

Module 1

Research

Retention of EE/ESD learning and attitudes of participants, over six months: The Case Study of NaDEET Centre, NamibRand Nature Reserve, Namibia



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1. Title

The influence of the NaDEET Centre EE/ESD programme on the lives of participants, over a period of six months

2. Abstract

Education for Sustainable Development has become the crucial component in bringing about change in humans. If we want to save our Earth for many generations to come we will need to change our mindsets towards it. Earth is the only home we have and we need to create awareness about the state it is in and how we can conserve it for the future. The Namib Desert Environmental Education Trust (NaDEET) recognised just that. They have identified the need for educating people about how to live a sustainable lifestyle. Their hands-on approach and learner centered programmes do just this.

A study conducted at NaDEET Centre in order to determine the impact the programme had on the lives of the participants. Three objectives were identified to answer the main aim of the study. These objectives were:

- 1. To identify which theme had the greatest impact on learners' lives**
- 2. To determine if there is a link between environmental learning and implementation at home**
- 3. To determine if there is a difference between the influence on male versus female participants**

The main methods used to collect data for this study was by sending out hardcopy surveys to participants. The assessment of this research formed part of a greater study conducted by NaDEET and the University of Illinois Urbana-Champaign in the United States. They directed a study on children's attitudes and beliefs about the environment and sustainability change as a result of their time at NaDEET Centre. However, the main focus for this research report was based on the last section of the post programme and post 6-month surveys. The last section comprised of open-ended questions addressed to participants that attended the NaDEET Centre programme.

The main results found for this study was that water, energy and waste were the themes that highly impacted participants. The aim and objectives for the study were met and had a positive outcome. The research showed that there was an affiliation between things learned at NaDEET and things implemented at home. More females were influence by the water and energy themes than males, but males were influence by the waste theme. Other

additional information was revealed showing that some participants reported learning about ethics and sustainable living.

3. Introduction

Our planet is degrading daily, at a rapid rate, species are becoming extinct and resources are being depleted on a large scale. Therefore, the importance of living a sustainable lifestyle has become of utter importance (Tilbury, D., 2002, p.13), in order to preserve Earth and its resources for the future generations. Education for Sustainable Development (ESD) is seen as a crucial component of quality education and a vital enabler for sustainable development (UNESCO, 2019).

NaDEET therefore recognizes the need for teaching people about how to live sustainably and the importance of conserving their natural environment. The NaDEET Centre programme supports the Namibian curriculum for environmental education. NaDEET has spent most of its time on the development of hands-on / practical programmes to tackle the key areas in EE/ESD and Sustainable Development Goals (SDGs) number 4. Education; target 4,7. Education for Sustainable Development and Global Citizenship and 11. Sustainable Cities and Communities. NaDEET Centre is located in the Namib Desert, this forms part of an ideal environment for teaching about sustainable living. NaDEET offers programmes to different school groups in Namibia, targeting upper primary and secondary school learners as well as teachers. Participants are taught about the connection between the natural and human environment (NaDEET, 2017). These programmes focus on teaching learners about energy, water, waste and biodiversity and how to live sustainably, as well as the threats to the environment (NaDEET, 2017). This in turn thus creates knowledge, awareness and skills, that can be applied to daily living. Hence, also adhering to the Sustainable Development Goals (SDGs) set by the UN.

The lack of sustainable living is a major global problem, but for Namibians it is even more so as Namibia is a developing country. There are many threats that impede sustainable development in Namibia. Some of these include: poor planned development and rapid industrialization, poverty and inequality, limited water resources, land issues, biodiversity loss, population growth and settlement patterns, lack of human resources, poor governance, increasing competition for shared natural resources, adverse impacts of global atmospheric change and the need to improve access to existing knowledge and generate new knowledge (Tarr, 2000).

Environmental Education (EE) and Education for Sustainable Development (ESD), flow into each other. The Dictionary of Environment and Conservation defines Environmental Education (EE) to be “formal and informal activities that are designed to promote people’s understanding of, appreciation of, and care for the natural

environment” (Park, 2011, p.150). Education for Sustainable Development (ESD) is known as education that inspires changes in knowledge, skills, values and attitudes to allow a more sustainable and just society for all. ESD aims to empower and train current and future generations to take care of their needs using a well-adjusted and united approach to the economic, social and environmental dimensions of sustainable development (Leicht, 2018). The concept of ESD was born from the need for education to address the increasing environmental challenges facing the planet and how to find possible solutions to minimize their impacts.

