DEN HAAG
6 JUNE 2023

Concise Research Report

Bachelor internship & capstone

UNDER THE WAVE
ZANZIBAR MARINE CONSERVATION

THE LIVING OCEAN

Internship counsellor:
Radostina Sharenkova-Toshkova

Zoé Kerkhof, s1143835
Global Project and Change Management
Windesheim University of Applied Sciences

Identifying Activities that Foster an Emotional Connection Between the Ocean and Secondary School Students of Matemwe, Tanzania, through an Environmental Education Program.

Concise Research Report

Zoé Kerkhof – 1143835

Windesheim University of Applied Sciences

Global Project and Change Management, Bachelor Internship & Capstone

Internship Counsellor: Radostina Sharenkova-Toshkova

6 June, 2022

Acknowledgments

I would like to acknowledge and give my warmest thanks to Under the Wave marine conservation Zanzibar, by trusting me with this project and providing me with all the support necessary. The passion and drive of Yong Mi Janse was inspiring and the interest of Faraji Suleiman in the underwater world was contaminating. In particular, I would like to thank Laura Rosset for the guidance, support and confidence throughout my research, and Ludovic Gouérec for the underwater knowledge and passion. Along with, Alexis Fraile, my dive buddy, for the support and encouragement in Zanzibar.

Appreciation goes out to Demi Kerkhof and Lydia Meester for the editing and proofreading of the work. My four-year councilor Catriona McConnell and internship councilor Radostina Sharenkova-Toshkova.

A special thanks also goes out to my sister, Demi Kerkhof, for the support, the inspiration and motivation throughout the last four years. Joshua van Wely, for the encouragement, the patience and trust on the everyday basis. Lydia Meester and Aga Jurczak for the opportunity to share my journey and life in Zanzibar with them, along the never-ending support. And finally, my parents.

Abstract

This report presents the outcomes of a qualitative study that aimed to investigate the potential of an environmental education program focused on marine conservation to foster an emotional connection to the ocean among secondary students in Matemwe, Tanzania. Environmental education programs are specifically designed to educate children about their local environment, including its challenges and issues. By emphasizing activities that elicit emotional responses, it is expected that future behavioral changes can be observed. Organizations such as Under the Wave Zanzibar actively engage in protecting and restoring the marine ecosystem and recognize the significance of environmental education programs in local schools. The research findings provide valuable insights for individuals and organizations seeking to develop environmental education programs centered around marine conservation, with an emphasis on fostering an emotional bond between children and the ocean. The findings illustrate various approaches, including passive education, interactive education, hands-on education, and empowering activities, to effectively convey knowledge and engage children in connecting with marine life. Activities and their contribution to the specific learning method have been explained and a final environmental education program has been created out of the research results.

Table of Contents

ACKNOWLEDGMENTS **0**

ABSTRACT **0**

1. INTRODUCTION **1**

1.1 Background of The Research 1

1.2 Problem Definition 3

2. LITERATURE REVIEW **4**

2.1 Importance of Environmental Education 4

2.2 Elements of Effective Environmental Education 5

2.3 Awareness and Environmental Education 6

2.4 Behaviour Changes and Environmental Education Programs 6

2.5 Conclusion 7

3. THEORETICAL FRAMEWORK **8**

4. RESEARCH OBJECTIVE AND QUESTIONS **10**

4.1 Research Objective 10

4.2 Research Question 10

4.3 Sub-Questions 10

5. METHODOLOGY **11**

5.1 Sampling 12

5.2 Data Collection 15

5.3 Data Analysis 17

5.4 Data Quality Assurance 18

6. RESULTS **20**

6.1 Motivation Based on Theoretical Framework 20

6.2 Sub Question 1: Passive Education 22
6.3 Sub Question 2: Interactive Education 25
6.4 Sub Question 3: Hands-On Education 26
6.5 Sub Question 4: Empowerment 28
6.6 Additional Important Factors 29
6.7 Culture 32
7. CONCLUSIONS 33
8. LIMITATIONS 35
9. RELEVANCE RESEARCH RESULTS FOR THE WORK FIELD 36
10. CONTRIBUTION RESEARCH RESULTS TO THE PROFESSIONAL PRODUCT 37
REFERENCE LIST 39
APPENDICES 48
Appendix 1 – Interview information 48
Appendix 2 – Interview protocol 48
Appendix 3 – Interview themes and desk research 52

1. Introduction

This concise research report is part of the last semester at the University of Applied sciences of Windesheim of the degree Global Project and Change Management and as part of a research internship at Under the Wave. Under the Wave is a marine conservation organization situated in Zanzibar that is active in protecting and restoring the local marine ecosystem by collaborating with local communities. The research took place on the island of Unguja for 3 months and was further elaborated and finished in the Netherlands where the university of the student is situated.

The increasing use of the ocean for human activities is having a devastating impact on the marine ecosystem, such as the lagoon and coral reef (Khamis et al., 2017). With the growing levels of destruction of biodiversity and endangered species, education and awareness programs have a growing role in sustaining life on earth (Singh & Rahman, 2012). Unfortunately, the implementation of environmental education programs tends to occur in an uncoordinated manner (Singh & Rahman, 2012). This is also the case for the program of Under the Wave in the secondary school of Matemwe, Tanzania.

This research served to find out how to create an emotional tie between children of the local secondary school of Matemwe and the ocean, with a consistent long-term education program in hope that it will create a shift in behavior among the future generation.

1.1 Background of The Research

Overfishing and bycatch are having a devastating impact on fisheries worldwide (Colbert-Sangree & Suter, 2015). Management strategies are challenging to implement in Zanzibar as local people depend on marine resources for survival (Colbert-Sangree & Suter, 2015).

With the increasing importance of sustainability and conservation, environmental education programs are rising around the world (Yadav et al., 2021). Environmental education programs are a concept that grew in the 1970s in response to a growing social awareness of

environmental issues brought by human activities (Gough, 2017). Now, UNESCO calls the importance of making environmental education programs an essential curriculum component in all countries by 2025 (UNESCO, 2023).

Under the Wave Zanzibar (UTW) is an internship organization focused on marine conservation efforts in Zanzibar. The coral reef ecosystem along Tanzania's coastline is under increasing threat of severe damaged posed by the impacts of tourism and local fisheries (Khamis et al., 2017). Recognizing the critical importance of reef protection and endangered species, UTW aims to foster a sustainable relationship between local communities and the ocean by raising awareness about the various challenges and issues faced by the marine environment.

The founders of UTW have observed a significant decline in marine life over time. For instance, they have noted a drastic reduction in turtle sightings during dives, from a previous abundance of 40 turtles a day to encountering only one turtle per month (The Living Ocean, n.d.). This decline can be attributed to factors such as local consumption of turtle meat and the poaching of turtle eggs (National Tanzania Turtle Committee, 2005). Such findings highlight the urgent need to establish a stronger sense of awareness and connection to the ocean among the local population.

Given that fishing practices and occupational choices are often inherited within local communities (Colbert-Sangree & Suter, 2015), UTW recognizes the significance of implementing an environmental education program targeted at young children. This program should not only focus on imparting knowledge about the marine ecosystem but also emphasize an understanding of local culture and fishing practices (Lange & Jiddawi, 2009).

The research conducted in support of the non-profit organization Under the Wave has facilitated the development of a professional product aimed at enhancing ocean connectivity among secondary school children. This initiative aligns with Sustainable Development Goal 14 (SDG 14) concerning life below water and SDG 4 related to quality education. The project's primary objective is to raise awareness regarding marine conservation and promote sustainable practices, thereby contributing to the following specific targets 14.2, 14.7 and 4.7

(Goal 14: Department of Economic and Social Affairs, n.d.; Goal 4: Quality Education - the Global Goals, 2022).

1.2 Problem Definition

The environmental education program is an activity that aims to bring awareness to children in the field of marine conservation. Under the Wave started the collaboration in the local school in Matemwe in October 2022. The target group comprises children aged between 13 and 15, with approximately 30 to 40 students per one class, including both boys and girls.

Previously, the environmental education program was conducted by volunteers from World Unite, a German company facilitating international volunteering experiences, with the assistance of a local marine biologist employed by UTW. However, the program lacked structure and comprehensiveness due to the volunteers' limited motivation and knowledge in marine conservation. Consequently, lessons to local schoolchildren were taught without the necessary expertise and with inconsistent topics, as each week a subject related to the ocean was chosen at random. Despite the intent to raise awareness about marine conservation among schoolchildren, the program's efficacy was compromised by the lack of expertise, passion, and organization, resulting in significant gaps in knowledge dissemination. Cultural considerations were also overlooked.

The official religion of Zanzibar is Islam, complemented by a resolute Swahili culture that prevails throughout the island, including in the village of Matemwe where the school is located (Khamis et al., 2017). Local cultural beliefs, values and motivation play a crucial role in education and are often incorporated in the education curriculums to teach about local values, heritage and history (Van Der Steen, 2011). Behavior change initiatives within a context strongly influenced by Swahili cultural beliefs can be challenging and should be approached with respect, sensitivity and with a deep understanding of local context (Käyhkö et al., 2019).

The organization has asked for assistance to help improve the existing education program with the aim of creating greater impact and consistency so that future generations change their behavior towards the natural environment. However, behavior change is a long-term process, which can be challenging to implement due to habits, social norms and resistance (Van De Wetering et al., 2022). It requires time, effort and resources. In Matemwe, the implementation of behavior change initiatives is particularly challenging due to the strong influence of Swahili cultural beliefs, which emphasize respect for elders and traditional practices. Therefore, behavioral change cannot be accomplished within a mere four-month timeframe.

Emotional impact can be a powerful facilitator for behavioral change as strong emotions can influence thoughts, attitudes, and motivation that can lead to a shift in behavior (Liu et al., 2022). Positive and negative emotions can be used to install greater concerns, therefore higher levels of commitment and result in pro-environmental behavior (McKenna, 2020). In line with this, the research aimed to investigate how to create an emotional tie with the ocean in the local secondary school of Matemwe with a consistent long-term education program that will instigate behavioral change. Moreover, this research served to create a professional product, this is presented as an education program based on the research. As much research focuses on the importance of environmental education programs and the outcomes in change in behavior or awareness, this research fills the gap to find out what activities are needed to create emotional impact.

2. Literature Review

2.1 Importance of Environmental Education

Environmental education programs have been gaining momentum in recent years as a result of the increasing awareness about the importance of sustainability and conservation (Gough, 2017). Environmental education has been recognized as crucial for achieving environmental awareness, values, attitudes, skills, and behavior (Gough, 2017). It is essential for effective participation in environmental decision-making and sustainable development

(Gough, 2017) and it plays an important role in developing positive attitudes about the environment and the way places, animals, and nature are perceived (Martin et al., 2015).

Environmental education is often delivered through larger scale programs that aim to enrich the learner's cognitive, emotional, and participatory knowledge (Hug & Hug, 2009). The programs are designed to teach students about environmental issues and empower them to take action to address these issues. Education and communication are thus two essential disciplines that contribute to conservation (Thomas et al., 2019) and are seen to be means that drive communities to work toward the creation of sustainable futures (Gough, 2017). According to Marsh (2017), people are part of the problem, and education of the people will be part of the solution.

2.2 Elements of Effective Environmental Education

Effective environmental education is more than a transfer of information, it should help build skills that enhance positive environmental action (Ardoin et al., 2019). According to Braun et al. (2018), this is especially done through outdoor environmental education.

The message of the environmental education program should be accessible and tailored to the existing knowledge and interests of the target audience and it must also be clear, uncomplicated, and empowering (Singh & Rahman, 2012). Ardion et al. (2019) suggest that environmental education programs should focus on topics with a local focus, have partnerships with local organizations, scientists and integrate action projects into the education program to have more effect on the participants. Addressing local environmental problems and in collaboration with local stakeholders can enhance interest and involvement (Ardion et al., 2019). Sigh and Rahman (2012) suggest that a school-based environmental education program should be a combination of passive education, interactive education, hands-on education, and empowerment. The combination of these four elements should increase the emotional connection and the skills needed to take environmental action (Singh & Rahman, 2012). It is thus important that successful environmental education programs go

further than teachers and students, they require community leaders and organizations to work alongside them to bring awareness and resolve the challenges facing marine conservation (Martin et al., 2015).

2.3 Awareness and Environmental Education

An environmental education program that is well-structured should have objectives that relate to the creation of awareness, knowledge, positive attitude, problem-solving skills and citizen participation (Singh & Rahman, 2012).

Environmental education programs play an essential role in raising people's awareness about the environment (Sakurai & Uehara, 2020) and they help to create awareness and understanding of the relationship between humans and their environment (Binti et al., 2013). It is important to grow the number of people that are aware and concerned about environmental issues (Marpa, 2020). Children will be more aware of environmental issues in the real world, once they've gained enough knowledge about it through their education. (Binti et al., 2013). By being aware of environmental issues and problems they can begin seeking solutions and start being active advocates for their environment (Marpa, 2020).

To successfully raise awareness, the understanding of the target market and their behavior is important to compose an effective message for the environmental education program (Singh & Rahman, 2012).

