Environmental Education Program

GUIDE

Proffesional Product

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Introduction

During my last semester of studying Global Project and Change Management, I had the opportunity to intern with Under the Wave, a non-profit organization based in Zanzibar. Their mission is to preserve and restore the waters of Zanzibar through various projects. One of these projects focused on environmental education in local schools, aiming to raise awareness and understanding about the ocean among the younger generation.

Under the Wave recognized the need for a more impactful approach to ocean conservation in local schools. The existing environmental education program faced challenges such as lack of structure, inconsistency, and a focus on subjects that were not relevant to the local community. Additionally, the program struggled to effectively communicate its message.

The main objective during the internship was to enhance the existing environmental education program. To achieve this, I carried out field research to identify effective ways of establishing an emotional connection between local secondary school students and the ocean. The goal of fostering this emotional tie was to influence the students' future behaviours and attitudes towards marine conservation.

The findings of this research can be found in detail in the Concise Research Report. Based on these results, this document will provide a presentation of the developed environmental education product for Under the Wave.

The Product

The product I developed is an environmental education program guide for Under the Wave, specifically focusing on marine conservation. This program was created based on qualitative research conducted in Matemwe from February to May 2023, as part of my bachelor's thesis for the Global Project and Change Management program. The main objective of this program is to establish consistency and foster in-depth awareness of marine conservation topics, with a specific emphasis on addressing local needs, environments, and the economy.

The product consists of two main parts: one for the Under the Wave employees who will lead the program in local schools, and the other as a guide for the volunteers who will accompany and participate in the school activities. The section designed for Under the Wave employees serves as a comprehensive guide for the local marine biologist responsible for leading the program throughout the year.

It begins with an introduction highlighting the importance of environmental education, based on the literature review conducted during the research phase. This section aims to provide a clear understanding of why the organization has undertaken this project and the significance of educating local children about their environment. Following the introduction, the guide presents the topics and their corresponding timelines. It further provides a detailed week-by-week activity plan, illustrating how the topics should be covered over a span of five weeks, employing various educational methods each week. The core of the product is a step-by-step guideline outlining the specific responsibilities and tasks for each week. Additionally, for each topic, the guide offers suggestions, ideas, and examples for the activities.

The guide for the volunteers also emphasizes the importance of environmental education and provides an overview of the topics and materials needed. However, its primary focus is on their role and responsibilities during the education sessions in local schools. The volunteers, in collaboration with Under the Wave, will prepare and facilitate the sessions, guiding and assisting the students. This section includes basic information about the school, such as the number of students and the scheduled activity time.

The ideas and suggestions for the activities remain exclusive to the Under the Wave staff, to be utilized as needed.

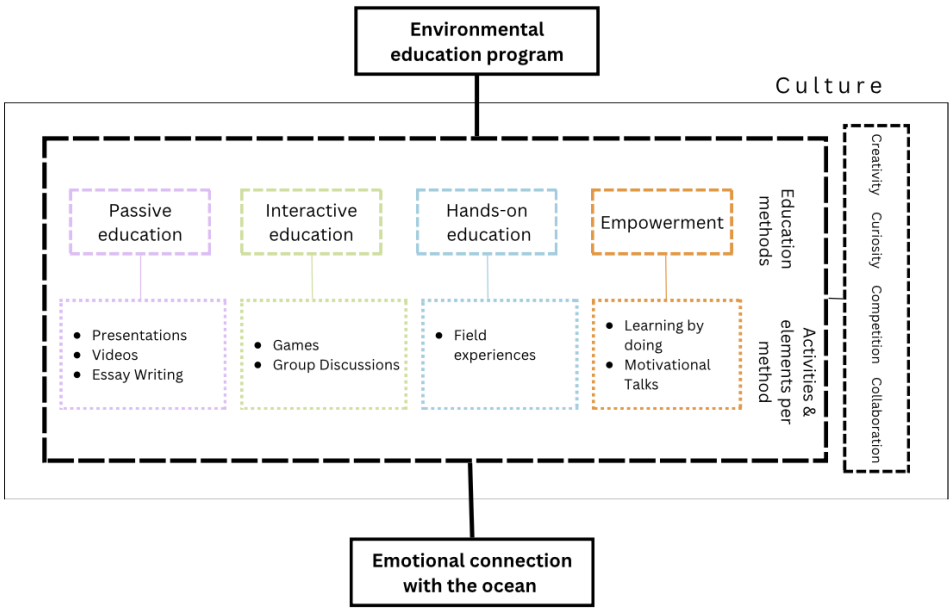
Overall, this product serves as a comprehensive guide for both the Under the Wave employees and the volunteers, ensuring effective implementation of the environmental education program in local schools.

The Research Results

Based on the research results depicted in the provided in figure 1, the environmental education program has incorporated several key elements. The program follows a structured approach with different types of education methods implemented over the course of five weeks.

Figure 1

Research Results Summarized



In the first week, the program emphasizes passive education, focusing on imparting knowledge and information to the school children. This approach allows them to acquire foundational understanding about marine conservation and the importance of the ocean. As mentioned in the CRR, PowerPoint presentations are a good method to transfer knowledge with the uncertainty of electricity as they can be printed out prior to the class. Moreover, the information should be tailored to the local context to spark more curiosity towards the topics. However, mixing it with a more interactive activity can be more efficient, therefore a group discussion activity is added.