In 2002, during the “World Summit on Sustainable Development” that was held in Johannesburg, South Africa, it was decided that sustainable development is crucial for people, planet and prosperity (Michelsen, G. & Wells, P.J. 2017). Inspired by this, the “UN Decade on Education for Sustainable Development” was established in 2005 and this continued until 2014. The “UNESCO Global Action Programme on Education for Sustainable Development” was formulated and this was in effect until 2019 and is to be followed by “ESD2030” for a further ten years. The “Agenda 2030” containing the Sustainable Development Goals (SDG’s) were framed and adopted by 193-member states of the UN, Namibia being one of them. Today, ESD is arguably at the heart of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDG’s) (United Nations, 2015). The SDG’s identify that all countries must inspire action in the following key areas - people, planet, prosperity, peace and partnership - in order to achieve the global challenges that are crucial for the survival of humanity. Achieving these goals needs a profound alteration in the way we think and act, with education being the key element to achieving this (Garrard, 2017, p.13).

Creating ecologically-minded individuals is of utter importance. At NaDEET Centre EE / ESD is implemented by having a one-week long camp. For that week participants are introduced to a culture that creates interactions with their environment, educators and fellow participants. Learners are allocated bucket showers and long-drop toilets to use and all water consumption is measured, all waste is recycled, food is prepared using solar equipment and recycled fire balls are made to be used in the fuel-efficient stoves. The learner-centered learning and hands-on learning approach as well as the chance to spend time in the dunes and stargazing – provide a life changing experience for participants (Garrard, 2017, p.182).

The above-mentioned literature supports the facts that environmental education is the key to a better more sustainable future for all. The aim of the study conducted for this research report was to evaluate the impact of EE/ESD programmes conducted at NaDEET Centre on the lives of the participants over a period of six months. ESD helps to teach people about the sustainable utilization of resources. The results found throughout this study fully supported this aim.

4. Research Objectives

The aim of this study was to evaluate the influence of EE/ESD programmes conducted at NaDEET Centre on the lives of the participants over a period of six months.

Three objectives were to be proven throughout the process of data analyses. These objectives were as follows:

1.To identify which theme had the greatest impact on learners' lives

2.To determine if there is a link between environmental learning and implementation at home

3.To determine if there is a difference between the influence on male versus female participants

5. Study Site

The study for this research was conducted at the NaDEET Centre (Figure 1). This centre is situated in a dune valley on the NamibRand Nature Reserve in the south-west of Namibia. The GPS co-ordinates to the location is 25°14'14.6"S 16°03'48.1"E. The NamibRand Nature Reserve (NRNR) is the largest private nature reserve in southern Africa, it extends across more than 215,000 ha. It is very diverse and includes four distinct natural habitats: dunes and sandy plains, inselbergs and mountains, gravel plains and sand, and gravel plains interfaces (NamibRand, 2016). This Nature Reserve has a very rich biodiversity. NaDEET is the reserve's sole environmental education centre. NaDEET and the reserve work closely together to preserve the exquisite natural beauty of the Namib Desert, as well as to offer researchers and forthcoming nature conservation students the opportunity to study its inhabitants



Figure 1: Map showing the location of NaDEET Centre (adapted from Google 2020).



Figure 2. Image of the NaDEET Centre (NaDEET picture library).

6. Research methodology

The assessment of this research formed part of a greater study conducted by NaDEET and the University of Illinois Urbana-Champaign in the United States. They directed a study on children's attitudes and beliefs about the environment and sustainability change as a result of their time at NaDEET Centre. The main researcher for this study was Mrs. S. Lindgren, the research done formed part of her study for her Doctor of Philosophy (PhD) degree.

This study formed part a social study, dealing with school learners. Hardcopy surveys were used for data capturing. The author did not have to obtain ethical clearance to conduct her research, because it was part of an ongoing study. The study and documentation used had already received clearance from the Ministry of Education, Arts and Culture, the University of Illinois Institutional Review board and a research permit was obtained from the National Commission on Research Science and Technology, thus Cape Peninsula University (CPUT) did not have to conduct an ethical clearance to approve it.

The main focus for this research report conducted by the author, was based on the last section of the post-programme and post six (6) month surveys. This last section comprised of the open-ended questions addressed to participants that attended the NaDEET Centre programme. The study for this entire research commenced In January 2019 and completed in October 2020.

6.1. Participants for the study:

Schools that booked at the NaDEET Centre for 2019 were approached to take part in this research study. The principal / director was informed about the research via a letter. Their decision to participate in the study was completely voluntary and they had the right to stop anytime without penalty.

A total of fifteen (15) schools partook in the study. The schools were contacted via email or telephonically prior to their programme dates. Teachers that were part of the participating schools were tasked with administering the surveys to the learners preparing to visit NaDEET Centre, as well as learners from one class in the grade below, to serve as a control group, this was done during the school day on a prearranged schedule.

After analyzing the data accordingly, it was found that only seven (7) out of the initial fifteen (15) schools, data could be used to meet the objectives of this study. Three (3) were Private schools and four (4) were Government schools.

The following schools listed below where used in this research (Table 1):

Table 1: Participant analyses of the schools that were part of the study for this research report.