2.4 Behavior Changes and Environmental Education Programs

Environmental behaviors are actions that individuals take that have benefits for nature (Krasny, 2020). According to Braun et al. (2018), environmental education programs that increase environmental knowledge have the potential to support positive environmental attitudes and behaviors. However, environmental education programs should not necessarily focus on expecting to influence behaviors but rather on promoting knowledge (Van De Wetering et al., 2022). Knowledge is a basic precondition for a person's behavior (Braun et

al., 2018), but encouraging behavior change in youth can be challenging as it needs time and resources (Van De Wetering et al., 2022).

Yet, environmental education can enhance nature connectedness among children by providing long-term, repeated, sensory experiences in nature and can have beneficial nature-protective behaviors (Krasny, 2020). Nature connectedness is the feeling of being connected and belonging to the natural world, thus creating an emotional empathy toward nature (Krasny, 2020). Outdoor environmental education and emotional connection can provide students with skills and inspiration to develop pro-environmental attitudes and behaviors (Binti et al., 2013). When students feel a strong emotional connection to their surrounding environment, they are more likely to protect it (Liu et al., 2022). Positive emotions toward nature can thus increase motivation to take environmental action (Gan & Gal, 2022).

2.5 Conclusion

Marine conservation education programs are seldom included in school curriculums of most countries (Gough, 2017). Yet, the marine ecosystem needs to be included in environmental education in schools if ocean sustainability is to be achieved (Gough, 2017).

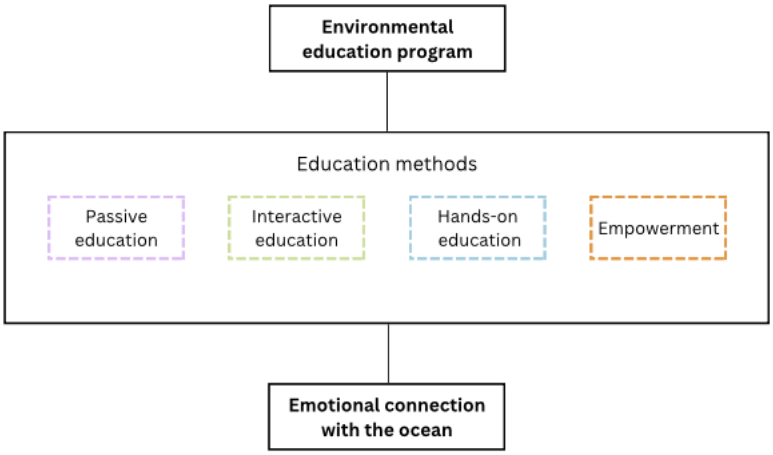
The role of NGOs in public environmental education and awareness is growing as it becomes more important to protect and restore the environment (Singh & Rahman, 2012). Through formal education in different forms, by aiming for emotional connection instead of change in behavior, NGOs are able to lobby for change with local communities (Singh & Rahman, 2012). Environmental education programs are vital tools for creating awareness, fostering positive attitudes, and promoting knowledge towards environmental conservation. By employing well-structured programs, tailored messages, and diverse teaching methods, these programs can empower individuals to connect to nature environments, take action and contribute to a sustainable future.

3. Theoretical framework

Singh and Rahman (2012) researched the approach to environmental education by Non-Governmental Organizations in Biodiversity Conservation. The researchers, as mentioned in the literature review, highlight the importance of the role of non-governmental organizations and their part in public environmental education and awareness. The research suggests that the key to success for an environmental education program is accessibility and stakeholder participation. Moreover, they suggest that the program of school-based environmental education should be a combination of passive education, interactive education, hands-on education, and empowerment. Through a multi-learning approach combining traditional and formal education with a more informal approach that includes hands-on field experiences, NGOs can create more tools and techniques to engage and influence those who may be indifferent to environmental issues, with the ultimate goal of shifting attitudes and inspiring positive actions in support of the planet (Singh & Rahman, 2012). As UTW is a nonprofit organization that aims to create an environmental education program in marine conservation, this theoretical foundation fits the purpose of the project.

Figure 1

Theoretical Framework



An environmental education program should have different education methods and activities to accommodate different learning styles, engage the students and provide a more comprehensive learning experience (Misseyanni et al. 2020). According to Singh and

Rahman (2012), there are four ideal education methods that help NGOs approach environmental education in biodiversity conservation: passive education, interactive education, hands-on education and empowerment. Passive education can create awareness by giving talks and lectures. This helps to increase knowledge but is not yet leading to behavioral change. Interactive education encourages a more collaborative environment in the class. This means that more workshops, games, and activities enable the students to develop problem-solving skills. Hands-on education is the experimental side of the program, this means that the kids can have experiences in the field, understanding and feeling more connection to the environment. The last is empowerment, this has the aim to give students the space to enable and come up with their own problem-solving projects. Empowerment is needed to give the kids hope that they are the ones that can make an impact. According to Singh and Rahman (2012), self-confidence is the key to developing new behavior and attitudes.

Environmental education programs should impact students' emotions because emotions play a crucial role in shaping attitudes and behaviors towards the environment (Liu et al., 2022). Studies have shown that emotional connections to nature can lead to increased pro-environmental attitudes and behaviors, as well as a greater sense of well-being and connection to the natural world (Liu et al., 2022), it is therefore important to create an emotional tie between the students and the ocean. The more people are connected and drawn to the ocean, the more they will give back to the ocean. "The sea, once it casts its spell, holds one in its net of wonder forever. People protect what they love (Nichols & Cousteau, 2018, p. IX)". Moreover, according to Van De Wetering et al. (2022), change behavior should not be the focus of environmental education programs as it needs time and resources. Therefore, this study focuses on creating an environmental education program that creates an emotional tie between secondary school students and the ocean.

In the study, the authors mention that NGOs should identify the behaviors that need to be changed and the benefits that are available to the audience if they do commit to those behavioral changes (Singh & Rahman, 2012). The environmental message should thus be

accessible and tailored to the existing knowledge and interests of the target audience and it must also be clear, uncomplicated and empowering (Singh & Rahman, 2012), with a local focus (Ardoin et al., 2019). Therefore, cultural and traditional values should be involved in the research, even more as Matemwe has a strong Swahili culture that influences education (Khamis et al., 2017).

4. Research Objective and Questions

4.1 Research Objective

The purpose of this study was to find out how to best create an environmental education curriculum about marine conservation in local secondary schools in the northeast part of the island of Unguja to create an emotional impact. With in-depth interviews, a group discussion and additional desk research, the research aimed to identify how to design an environmental education program that creates an emotional connection between the children of the secondary school of Matemwe and the ocean. By creating an emotional connection, the children can become more prone to protect and take positive action toward the sea. Based on the theoretical framework this research looked into the methods (passive and interactive) to create an emotional impact, it focused on finding what activities will best create an environmental emotional connection and lastly, it looked at how to empower the children to take environmental action.

4.2 Research Question

How can an environmental education program in local secondary schools bring an emotional connection with the ocean in Matemwe, Tanzania?

4.3 Sub-Questions

To answer main research questions four sub-questions were created. These are used as foundation to answer the main research question.

- What are the passive activities for an environmental educational program that contribute to achieving emotional connection with the ocean in Matemwe?
- What are the interactive activities for an environmental educational program that contribute to achieving emotional connection with the ocean in Matemwe?
- What are the activities of experimental education that contribute to connecting the kids of Matemwe to the ocean?
- What are the empowerment activities that contribute to the environmental education program in Matemwe?

5. Methodology

This research employs a qualitative approach consisting of semi-structured interviews and desk research. The decision to use a qualitative approach is based on the notion that it allows for the exploration of underlying reasons and opinions that numerical data may not capture, as highlighted by Verhoeven (2015). Given the small-scale and exploratory nature of the research conducted in the field in Matemwe, Tanzania, a qualitative methodology was deemed suitable for enabling interactive research.

The researcher was situated in Matemwe, Tanzania and The Hauge, Netherlands. The research approach employed is inductive, meaning that the research aims to develop new insights and theories that help and create a new framework. Inductive research allows flexibility and openness to developing themes and ideas from the data (Verhoeven, 2015).

Appendix 1 provides an overview of the interview duration, location, and recording availability, with interviews ranging from 20 to 70 minutes. One interview was conducted in Stone Town, Zanzibar, while two were conducted online via Zoom due to availability constraints or geographic distance. The remaining three interviews were conducted in person in Matemwe, Zanzibar. A group discussion with secondary school students was conducted in Matemwe in Swahili by an employee of Under the Wave in request by the researcher to collect additional data.

5.1 Sampling

For the research interviews, non-probability sampling was chosen, and two main sampling methods have been selected: convenience sampling and purposive sampling. For the group discussion purposive sampling was used.

Non-probability sampling, according to Verhoeven (2015) is used when the selection of research participants is non-random. This means that the sampling of the population has been chosen by the researcher. Even if less reliable and with more potential for bias, non-probability sampling can still provide insights and findings that are valuable to the research. Due to cultural differences and the language gap between English and Swahili, this method has been selected.

Due to several gatekeepers such as my internship mentor, a researcher from National Geographic, and other members of the population, I have gotten the contact of six members that they believed were important to interview for the research. The anonymity of the participants is protected throughout the research.

Convenience sampling was used to interview four members that were available and had a relationship to marine conservation or to the education field. Convenience sampling is often used for the semi-structured interviews in exploratory research (Verhoeven, 2015). In table 1 a short explanation of their role and relevance to the research can be found.

Table 1

Role and Relevance Convenience Sampling Participants

Participant number	Role	Relevance to research
Participant 1 (P1)	Dive instructor from Matemwe	• Local person that saw the changes in the ocean firsthand • Key person in community (Matemwe) • Learn about cultural factors of the village • Understand how a local built the relationship with the ocean and how he learned to respect it • Understand how he teaches his students about the ocean • Understand what should be important to teach local children about the ocean

		• Understand what methods would be most effective to teach local children about the ocean
Participant 2 (P2)	Teacher in the Matemwe secondary school	• Understand the needs of the secondary school of Matemwe • Understand current educational methods • Understand the knowledge of a key teacher in the local secondary school about marine conservation • Understand what topics and experiences are important for local children to learn about the ocean • Learn about effective education methods • Learn about cultural and traditional factors to take into account
Participant 3 (P3)	Local that has collaborations with NGOs and local schools in Matemwe	• Understand local perspective on marine conservation • Understand effective teaching methods • Understand challenges of implementation and change in schools • Learn about effective teaching methods and activities for children • Learn about cultural and traditional factors to include or take into account
Participant 4 (P4)	Marine Biologist from Zanzibar (woman)	• Understand local perspective in marine conservation • Understand challenges for women and marine conservation • Understand the relationship for women and the ocean • Understand how a local woman built a relationship with the ocean with the many societal challenges • Understand topics and subjects that should be included in environmental education programs • Understand what kind of activities can enhance the emotional connection to the ocean • Understand the current education methodologies in local schools • Understand what local children should learn about the ocean • Learn about cultural and traditional factors to include or take into account

Purposive sampling has been used to select two other participants that have expertise in the field of marine conservation and environmental education in Zanzibar. These two participants were key in the research as they both had several years of experience in the field of marine conservation and the mobilization of local population toward a more sustainable relationship with the ocean, as can be seen in table 2.

Table 2

Role and Relevance Purposive Sampling Participants

	Role	**Relevance of the research**
Participant 5 (P5)	Local that started a coral farm in Zanzibar and has been active for many years to show locals the beauty and problems ocean faces through ocean experiences and education.	• Understand the challenges of implementing marine conservation activities in Zanzibar • Understand environmental education issues and challenges • Understand perspectives on environmental education • Understand local view on marine conservation • Understand how locals build a relationship with the ocean • Understand what activities would help transfer knowledge • Understand what interactive activities can be efficient • Understand field-trip possibilities • Understand local and traditional factors
Participant 6 (P6)	Senior marine researcher and lecturer in Zanzibar (woman)	• Understand the challenges of implementing marine conservation activities in Zanzibar • Understand environmental education issues and challenges • Understand women's perspective and accessibility to marine conservation • Understand women's challenges • Understand perspectives on environmental education • Understand local view on marine conservation • Understand current educational methods • Understand local existing curriculums • Understand how locals build a relationship with the ocean • Understand what activities would help transfer knowledge

		• Understand what interactive activities can be efficient • Understand field-trip possibilities • Understand local and traditional factors • Understand how local people can feel empowered to change behavior

An additional group discussion took place with secondary school students and an employee of UTW. The criteria for the purposive sampling were that a) the interviewees were part of the class, b) between the ages of 12 and 15, and c) that there was an equal representation of gender. Six participants contributed to the group discussion.

Table 3

Group Discussion Participants and Relevance

	Number of participants	**Gender**	**Role**	**Relevance to the research**
Group Discussion 1 (GD1)	6 participants	3 female & 3 male	Students secondary school of Matemwe	• Understand student perspective on education program • Understand activities that transfer knowledge • Understand activities that encourage interaction • Understand hands-on education activities • Understand topics to include in program • Understand empowerment methods

5.2 Data Collection

For the data collection three methods were used for this qualitative research: desk research, semi-structured interviews, and a group discussion thus both primary and secondary data was collected.

