

Teaching Module: Biounpoll World Kit

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Abstract : Promoting community commitment to protect local biodiversity especially in our own country, Malaysia is an important goal of education for sustainable development. In order to develop the biodiversity consciousness among people, a learning kit is the way to expose them to problems and everything they need to know about biodiversity. Therefore, we invented a learning kit which was developed by an enthusiast group towards STEM education focusing on biodiversity. Our own invention learning kit is known as 'Biounpoll World Kit' which can help to enhance the teaching and training process about biodiversity for all levels of the community. The idea of making this project is based on our observation on the low level awareness on biodiversity though a lot of campaign has been done by the government. Biounpoll world kit connects the sufficient requirement as an educational tool for the younger generations. This kit is a combination of 3 activities which are Save Anastasia and Her Friends, Unsponges and Biodiversity Flashcard. The objective of this product is to help in encouraging the curiosity in the students and also can be very helpful in experimental learning. The activities of Biounpoll world kit help the users about the Introduction to biodiversity, understand the impact of pollution to aquatic animals and know the benefits of eco-friendly products. This kit also allows user to develop, experiment, think, solving and explore while learning to apply the products in their life and gaining new information about the world of biodiversity. The activities offer from this kit will help to increase the knowledge of the user about our ecological biodiversity since our ecosystems are in danger. This interesting kit has potential to be commercialized and suitable as a learning kit as there is no learning kit that offer a similar content in the market.

Keywords: Learning kit, Biodiversity, Eco-friendly, Pollution, Module

1. Introduction

What is biodiversity? Biodiversity refers to all species and living things on Earth or in a specific ecosystem. The term “biodiversity” refers to the variety of living organisms. Biodiversity brings together the different species and forms of life such as animal, plant, entomological, other and their variability. There are three levels of biodiversity which is genetic diversity, species diversity, and ecosystem diversity (ASEAN Centre for Biodiversity, 2021). Today, biodiversity is increasingly threatened by human activities. Therefore, methods to provide awareness to the community about the importance of caring for the environment in order to save biodiversity need to use interesting and effective methods. In this kit, we are going to explain about the ways of conserving our biodiversity which is by stopping pollution and the effects of pollution towards our marine life by using a fish tank as an example and real life fish named as Anastasia. We will also spread some awareness about recycling unwanted items using the None sponges. None sponges, or also known as unsponges are created from offcuts of fabric and reuse fruit or vegetable mesh bag or tulle as a replacement to single-used plastic sponge. This thing was called as unsponges because there has no polyurethane sponge in them and a plastic free, which making them one of the eco-friendly products. The reasons unsponges are created because plastic sponges need to change frequently and it will throw away, creating so much wastes that usually end up in landfill as unlike unsponges, plastic sponges are none biodegradable. This synthetic sponge also contains toxic chemicals inside it and will dumped into the sea, create water pollution and harming the marine life. Not to forget that we will also explain about the major threats towards our biodiversity which is the climate change, habitat loss, pollution, invasive species and overexploitation. The benefits that we can gain from this kit is that we will be exposed to the importance of living things and also some awareness of the importance of taking care of the living things. We will be able to understand the connectivity of biodiversity between us and the living things around us. To spread this awareness, we are using the flashcards as a medium of questions and answer about how, what and why the ecosystem needed to be preserve. These flashcards will be answering all the question that are related to the first and also the second product of this kit. Flashcards are very easy to make and convenient to carry anywhere because of its small size compare to a book.

2. Materials and Methods

2.1 Materials

Save Anastasia and Her Friends!

- Fink tank or a container
- 1-2 fishes per box (optional)
- Plastic bag
- Recycling paper
- Tissue paper
- Oil to act as marine debris as well fish/fishes named as Anastasia

Unsponges

- Two pieces of 15.5cm x 8.5cm of old towel/ cotton batting
- Two pieces of 15.5cm x 8.5cm of cotton fabrics
- Two pieces of 15.5cm x 8.5cm mesh fruit bag or tulle
- Pins
- Scissor
- The sewing kit or sewing machine
- The size of unsponges is depends on choice. To make the sponge look thick, 4 layers of old towel or cotton batting was included. The materials and general steps shown in Figure 1.



Figure 1: Materials to prepare the unsponges

Biodiversity Flashcards

- Colour papers
- Scissor
- Printer

2.2 Methods

Save Anastasia and Her Friends!