School Name:	Grade Level:	GRN / Private:
1. Waldorf Primary School Windhoek	6	Private
2. St. Josephs Primary School	6	GRN
3. Amazing Kids Private School and Academy	6	Private
4. Ruimte Primary School	7	GRN

5. Reverend P. A. Schmidt Primary School	6	GRN
6. Khomasdal Primary School	7	GRN
7. Private School Swakopmund	6	Private

A total of 537 participants were part of the study, out of these participants only 119 participants could be used in the analyses. This was determined by looking for learners who answered both questions for both surveys, if this correlation was not able to be done a participant was eliminated from the study. Private School Swakopmund did an online survey for their post 6-month survey. The last school Kahenge Combined School was automatically eliminated due to the COVID-19 pandemic, as they could not complete and send back their post 6-month survey.

6.2. Surveys given to the participants:

Surveys were printed and prepared in advance to be handed to the participants as required. The surveys were given thrice to each participant, scheduled to attend NaDEET Centre (even those who were unable to attend) and to one class in the grade below (for example, if Grade 6 attended the NaDEET Centre programme, the survey was given to one class of Grade 5 learners as well).

The materials were made up and each package content consisted of the following list:

- Survey instructions for teachers (x2)
- Teacher consent forms (x2)
- 3 – page pre - survey (enough for both grades)
- 3 – page post - survey (enough for grade attending NaDEET Centre)
- 2 – page post – survey (enough for grade below)
- Pre – paid Nampost Courier easy pack

Pre-surveys

This 3-page survey was given to the participants one to two weeks before their scheduled arrival at NaDEET Centre. The teachers consent form was also completed. The surveys were sent in a pre-paid Easy Pack via Nampost courier to the physical address of the school. Inside the Easy Pack were the pre-surveys, instructions to teachers and also a pre-paid Easy Pack, with NaDEET address was already filled in on the form, for the teacher to use when sending back the completed surveys. In the letter of instruction, the teachers were asked to read the instructions out loud to the learners in English or translate it to them in their primary language or mother tongue.

Post-surveys

For the grade that attended NaDEET:

These 3-page surveys (Appendix 2) were sent one week after participants attended the NaDEET Centre programme. If a learner did not attend the NaDEET programme, they did not have to complete a survey. After each learner that attended the programme completed the survey, it was collected by the teacher and checked to ensure it was answered and sent back via Nampost courier.

For the grade below:

Each learner was given a copy of the 2-page post survey. After each learner completed the survey, it was collected by the teacher and checked to ensure it was answered and sent back via Nampost courier.

Post 6-month surveys

The follow-up surveys were sent out six (6) months after the participants had been to NaDEET. This survey was a shorter version of the pre-survey and it included the five open-ended questions asking about their experience at the camp. After completing the surveys, it was also returned to NaDEET via Nampost courier.

6.3. Data analysis for Lindgren's study

Lindgren made use of a two-stage analysis. The first step she did was to conduct an "open" analysis of the transcripts without predefined codes in order to allow for variable discovery; In this step, themes and codes emerged. The second step was an analysis of each response used pre-defined codes, including those discovered in the previous step (Lindgren, S., 2020).

6.4. Data analyses for this research report

The data for this study was analysed by using Grounded Theory. The qualitative data sampling method was used. It was used because it is known to answer questions about experience, meaning and perspective, most often from the viewpoint of the participant (Hammerberg, Kirkman, de Lacey, 2016). An excel spread sheet was created for tracking

Appendix 4) and entering data (Appendix 3). Results from the post survey were compared with the results from the follow-up survey, for each individual participant from the different schools.

This was done for Each School

1. Match & Alphabetize Pre-Survey and Post-Surveys for Grade Below
2. Match & Alphabetize Pre-Survey and Post-Surveys for NaDEET Learners
3. At the bottom of each page of each survey, give each individual student an ID number, starting with the Grade Below learners and then continue the numbers for the NaDEET learner
4. ID numbers follow this rule: School Code followed by a 4-digit number. The first school that visited was St Paul's College, the first student is then given the code: SPC 0001. The second student is SPC 0002. If there are 50 Grade Below learners and 80 NaDEET learners, the last ID code will be SPC0130
5. Continue this system for the next school by giving it a School Code. Start numbering where you left off with previous school. (e.g. after St Pauls in the example above, the next school would start with 0131)

Data sorting for the NaDEET Open Questions:

1. Copy and paste the post survey and post 6 survey raw data into different spread-sheets
2. Sort out the data by removing participants that do not have answers for both surveys
3. Make sure to enter the answers as participants wrote them. Sort through the responses and identify the themes presented. (e.g. water, waste, energy, etc.)
4. Code the answers for questions 1 and 2 for each participant in a new excel spreadsheet (e.g. count the number of things learned by the participant, then place a number unit 1,2 or 3 for coding, then place a number unit under each of the categories: water, energy, waste, biodiversity & other)
5. The SUM total for each theme identified was then calculated using excel auto SUM calculation
6. A bar graph was used to show comparisons in the Sum total of each theme for the post and post 6 survey. The top three themes were identified.
7. The top three themes were water, energy and waste. A crosscheck was done for every participant answer in order to determine a retention of answers provided under each theme for both surveys.
8. Coding for each theme was done Water (W1), Energy (E1) and Waste (W2)
9. Keeping the objectives of the study in mind
10. Theme retention was determined using a *paired t-test* done in excel
11. The theme retention was tabulated and presented in bar graphs
12. Determine the sum of things learned and things not learned, present the data in a pie chart

13. The top environmental themes learned and top environmental themes implemented at home were presented in a pie chart
 14. Gender influence was determined by grouping female versus male answers for each theme
 15. A bar graph for female and male responses was designed
 16. A retention test was done using a *paired t-test* in excel
 17. The data from the t-test was tabulated for the *p*-value and the mean % for both surveys
- Throughout the analyses process the three objectives were kept in mind
 - The two questions that were analysed as part of the study are as follows:
 - **Question 1:** List 3 things that you learned at NaDEET Centre.
 - **Question 2:** What did you learn at NaDEET that you are now doing at home?

A ***paired t-test*** was done to compare the participants first score and compares it to their second score. If there was a significant difference ($p > 0.05$) then it meant that participants score greatly changed between the two tests. If there is not a significant difference ($p = 0.05$ or less) then it meant that participants scores did not change very much.

How a *paired t-test* was done in excel:

- Go to the tools, then data analyses
- Select t-test: Two sample assuming equal variances, click ok.
- Put the cursor in the box for variable 1, then highlight all of the data, repeat for variable 2.
- Click on output range and click somewhere on the sheet where you want the results to appear.
- Click ok.

7. Results

During the process of analysing the data the post survey and post six-month survey was always considered, as well as question 1 and question 2 for the open-ended questions.

The raw data addressing all three objectives for this study was analysed. Only a total of one-hundred and nineteen (119) participants data was found viable to be used to analyse for results.

Objective 1: To identify which theme had the greatest impact on learners' lives

The first objective was summarized according to themes forming part of the programme held at NaDEET Centre. In order to determine which theme had the greatest impact over a period of six months a bar graph was used to clearly show the data for question 1 and question 2, for both surveys.

The raw data was summarised according to different themes and the sum thereof was calculated. The two bar graphs (Figure 3 and 4) shown below indicate all the themes that were identified by the participants after attending the ESD programme held at NaDEET Centre and the sum of answers under each theme. This was just to give an overall view of data obtained throughout this study. Each participant was expected to provide a total of three answers. There were 119 participants adding up to a total of 357 expected answers in total by all the participants.