Desk research was conducted to establish the theoretical framework that informed the research question and sub-questions. This step was crucial for gaining insights into existing

studies, identifying gaps, and understanding the challenges faced by environmental education programs worldwide, as mentioned by Verhoeven (2015). The research was primarily conducted on google scholar and the online Mediacentrum of Windesheim University. Only peer reviewed articles were selected and used. Literature that was older than 20 years was excluded.

Further secondary data was collected with desk research alongside interviews to review successful practices of environmental education programs. According to Verhoeven (2015), desk research can corroborate or challenge interview findings by comparing them with existing research and literature, thereby confirming, refuting, or complimenting statements made during the interviews. For this secondary research peer reviewed, as well as other documentation was used to get better insights in already existing programs, educational methods, and activities.

For the primary data, in person semi-structured interviews were held with several people that had experience with the ocean, in the field of marine conservation, or in the field of education. Six interviews were conducted to collect data from this research. An additional group discussion was carried out by a colleague from UTW with the secondary school students after the researcher left Unguja. The interviews took place either in person on site or through Zoom calls. The group discussion was conducted in Matemwe in Swahili. These interview options were chosen to allow for follow-up questions, which can clarify and deepen responses, as noted by Verhoeven (2015). Additionally, the flexibility to adapt questions as needed was considered advantageous as people from different fields, background and age were interviewed. Building a rapport with the participants before the interviews was important to establish trust and encourage openness, thus providing more insight into cultural and traditional factors. Only the group discussion was limited as a third person conducted the discussion and as the language used was Swahili. The answers to the open-ended questions were summarized in English by the UTW employee and given to the researcher.

In this study, the collection of primary data was deemed crucial due to the limited availability of publications on local cultural aspects in education. Gathering primary data not

only enhances the accuracy and relevance of the research but also minimizes biases and misinterpretations that can arise from relying solely on secondary data. The research was conducted in a small village on Unguja, which posed challenges in terms of the number of eligible participants available for interviews and their willingness to participate. As a result, there were adjustments in terms of participant selection and numbers, which are further discussed in the limitations section of the study.

The interview questions, outlined in Appendix 2, were designed to provide deeper insight into the research's sub-questions. These open-ended questions aimed to gain a comprehensive understanding of teaching methods, empowerment strategies, and local factors that contribute to an emotional connection between children and the ocean. The questions were carefully selected and prepared prior to the interviews. Given the semi-structured format of the interviews, additional questions were posed during the interviews and some were modified as needed, considering factors such as the participants' expertise, age, and gender. The interviews also served as an opportunity to gain a better understanding of cultural differences, beliefs, and traditions surrounding the local community's relationship with the ocean, as well as the reliability and potential motivations for change.

5.3 Data Analysis

The analysis of the collected data followed a thematic analysis approach, which involved identifying, analyzing, and interpreting themes that emerged from the data.

Initially, the recorded interviews were transcribed, while in-depth notes were taken for the non-recorded interviews by the researcher. For the group discussion, the responses were summarized and translated by a local employee of UTW.

The first step in the analysis process was to familiarize oneself with the interviews and data by thoroughly reviewing the transcriptions and notes. Keywords and significant elements from the interviews and notes were identified and highlighted, leading to the generation of initial codes. These codes were then organized into themes. Subsequently, the themes were

grouped into categories and interconnected across the various interviews. The themes were carefully reviewed and refined, accompanied by the inclusion of pertinent quotes from the interviews or notes, as presented in Appendix 3.

In addition to the thematic analysis, supplementary desk research was conducted to explore existing environmental education programs, their methodologies, and activities. This research aimed to complement, confirm, or challenge the findings from the interviews.

5.4 Data Quality Assurance

Credibility

To ensure the trustworthiness of the research primary data was collected through six interviews and a group discussion. The in-person interviews and group discussion were conducted in a comfortable and confidential environment, allowing participants to freely express their thoughts and experiences. The researchers employed active listening techniques and open-ended questioning to encourage participants to share detailed and reflective responses. The use of audio recordings, transcriptions, and field notes ensured accurate documentation of the data, minimizing the potential for misinterpretation or misrepresentation.

The study employed a purposive sampling technique to select participants who possessed relevant experiences and knowledge related to the research topic. The researchers carefully identified individuals who could provide diverse perspectives, ensuring a comprehensive understanding of the phenomenon under study. The sample size of six individual interviews and the inclusion of a group discussion allowed for a range of insights and perspectives to be captured, enhancing the credibility of the findings.

The credibility of the study was enhanced through researcher reflexivity and awareness of positionality. The researchers acknowledged their own biases, assumptions, and preconceived notions, taking steps to minimize their influence on data collection and analysis. Reflexive journaling was employed, allowing the researchers to document their

thoughts, reflections, and potential biases throughout the research process. This transparency and self-awareness ensured a more nuanced interpretation of the data and increased the credibility of the study.

Transferability

To ensure transferability in this qualitative research, the foundation was built upon academic peer-reviewed articles sourced from diverse contexts, creating a multi-context foundation. The research was specifically conducted in Matemwe, Tanzania, with a focus on a local secondary school. However, the methods explored in this study have the potential to be adapted and transferred to other contexts.

To validate the transferability, additional desk research was conducted alongside the interviews. This desk research had a broader scope beyond Tanzania, allowing for a wider understanding of environmental education programs in different settings. While the interviews emphasized the importance of incorporating local examples into the educational program (Ardoin et al., 2019), with slight adaptations of topics, the program outline and activities could be utilized in other countries to address related environmental issues.

For the island of Zanzibar, the program could be implemented in other local secondary schools with minimal adjustments, considering the specific context. This highlights the potential for the research findings and recommendations to be applied in similar educational settings beyond Matemwe, Tanzania.

Dependability

Regarding the reliability of the research, steps were taken to ensure that the integrity of the findings was maintained during the data collection process. Prior to conducting the interviews, it was important that the participants were fully aware of the researchers role and the purpose of the study. Assurance that any information they provided would be treated as confidential was given and used anonymously for the research. Additionally, the names of the participants were altered when transcribing the interviews. The interview was conducted

without recording if they preferred. Two out of the six interviews were not recorded due to the participants' previous negative experiences. During these interviews, the researcher took notes to capture the most significant factors.

To interpret the results of the interviews, the researcher employed a coding system to analyze the data. Since multiple interviews were conducted, the findings consistently and repeatedly revealed common themes. Furthermore, desk research was conducted to validate the interview responses by linking them to existing research, literature and education programs.

Confirmability

To ensure the confirmability of the research, the interviews were conducted using open-ended questions. This approach aimed to elicit honest and genuine opinions regarding marine conservation and the most effective ways to make a positive impact in local secondary schools. Appendix 3 presents selected quotes and phrases from the interviews and group discussion, highlighting the key findings.

However, it is important to note that the confirmability of this research was slightly compromised as two interviews were not recorded. As a result, the researcher relied on summarizing their responses, which could introduce biases or assumptions. To mitigate this potential issue, the researcher repeated summarized phrases to the interviewees, ensuring accurate transcription and understanding of their answers. Moreover, the group discussion was conducted by an employee of UTW that summarised and translated the results for the researcher. Additional bias of the UTW staff and the loss in translation factor are taken into consideration.

6. Results

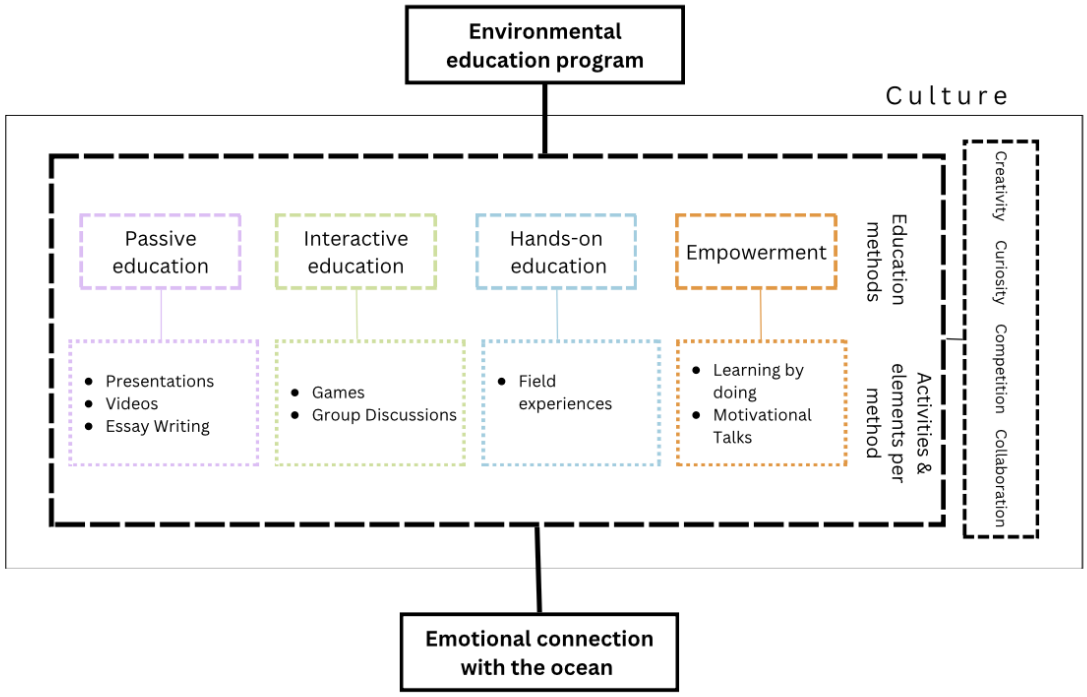
6.1 Motivation Based on Theoretical Framework

The aim of this study was to find out how to create an environmental education program for local secondary schools that emotionally connects the schoolchildren in

Matemwe, Tanzania, to the ocean. For this research an initial theoretical framework inspired by Singh & Rahman (2012) research was used.

Figure 2

Theoretical Framework with Summarized Results



In figure 2 a representation of the education methods needed to create an effective environmental education program for NGOs according to Singh & Rahman (2012) is outlined. According to their research the combination of these four education methods generates an effective program that builds impact. This researched aimed to find out 1) what passive activities are needed for an environmental education program that contributes to achieving emotional impact, 2) what interactive activities are needed to achieve emotional impact, 3) what activities of experimental education are needed and lastly what are some activities that empower the children in the education program. In figure 2, a short summary of the results per education method outlines the activities and elements needed to create emotional ties with the ocean through the environmental education program. Important factors such as creativity, curiosity and competition, according to the interviews and documentations should also be considered in the different activities and methods. As previously mentioned, culture

also plays an important role in the education program in Matemwe, therefore the activities and methods should consider cultural values, beliefs and attitudes. These results were found after conducting interviews with 6 participants, a group discussion with students and desk research about existing environmental education programs, educational methods and activities. Appendix 3 illustrates a more comprehensive thematic categorization with quotes from the interviews, and desk research presents the initial results. The following sections will provide a thorough explanation of the sub-questions, activities, and additional factors.

6.2 Sub Question 1: Passive Education

Passive education methods, as discussed in the first question, refer to knowledge transfer in environmental education programs without requiring direct student participation (McKenna, 2020). These methods are valuable tools as they provide students with access to information and concepts that they may not have encountered otherwise, thus broadening their understanding (Davidson et al., 2009). By incorporating a range of passive education methods, teachers can have a lasting impact on students' emotions, attitudes, and behaviors toward the environment (Davidson et al., 2009). Examples of such methods include lectures, videos, and readings (Davidson et al., 2009).

However, it is important to note that passive education does not actively engage students in the subject matter; instead, it involves listening to the content presented in a lecture format. Research indicates that active learning activities are more effective as a learning strategy (McKenna, 2020). Therefore, while a small amount of passive education can be included in environmental education programs to provide foundational knowledge, the majority should focus on active learning approaches, such as interactive activities and hands-on experiences.

As mentioned by the participants of the interview, theory is an important part that should be present in the environmental education program, as children have to learn and understand the ocean and its importance for the island (P6 & P2, 2023). Now, “… the

knowledge regarding marine conservation or simply about the ocean is limited, therefore, direct information will help with that." (P5, 2023). Several methods such as power points, videos or essay writing were mentioned in interviews. Furthermore, in research conducted by Frame et al. (2021) concepts about conservation were presented using power points, videoclips among other learning-participation activities.

PowerPoint presentations

PowerPoint presentations are a common form of passive education in which the lecturer presents information to students (Baker et al., 2018). This enables teachers to share knowledge and information about key concepts, explore environmental issues, and explain how nature elements work and interact (Frame et al.,2021).

Effective power points should have a consistent and simple design, and include a variety of content such as a mix of text, images or graphs. The phrases should also be as simple as possible and short (not more than 3 bullet points of 20 words) to have an effective presentation (Brock & Joglekar, 2011). According to Brock & Joglekar (2011), the number of slides does not influence effectiveness.