Moving into the second week, the program shifts towards interactive education. This approach encourages active participation and engagement from the students, fostering a deeper connection and understanding of the topics discussed. Several Games per topic are

suggested in the education program and little healthy competitions between groups are installed. The research suggests incorporating rewards for winners to promote motivation and enthusiasm.

Week three is dedicated to hands-on education, which involves taking the children out of the school environment to experience and engage directly with the ocean and its ecosystems. This immersive experience aims to create a stronger connection and appreciation for the marine environment. These activities are organized by Under the Wave.

During the last two weeks, the program aims to empower the school children. This could involve empowering them to take action and make a positive impact on marine conservation, fostering a sense of responsibility and agency. The inclusion of creative activities, such as the preparation and presentation of hand-made posters, nurtures problem-solving skills, group collaboration, and a sense of accountability.

By implementing these various educational approaches throughout the program, the environmental education initiative seeks to provide a holistic and comprehensive learning experience for the school children, enabling them to develop a deeper understanding and connection to the ocean and its conservation.

Activities Of The Product

The proposed activities in the education program have been thoroughly discussed and approved by the owners of the organization, Under the Wave. However, it is important to note that the final organization and scheduling of the activities will be determined by Under the Wave closer to the program's implementation date. As the implementing organization, Under the Wave possesses the expertise and understanding of local dynamics, allowing them to make informed decisions and adapt the activities based on factors such as weather conditions or unforeseen circumstances. This approach ensures that the education program is carefully tailored and optimized to provide the best possible experience for all participants involved.

Moreover, it is important to highlight those certain activities, such as snorkelling, require special attention and assistance. Not all children may be proficient swimmers, and additional organizational factors will need to be considered to ensure their safety and participation. Under the Wave will diligently address these requirements, including providing appropriate supervision, safety measures, and additional support to accommodate the varying swimming abilities of the children. This ensures that all participants can fully engage in the activities while maintaining a focus on their safety and well-being.

Cultural Factors In The Product

As highlighted in the Concise Research Report, the environmental education program takes into consideration various cultural factors. One crucial aspect is ensuring that the program's content and information transfer are specifically tailored to the local island context. This approach facilitates easier understanding and captures the interest of the children. Additionally, the program's activities are designed to take place in close proximity to the schools, showcasing the beauty of the ocean right in their own "backyard."

Respecting local values and beliefs is a significant consideration throughout the program. Engaging in open dialogue with teachers and seeking their permission and supervision for activities helps ensure that the program aligns with the cultural norms and values of the community. Emphasizing close community involvement is also essential, with efforts made to invite and include local individuals to share their knowledge and experiences. This approach fosters a sense of ownership and connection among the community members, making the environmental education program more impactful and relevant.

Considering the strong traditions and the predominant practice of Islam throughout the island, it is important to be mindful of cultural norms and expectations. Both men and women are expected to dress respectfully when engaging with the local population (The Revolutionary Government of Zanzibar, 2021). As a result, volunteers participating in the environmental education program are kindly requested to dress in a manner that is culturally appropriate and

respectful. This demonstrates our commitment to honouring and embracing the local customs and traditions, fostering positive interactions and mutual respect between volunteers and the community members. By adhering to these cultural considerations, we can create a harmonious and inclusive environment for all participants involved.

Language Of The Product

The language used in the environmental education program guide has been intentionally kept simple and accessible. This decision stems from the recognition that the target audience, the local people and the volunteers, may have English as their second language or may not be fluent in it. It is crucial to ensure that the guide can be easily understood by individuals whose first language may be different. By using clear and straightforward language, we aim to bridge any language barriers and make the content readily comprehensible, thereby enabling effective communication and engagement with the local community.

Under the Wave Guide

UNDER THE WAVE

Environmental Education Program

GUIDE

The importance of environmental education programs

Overfishing and bycatch have a devastating impact on fisheries worldwide (Colbert-Sangree & Suter, 2015). However, implementing management strategies in Zanzibar poses challenges due to the local population's dependence on marine resources for survival (Colbert-Sangree & Suter, 2015).

Recognizing the importance of environmental education, it is considered essential for fostering environmental awareness, values, attitudes, skills, and behaviors (Gough, 2017). It plays a crucial role in enabling effective participation in environmental decision-making and promoting sustainable development (Gough, 2017). Moreover, environmental education contributes to the development of positive attitudes toward the environment and shapes perceptions of places, animals, and nature (Martin et al., 2015).

Environmental education is typically delivered through structured programs that aim to impact learners' cognitive, emotional, and participatory knowledge (Hug & Hug, 2009). Education and communication are recognized as indispensable disciplines that contribute to conservation efforts (Thomas et al., 2019), serving as catalysts for communities to work towards creating sustainable futures (Gough, 2017). Marsh (2017) emphasizes that people are both part of the problem and part of the solution, underscoring the significance of educating individuals as a means to address environmental challenges.

Despite the importance of marine conservation, it is often overlooked in school curriculums worldwide (Gough, 2017). In order to achieve ocean sustainability, it is crucial to include the marine ecosystem in environmental education programs within schools (Gough, 2017). The role of non-governmental organizations (NGOs) in public environmental education and awareness is growing, as the need to protect and restore the environment becomes increasingly significant (Singh & Rahman, 2012). Through various forms of formal education, NGOs are able to engage with local communities and advocate for change, aiming to create emotional impact and facilitate positive transformations (Singh & Rahman, 2012). Programs that enhance understanding of the marine environment can effectively improve participants' knowledge and empathy, potentially leading to behavior changes and increased involvement in conservation efforts (Frame et al., 2021).