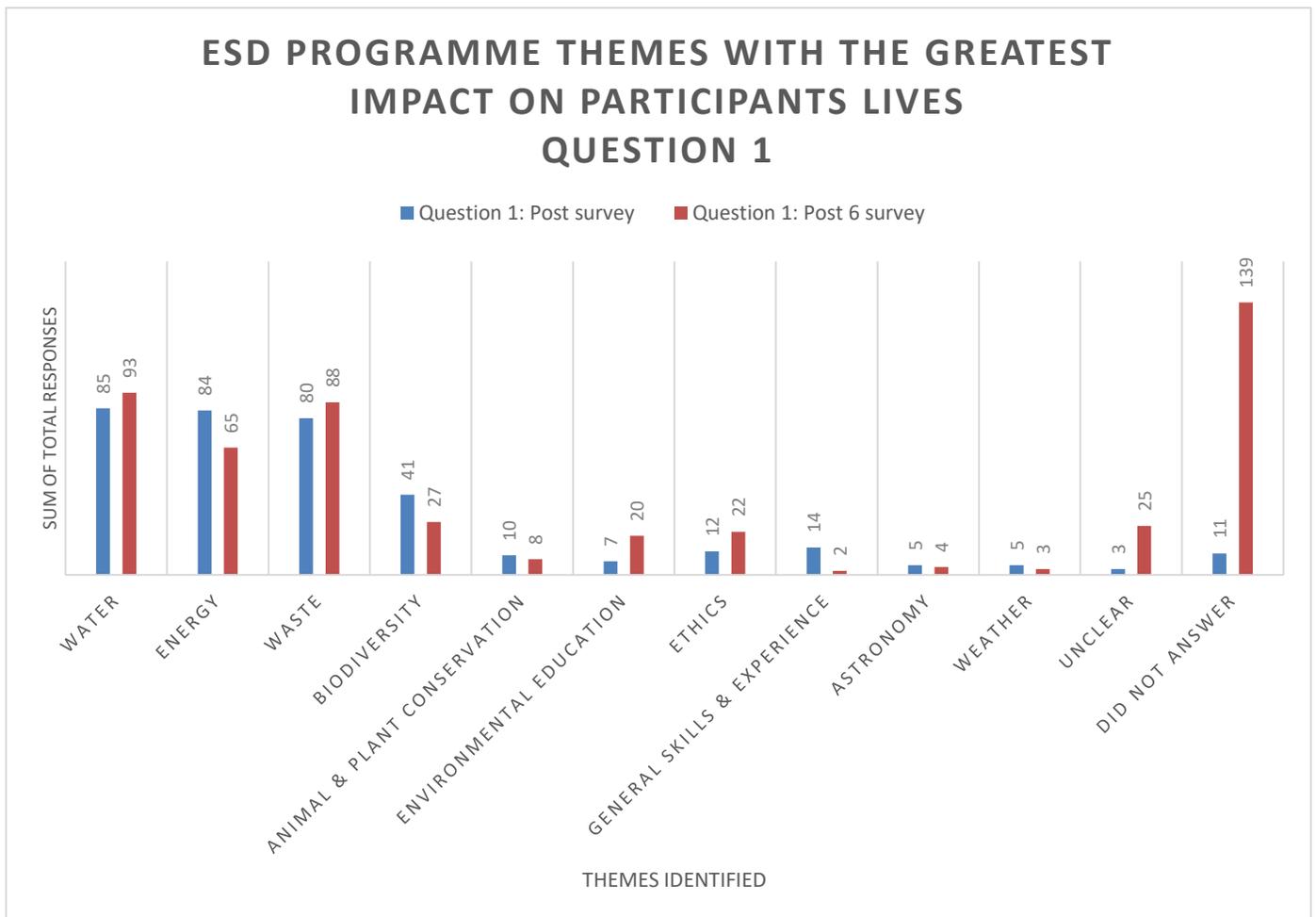


Figure 3. Sum of response totals under each identified theme, for question 1, post survey and post six (6) survey.