Power points in this case are a simple way to transfer knowledge and can easily be printed out. As not all students have access to books, internet and information (P1, 2023) it is viable to give them physical paper with information. Moreover, a power point presentation allows for the possibility to tailor the information related to the ocean with a more local focus. Giving the opportunity to implement local values, practices and beliefs. This makes it an ideal method to transfer knowledge in a passive way.

Videos

Videos can also be an effective way to engage students in environmental education. They can include documentaries or animated videos that explain environmental concepts or issues. Videos and documentaries are proven to be a good mode of education (Ahmad et al., 2015). In schools, videos quicken the perception and shorten the learning time while

promoting a particular concept (Ahmad et al., 2015). One participant of the research suggested using videos to transfer knowledge in a fun and more engaging way about the ocean: “Through videos or with fun facts give the kids knowledge …” (P4, 2023). In the group discussion videos were also mentioned as a fun way to learn more.

Zanzibar’s regular power cuts and limited internet access (Teacher Horizons, n.d.) make it however a more challenging method to transfer knowledge. In order to share videos, a projector without direct electricity use would be best. Moreover, local videos about ocean related topics that give a more general overview of issues and challenges are almost impossible to find. As the Swahili culture plays an important role in the relationship with the ocean and as the Islam religion also has important values for locals, it is difficult to find informative videos about the ocean that simultaneously adhere to cultural and religious values (e.g. exposed body parts, language, fishing practices, etc.). More attention should therefore be directed to this method of knowledge transfer.

Essay writing

In the group discussion and a few interview participants, it was mentioned that writing essays could be a way of to deepen one’s understanding of the topic. Less than half of the group mentioned they enjoy it (GD1, 2023), an important factor to consider when designing the environmental education program as they are the target group involved.

The challenge of writing an essay is that no additional information, outside of the classes can be added due to a lack or uneven distribution of information (P1, 2023). However, essays about personal ocean related experiences can bring a deeper connection and understanding of the emotions towards the ocean (P6, 2023). Participant 6 mentioned that writing essays is a helpful way of highlighting what they already know about the topics concerned.

6.3 Sub Question 2: Interactive Education

Interactive education enables the transfer of knowledge and information while engaging with the students. Interactive education can enhance collaboration, critical thinking and promote positive attitudes toward the environment (Frame et al.,2021) as it is part of active learning. Active learning enables the student to be responsible for their own learning (McKenna, 2020). Frame et al. (2021) determined that incorporating active-learning activities such as games and group discussions alongside passive education significantly increased knowledge among students in the field of conservation. In line with this, the interviews, supported by the literature, found that games and group discussions in local secondary schools were the most impactful interactive activities for promoting an emotional connection to marine conservation.

Games

Participants of the interviews mentioned the importance of having fun and interesting activities such as games to make the learning environment more engaging and active (P1, P2, P4 & P6, 2023). In the group discussion all students said they enjoy when they learn with games as it is more fun and interesting. Some mention it helped them understand the topics better (GD1, 2023). Research done in the field of environmental education (Frame et al., 2021; McKenna, 2020), mentions the importance of active-learning and the involvement of games to increase knowledge among students.

In existing education programs and ocean activities many games such as beach bingo, scavenger beach hunts, plastic sink race, “Go fish”, and explore the shore, are mentioned (*KELP*, 2020; MSC International, 2018). These games show how humans interact with the ocean, interactions between organisms, how long it takes for plastic to biodegrade, etc. (MSC International, 2018).

As the school is situated 100m from the beach, games near the shore related to the ocean can be an interesting and interactive way to teach the children more about the

environment. One student remarked: “In school I loved to learn with games, those are the ones I remember most now. So having games that are about the ocean would be very helpful to learn more and better” (P4,2023). However, it is true that the outside environment can pose distractions: kids like to be outside and every activity outside of their school campus is interesting, but they will also be more distracted, as mentioned by participant 6 (2023).

Group discussions

In the interviews some participants mentioned that it is important to make students discuss the knowledge they have about the topic in groups (P6, 2023). Collaboration among students can help them think critically about topics as they are faced with different perspectives and views, and at the same time it enforces teamwork and social skills (Frame et al., 2021). “If they collaborate among each other, they will already get far and know a lot” (P5, 2023). Group discussions in education help deepen the understanding of subjects, issues and ideas together with a more active participation approach and while developing critical thinking, problem-solving skills and communication abilities (Bordia, 2023; Parmar, 2023).

In A Schoolteacher’s Guide to Marine Environmental Education in the Eastern Africa Region (Francis et al., 2000), several group discussion activities are mentioned where children can talk about ocean related subjects, learn about challenges and think of solutions together. Group discussions can therefore be an interesting activity in environmental education programs that enforce group learning and active participation about ocean subjects.

6.4 Sub Question 3: Hands-On Education

Field experiences are an important part of environmental education programs as they can connect children more with nature: “ … positive human nature relationship is essential for countering today’s environmental problems” (Liefländer et al., 2013, p.1). According to Misseyanni et al. (2020) hands-on experiences in the outside environment are proven to be more effective in reaching an emotional impact among children.

Field experiences

In all interviews the participants mentioned the importance of field experiences. Even if only particular experiences were mentioned, like mangrove forest visits, snorkeling or swimming lessons, interview participants mentioned that simply taking the children outside of class can improve their involvement in the activity (P4, 2023). In-person experiences in connection with the ocean can provide students with personal, educational and conservation benefits (Zeppel, 2008). Experiences of Chumbe Island Coral Park (2019), showed that participants, guided by environmental educators on the coral reef and along nature walks, have benefitted from the insights gained in the field.

Moreover, much of the local economy is directly related to the ocean, as people rely on it for their livelihoods through fishing and tourism (Käyhkö et al., 2019). Local communities should therefore … learn, see, and try activities that also have potential economic benefit" (P3, 2023). "They (referred to students) should actively be connected to the ocean… most towns have beaches, more coastal activities should be organized" (P4, 2023).

To create a deeper and more meaningful connection with nature, the children need to go and explore it. If all senses are involved, the emotional connection will be greater (Liefländer et al., 2013). I Am Water Foundation in South Africa is using ocean swimming workshops to give children the opportunity to see the life that is found below water. They mention that by allowing the participants to observe the ecosystem and see how it interacts, connects them to the ocean (I Am Water Foundation, n.d.).

In Zanzibar, field-excursions are rarely organized by schools and therefore only few children have a chance to visit surrounding ecosystems (Chumbe Island Coral Park, 2019). Particularly girls do not learn how to swim and snorkel (Chumbe Island Coral Park, 2019): "As a girl I was never allowed in the water. Only when I was at university I learned how to swim" (P4, 2023). It is therefore even more important to organize field experiences with secondary school children, with a focus on girls, to strive towards gender equality in the context of feeling emotionally connected to the ocean.

6.5 Sub Question 4: Empowerment

The fourth sub question focused on empowerment. Empowerment is the action of giving power and authority to another person, but it is also used as a motivational concept. It is related to the self-determination of an individual to obtain what they feel they deserve (McKenna, 2020). Empowerment involves giving students knowledge, skills, resources and confidence to reach their own potential (Wiobyrne, 2018).

Empowering children during environmental education programs is important because it can develop a sense of agency and responsibility toward the environment that surrounds them (Birdsall, 2010). Educators can help to develop more environmentally conscious and responsible students who are capable of addressing the environmental challenges that the world is facing (Birdsall, 2010).

In Matemwe it is especially important to empower the next generation of Zanzibar as “the children usually do their parents job” (P1, 2023), and therefore teaching them about the issues the ocean is facing can empower them to do things differently (P4 & P6, 2023).

Learning by doing activities

As participant 5 mentioned, “[A] big part is to give the children the feeling that they can do it by themselves. That they are capable to find out alone … They need to learn by doing” (P5, 2023). This means allowing the space to make mistakes and figuring out the best practices has a big influence in the skills needed to solve environmental issues. By allowing them to be independent they feel empowered and have the opportunity to think creatively and innovatively (P5, 2023).

Presentations are a learning-by-doing activity which give space to students and encourage them to explore the topics, transform ideas and knowledge and stimulates self-assurance (Clarity Innovations Inc., 2022; Justas, 2022).

Low-stake quizzes were also mentioned as a learning-by-doing activity as they are not designed to evaluate performance but to engage with what is learned in the classroom (Bordia, 2023). In the group discussion most students mentioned quizzes as a way to feel good about what they learned; on the contrast some also mentioned feeling demotivated if they didn't perform well (GD1, 2023).

Presentations and low-stake quizzes can thus empower children to connect with their own knowledge and ideas by trying, failing and/or succeeding. It can however also result in demotivation and insecurity.

Motivation Talks

Participant 4 mentioned "Having local people speak about their passion might also inspire them more" (P4, 2023), participant 5 said "If there is a person that is very enthusiastic about the topic and has a lot of knowledge, it's interesting. It's good for the kids to talk to people that work with the ocean. They (the people with knowledge) need to be invited to the school to talk" (P5, 2023).

Motivational speakers can inspire students to set goals and help reach full potential (Kazulen, 2023). In particular, external speakers or community leaders are able to bring unique perspectives that motivate students and to empower them (Kazulen, 2023).

Storytelling and motivational talks by key people in the community have an important cultural role in Swahili and are used to pass on traditions, cultures, values and behaviors (Nyangahondi, 2015). It is thus important to integrate them in the environmental education program in Matemwe to promote a sense of empowerment and inspiration to the local children.

6.6 Additional Important Factors

Additional factors that enhance the educational purposes have come up in the interviews, including creativity, competition, curiosity, and collaboration. These are values that should be

prioritized when it comes to developing educational programs around the environment, in Zanzibar.

Creativity

Developing and nurturing creativity can play a crucial role in fostering and enhancing innovative thinking and problem-solving skills. Creativity is recognized as one of the Core Life Skills and is considered essential for children to acquire at an early stage (Life Skills and Citizenship Education Initiative Middle East and North Africa [LSCE], n.d.). The complexity of the environment and the multitude of challenges it faces necessitate creative solutions that account for diverse factors (Life Skills and Citizenship Education Initiative Middle East and North Africa [LSCE], n.d.). By incorporating creativity into environmental education programs, students can be better prepared to tackle these challenges effectively. Participant 3 highlighted the importance of creativity, stating that "…teaching is an art, and we should be creative in creating things for students" (P3, 2023).

Furthermore, fostering creativity can contribute to creating a more engaging learning environment where children feel empowered to express themselves. This can deepen their emotional connection with the natural world. Participant 6 suggested that through activities such as drawing, acting, or art, children can express themselves more freely and effectively convey their experiences of the ocean. Allowing children the space to express themselves in their preferred ways promotes their independence and empowers them (P6, 2023).

Creativity is therefore an important factor that should be considered in the activity related to the ocean as it can enhance the emotional tie.

Competition

The interview participants expressed that competition played a significant role in fostering increased interaction within classes and in the field of education. Competition can be defined as an act or process wherein individuals strive to achieve victory over others (Britannica Dictionary, n.d.). The interviewees suggested various ways to incorporate competition into education, such as combining it with activities like football (P1, 2023) or

offering opportunities for winning prizes (P4 & P6, 2023), along with other suggestions like swimming competitions or art challenges (P2 & P3, 2023).

Existing research acknowledges the potential importance of competition but emphasizes that it is not always necessary or suitable (The International School of Thrissur [TIST], 2022). Introducing classroom competitions can effectively engage students and enhance their active involvement, as highlighted in Burguillo's study (2010). By integrating games and friendly competition, motivation levels can be significantly increased, leading to improved performance. Competition generates a sense of challenge and excitement around the learning activity (Burguillo, 2010). However, it is important to recognize that competition may also induce stress and anxiety in some students. Consequently, when designing an environmental education program, careful consideration should be given to the inclusion of competition (The International School of Thrissur [TIST], 2022).

Curiosity

As highlighted in several interviews, curiosity emerges as a significant factor in environmental education. When students exhibit curiosity towards a particular topic, their motivation to learn and explore it increases (P4 & P5, 2023).

Curiosity is evoked by a sense of uncertainty, which primes the brain for learning and enhances the rewarding nature of the experience (Stenger, 2014). Nurturing curiosity among students not only fosters a deeper understanding but also promotes greater engagement in the activity (Gordon et al., 2018). It stimulates students to ask questions and delve into their areas of interest (Gordon et al., 2018). When teachers succeed in cultivating curiosity within students regarding subjects they are naturally inclined to learn, the students are more likely to display genuine interest and active engagement in the activity (Stenger, 2014).

Collaboration

Participant 5 mentioned “If they collaborate among each other they will already get far and know a lot” (P5, 2023). In the group discussion students mentioned that working in groups

helps them understand topics better and they feel more motivated to learn about the subject (GD1, 2023). By collaborating among students in group discussions, problem-solving activities, field trips and games there is opportunity to enhance learning and emotional ties to the field. Moreover, it helps minimize the language gap among local students and volunteers of the organization as not all children speak English (GD 1, 2023).

Moreover, outside of the school collaborations with community leaders, other organizations can also lead to increased awareness, inspiration and empowerment of the school children (Martin et al., 2015).