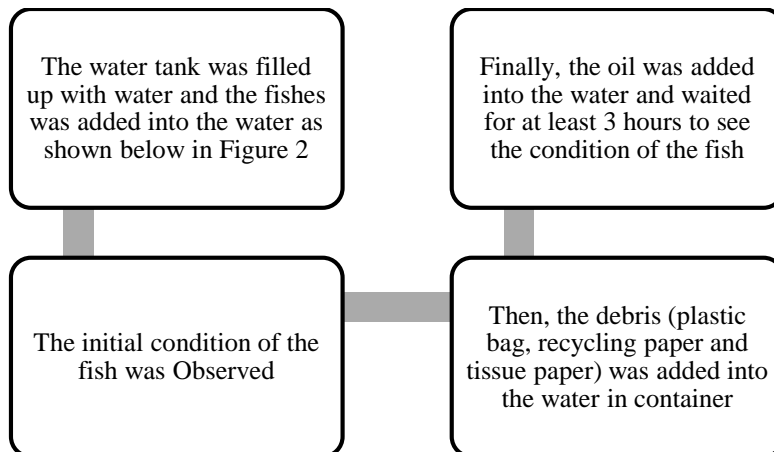


Figure 2: The tank condition

Unspoges

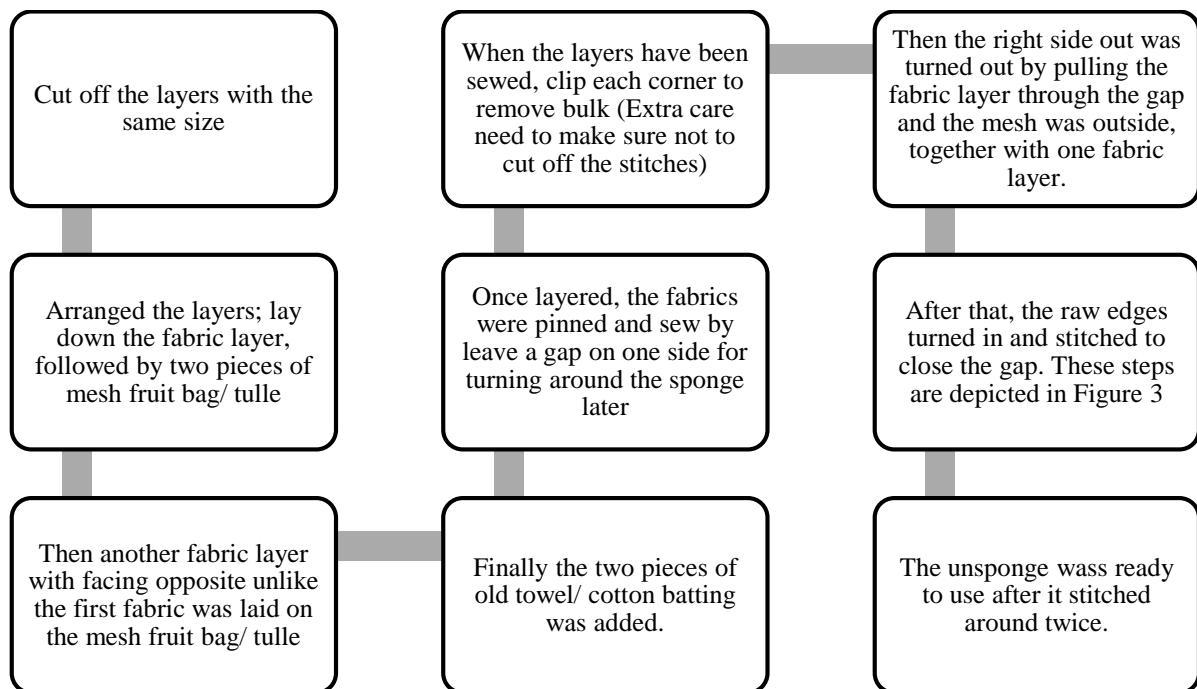
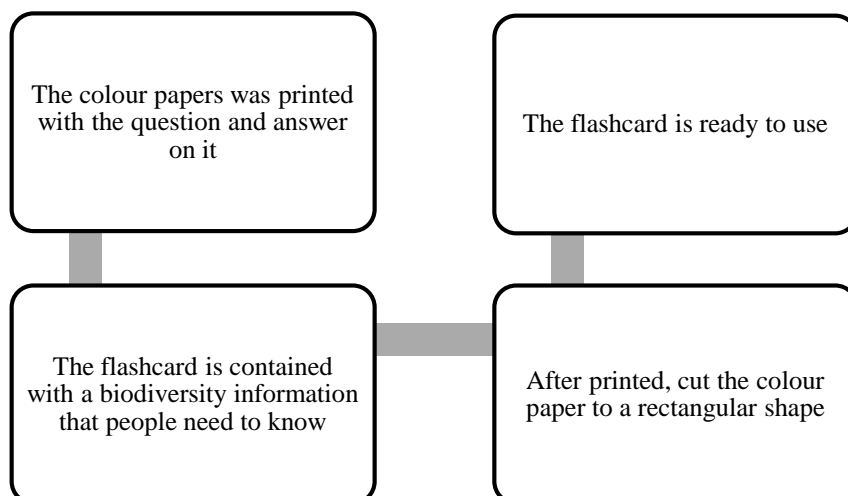