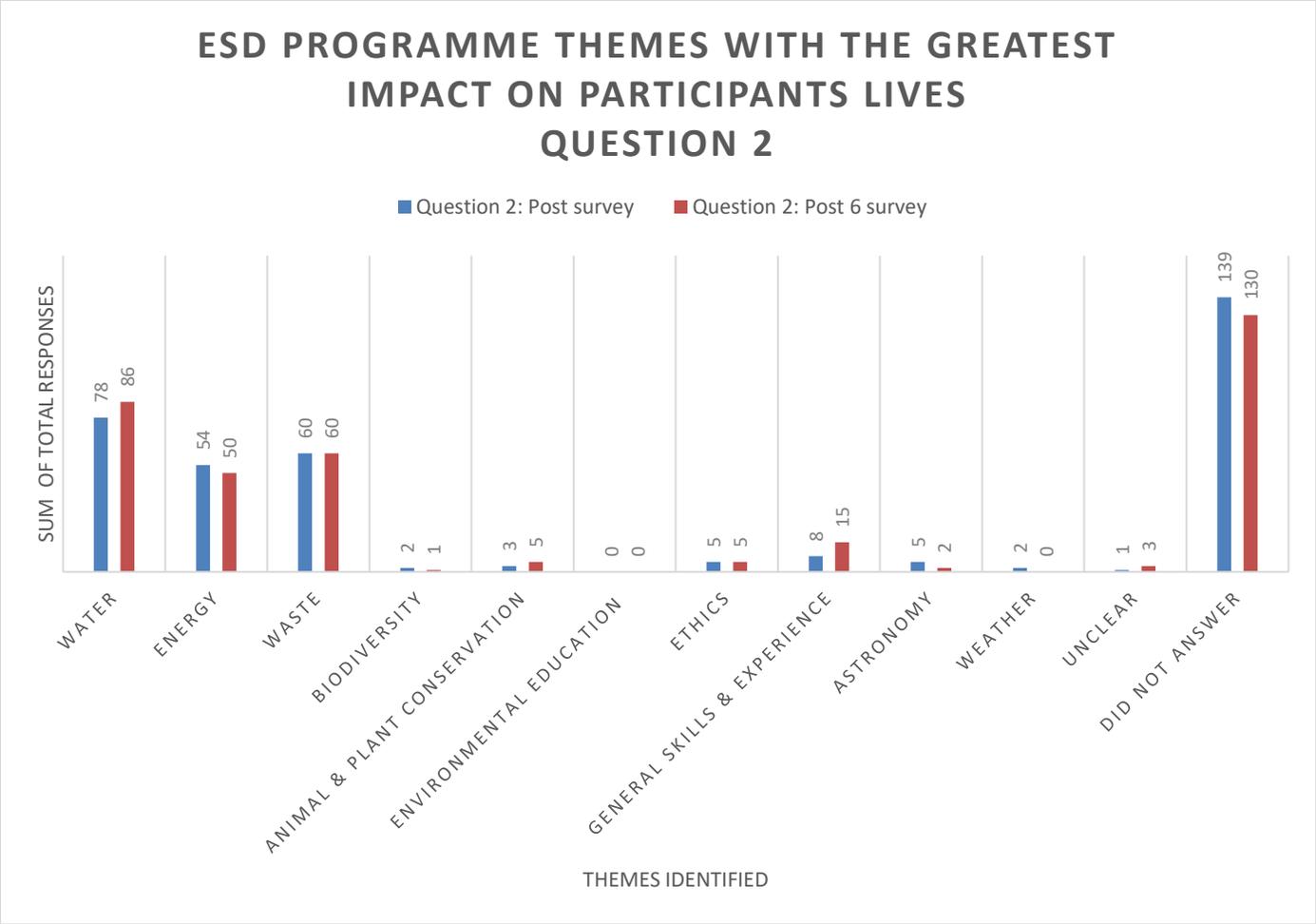


Figure 4. Sum of response totals under each identified theme, for question 2, post survey and post six (6) survey.

After additional analyses of the data, it was confirmed that the top three highest ranging themes which had the greatest impact on participants lives were found to be water, waste and energy. The results were coded in order to determine theme retention and a t-test was done to determine significance.

Table 1: Summary of the percentage of answers for the top three themes identified, as well as the retention over six months, for question 1.

Themes:	water	energy	waste
Mean % post survey	72%	70%	66%
Mean % post 6-month survey	79%	55%	75%

p	0.1036	0.0287	0.1817
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For question one for both surveys. As indicated by the above table, an increase in retention of water related answers were observed, it increased with 7%, waste also increased with 9%, but energy significantly decreased with 15% over the six-month period. The p value for water was 0.1034, energy was 0.0287 and waste was 0.181.

Table 2: Summary of the percentage of answers for the top three themes identified, as well as the retention over six months for question 2.

themes	water	energy	waste
Mean % post survey	66%	45%	50%
Mean % post 6-month survey	72%	42%	50%
p	0.1198	0.3172	0.5

For question two for both surveys. As indicated by the above table, an increase in amount of water related answers were observed, it increased with 6%, waste remained the same with 0%, but energy decreased with 3%. The p value for water was 0.119, energy was 0.317 and waste was 0.5.

Objective 2: To determine if there is a link between environmental learning and implementation at home

The raw data addressing the second objective which was looking for any link between things learned during the programme done at NaDEET and implementation of these things once a participant was back home, was determined by the following pie chart data. The sum of answers learned by the total group was calculated, as well as the sum of things no answers given. These two totals were compared using a pie chart (Figure 5 and 6), for both data sets of the post and post 6-month surveys, for question 1 and 2.



Figure 5: Proportions of things remembered and no answers given for the post survey, question 1



Figure 6: Proportions of things remembered and no answers given for the post six survey, question 1.

When analyzing the data presented by the pie charts it is clear to see that participants gained much knowledge during the ESD programme at NaDEET. The number of answers given for things remembered in the post survey for question 1, was very high adding up to 346 answers given with only 11 answers not given. Whilst for the post 6 survey there was found to be a slight decrease in the answers given for things remembered, adding up to 331 answers given, with 25 answers not given.

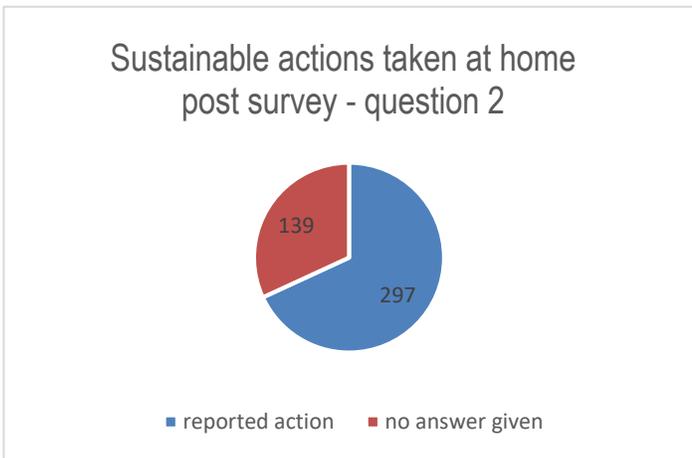


Figure 7: Proportions of reported action and no answers given for the post survey, question 2.