30% OF THE OCEANS ARE NOW PROTECTED BY THE UNITED NATIONS

BEHIND THE PROGRAM

Hi! I'm Zoé, the person behind the environmental education program. For my bachelor internship I have helped Under the Wave create a more consistent and impactful program.
To design this program I have researched how an environmental education program in local schools can create an emotional tie between students and the ocean. I have interviewed several experts and key stakeholders for this. Before expecting a change in behaviour, it is important to create an emotional connection to the water so they can by themselfs change behaviour once they see the importance and beauty.

Topics

Different topics have been selected as they are important to get a deeper understanding and connetion to the ocean with local focus. The topics start from more generalisation and go more into specific topics.

There is interdepence between topics so the order has been thought through carefully.

	TOPICS	Start date	End date
1	Ocean		
2	Lagoon and coral reef		
3	Mangroves & seagrass		
4	Marine ecosystem		
5	Sustainable fishing		
6	Turtles		
7	Pollution & Recycling		

The schools

Matemwe secondary school

AGE: 13-15 YEARS OLD

GENDER: MIXED

NUMBER OF STUDENTS: 30-40

TIME: 1 HOUR (AFTERNOON)

LOCATION: MATEMWE CENTER VILLAGE

Kigomani secondary school

AGE: 13-15 YEARS OLD

GENDER: MIXED

TIME: 1 HOUR (AFTERNOON)

LOCATION: KIGOMANI VILLAGE

NUMBER OF STUDENTS: 20-30

Weekly program & materials

To ensure consistency in the program's content, each topic will be thoroughly explored over a span of five weeks. Throughout these weeks, a diverse range of activities will be conducted, incorporating passive education, interactive education, hands-on education, and empowerment. These activities will be specifically tailored to each topic, offering unique perspectives and approaches.

The following table provides an overview of the weekly activities and the corresponding materials required for each week:

WEEK	ACTIVITY	Preparation
WEEK 1	• Mind maps that introduces the subject • Presentation about the topic	• Paper for mind maps • Prints of the presentation • Projector or television
WEEK 2	• Games related to the topic in discussion: they have to be interactive, simple and well explained	• Prepare, print and laminate the games if needed
WEEK 3	• Field trip	• Briefing and task division of roles • Preparation activity
WEEK 4	• Preparation of group presentation or creative activity	• Posters (A3 paper) • Colors • Scissors • Glue • Printed images • Information posters
WEEK 5	• Little quiz about the topic • Presentation in groups or art piece	• Snack and juice for end • Little price for the 3 best scores • Test preparation and printing

Week 1 & 2

A layout of the weekly program with a time division of the class is presented.

WEEK 1: PASSIVE

The introductory class will serve to introduce the topic for the five-week program. Firstly, the kids will be divided into groups, where they will share everything they know about the topic and create a mind map with the assistance of volunteers. The mind map will be created in English, aided by a vocabulary list containing terms related to the topic in both languages. This list is provided to help each kid learn the basic words necessary to understand the topic.
Following that, a presentation in Swahili will be delivered by a local marine biologist to provide the necessary knowledge and information about the topic.
At the end of the class, the mind maps will be discussed, and a collective mind map will be created on the board, gradually filled with information for the upcoming presentation.

ACTIVITY	Time
• Mind maps that introduces the subject • Translation list	• 15 min
• Powerpoint presentation (knowledge transfer)	• 30 min
• Class mind map	• 5 min • 10 min

WEEK 2: INTERACTIVE

This class serves to learn more about the topic by playing a game or looking at an example. Through engaging games, the aim is to keep the kids interested in the topic and enhance their understanding of the learning objectives. To make it more enjoyable, a challenge can be created among the groups.

ACTIVITY	Time
• Introduction games	• 5 min
• 4 or 5 games	• 7 min per game • 28/35 min total
• Final group puzzle	• 15 min

Week 3

WEEK 3: HANDS-ON EXPERIENCE

One of the most important aspects of environmental education is to help children connect with nature. When children have experiences in nature, it helps them feel closer to the environment and develop a stronger bond with it.
During week 3 of our program, we aim to provide hands-on experiences for the children. This means taking them out of the classroom and engaging them in interesting activities that will deepen their connection to the topic we are discussing.
By offering long-term sensory experiences in nature, our environmental education programs can greatly enhance the children's sense of connection to the natural world. This feeling of connection and belonging to nature can foster emotional empathy towards the environment.
Outdoor education plays a crucial role in equipping students with the skills and inspiration needed to develop behaviors that protect nature. It empowers them to take action and make a positive impact on the environment.

ACTIVITY	Time
• Depending on the activity and distance	• 60 min +

The field activities will have a local focus as it is important to connect them to nature in familiar places and environments. Their island is full of things they never get the chance to experience.
Moreover, there will be activities for the students to do during the trip so they can get more engaged from the experience but also will have focus on the information shared.

Some examples are a snorkeling trip to Mnemba island, treasure hunt in the lagoon and coral reef, mangrove forest exploration, beach clean ups and analysis of items, ...