Figure 3: Steps to prepare the unspoges

Biodiversity Flashcards



3. Results and Discussion

3.1 Results

The kit was successfully prepared and all the activities have been tested. Below are the details observation of each activity.

3.2 Discussions

Save Anastasia and Her Friends!

The fishes was moving freely in a clean water. As soon as the debris was added, the movement of the fishes becomes bounded because the fishes did not get enough air as the debris are blocking their only source of air from the surface of the container as shown in Figure 4.



Figure 4: The conditions before (a.) and after the debris (b.) was added

None sponges / Unsponges

Unsponges were made of by reuse materials and polyurethane free. Households can use it for many functions and it is easy to wash and do not need to change frequently, unlike the plastic sponges. Unsponges are really eco-friendly as it does not contain any dangerous chemicals and non-harmful towards environment (Figure 5)



Figure 5: Unsponges

Biodiversity Flashcards

Teachers used this flashcard as their learning session tool for teaching the student and other users such as students, able to do the question and answer about biodiversity with their friends (Figure 6). This is because, the quality of student-centered learning depends largely on the effectiveness of how teachers choose and use the appropriate learning kits (Mohamad Jackie et al., 2016). Moreover, flashcard is a handy teaching and learning aid (Golding, Wasarhaley and Fletcher, 2012). Usually teachers still teach while writing on the whiteboard (Reighluth, 2012) and not using the learning kit (Abdullah, Zainal Abidin & Mohamad, 2012). So with this flashcard will ease the learning process and help them to understand the key facts about biodiversity. It also will create a generation that is

knowledgeable in the field of biodiversity and also give benefits for the teacher to make the learning process more interesting and easily understand by the students.

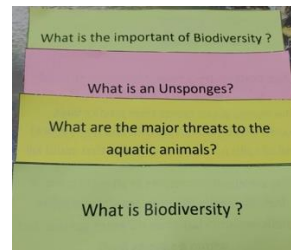


Figure 6: Flashcards

4. Conclusion

Biodiversity is a very important part of our lives. If we lost this part of our life, we will be in a huge threat. By using the products from this kit, we will be able to give awareness about the condition of our sea and also the advantages of recycling, so that people can stand united to protect our ecosystems. This kit not just can save and improve the awareness of biodiversity and create friendly environment, but it is also to teach people to recycle any materials that may be seen as useless and will be thrown away but actually it has so many benefits that can be use that people may cannot see it. It will also make people aware of how important it is for us to take care of the biodiversity because most biodiversity resources are consumed by humans, so it is our primary responsibility to preserve and protect biodiversity to protect the earth and its sustainability. The richness of the species, the ecosystem, the environment and the sustainable growth of life on earth is important. Therefore, by using this kit, lot of information could be learned including information on biodiversity in relation with the environment sustainability.

Acknowledgement

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Appendix A

The novelty of this teaching kit is that, this is the first Biounpoll World Kit in Malaysia. It can give a lot of benefits to the users because this box is three in one product and below (Figure 7) is the sample of the Biounpoll World Kit box.



Figure 7: The box of the Biounpoll World Kit and the inside of the box.

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