6.7 Culture

Zanzibarian culture and traditions are also a big part of the local academia (Khamis et al., 2017). It was therefore important to understand cultural and traditional factors for the environmental education program just like Singh and Rahman (2012) mentioned in their research; the environmental message should be accessible and tailored to the existing knowledge and interests of the target audience and it must also be clear, uncomplicated, and empowering with a local focus (Ardoin et al., 2019) therefore, cultural, and traditional values should be involved. In the interviews several cultural elements were mentioned such as beliefs, motivations and restrictions among local people.

The organization and participants of the interview mentioned that there are many village principles regarding the instalment of the education program. First the head village (shea) needs to be in accordance with the environmental education project and initiate the school contacts, only then is the organization allowed to go to the schools. Moreover, it is important to remember that even neighboring villages have different beliefs, values and traditions (P5, 2023). According to Martin et al. (2015), successful environmental education requires the collaboration with community leaders to efficiently face challenges that the local and global environment is having.

The interviews also mentioned beliefs between women and the ocean, challenges that women face and how many motivational drives are connected to money. These are also important factors to be considered when developing an environmental education program that creates emotional impact in local secondary school in Matemwe. Women face more challenges disproportionately: having limited access to ocean related activities was one example mentioned in the interviews (P4 & P6, 2023). Furthermore, as stated by Chumbe Island Coral Park (2019), girls do not learn how to swim or snorkel.

One participant discussed the monetary motivation behind all activities executed by organizations or foreigners. According to the participant, if money is included there can be a bigger drive to execute the activity (P3, 2023). Other participants mentioned that prizes such as gifts, are also an additional drive to participate in games or to achieve better in school results (P1, P4, P5 & P6). Taylor et al., (2021) mentions that in local villages in Zanzibar perspectives on marine conservation are highly influenced by wealth.

Cultural factors thus play a critical role in the shaping of an environmental education program if the aim is to create an emotional tie between students and the ocean.

7. Conclusions

In conclusion, passive education methods, such as lectures, videos, and readings, provide students with foundational knowledge in environmental education programs. While these methods are valuable for knowledge transfer, active learning approaches should be emphasized to engage students more effectively. PowerPoint presentations can be a useful tool for transferring knowledge in a passive way, especially when tailored to local values and beliefs. Videos can be engaging but may pose challenges due to limited access and cultural considerations. Essay writing can deepen understanding and create a personal connection to the topic, but it may have limitations in terms of access to information.

Interactive education, which includes games and group discussions, promotes collaboration, critical thinking, and positive attitudes towards the environment. Games can make learning more enjoyable and interesting, while group discussions foster critical thinking

and problem-solving skills. Both methods have been shown to increase knowledge among students.

Hands-on education, particularly field experiences, connects children with nature and provides personal and conservation benefits. Field excursions allow students to explore the environment and develop a deeper connection with the ocean. However, limited access to field experiences and the lack of swimming and snorkeling skills among students pose challenges.

Empowerment is an important aspect of environmental education. By empowering students, educators can develop a sense of agency and responsibility towards the environment. Learning by doing activities, such as presentations and low-stakes quizzes, allow students to explore and apply their knowledge, fostering self-assurance and creativity. Motivational talks and storytelling by local community members can inspire and empower students.

In addition to the main findings, factors like creativity were highlighted as important in environmental education programs. Fostering creativity can enhance innovative thinking and problem-solving skills, preparing students to tackle environmental challenges effectively.

In the context of Matemwe, Zanzibar, where the local culture is deeply intertwined with the ocean, considering cultural elements is more crucial. By embracing and integrating culture into environmental education programs, students in Matemwe can develop a stronger sense of identity, cultural pride, and connection to their environment. It also fosters respect for diverse cultural perspectives and enhances their understanding of the intricate relationship between culture and the environment.

Overall, a comprehensive environmental education program should incorporate a combination of passive, interactive, and hands-on methods while emphasizing empowerment and creativity to connect the children emotionally to the ocean. This approach can provide students with knowledge, skills, and a sense of responsibility, enabling them to address environmental issues and contribute to a sustainable future.

8. Limitations

The study attempting to establish an emotional connection among secondary school students in Matemwe through an environmental education program has several limitations that should be acknowledged. Firstly, the findings may have limited generalizability due to the study's focus on a specific geographical location and cultural context. The unique cultural aspects and environmental challenges of Matemwe may differ from those found in other communities, making it difficult to apply the results to broader populations.

Furthermore, the effectiveness of the study in fostering emotional connections relies on subjective measures, such as self-reported emotions, which can be influenced by social desirability bias and individual interpretation. This introduces the possibility of inaccurate or incomplete representations of the participants' true experiences or emotions.

The sample size and representativeness of the participants also pose limitations. Initially, interview participants were selected using convenience and purposive sampling methods, but some prospects declined the interview, leading to the selection of alternative participants. Additionally, challenges were encountered during the group discussion, including the limited openness of students towards the interviewer, hindering rapport building and obtaining comprehensive responses. The group discussion had to be rescheduled and was ultimately conducted by an employee of Under the Wave (UTW) in Swahili, without recording. The answers were then translated and summarized by the UTW employee, potentially introducing bias into the handling of data.

In terms of data collection, relying on self-reported data introduces the possibility of response bias, as participants may provide socially desirable answers or align their responses with the study's expectations. Moreover, the inability to record the interviews made the data collection process prone to bias. To diminish that, accuracy of summarized answers were checked regularly during the interview.

Thematic data analysis, while providing valuable insights, has limitations of its own. It typically focuses on a specific sample or context, which limits the generalizability of the

findings (Verhoeven, 2015). The identified themes may be unique to the participants and the specific research setting, making it challenging to use the results to broader populations or contexts. However, efforts were made to enhance transparency and reduce bias in the reading of the results through the inclusion of an overview of themes, their respective quotes, and additional resources.

Additionally, assessing the long-term sustainability and durability of the emotional connection created through the program may be challenging to assess, as external factors and time can influence the stability of these emotions. Furthermore, external factors beyond the scope of the study, such as government policies, community values, or environmental events, may impact the effectiveness of integrating culture and field trips into environmental education.

It is important to consider these limitations when interpreting the study's results and when considering the feasibility of implementing similar programs in other contexts.

9. Relevance Research Results for the Work Field

Given the increasing importance of environmental education programs in advocating for change, along with the United Nations' target of protecting 30% of the world's oceans by 2030, there is a growing recognition of the significance of marine conservation initiatives in local schools worldwide. As mentioned in section 1.2, the study contributes to the Sustainable Development Goals, in particular Goal 14 Life Below Water and SDG 4 Quality education.

Based on the conclusions of the research, the study holds significant relevance in several areas. Firstly, it highlights the importance of environmental education programs in fostering emotional connections among secondary school students with the ocean. The findings suggest that such programs can positively influence students' emotional responses and attitudes towards the environment, potentially leading to increased engagement and concern for environmental issues.

Additionally, the study focuses on the specific methods and factors that need attention, such as cultural integration and field trips, that can be employed to enhance the emotional

connection with the environment, in particular the ocean. This knowledge can inform the development of effective educational initiatives and curriculum design, not only in Matemwe but also in other communities facing similar environmental challenges.

Moreover, the research emphasizes the need to consider cultural context and local environmental issues when designing and implementing educational programs. By recognizing the unique cultural aspects and environmental challenges of a specific community, educators and policymakers can tailor their approaches to address these factors effectively, ensuring greater relevance and impact.

Furthermore, the limitations identified in the study can provide valuable insights for future research and program development. Understanding the challenges faced in data collection, such as reliance on self-reported data and thematic analysis limitations, can guide researchers in refining their methodologies and improving the rigor of their studies.

Overall, the research underscores the relevance of environmental education programs in fostering emotional connection with the environment, highlights effective strategies for implementation, and emphasizes the importance of considering cultural context. It offers valuable insights for practitioners, policymakers, and researchers in the field of education and environmental conservation, contributing to the development of evidence-based practices that can be applied in diverse contexts to promote sustainable attitudes and behaviors towards the environment.

10. Contribution Research Results to the Professional Product

The objective of this research was to determine the most effective approach for developing an environmental education program for secondary schools in Matemwe, with a specific focus on connecting students to the ocean. The findings of this research were subsequently used to create a comprehensive guide for Under the Wave, an internship organization, outlining an environmental education program that can be implemented in local schools

The guide provides a well-structured annual program centered around eight marine conservation topics for the local schools. Each topic is accompanied by a five-week program outline, incorporating various methods of education such as passive learning, interactive activities, hands-on experiences, and empowering initiatives. These approaches were identified and explored during interviews and desk research conducted for this project.

To ensure the program's effectiveness and purpose, the guide begins by emphasizing the importance of environmental education programs in local schools. It then proceeds to explain the specific topics covered and outlines the weekly educational methodology and its objectives. The guide also includes a toolbox section that offers guidance to the organization's staff members who will be implementing the education program in local schools. Additionally, as Under the Wave collaborates with a volunteering camp, it was crucial to involve them in the program and assign clear roles for each week, which are also outlined in the toolbox.

Reference List

Ahmad, J., Sritharan, G., & Nasir, N. N. a. M. (2015). The effectiveness of video and pamphlets in influencing youth on environmental education. *Jurnal Komunikasi: Malaysian Journal of Communication*, *31*(1), 281–296. https://doi.org/10.17576/jkmjc-2015-3101-15

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological Conservation*, *241*, 108224. https://doi.org/10.1016/j.biocon.2019.108224

Baker, J. R., Goodboy, A. K., Bowman, N. D., & Wright, A. (2018). Does teaching with PowerPoint increase students' learning? A meta-analysis. *Computers & Education*, *126*, 376–387. https://doi.org/10.1016/j.compedu.2018.08.003

Binti, Z., Zakariya, S., Hadi, A., & Sakari, M. (2013). Relationship Between Awareness, Knowledge and Attitudes Towards Environmental Education Among Secondary School Students in Malaysia. *World Applied Sciences Journal*, *22*(9), 1326–1333. https://doi.org/10.5829/idosi.wasj.2013.22.09.275

Birdsall, S. (2010). Empowering Students to Act: Learning About, Through and From the Nature of Action. *Australian Journal of Environmental Education*, *26*, 65–84. https://doi.org/10.1017/s0814062600000835

Bordia, D. (2023, March 16). *Importance of Group Discussion (GD) in the Classroom*. Teachmint Blogs. Retrieved May 29, 2023, from https://blog.teachmint.com/importance-of-group-discussion-gd-in-the-classroom/

Bordia, D. (2023a, January 29). *Learning By Doing-How and Why to Use this Approach*. Teachmint. Retrieved May 30, 2023, from https://blog.teachmint.com/learning-by-doing-an-approach-for-enhanced learning/#:~:text=Low%2Dstake%20quizzes%20are%20one,learned%20information %20from%20your%20mind.

Brame, C. J. (2016). Effective Educational Videos: Principles and Guidelines for Maximizing

Student Learning from Video Content. *CBE- Life Sciences Education*, *15*(4), es6. https://doi.org/10.1187/cbe.16-03-0125

Braun, T., Cottrell, R. S., & Dierkes, P. W. (2018). Fostering changes in attitude, knowledge and behavior: demographic variation in environmental education effects. *Environmental Education Research*, 24(6), 899–920. https://doi.org/10.1080/13504622.2017.1343279

Britannica Dictionary. (n.d.). *Competition Definition & Meaning*. Retrieved May 23, 2023, from https://www.britannica.com/dictionary/competition#:~:text=Britannica%20Dictionary%20definition%20of%20COMPETITION,act%20or%20process%20of%20competing

Brock, S. E., & Joglekar, Y. (2011). Empowering PowerPoint: Slides and Teaching Effectiveness. *Interdisciplinary Journal of Information, Knowledge, and Management*, *6*, 085–094. https://doi.org/10.28945/1366

Burguillo, J. C. (2010). Using game theory and Competition-based Learning to stimulate student motivation and performance. *Computers & Education*, *55*(2), 566–575. https://doi.org/10.1016/j.compedu.2010.02.018

Chumbe Island Coral Park. (2019, October 3). *Zanzibar - Chumbe Island: Environmental Education*. Chumbe Island Coral Park - Zanzibar Ecobungalows. Retrieved May 29, 2023, from https://chumbeisland.com/education-programme/education-program/

Clarity Innovations, Inc. (2022). Crucial Education Moments: Empowering Students to be Agents of Their Own Learning. In *K12-Bluprint*. K12-Bluprint. Retrieved May 29, 2023, from https://edudownloads.azureedge.net/msdownloads/Empowering-Students-Agents-of-Learning-Study.pdf

Colbert-Sangree, N., & Suter, J. F. (2015). Community based fishery management within the Menai Bay conservation area: A survey of the resource user. *Marine Policy*, 60, 171–177. https://doi.org/10.1016/j.marpol.2015.06.017

Davidson, M., Jensen, B., Klieme, E., Vieluf, S., & Baker, D. (2009). Creating Effective

Teaching and Learning Environments. In *OECD eBooks*. Organization for Economic Cooperation and Development. https://doi.org/10.1787/9789264068780-en