Week 4 & 5

WEEK 4: CREATIVITY

Week four helps to provide space for creativity. With the kids, the aim is to create visually appealing posters related to the topics or have them individually draw a representation of the field trip they went on. One volunteer per group will already prepare all the information that needs to be included in the poster, and together with the students, they will create an A3-sized poster with all the information.
By fostering creativity, the children are able to establish a deeper connection between what they are writing and what they will ultimately present.

ACTIVITY	Time
• Explanation + topics	• 10 min
• Preparation presentations	• 50 min

WEEK 5: PRESNETING AND KNOWLEDGE TESTING

In week five, we aim to empower the children by allowing them to deliver the presentations they have prepared in front of the class or share their creative pieces.
Learning how to speak in front of people will empower them in the future. Additionally, the presentations will be in English, which will help them become more comfortable with the language used in the topics. Volunteers will assist and guide the students in presenting their topics effectively.
In week 5, there will also be a small quiz for the kids. This quiz is designed to assess whether the children have learned anything from the classes. The three highest grades will receive a small gift (school materials) as an incentive to foster healthy competition and motivate the children to perform well in the quiz.

ACTIVITY	Time
• Quiz	• 15 min
• 4 or 5 presentation	• 7 min each
• Closing plus snacks	• 10 min

Under the Wave

A brief explanation of the task of an Under the Wave Member

WEEK 1

In week one your role is to show the presentation about the topic to the volunteers and give them more knowledge on the topic. Also present the school and target audience. After that help them create mind maps about the topics and explain their task. Make sure that they create a complete vocabulary list with the current translation (ask a Zanzibari for assistance). Print a copy for each kid and 5 copies for the volunteers (you can laminate them and keep them for the 5 weeks).

For the class, make sure that you have enough copies of the presentation (1 for each 3 students). During the class you will take the lead dividing the children into groups (4 or 5, depending on size of the class and number of volunteers). After they had time for the mind map start the presentation.

WEEK 2

Your task is to guide the volunteers in making the games. They have to be simple, creative and informative about one of the subjects of the topics. Show them an example of the previous topic and have some back up games ready in case they couldn't come up with something. Each volunteer should have one game with an explanation in Swahili.
Your task is also to print out the materials and laminate them. This way they last longer and can be reused. Don't wait until the last moment to do so.
Do you also want a puzzle and prize? Decide with the volunteers what it will be and make sure it is ready the day of the class.

Take the lead at the beginning of the class explaining what the activity is to the kids. During the class go around in tables and help the volunteers when necessary. As there are several games, you will also set the timer of 7 min to complete the game, when the time is over the volunteers will switch groups and do the game with different students. If you have the big puzzle, take the lead at the end and decide the winner with the volunteers. At the end of the class, take the games and put them in the folder.

WEEK 3

Create a clear briefing on the field trip for the volunteers and help them come up with the activity. Make sure all volunteers are comfortable with the activity and have the skills to lead a group of students (make a list beforehand and check with Laura or Yong Mi).
Just before the field trip do again a briefing with the volunteers and ask if everything is clear about the field trip and activity. Make sure to also prepare a briefing for the children: what is the activity they will do, what to touch and not touch, group sizes etc.

WEEK 4

In week 4, decide with the volunteers what to make the posters about (have already some ideas in mind). The subject should be interesting and connected to the topic. Let the volunteers prepare the information and print out images if necessary (each volunteer will have 1 topic and get 1 group). Have an example for the class to show them how it is done, and make them pick the topic out of folded papers (equality in choosing the topic). Bring posters, scissors, glue and colors. Try to make them as creative as possible. At the end of the class, take them with you and bring them the week after.

WEEK 5

In week 5, lead the volunteers in making a small quiz for the kids of the school. Show them an example and make sure it is suited for the target. The test should be in English and Swahili. Print out enough copies and always some extra for the volunteers and the EE folder.
It's the last lesson so also organise snacks and a drink for the kids (ask UTW).
In the class, take 10 min for the test and then start with the presentation. Make sure a volunteer helps 5 min in preparing the presentation and remind what they have have to say. The kids from the school can keep the presentation.
End the session with the snacks and the drink.

Under the Wave

FOR THE PREPARATION

- Make sure you know your role and tasks
- Make sure you know the volunteers role and tasks
- Know the school and target group
- Bring the Environmental Education map with the examples and explanation
- Make sure all the required materials for the volunteers is available

BEFORE THE CLASS

- Print the materials needed
- Make sure there are enough copies for all children
- Print copies for the volunteers
- Prepare the materials needed for the school in advance (colors, posters, scissors, ...)
- Make sure you explain again to the volunteers their role and task

DURING THE CLASS

- Start the class and explain what you will do
- Distribute the materials (ask help from the volunteers)
- Help the volunteers when in group work
- Always make sure to keep a positive attitude
- At the end, thank the class for the time and close the session
- If a timer is needed, you are responsible for it

AFTER THE CLASS

- Take the materials back with you - check that you have everything
- Leave a copy of the printed materials in the environmental education map
- Leave the games in the map too
- Write a little summary of what worked and what did not if needed (google drive)
- Thank the volunteers for participating
- Keep all the materials organized and clean so they can be reused

Topic 1: The Ocean

Topic one is the ocean. This topic serves to give a general understanding of the water and how it functions around the world. It is the foundation of the education program because if the children do not know how the ocean works, it's currents and tides, then it is also difficult to explain other topics.

In this topic we explore the different oceans around the world, the ocean currents and their temperature, the tides and also the layers of the ocean.