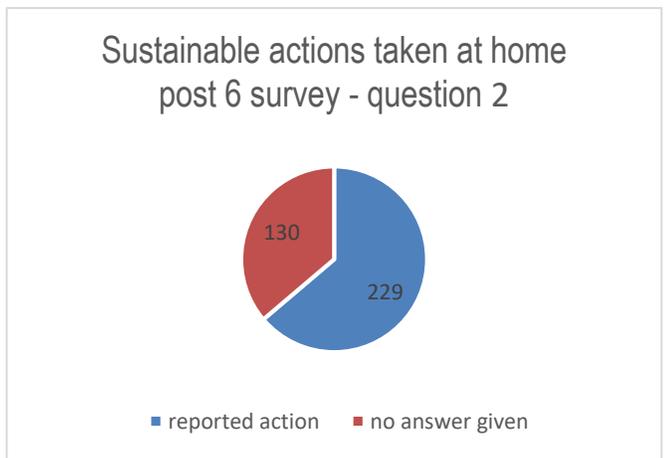


Figure 8: Proportions of reported action and no answers given or the post six survey, question 2.

When analyzing the data represented by the above pie charts (Figure 7 and 8), it is clear to see that the participants have acted to implement the knowledge gained during the ESD program, once they were back at home. In the post survey the proportion of answers given for reported actions done added up to 297 and no answers given add up to 139. There was a huge gap of a total of 158 between answers provided and no answers given. For the post 6 month survey the proportion of answers given for reported actions added up to 229 and no answers given added up to 130. The gap between answers given and answers not given for the post 6 survey decreased, adding up to a difference of 99.

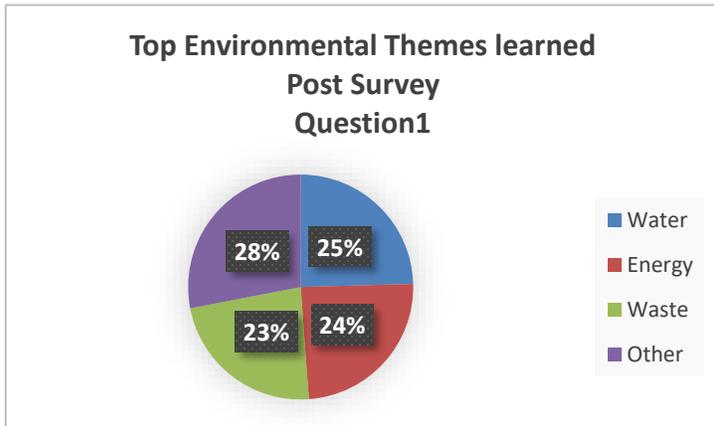


Figure 9: Proportion of the top environmental themes learned during the initial survey, question 1.

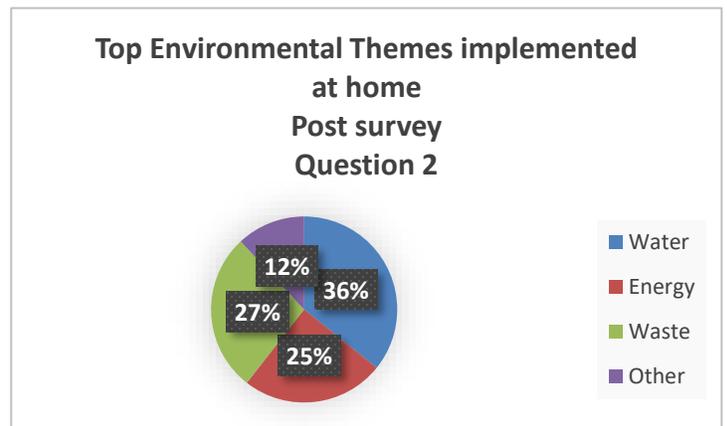


Figure 10: Proportion of the top environmental themes implemented at home during the post survey, question 2.

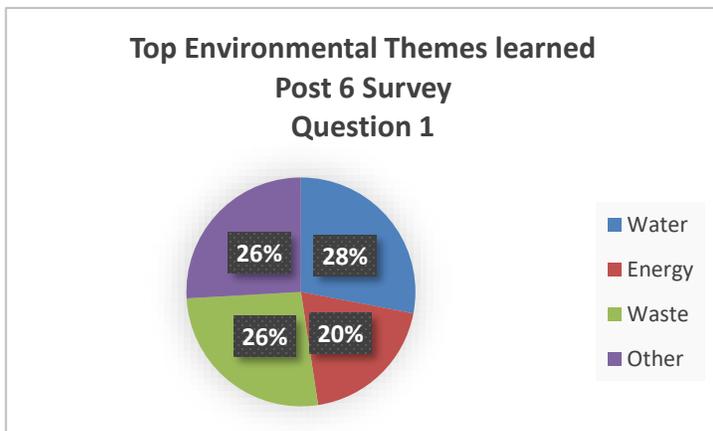


Figure 11: Proportion of the top environmental themes learned during the post 6 survey, question 1.