Frame, J. R., Good, B., Slinger, P., Smith, M. P., Butler, B., & Marancik, D. (2021). Measuring of the effects of a sea turtle conservation education program on children's knowledge and attitudes in Grenada, West Indies. *Ocean & Coastal Management*, *211*, 105752. https://doi.org/10.1016/j.ocecoaman.2021.105752

Francis, J., Mwinuka, S., & Richmond, M. (2000). *A Schoolteacher's Guide to Marine Environmental Education in the Eastern African Region* [E-Book]. UNEP. https://aquadocs.org/bitstream/handle/1834/9575/EAF-SchoolTeachersGuidebook-complete.pdf?sequence=1&isAllowed=y

Gan, D., & Gal, A. (2022). Student emotional response to the lesser kestrel environmental and sustainability education program. *Environmental Education Research*, *29*(1), 99–120. https://doi.org/10.1080/13504622.2022.2139354

Goal 4: Quality education - The Global Goals. (2022, March 15). The Global Goals. https://www.globalgoals.org/goals/4-quality-education/

Goal 14 | Department of Economic and Social Affairs. (n.d.). https://sdgs.un.org/goals/goal14

Gordon, G., Jirout, J., Vitiello, V., & Zumbrunn, S. (Eds.). (2018). *The New Science of Curiosity: Curiosity in Schools*. Nova Science Publishers. https://www.researchgate.net/profile/Jamie-Jirout/publication/329569586_CURIOSITY_IN_SCHOOLS/links/5ef39deb4585153fb1b3858f/CURIOSITY-IN-SCHOOLS.pdf

Gough, A. (2017). Educating for the marine environment: Challenges for schools and scientists. *Marine Pollution Bulletin*, 124(2), 633–638. https://doi.org/10.1016/j.marpolbul.2017.06.069

Hamilton, N., Omar, J., Jiddawi, N., Walhter, A., Masuka, S., Godfrey, E., & Tanner, D. (2011). *Environmental Sustainability in Zanzibar: A guide to environment and sustainable living for Zanzibar Schools and Communities* (1st ed., Vol. 1) [E-Book].

CHICOP. https://chumbeisland.com/wp-content/uploads/2017/12/Sustainable_Booklet_English.pdf

Hartley, B. L., Thompson, R. F., & Pahl, S. (2015). Marine litter education boosts children's understanding and self-reported actions. *Marine Pollution Bulletin*, *90*(1–2), 209–217. https://doi.org/10.1016/j.marpolbul.2014.10.049

Hug, A., & Hug, J. W. (2010). Challenges and opportunities for evaluating environmental education programs. Evaluation and Program Planning, 33(2), 159–164. https://doi.org/10.1016/j.evalprogplan.2009.07.005

I Am Water Foundation. (n.d.). *OCEAN GUARDIANS | IAmWaterFoundation*. Retrieved May 3, 2023, from https://www.iamwaterfoundation.org/oceanguardians

Justas, J. (2022, February 1). *Three powerful examples of Learning by Doing*. DNS the Necessary Teacher Training College. Retrieved May 29, 2023, from https://www.dns-tvind.dk/examples-of-learning-by-doing/

Kazulen, M. (2023, May 2). *Motivational Speakers for Schools in 2023*. TEEN TRUTH. Retrieved May 29, 2023, from https://teentruth.net/motivational-speakers-for-schools/

Käyhkö, N., Khamis, Z. A., Eilola, S., Virtanen, E., Muhammad, M. J., Viitasalo, M., & Fagerholm, N. (2019). The role of place-based local knowledge in supporting integrated coastal and marine spatial planning in Zanzibar, Tanzania. *Ocean & Coastal Management*, *177*, 64–75. https://doi.org/10.1016/j.ocecoaman.2019.04.016

KELP. (2020, February 7). Sailors for the Sea. Retrieved May 29, 2023, from https://www.sailorsforthesea.org/programs/kelp

Khamis, Z. A., Kalliola, R., & Käyhkö, N. (2017). Geographical characterization of the Zanzibar coastal zone and its management perspectives. *Ocean & Coastal Management*, *149*, 116–134. https://doi.org/10.1016/j.ocecoaman.2017.10.003

Krasny, M. E. (2020). Advancing Environmental Education Practice. In *Cornell University Press eBooks*. Cornell University Press. https://doi.org/10.1353/book.73081

Lange, G., & Jiddawi, N. (2009). Economic value of marine ecosystem services in Zanzibar:

Implications for marine conservation and sustainable development. *Ocean & Coastal Management*, *52*(10), 521–532. https://doi.org/10.1016/j.ocecoaman.2009.08.005

Levine, A. (2004). LOCAL RESPONSES TO MARINE CONSERVATION IN ZANZIBAR, TANZANIA. *Journal of International Wildlife Law; Policy*, *7*(3–4), 183–202. https://doi.org/10.1080/13880290490883241

Liefländer, A., Fröhlich, G., Bogner, F. X., & Schultz, P. H. (2013). Promoting connectedness with nature through environmental education. *Environmental Education Research*, *19*(3), 370–384. https://doi.org/10.1080/13504622.2012.697545

Life Skills and Citizenship Education Initiative Middle East and North Africa [LSCE]. (n.d.). The Twelve Core Life Skills: Creativity. In *Unicef*. Unicef. Retrieved May 25, 2023, from https://www.unicef.org/mena/media/6186/file/Twelve%20Core%20Life%20Skills%20for%20MENA_EN.pdf%20.pdf

Liu, Y., Cleary, A. M., Fielding, K. S., Murray, Z., & Roiko, A. (2022). Nature connection, pro-environmental behaviours and wellbeing: Understanding the mediating role of nature contact. *Landscape and Urban Planning*, *228*, 104550. https://doi.org/10.1016/j.landurbplan.2022.104550

Marpa, E. P. (2020). Navigating Environmental Education Practices to Promote Environmental Awareness and Education. *International Journal on Studies in Education*, 2(1), 45–57. https://doi.org/10.46328/ijonse.8

Marsh, K. (2017). Conservation education and outreach techniques. *Environmental Education Research*. https://doi.org/10.1080/13504622.2016.1199662

Martin, J. M., Higgins, K., Lee, K., Stearns, K., & Hunt, L. (2015). Integrating science education and marine conservation through collaborative partnerships. *Marine Pollution Bulletin*, *95*(1), 520–522. https://doi.org/10.1016/j.marpolbul.2015.04.009

Martin, V. J., Weiler, B., Reis, A. C., Dimmock, K., & Scherrer, P. (2017). 'Doing the right thing': How social science can help foster pro-environmental behaviour change in marine protected areas. *Marine Policy*, *81*, 236–246. https://doi.org/10.1016/j.marpol.2017.04.001

Masud, M. M., Akhtar, R., Afroz, R., Al-Amin, A. Q., & Kari, F. (2015). Pro-environmental behavior and public understanding of climate change. *Mitigation and Adaptation Strategies for Global Change*, *20*(4), 591–600. https://doi.org/10.1007/s11027-013-9509-4

McKenna, K. (2020). Adult Environmental Education: Active vs. Passive Learning Pedagogy. *University of South Florida*, *4*(2), 193–212. https://doi.org/10.5465/amle.2005.17268566

Misseyanni, A., Marouli, C., & Papadopoulou, P. (2020). How Teaching Affects Student Attitudes towards the Environment and Sustainability in Higher Education: An Instructors' Perspective. *European Journal of Sustainable Development*, *9*(2), 172–182. https://doi.org/10.14207/ejsd.2020.v9n2p172

MSC International. (2018). *Games and activities*. Retrieved May 29, 2023, from https://www.msc.org/for-teachers/teach-learn-about-ocean-sustainability/games-and-activities

National Geographic Society. (n.d.). *Ocean Education*. (C) National Geographic Society. Retrieved May 29, 2023, from https://www.nationalgeographic.org/education/programs/oceans-education/

National Tanzania Turtle Committee. (2005). The Status of Marine Turtles in The United Republic of Tanzania, East Africa. In *WWF*. WWF. Retrieved May 23, 2023, from https://wwf.panda.org/wwf_news/?23716/The-Status-of-Marine-Turtles-in-Tanzania

Nichols, W. J., & Cousteau, C. (2018). *Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make You Happier, Healthier, More Connected, and Better at What You Do*. Back Bay Books.

Nyangahondi, K. (2015). Parents as first teachers: use of storytelling in rural and urban family settings in Tanzania. *UDOM Institutional Repository*. Retrieved May 30, 2023, from http://repository.udom.ac.tz/bitstream/handle/20.500.12661/1848/KASUBI%20NYANGAHONDI.pdf?sequence=1&isAllowed=y

Parmar, P. (2023, March 11). Importance Of Group Discussion in Teaching. *Classplus Growth Blog* -. Retrieved May 29, 2023, from https://classplusapp.com/growth/importance-of-group-discussion-in-teaching/#:~:text=webinar%20software%20platform-,What%20is%20a%20Group%20Discussion%3F,solving%20abilities%2C%20and%20communication%20skills.

Sakurai, R., & Uehara, T. (2020). Effectiveness of a marine conservation education program in Okayama, Japan. *Conservation Science and Practice*, 2(3). https://doi.org/10.1111/csp2.167

Singh, H., & Rahman, S. (2012). An Approach for Environmental Education by Non-Governmental Organizations (NGOs) in Biodiversity Conservation. Procedia - Social and Behavioral Sciences, 42, 144–152. https://doi.org/10.1016/j.sbspro.2012.04.175

Stenger, M. (2014, December 17). *Why Curiosity Enhances Learning*. Edutopia. Retrieved May 25, 2023, from https://www.edutopia.org/blog/why-curiosity-enhances-learning-marianne-stenger

Taylor, S., Aswani, S., Jiddawi, N., Coupland, J., James, P., Kelly, S. M., Kizenga, H., Roberts, M. S., & Popova, E. (2021). The complex relationship between asset wealth, adaptation, and diversification in tropical fisheries. *Ocean & Coastal Management*, *212*, 105808. https://doi.org/10.1016/j.ocecoaman.2021.105808

Teacher Horizons. (n.d.). *Teaching in Zanzibar*. Retrieved May 25, 2023, from https://www.teacherhorizons.com/countries/africa-zanzibar/quality-of-life

The International School of Thrissur [TIST]. (2022, June 30). *Competitiveness in Education: Good or Bad?*TIST. Retrieved May 25, 2023, from https://tist.school/blog/competitiveness-in-education-good-or-bad

The Living Ocean. (n.d.). *About – The Living Ocean*. Retrieved May 25, 2023, from https://thelivingocean.org/about/

Thomas, R. L., Teel, T. L., Bruyere, B. L., & Laurence, S. (2019). Metrics and outcomes of

conservation education: a quarter century of lessons learned. *Environmental Education Research*, 25(2), 172–192. https://doi.org/10.1080/13504622.2018.1450849

Tobey, J., & Torell, E. (2006). Coastal poverty and MPA management in mainland Tanzania and Zanzibar. *Ocean & Coastal Management*, *49*(11), 834–854. https://doi.org/10.1016/j.ocecoaman.2006.08.002

UNESCO. (2023, April 20). UNESCO urges making environmental education a core curriculum component in all countries by 2025. *UNESCO*. Retrieved May 3, 2023, from https://www.unesco.org/en/articles/unesco-urges-making-environmental-education-core-curriculum-component-all-countries-2025?TSPD_101_R0=080713870fab2000f4c8beb6eb35b43dfc32e05b22ba0685e050766478cc2f9f2f5a62ed1abe3d9508932aff23143000f9aa62c86dcaf9fb4cfb7ed207868d804ea5b7839223256e0d771fdb9e5973b01db4194c2dff55a1480914723c4e51f5

Van De Wetering, J., Leijten, P., Spitzer, J., & Thomaes, S. (2022). Does environmental education benefit environmental outcomes in children and adolescents? A meta-analysis. *Journal of Environmental Psychology*, *81*, 101782. https://doi.org/10.1016/j.jenvp.2022.101782

Van Der Steen, N. (2011). School improvement in Tanzania : school culture and the management of change. In *Doctoral thesis, Institute of Education, University of London.* http://eprints.ioe.ac.uk/21666/

Verhoeven, P. S. (2015). *Doing Research: The Hows and Whys of Applied Research* (4th ed.). Boom Lemma uitgevers.