WEEK	ACTIVITY
WEEK 1	Mind map Power point presentation Vocabulary list Extra: with a bucket of water and a plastic bottle you can show the children how the current works. Stir in the bucket in one direction and then leave it and show how the plastic bottle will follow the water stream.
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Layers of the ocean game (which animal in which ocean layer - pictures of animals and the board with ocean layers painted) • Tides game: connecting the local image of the tide on the beach to the right moon and right tide • The 5 major oceans game: first, connecting the right ocean name to the place on the map. The second part is to order the from biggest to smallest and third you associate the ocean with one factor (most saltiest, most unexplored ....) For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies). For the ocean it can be about the light in the ocean and the way colours change.
WEEK 3	Snorkelling at Mnemba with Scuba Fish boat to show them the underwater world and the marine ecosystem. By being in the water the children learn not to be scared, some improve the swimming skills, and for some it's the first time to look under water with mask. As not all children are able to swim, Scuba Fish will provide all necessary safety equipment and snorkelling guides will be present. Moreover, each child will provide a disclaimer signed by parents that agree the participation in the activity. School teachers are involved in the preparation and supervision of the activity.
WEEK 4	Posters to enhance creativity related to the topic. Idea, about 4 different animals: they have to say in which ocean they live, in which layer they live, the temperature of the water that is preferred, what they do with high and low tide
WEEK 5	Presentation of the poster they prepared. Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Snacks and drinks for all to end the sessions.

Topic 2: Lagoon & coral reef

Topic two is the lagoon and coral reef. This topic is essential on the island as the east coast has a natural lagoon and is covered by coral reef. Unfortunately the reef is slowly dying. Locals depend on lagoons and their ecosystem to survive, it is thus important to teach them about it.

Everything that covers the different sorts of lagoons, the animals that live there and the bleaching of the corals is explained in this topic.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about the lagoon: this can be stories, myths, ...) Power point presentation + vocabulary list End with a new mind map, this time on the board Final question: what can you do to protect the corals?
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Corals game - what kind of coral is in what stage, what happens? • What can you find in the lagoon with high tide, and what with low tide? (image plus animal pictures) For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Walk in the lagoon with a treasure hunt. Each group has a set of pictures of animals that they have to find and identify. They have to write the name of what it is on the laminated paper - make a clear breafing for the volunteers and the children of the school. Make sure all the materials are organised (shoes, laminated treasure hunts, ...)
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Posters to enhance creativity related to the topic. Idea: 4 different species that can be found in the lagoon or a stage in which the corals can be found (bleaching process), a solution on how to protect the lagoon.
WEEK 5	Presentation of the poster they prepared. Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Topic 3: Mangroves

Topic 3 is about mangroves. Mangroves cover big part of the island of Zanzibar and are very important for climate mitigation, erosion, and economic activity. They also play a crucial role for the ocean. Therefore, it is important to teach the children what they are, what they do and how to protect them.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about the mangroves: this can be stories, myths, ...) Power point presentation + vocabulary list End with a new mind map, this time on the main school board
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Position the right term in the mangrove picture • Why are mangroves important? Pictures true and false • Quiz about importance of mangroves For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Field trip to mangrove park or planting of mangroves - as activity they can draw what they see in the mangrove forest or write how to plant mangroves.
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Idea: each kid will draw/paint about something that they learned during the field trip. Or each group will make a presentation on one important factor of mangroves: • Different parts of the mangrove • Different mangroves • Mangroves and economic activity • Mangroves and erosion • Mangroves and animals
WEEK 5	Presentation of the poster they prepared Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Topic 4: Marine ecosystem

Topic 4 is about marine ecosystems. A difficult topic but essential as it shows the relation and interdependence of species in the ocean. As many locals depend on fishing it is important to show them the food chain and what happens when they only catch small fish.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about the marine ecosystems: connections, what it is, ...) Power point presentation + vocabulary list End with a new mind map, this time on the main school board
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Position who eats what in the right order (food chain) • Why are marine ecosystems important? Pictures true and false • Quiz about marine ecosystem and interdependence For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Visiting a fish market and as activities the children have to identify the fish and see if the sizes are correct or not. The volunteers can prepare the activity (also go to the fish market with them if necessary - Kigomani or Pawni).
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Idea: • Different ecosystems and their interdependence • The food chain of fish • What to fish in what season (mating seasons)
WEEK 5	Presentation of the poster they prepared Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Topic 5: Sustainable fishing

Topic 5 is about sustainable fishing. Now that the children have learned about the interdependence of species, it is important show them sustainable fishing techniques that help and preserve the food chain.
In this topic different practices are showed and the importance of sustainable fishing is explained. The locals will never stop fishing, and that is okay, but the way they fish can change what they will eat and for how long.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about the sustainable fishing: this can be practices, lifecycle of fish, ...) Power point presentation + vocabulary list End with a new mind map, this time on the main school board
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Position the sustainable, unsustainable and illegal practices under the right one • Why is sustainable fishing important? Pictures true and false • What happens if game (what happens if I only catch tuna?, what happens when I only catch damsels?, ...) For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Ministry of fisheries visit and talk
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Idea: Presentations about different sustainable fishing methods and practices and why it is important to use those
WEEK 5	Presentation of the poster they prepared Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Topic 6: Turtles

Topic 6 is about sea turtles. Locals still tend to eat turtles and poach their eggs. It is now an endangered species that will soon disappear from the island if locals are not educated about them.

