Mukharomah, Ervina; Fadhillah, Etty Nurmala; Harfian, Binar Azwar Anas. Empowerment of Housewives in 12 Ulu Village in An Effort to Maintain Environmental Cleanliness With Plastic Waste Recycling Art Skills. Journal of Community Service,24.4:918-922.

[16] Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. Science Advances, 3(7), 25–29. https://doi.org/10.1126/sciadv.1700782

[17] Purwaningrum, Pramiati. Efforts to reduce the incidence of plastic waste in the environment. Indonesian Journal of Urban and Environmental Technology,2016, 8.2: 141-147.

[18] Kementrian Environment and Forestry. 2015. Plastic Pollution Threatens. Jakarta: Kompas

[19] Wei, J., Li, H., & Liu, J. (2022). Heavy metal pollution in the soil around municipal solid waste incinerators and its health risks in China. EnvironmentalResearch, 203,111871. https://doi.org/10.1016/j.envres.2021.111871

[20] Sufia, R., & Arisona, R. D. (2021). Introducing environmental education to early children through 3R activities (an effort for Indonesia free trash). IOP Conference Series: Earth and Environmental Science, 747(1), 012030. https://doi.org/10.1088/1755- 1315/747/1/012030

[21] Tharani, M., Amin, A. W., Maaz, M., & Taj, M. (2020). Attention Neural Network for Trash Detection on Water Channels. ArXiv:2007.04639 [Cs, Eess]. http://arxiv.org/abs/2007.04639

[22] Sufia, R., & Arisona, R. D. (2021). Introducing environmental education to early children through 3R activities (an effort for Indonesia free trash). IOP Conference Series: Earth and Environmental Science, 747(1), 012030. https://doi.org/10.1088/1755- 1315/747/1/012030

[23] Jambeck, Jenna R.; Gayer, Roland; et al. 2015. Plastic Waste inputs from Land into the Ocean. AAAS, 2015, 347.6223: 768-771

[24] Kabirifar, K., Mojtahedi, M., Wang, C., & Tam, V. W. Y. (2020). Construction and demolition waste management contributing factors coupled with reduce, reuse, and recycle strategies for effective waste management: A review. Journal of Cleaner Production, 263,121265. https://doi.org/10.1016/j.jclepro.2020.121265

[25] Palande, V., Zaheer, A., & George, K. (2018). Fully Automated Hydroponic System for Indoor Plant Growth. Procedia Computer Science, 129,482–488. https://doi.org/10.1016/j.procs.2018.03.028

[26] Nawarisa, Haris. (2017). Study of Fertigation on Spinach Plants. Medan: Elya Novita.

[27] Ewert, Michael K., et al. Comparing Trash Disposal and Reuse Options for Deep Space Gateway and Mars Misisons. In: AIAA SPACE and