Wiobyrne. (2018, April 11). *What is "empowerment" in education?* Dr. Ian O'Byrne, Literacy, Technology, and Education. Retrieved May 29, 2023, from https://wiobyrne.com/empowerment/

Yadav, S., Banerjee, A., Jhariva, M., Meena, R., Abhishek, R., Khan, N., Kumar, S., & Sheoran, S. (2021). Environmental education for sustainable development. In *Natural*

Resources Conservation and Advances for Sustainability (pp. 415–428). Elsevier. https://www.researchgate.net/publication/354686916_Environmental_education_for_sustainable_development

Zeppel, H. (2008). Education and Conservation Benefits of Marine Wildlife Tours: Developing Free-Choice Learning Experiences. In *Research Gate* (DOI: 10.3200/JOEE.39.3.3-18). *The Journal of Environmental Education*. Retrieved February 22, 2023, from https://www.researchgate.net/publication/254345121_Education_and_Conservation_Benefits_of_Marine_Wildlife_Tours_Developing_FreeChoice_Learning_Experiences/citations

Appendices

Appendix 1 – Interview information

Number participant	Location Occupation participant	Location interview	Date interview	Duration interview	Recording	Language
Participant 1	Matemwe	Matemwe	01.04.2023	20 min	yes	English
Participant 2	Matemwe	Matemwe	23.03.2023	24 min	yes	English
Participant 3	Matemwe	Matemwe	17.04.2023	20 min	No	English
Participant 4	-	Zoom	20.04.2023	31 min	yes	English
Participant 5	Kigomani	Zoom	18.04.2023	50 min	yes	English
Participant 6	Stone Town	Stown Town	24.04.2023	1h 10 min	No	English
Group Discussion 1	Matemwe	Matemwe	25.05.2023	30 min	No	Swahili

Appendix 2 – Interview protocol

Interview Introduction

First of all, thank you so much for taking part in this interview.

Let me tell you about me and what I am doing. My name is Zoé Kerkhof, I am a student of Global Project and Change Management, and I am currently interning for Under the Wave, a marine conservation organization in Matemwe. I am here to research how to best create an environmental education program about marine conservation for local secondary schools. With education we aim to create a closer connection to the ocean and hopefully in a future that will drive the children to protect it.

I am so glad to have a chance to talk to you and hear from your side what you think is important to teach the children.

The interview should not take longer that 30 min. If allowed by you, I would like to record the interview. I will make a transcription afterward and if allowed, I would like to use some quotes for my research, they would stay anonymous. Moreover, if need, the transcription will be shared with a third party. If this is allowed by you, I have a form with me to sign so to confirm that you allow using this interview for university purposes.

Do you have any questions for me before starting the interview?

I will start the recording and the interview.

Interview questions

Interview phase	Questions	Follow-up questions	Rationale

Introduction	Where are you from?	• Where do you live? • How long have you lived there?	Understanding where the interviewer is from and where it is located as the research is focused on one village
	What do you do in life?	• For how long? • What do you like about it? • Why did you decide to become ……?	Understand the work field and experience
	How would you describe your relationship with the ocean?	• When did you realize it is important to protect the ocean? • Have you seen any changes in and around the ocean? • What changes have you seen? • What do you do to protect the ocean?	Understanding how the interviewer is involved in marine conservation and the changes the ocean is facing on the island
Education program	How do you see environmental education programs in local schools?	• Why do you think it is (or not) to teach the children about the ocean? • Do you think the children hear a lot about marine conservation? • What are methods now to give children knowledge about the ocean?	Understanding the view and opinion on environmental education programs and what are some educational methods
	What are some of the subjects/topics/issues that children should learn about?	• What are some local subjects/topics/issues that should be included in the education program? • Why do you think these subjects/topics/issues are important to discuss in local schools?	Understanding what topics and issues should be faced in the environmental education program
Passive education Sb-Q 1	What do you think are some methods to give the children more knowledge about marine conservation?	• How are children currently learning? • How can children best understand topics about marine conservation?	Understand how children are currently learning and what some methods of passive educations are to transfer knowledge about the ocean to the children

Interactive Sb-Q2	What do you think are some activities the kids can do to learn about marine conservation in a more interactive way?	• What are some interactive activities/games that the children can do? • What are some factors that can enhance the participation in activities related to marine conservation? • What are activities that enhance children's emotional tie with the ocean?	Understand what interactive activities can be to create an emotional impact and to transfer more knowledge to the children
Hands-on education Sb-q3	What are some hands-on experience that children can do to learn more about the ocean and feel more connected?	• What are some factors that can enhance the participation in hands-on experiences related to marine conservation? • What are hand-son experiences that enhance the children's emotional impact?	Understanding what some hands-on experiences can be or what they should involve to connect the children more emotionally to the marine world
Empowerment Sb-q4	Can children be empowered by an education program?	• What are empowerment activities for children about marine conservation? • What are children's empowerment activities that enhance emotional impact?	Understanding how children can feel more empowered during the environmental education program so that they get the skills and knowledge to protect the ocean
Culture	Are there cultural factors to include in the environmental education program?	• What are these cultural factors? • How can they best be implemented in an environmental education program?	Understanding cultural and traditional factors that need to be included or considered in the education program
	Are there cultural challenges with marine conservation?	• What do you think is the biggest challenge regarding culture and ocean conservation? • How can these challenges be implemented in the environmental education program?	

		• Are there any myths concerning the ocean? • Are there any particular challenges women are facing with the ocean?	
Concluding	Are there any other things that I should know or include in the environmental education program?		
Closing			
Thank you so much for participating in this interview and for being so open! I really appreciate it. Let me know if you would like to see the end product and research. For the last question I would like to ask you if you have a message for the children from your side? Do you have more questions for me?			

Appendix 3 – Interview themes and desk research

Theory Thematic	Explanation	Categories	Interview quotes or notes	Desk research
Environmental education program	Understand and see how environmental education programs are viewed and the current similar programs or subjects' locals learn. This gives a general idea on the importance of environmental education on the island.	**Current situation**	• "When you talk about Zanzibar, you can not not talk about the ocean. But local people do not get to learn about it in school" – P4 • In school there are currently no subject that cover the topics of marine conservation. There is a subject like science but no biology or environmental related. … Also, teachers don't know much about it – P6 • Now they don't know much about the ocean. They only see it as a source of food – P3 • On Chumbe Island something similar has been created – P6	"The Chumbe project aims at building environmental awareness in Zanzibar." (Chumbe Island Coral Park, 2019). A Schoolteacher's Guide to Marine Environmental Education in the Eastern African Region has the aim to introduce environmental components in the classroom as well as in outdoor activities (Francis et al., 2000). Ocean education platform of National Geographic Society (National Geographic Society, n.d.)
Topics and issues to cover in the environmental education program	Understanding what some of the major topics and issues on the island of Zanzibar are that need to be included in the environmental education program. The aim is to understand	**Topics**	• "They should start to learn from the reality that is in front of them, then move to deeper." – P5 • They don't know a lot about erosion, so it should be important to know what is important to keep the island from erosion – P6 • "They should learn about what they eat, what they see, what they touch. … Like what fish to eat when (season), what size but also things like respect for own land with pollution. What they do not see is not there, that's how they think, but that's not true. They need to learn." – P5	Topics in the book Environmental sustainability in Zanzibar (Hamilton et al., 2011): Environment & Sustainability, Biodiversity, Mangroves, Seagrass, Coral reefs, Fisheries, Pollution, Climate change In the topics: what it is, what is special and/or important, the role in Zanzibar, the treats, how to protect them - (Hamilton et al., 2011) Currents, tides, weather, different oceans, marine ecosystems, habitats, reef and corals, marine protected areas, food webs, ocean impacts of climate change, ocean animals, ocean plastics, ocean plants, why the ocean matters, … (National Geographic Society, n.d.)

			• "Environmental education gives a chance to see and understand the ocean" – P2 • "They should learn more about fishing and how it works in the ocean" – P1 • "Anything related to the water is important for them to know. How the ocean works, how the lagoon works, but especially different fishing practices. They don't know… Also endangered species are important to mention, especially sea turtles" – P4 • It would be good to show them the interconnectedness about food, economic. The linkage is important – P6	Topics in "A Schoolteacher's Guide to Marine Environmental Education in the Eastern African Region" (Francis et al., 2000): Environment and ecology, ocean and seas, the seashore, mangrove forest, coral reefs, coastal pollution, coastal resource management
		Issues	• Kids don't see enough the ocean, especially girls – P6 • "Fisherman catch less fish but don't know why" - P1 • "So much more pollution, many broken fishnets, broken corals, no fish, no big fish, … before a lot of big fish also in the lagoon, now only out far in the ocean" – P1 • "People secretly sell Kasa (turtle) for 10'000 TZS, even if they know it's illegal. People still do it yeah" – P2 • They wanted to break part of the reef in Matemwe so that they can still go and fish also with low neap tide. They didn't do it because not allowed. But they did not understand tides and why sometimes it was more and sometimes less. But they do live and depend on tides. So slowly they learned to look at moon – P6	To improve population management is to develop educational programs that increase awareness toward conservation issues (Frame et al., 2021). Management strategies are challenging to implement i Zanzibar as local people depend upon marine resource survival (Colbert-Sangree & Suter, 2015). School education in Zanzibar, as elsewhere in the region, is based on rote learning of a highly academic syllabus that has little relationship with the surrounding world (Chumbe Island Coral Park, 2019). Teachers in Zanzibar have not been trained for linking classroom teaching to field excursions in this country (Chumbe Island Coral Park, 2019).

Knowledge transfer methods for emotional impact to the ocean (passive education, sub-question 1)	Understanding how to best transfer knowledge or create new awareness among children in local schools about marine conservation. The aim was to understand if there are ideal practices or activities that enhance the understanding and interest in information related to the ocean.	**Passive knowledge transfer Methods**	• Theory is important, they have to know how it works and the size of things. In school they should get the information and provide theory. Outside they learn and experience – P6 • "They need to learn about the environment to know how it works" – P2 • "The knowledge part is limited. Direct information will help with that" – P5 • Through oral classes kids can learn. Like presentations on power points, on the board or also videos, maybe even art or acts. – P6 • "Through videos or with fun facts give the kids knowledge…" – P4 • "It's good to see what they know with an essay. The best one can win a price so that they have a bigger drive to write it." - P6 • In the group discussion they mentioned videos but not all knew about education videos – GD1 • Essays were mentioned in the group discussion but less than half said they enjoy it – GD1	In research by Frame et al. (2021) concepts about conservation were presented using power points, videoclips and active learning-participation Misseyanni et al. (2020) research reports that enthusiasm and knowledge of the instructor is big part of effective teaching and impact to the children. When it comes to Power points "the number of slides used per session appeared not to affect effectiveness but lower than thirty (3 bullet points and 20 words or less per slide) was associated with effectiveness" (Brock & Joglekar, 2011, p.1). Videos can be effective ways to engage students in education and transfer knowledge in a fun and engaging way (Brame, 2016). "Video has become an important part of higher education" (Brame, 2016, p.1). "Ask the students to select any organism they identified and write a two- page essay describing the following: its form (e.g. shape, colour, size); its habits (e.g. its diet, protection, reproduction, movement, etc,); any interesting or unusual features; and ways in which it might be affected by human activities and how it might be protected." (Francis et al., 2000, p. 2) "Have students write a short essay explaining 'Why coral reefs are important to us'." (Francis et al., 2000, p. 32) "Additional lectures in marine biology, forest ecology and environmental protection enhance the practical experience." (Chumbe Island Coral Park, 2019).

Activities for environmental education program that create emotional impact to the oceans (interactive education, sub-question 2)	Understand what some activities can be, or what they need to involve, to create an emotional impact in a fun and interactive way among secondary school children.	**Games**	• Games outside of school would be really good for the kids. As soon as they are outside of school, they are happy. Simple things lie drawing on the sand, finding shells on the beach and identifying them, of course the dead and empty ones. Activities like this, just on the beach helps to learn – P6 • 100% ocean games will help connect. More interactive means more interesting – P6 • "In school I loved to learn with games, those are the ones I remember most now. So having games that are about the ocean would be very helpful to learn more and better" – P4	The development of educational activities that are active provide opportunities for students to collaborate (Frame et al., 2021). Active-learning components can increase students' knowledge by increasing students engagement and understanding, in the research done by Frame et al. (2021) activities such as games, group-scenarios and group discussions in education curriculum had big impact Go Fish - This game aims to help learners understand how human and physical processes interact to influence and change the marine environment; and how human activity relies on effective functioning of natural systems (MSC International, 2018). The String Game - This game is a great way to introduce the idea of connections between organisms in a food web (MSC International, 2018). Beach bingo, scavenger hunt on the beach, beach sculptures, explore the shore, how long till it's gone game, sinking races, plastic drift race, … (*KELP*, 2020)
		Group discussions	• "If they collaborate among each other they will already get far and know a lot" – P5 • They should be able to discuss in groups what they know and what they learn, talking about it helps – P6	"Let students work in groups and discuss their views about what we would lose if mangroves disappeared. Also discuss how this would affect local coastal communities who depend on mangroves for their livelihood." (Francis et al., 2000, p.26) Group discussions is a learning method where students discuss about issues, topics and ideas together. It helps students develop critical thinking