In this topic the importance of turtles is explained, the lifecycle and how it is illegal to kill them and poach their eggs. The beauty of the animals is also shown and explained.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about the turtles this can be stories, myths, ...) Power point presentation + vocabulary list End with a new mind map, this time on the main school board
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card (terms and pictures, what is what) • Lifecycle of turtle • Quiz about importance of turtles For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Turtle hatchery visit and explanation lifecycle.
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Idea: Presentation about lifecycle of the turtle - each group can have one phase of the lifecycle and explain in depth the process and importance.
WEEK 5	Presentation of the poster they prepared Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Topic 7: Pollution & recycling

Topic 7 covers pollution and recycling. The island of Unguja is affected by different types of pollution. There are several local mechanism to make pollution "disappear" these include trowing things in the ocean, digging holes in the ground for oil to disappear, burning plastic, ... Even if solutions are difficult to implement, it is important to know what pollution does to humans and nature, how long it takes to disappear and even mention some recycling methods.

WEEK	ACTIVITY
WEEK 1	Mind map (let the children reflect about what they know about pollution and recycling: what happens if goes in the water? ...) Power point presentation + vocabulary list End with a new mind map, this time on the main school board
WEEK 2	All games can be printed out and laminated and put in the folder • Memory card game about pollution • Recycling game - Recycling relay race (groups have to run and recycle the item in the right big) • How long does it take to disappear game - age and type of pollution For the competition: the games are done in groups and with a time limit. If they finish the game correctly on time, there is the possibility to create an additional puzzle with images. The group that is able to identify the meaning of the images wins a price (e.g. school supplies).
WEEK 3	Ask the volunteers to prepare an activity in the field. Suggestion: clean up and analysis trash - how many tooth brushes, how many bottle caps, how many slippers, ... Make a big board (plywood with paint)with the item name and the number found - this can be used as a statement piece.
WEEK 4	Make the volunteers come up with interesting topics for presentations and prepare the topics. Idea: presentation about different pollution issues (how they exists, what to they do) and what can be done to resolve it on the island (problem-solving thinking). • Plastic pollution • Soil pollution • How long does it take to disappear what • Air pollution
WEEK 5	Presentation of the poster they prepared Quiz to test the knowledge. The 3 best results can get a price, this will enhance competition. The price can again be a school supply. Give the big poster printed out that summarises the topic. Snacks and drinks for all to end the sessions.

Volunteer Guide

UNDER THE WAVE

Environmental Education Program

GUIDE

VOLUNTEERS

The importance of environmental education programs

Overfishing and bycatch have a devastating impact on fisheries worldwide (Colbert-Sangree & Suter, 2015). However, implementing management strategies in Zanzibar poses challenges due to the local population's dependence on marine resources for survival (Colbert-Sangree & Suter, 2015).

Recognizing the importance of environmental education, it is considered essential for fostering environmental awareness, values, attitudes, skills, and behaviors (Gough, 2017). It plays a crucial role in enabling effective participation in environmental decision-making and promoting sustainable development (Gough, 2017). Moreover, environmental education contributes to the development of positive attitudes toward the environment and shapes perceptions of places, animals, and nature (Martin et al., 2015).

Environmental education is typically delivered through structured programs that aim to impact learners' cognitive, emotional, and participatory knowledge (Hug & Hug, 2009). Education and communication are recognized as indispensable disciplines that contribute to conservation efforts (Thomas et al., 2019), serving as catalysts for communities to work towards creating sustainable futures (Gough, 2017). Marsh (2017) emphasizes that people are both part of the problem and part of the solution, underscoring the significance of educating individuals as a means to address environmental challenges.

Despite the importance of marine conservation, it is often overlooked in school curriculums worldwide (Gough, 2017). In order to achieve ocean sustainability, it is crucial to include the marine ecosystem in environmental education programs within schools (Gough, 2017). The role of non-governmental organizations (NGOs) in public environmental education and awareness is growing, as the need to protect and restore the environment becomes increasingly significant (Singh & Rahman, 2012). Through various forms of formal education, NGOs are able to engage with local communities and advocate for change, aiming to create emotional impact and facilitate positive transformations (Singh & Rahman, 2012). Programs that enhance understanding of the marine environment can effectively improve participants' knowledge and empathy, potentially leading to behavior changes and increased involvement in conservation efforts (Frame et al., 2021).

30% OF THE OCEANS ARE NOW PROTECTED BY THE UNITED NATIONS

BEHIND THE PROGRAM

Hi! I'm Zoé, the person behind the environmental education program. For my bachelor internship I have helped Under the Wave create a more consistent and impactful program.
To design this program I have researched how an environmental education program in local schools can create an emotional tie between students and the ocean. I have interviewed several experts and key stakeholders for this. Before expecting a change in behaviour, it is important to create an emotional connection to the water so they can by themselfs change behaviour once they see the importance and beauty.

Topics

Careful consideration has been given to selecting different topics that are vital for developing a profound understanding of the ocean and establishing a strong local connection. These topics have been arranged in a deliberate order to reflect their interconnectedness, starting with broader concepts and gradually delving into more specific subjects.

	TOPICS	Start date	End date
1	Ocean		
2	Lagoon and coral reef		
3	Mangroves & seagrass		
4	Marine ecosystem		
5	Sustainable fishing		
6	Turtles		
7	Pollution & Recycling		

The schools

Matemwe secondary school

AGE: 13-15 YEARS OLD

GENDER: MIXED

NUMBER OF STUDENTS: 30-40

TIME: 1 HOUR (AFTERNOON)

LOCATION: MATEMWE CENTER VILLAGE

Kigomani secondary school

AGE: 13-15 YEARS OLD

GENDER: MIXED

TIME: 1 HOUR (AFTERNOON)

LOCATION: KIGOMANI VILLAGE

NUMBER OF STUDENTS: 20-30

Weekly program & materials

To ensure consistency in the program's content, each topic will be thoroughly explored over a span of five weeks. Throughout these weeks, a diverse range of activities will be conducted, incorporating passive education, interactive education, hands-on education, and empowerment. These activities will be specifically tailored to each topic, offering unique perspectives and approaches.

The following table provides an overview of the weekly activities and the corresponding materials required for each week:

WEEK	ACTIVITY	Preparation
WEEK 1	• Mind maps that introduces the subject • Presentation about the topic	• Paper for mind maps • Prints of the presentation • Projector or television
WEEK 2	• Games related to the topic in discussion: they have to be interactive, simple and well explained	• Prepare, print and laminate the games if needed
WEEK 3	• Field trip	• Briefing and task division of roles • Preparation activity
WEEK 4	• Preparation of group presentation or creative activity	• Posters (A3 paper) • Colors • Scissors • Glue • Printed images • Information posters
WEEK 5	• Little quiz about the topic • Presentation in groups or art piece	• Snack and juice for end • Little price for the 3 best scores • Test preparation and printing

Week 1 & 2

A layout of the weekly program with a time division of the class is presented.

WEEK 1: PASSIVE

The introductory class will serve to introduce the topic for the five-week program. Firstly, the kids will be divided into groups, where they will share everything they know about the topic and create a mind map with the assistance of volunteers. The mind map will be created in English, aided by a vocabulary list containing terms related to the topic in both languages. This list is provided to help each kid learn the basic words necessary to understand the topic.
Following that, a presentation in Swahili will be delivered by a local marine biologist to provide the necessary knowledge and information about the topic.
At the end of the class, the mind maps will be discussed, and a collective mind map will be created on the board, gradually filled with information for the upcoming presentation.

ACTIVITY	Time
• Mind maps that introduces the subject • Translation list	• 15 min
• Powerpoint presentation (knowledge transfer)	• 30 min
• Class mind map	• 5 min • 10 min

WEEK 2: INTERACTIVE

This class serves to learn more about the topic by playing a game or looking at an example. Through engaging games, the aim is to keep the kids interested in the topic and enhance their understanding of the learning objectives. To make it more enjoyable, a challenge can be created among the groups.

ACTIVITY	Time
• Introduction games	• 5 min
• 4 or 5 games	• 7 min per game • 28/35 min total
• Final group puzzle	• 15 min

Week 3

WEEK 3: HANDS-ON EXPERIENCE

One of the most important aspects of environmental education is to help children connect with nature. When children have experiences in nature, it helps them feel closer to the environment and develop a stronger bond with it.
During week 3 of our program, we aim to provide hands-on experiences for the children. This means taking them out of the classroom and engaging them in interesting activities that will deepen their connection to the topic we are discussing.
By offering long-term sensory experiences in nature, our environmental education programs can greatly enhance the children's sense of connection to the natural world. This feeling of connection and belonging to nature can foster emotional empathy towards the environment.
Outdoor education plays a crucial role in equipping students with the skills and inspiration needed to develop behaviors that protect nature. It empowers them to take action and make a positive impact on the environment.

ACTIVITY	Time
• Depending on the activity and distance	• 60 min +

The field activities will have a local focus as it is important to connect them to nature in familiar places and environments. Their island is full of things they never get the chance to experience.
Moreover, there will be activities for the students to do during the trip so they can get more engaged from the experience but also will have focus on the information shared.

Some examples are a snorkeling trip to Mnemba island, treasure hunt in the lagoon and coral reef, mangrove forest exploration, beach clean ups and analysis of items, ...

Week 4 & 5

WEEK 4: CREATIVITY

Week four helps to provide space for creativity. With the kids, the aim is to create visually appealing posters related to the topics or have them individually draw a representation of the field trip they went on. One volunteer per group will already prepare all the information that needs to be included in the poster, and together with the students, they will create an A3-sized poster with all the information.
By fostering creativity, the children are able to establish a deeper connection between what they are writing and what they will ultimately present.

ACTIVITY	Time
• Explanation + topics	• 10 min
• Preparation presentations	• 50 min

WEEK 5: PRESNETING AND KNOWLEDGE TESTING

In week five, we aim to empower the children by allowing them to deliver the presentations they have prepared in front of the class or share their creative pieces.
Learning how to speak in front of people will empower them in the future. Additionally, the presentations will be in English, which will help them become more comfortable with the language used in the topics. Volunteers will assist and guide the students in presenting their topics effectively.
In week 5, there will also be a small quiz for the kids. This quiz is designed to assess whether the children have learned anything from the classes. The three highest grades will receive a small gift (school materials) as an incentive to foster healthy competition and motivate the children to perform well in the quiz.