				skills, problem-solving and communication abilities (Parmar, 2023). Group discussions help deepen the understanding of subjects and make the students actively participate in classes (Bordia, 2023)
Hands-on experiences that children can do to create an emotional impact about the ocean (hands-on education, sub-question 3)	Finding out what some hands-on experiences are or what are some important activities/elements that need to be involved to enhance and create emotional impact about the ocean.	**Field experiences**	• "Learning by doing is the best way!" – P5 • "First, I always thought the local diving students how to swim, then to dive and only after. Once they were capable, I would show them all the pollution in the water. Once they are comfortable with the experience, they can see the issues and problems more" – P5 • "It's good to mix class days with field days" – P5 • "Taking the kids in the ocean is good for them. Learning how to swim is good. … They are happy outside of school. They want to see more." – P2 • Maybe a way that they can see what is under water, but needing to swim, is a glass bottom that can be put in the water. That way the children can see what is in the water. They need to see to experience and learn but they can't swim – P6 • "They should learn, see, and try activities that also have potential economic benefit" – P3 • "They should actively be connected to the ocean … most towns have beaches, more coastal activities should be organized" – P4	Misseyanni et al. (2020) mentions that topics and learning objective that have bigger impact on attitudes and behavior are experiential in nature. School field trip activities that are carefully designed, collaborative, hands-on and investigative can enhance environmental knowledge (Krasny, 2020) Field experiences are essential in environmental education programs as they can connect students more with nature and in a more meaningful way (Liefländer et al., 2013). " … positive human nature relationship is essential for countering today's environmental problems" (Liefländer et al., 2013, p.1). According to Zeppel (2008), in person experiences in close connection to the ocean provide people with personal, educational and conservation benefits. "Extra-curricular activities, such as field excursions, are rarely organized and very few children have a chance to visit their surrounding ecosystems, especially the coral reef. This is also partly due to the fact that school children, and particularly girls, normally do not learn how to swim or snorkel" (Chumbe Island Coral Park, 2019). "Experience shows that the participating children, which are guided by environmental educators on the

				coral reef and along nature walks, benefit greatly from the insight they gain while exploring these habitats." (Chumbe Island Coral Park, 2019). "A huge focus of the workshops is our snorkel station where participants are given the opportunity to see the life that is found below the surface of the ocean. This is an important aspect of our Ocean Guardians Workshops because it connects participants to the ecosystem by allowing them to be a part of it. Learning how to be confident in deeper water, understanding the ocean better and of course seeing the incredible life our ocean holds." (I Am Water Foundation, n.d.) "Go out in groups of 4 to 6 onto the reef at low tide (being especially careful not to step on any living animals). Let each group choose a small area and explore the animals that live down among the dead coral and sand, making notes of all that they see. On returning to the classroom allow each group to give a five-minutes presentation about their observations. " (Francis et al., 2000, p. 32) Mangrove excursion (Francis et al., 2000): "Organise for an excursion to study mangroves and their associated components. At the site: a) Identify the existence of different mangrove species at different zones; b) Observe the variety of creatures you can see—birds, crabs, fishes and others left behind after the tide has ebbed, and where they are found; c) Make a checklist of human uses of mangroves and the various activities that destroy mangroves; d) Look for signs of mangroves that have been destroyed; and e) Look

				for signs of conservation efforts in the area." (Francis et al., 2000, p. 26)
Empowerment methods for emotional impact about marine conservation (Empowerment education, sub-question 4)	Empowerment methods that will help connect the children emotionally to the ocean as empowerment is an essential element in changing behaviour. If the children feel empowered, they will be able to have the skills and motivation to take action.	**Learning by doing activities**	• "Big part is to give the children the feeling that they can do it by themselves. That they are capable to find out alone … They need to learn by doing. By seeing" – P5 • Asking questions like "How would you solve it?" Either if they do it alone or in groups, right or wrong, it's good to give them freedom …" – P5 • "They have the capacity to do it, they just need to have to try" – P5 • If they have the feeling that they are doing it alone it helps the learning process – P6 • "The key to education is to involve the children, let them make mistake, try. Otherwise, they will not learn." – P4 • "By giving them the chance to try, to express themselves. To have the freedom to try good or bad. Trying gives them confidence. You give them confidence to try. They have the capacity" – P5 • "Encourage that it's a safe environment. Especially when outside of school. Give safety information, make the kids comfortable. They have to learn not be scared. They are used to see it as a scary place." – P4 • Simple quizzes were liked among the majority of the participants of the group discussion. They did mention preferring multiple choice questions	Empowerment is the process of giving power and authority to another person. It's a motivational concept. It related to the self-determination of an individual to obtain what they feel they deserve (McKenna, 2020). "It's important for young people to feel empowered to effect positive environmental change" (Hartley et al., 2015) "Learning by doing" is an idea where people can learn something better and faster if it is a participatory experience (Justas, 2022) Empowerment is the process of individuals, groups to gain power, access to resources and control over their own lives. It thus involves equipping students with knowledge, skills, resources, and confidence to reach their own potential (Wiobyrne, 2018). Presentations empower students as it helps to develop communication skills, confidence, leadership, and teamwork. The preparation of the presentation stimulates self-assurance, transforming ideas and knowledge (Clarity Innovations, Inc., 2022). Presentations helps to prepare for future success (Clarity Innovations, Inc., 2022). Low-stake quizzes are a learning by doing method not designed to evaluate performance but to engage with what learned in the classroom (Bordia, 2023).

			rather than open-ended questions – GD1 • In the group discussion some mentioned not liking quizzes as they got more insecure, others disagreed and said they liked it. – GD 1	
		Motivational talks	• "Having local people speak about their passion might also inspire them more" – P4 • "If there is a person that is very enthusiastic about the topic and has a lot of knowledge than interesting. It's good for the kids to talk to people that work with the ocean. They need to be invited to the school to talk" – P2 • "Invite Ministry of fisheries, or Ministry of health to talk issues related to the ocean and pollution, would be good to see for the children" – P1 • "It is important for the culture to invite local community leaders or governmental people talk in school as part of the program. People look up to the Sheha (head village) and if he is present, it gives a sense of trust, or better, it's good they see that you collaborate with Sheha" – P5 • "I always end with saying: *if you really want to do it, you can!* I like to end with a motivational quote to inspire them to change*"* – P5	During an environmental education program students were brought into contact of politicians, researchers, and community leaders to discuss about environmental related problems that the village is facing (Yadav et al., 2021). It is important to emphasise that every person has the capacity to make a difference (Masud et al., 2015) Motivational speakers can have impact on young people and inspire them to set and achieve goals. It helps to reach their full potential. Outside speakers, or community leaders are able to bring unique perspectives that can motivate and empower students (Kazulen, 2023). In Tanzania "storytelling is a popular way of cultural and wisdom transmission among many families" (Nyangahondi, 2015, p.46)

Additional important factors		**Creativity**	• With art and drawing or other things such as singing and acting it helps the children to express in other ways. It's good to see what they see about the ocean – P6 • You have to empower the kids when they are young to take own initiative, to be creative, to talk – P6 • "I think it's good to do different things. Like poster, or colours or something different yeah" – P2	Creativity can drive to deeper understanding and engagement in the activity (Gordon et al., 2018). "Creativity is a life core skill that children should develop from an early age" (Life Skills and Citizenship Education Initiative Middle East and North Africa [LSCE], p.1, n.d.) Creativity is connected to the effectiveness of other life skills such as critical thinking, problem solving, and self-management – it is a core skill that can improve learning processes and education systems (Life Skills and Citizenship Education Initiative Middle East and North Africa [LSCE], n.d.).
		Curiosity	• "One big thing is to touch the curiosity of children. It will make them want to learn more. So many activities where they interact and learn in a fun way. But they need to be interesting and challenging. Not too easy" – P5 • They are interest when you talk about their local things, things they can see – P5 • "Curiosity is important. If the children are curious they want to learn and know more. It's a bit of a game but it helps" – P4	Research done by Gordon et al. (2018) suggests that curiosity in school can help children's learning and the encouragement of curiosity has positive effects on motivation and achievements. Curiosity makes the brain more receptive for learning (Stenger, 2014). "People find it easier to learn about topics that interest them" (Gruber et al., 2014). A study conducted by Gruber et al. (2014) highlights the importance of stimulating curiosity to create a more effective learning experience.
		Competition	• "Competition is big. If you organize a big competition the whole village will come … One day, American guy organized a clean-up and a football match and everybody joined. Never saw beach this clean" – P2	Competition: the act or process of trying to get or win something (such as a prize or a higher level of success) that someone else is also trying to get or win **:** the act or process of competing (Britannica Dictionary, n.d.).

			• "When kids, we always made competition in the lagoon who could swim faster, who could find more fish, always competing. It was good" – P1 • Competition is quite big on the island, having something to work for helps to get motivation. Activities or games with competition is always a good idea – P6 • "Having competitions with like a prize always motivated me in school. I wanted to be the best and get the gift…. So like with some quiz, with essays or games with competitions. If there is a reward it will help a lot" – P4 • In the group discussion it was mentioned that they like if there is a challenge among them and that they like competing – GD1	Competition not necessary and needs careful consideration (The International School of Thrissur [TIST], 2022) Competition can enhance differences, advantages and disadvantages (The International School of Thrissur [TIST], 2022) Competition can improve involvement when in form of friendly games. It helps motivate students though the sense of challenge and excitement (Burguillo, 2010).
		Collaboration	• "If they collaborate among each other they will already get far and know a lot" – P5 • The group agreed that it was more fun for them to learn in groups – GD1 • The group agreed that they learn more when working with other people – GD1 • The group found it easier to work with other students on challenging topics and due to language gap - GD1	Partnerships and networks developed during collaborative processes resulted in increased action (Ardoin et al., 2019) According to Martin et al. (2015) that successful environmental education programs go further than teachers and children, it requires community leaders and organizations working alongside the students and teachers to bring awareness and resolve the challenges facing marine conservation. It is the collaboration between education programs, community leaders and organizations that can lead to brother awareness and face challenges such as the protection of the marine ecosystem (Martin et al., 2015).

Cultural factors	Cultural factors that need to be take into consideration during the creation of the environmental education program to create an emotional impact among children related the marine conservation. These factors are important are religion and traditions are big part of the local livelihood. It is thus important to know and understand them.	**Values, beliefs and local regulations**	• "First things first, you need the approval of head village. The Shea. If he agrees than it's okay to meet for the school to start the program. But always the shea first" – P5 • You have to remember, that here on the island, every village is different, every school is different and the culture too. For every village the perception on the ocean is different so it's good to go to the school first and see" – P5 • Do not mention religion – P6 • There are many myths and sayings around the ocean. You should understand what they already know or think about it. It will make understand their (reference to the children) position better. – P6 • "People are not friends with the sea" – P5 • "Girls are not allowed in the water" – P5 • "As a girl I was never allowed in the water. Only when I was at university I learned how to swim" – P4 • She was not allowed in the water, unless outside of town with her parents. But before there was nothing on the beach it was clean, now there are many hotels, so we don't go anymore. But I grew up here (pointing towards the water), seeing the ocean everyday. – P 6 • "… especially girls have to ask permission at home to do things. But when I (teacher) say it's okay or talk	Swahili is the main culture that characterizes the cultures and traditions on the island and thus also the consumption patterns (Khamis et al., 2017). The traditions are strong, and the main religion is Islam which is highly practices around the whole island, women and men are expected to cover respectfully when engaging with local populations (The Revolutionary Government of Zanzibar, 2021). Zanzibar's coastal ecosystem is threatened due to fast and uncontrolled changes along the rapid deterioration of the environment (Käyhkö et al., 2019) Due to lack of legal support from the government regarding control and law enforcement in Zanzibar, conservation efforts are small (Levine, 2004) There are different local perspectives on marine conservation that are highly influenced by wealth (Taylor et al., 2021) Poverty sometimes forces people to use destructive fishing practices and break management rules, conservation is thus a limiting factor that comes in second place (Tobey & Torell, 2006)

			to parents. Then it's okay. Then they are allowed. A teacher must be present or talk to allow some activities." – P2 • They have to miss school due to menstrual cycle. Nothing to protect other than cloths – P6 • Everything is connected to money. They think Muzungu (white people) are getting paid to clean up. They are mad that they don't get employed, that is how it used to be. Now the government doesn't pay them anymore, so they get mad at the white people or NGOs picking it up. They don't want to do it unless paid. – P3 • They only see the ocean as a source of money. It gives them fish, so they get money. And now also with tourism. Ocean is money. No connection, no emotion, just money – P1 • "If you give them a t-shirt or pay for the football season every person in the village will join. You give them something, they come" – P2	

Other suggestions	Other suggestions that came up during the interviews regarding the creation of emotional impact with the ocean and to create a more sustainable relationship with the ocean	**Outside of school environmental/ ocean club**	• An outside of school environmental club could help for the ones that are more motivated to follow even more or have even more activities – P6 • "When I was in school that is how I learned about the environment. We had this environmental club and learned about the ocean. It can also be led by the more motivated or older students for younger ones. This way they feel important and also empowered…. It can also be something accessible by the entire village" – P4 • It would be good if older people also learn about the ocean. So maybe a class or club where older people, parents or kids that don't go to school can also learn about the ocean. That would be good – P3	
		Scholarship to study marine conservation	• An idea would be to create a competition among students with an essay or piece of art about their relationship with the ocean and then the winner could possibly get a scholarship to study marine biology in Stone Town – P6	
		Event day	• "It would be good to have one day dedicated to ocean or big event where whole village comes… organize big competition to win something. People like to win here…, like a big event" – P2	