ACTIVITY	Time
• Quiz	• 15 min
• 4 or 5 presentation	• 7 min each
• Closing plus snacks	• 10 min

Volunteers

A brief explanation of the role of the volunteers each week

WEEK 1	In week one you will create a mind map surrounding the topic in discussion. This way you will also get more acquainted with the topic yourself. In the class you will get a group of students and with them, you will discuss the topic and explore what they already know (by creating a mind map together). To make the language gap easier you will create a list of vocabulary that the students need to know about the topic (translation from English to Swahili). Make sure to print enough copies for all kids.
WEEK 2	Each volunteer will prepare an interactive game for the students that connects to one of the topics. The game serves to understand more in depth the topics, think of memory games, place the right image in the right place, ... try to be creative and try to make it as visual as possible for the kids. It should not take more than 7 min per game. Reference to the work of week one for inspiration. In the class there will be a timer. When the timer goes off, the activity will go to the next group. As volunteer you are in charge of the game that you prepare, you can therefore also prepare an explanation in Swahili, print it out and laminate it. To make it more interesting create a puzze with images about the topic. If the group manages to finish the game in 7 min, they get a piece of puzzle. Make sure that the puzzle leads to something, the first group that finds out what it is, wins!
WEEK 3	This week is the field trip. You will get a briefing on the field trip and your role during the preparation. Moreover, depending on the field trip you will create an activity for the students: think of a treasure hunt, identification of animals, ... First of all, make sure you are comfortable with the activity yourself and that you have enough skills to lead a group of students. When possible you will get the chance to try out the activity yourself in the field before taking the students. During the field trip, accompanied by experts in the field, you will lead a group of students (7 or 8 per volunteer) to do the activity.
WEEK 4	In week 4 you will prepare a presentation with the students. In the class you will make a good-looking poster on a subject/animal/element of the current topic. As the students don't have access to information you will prepare all the information that they need to put on a poster beforehand. Each volunteer will get a group and focus on a different topic. The posters created will then be presented the week after.
WEEK 5	In the last week you will prepare a little quiz regarding the topic (in English and Swahili). Make sure that there are not more than 10 questions and try to keep it simple (multiple choice questions, connecting words, images, ...). It should not take more than 10 min. Make sure there are enough test copies for all kids. Discuss a price for the 3 best results. In the class, they will start with the test and then present the posters that they made the week before. As it is the end of the topic, UTW, will provide a snack and a juice for each kid, you will help with the distribution in the class.

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Stakeholder Letter

In-Company Mentor

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Matemwe, Zanzibar, 3rd of June 2023

To whom it may concern,

My name is Laura-Cécile Rosset, a marine biologist at Under The Wave Organisation, a marine conservation NGO in Zanzibar, Tanzania. Our activities target the protection of marine life in the North East of Zanzibar and assist local communities in developing more sustainable fishing practices.

For 2023, our intention is to spread awareness of marine conservation within the community. Since 2022, we periodically attend a local school, but we did not have a structured program.

In February, we welcomed Zoe as an intern to develop a proper marine science program for local schools. She did exemplary work & surpassed our expectations. The program she composed is pertinent, accessible to the education level of the local school & easy to convey to our team. To create the program, she frequently met the different protagonists (e.g. students, teachers, marine biologists & partners involved), taking into account their reviews.

After creating the project baseline, Zoe had to test it & manage volunteers included in the program. She has proven herself truly devoted to the work. During her three months internship, she took many initiatives & demonstrated great adaptability.

Zoe is a delight to work with and I wouldn't hesitate to welcome her again to our team.

Should you have any further questions about her, feel free to reach us at underthewavezanzibar@gmail.com

Sincerely,

Laura-Cécile Rosset
Scientific Advisor at Under The Wave Organisation

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In-Company Letter

THE LIVING OCEAN

MAKING WAVES IN MARINE CONSERVATION

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Amsterdam, 6th of June 2023

Dear Reader,

My name is Yong Mi Janse and I am the director of The Living Ocean in The Netherlands. The Living Ocean is dedicated to conservation, development, and protection of marine-ecosystems. From February 2023- April 2023 I had the pleasure to have Zoe Kerkhof doing her internship with us in Zanzibar for our Environmental Education Program. We started this project in February 2022 but we noticed we could improve our program with a better and more organized playbook for the local schools in Zanzibar.

With this letter, I want to express my appreciation for all the work Zoe Kerkhof has done for our Environmental Education program in Zanzibar. Zoe is a brilliant and caring student. In our first meeting she impressed me with her enthusiasm and different ideas about the Environmental Education program.
Her papers are written with great clarity and understandable language that we need for our local students and local teachers in Zanzibar. Because English is not their first language in Zanzibar it was important that it was written in a clear way so that all parties would understand.

Over the past months Zoe also showed that she is well skilled in communication and collaboration skills. She smoothly collaborated with all the volunteers of Under The Wave and also with all the coordinators of World Unite (volunteering organization). The volunteers were from all around the world, so she managed very well to guide the volunteers to work together on different projects. Next, setting up many interviews individually clearly shows her network skills in a professional environment.

All in all, Zoe Kerkhof has shown flexibility, professionalism, and dedication during her internship at our projects in Zanzibar. She showed she is fully capable of functioning well in a professional organization and makes good use of academic skills in practice. The research that she conducted was of high value for us and the communication tasks were fulfilled well. I consider Zoe Kerkhof a valuable asset and recommend her for future studies and similar positions.

Kind Regards,

Yong Mi Janse
Director
The Living Ocean
The Netherlands

External Stakeholder 1

Follow-up by email

External Stakeholder 2

Follow-up by email