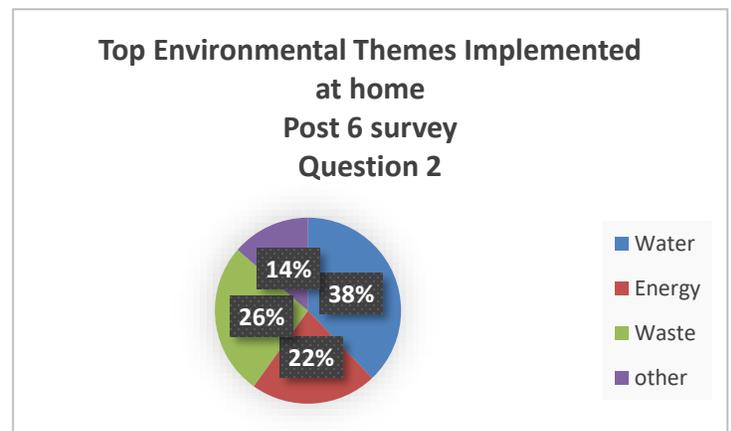


Figure 12: Proportion of the top environmental themes implemented at home during the post six survey, question 2.

The data presented by the pie charts above (Figure 9, 10, 11 and 12), clearly indicate that there was a link between things learned at NaDEET and implementing it once back home. The top themes that participants said to have been implementing are water, waste and energy, all other themes were grouped together under other.

For both the post survey answers given the top themes remained the same. There was an increase in water with 11%, waste increased with 4% and energy with 1% and all other themes combined underwent a decrease of 16%.

For both the post 6 survey answers given the top themes remained the same. There was an increase in water with 10%, waste had 0% change, energy increased with 2% and all other themes combined underwent a decrease of 12%

Objective 3: To determine if there is a difference between the influence on male versus female participants

The raw data addressing the third objective was done to determine the influence of the ESD programme on male versus female participants.

Table 3. Summary of *p* value, mean % for post and post 6, for top three themes for females, for question 1.

Question 1			
Females			
themes	<i>p</i>	mean % post	mean % post 6
Water	0.102	68%	78%
Energy	0.061	71%	52%
Waste	0.012	67%	98%

Table 4. Summary of *p* value, mean % for post and post 6, for top three themes for males, for question 1.

Question 1			
Males			
themes	<i>p</i>	mean % post	mean % post 6
Water	0.405	67%	68%
Energy	0.179	59%	51%
Waste	0.076	56%	41%

A t-test was used to determine the values used to indicate the influence of the ESD programme on male versus female participants. If the p value was higher than 0,05, it was known to be not significant; if the p value was lower than 0.05, it was known to be significant.

For the results with regards to question 1:

- For **females** the p value for water was 0, 102, energy was 0,061, and waste was 0,012. The percentage for water increased with 10%, energy decreased with 19% and waste increased with 31%, over the six-month period (Table 3).
- For **males** the p value for water was 0,405, energy was 0,179 and waste was 0,076. The percentage for water increased with 1%, energy decreased with 8% and waste decreased with 15%, over the six-month period (Table 4).

Table 5. Summary of p value, mean % for post and post 6, for top three themes for females, for question 2.

Question 2			
Females			
themes	p	mean % post	mean % post 6
Water	0.179	74%	82%
Energy	0.070	47%	32%
Waste	0.439	42%	40%

Table 6. Summary of p value, mean % for post and post 6, for top three themes for males, for question 2.

Question 2			
Males			
themes	<i>p</i>	mean % post	mean % post 6
Water	0.222	50%	55%
Energy	0.194	39%	47%
Waste	0.363	53%	56%

For the results with regards to question 2:

- For **females** the *p* value for water was 0,179, energy was 0,070 and waste was 0,439. The percentage for water increased with 10%, energy decreased with 19% and waste increased with 31%, over the six-month period (Table 5).
- For **males** the *p* value for water was 0,222, energy was 0,194 and waste was 0,363. The percentage for water increased with 1%, energy decreased with 8% and waste decreased with 15%, over the six-month period (Table 6).

8. Discussion

The results for this study found that the top three themes which proved to have had the greatest impact on participants lives were water, waste and energy. These three themes form a significant part of the programme implemented at the NaDEET Centre. A paired t-test was done in order to determine the mean percentage and to show significance. Other themes also identified through this study were Biodiversity, Animal & Plant Conservation, Environmental Education, Ethics, General Skills & Experience, Astronomy and Weather.

Water was identified as being the highest ranging theme throughout the study. This could be because water related activities form part of the participants daily experience during the duration of the programme. Water wise washrooms are used on a daily basis, comprising of bucket showers, cups to use when brushing teeth and no taps at the basins, long drop toilets also create awareness for a water wise lifestyle. For the duration of the programme participants are responsible for proper water consumption on a daily basis and do daily water counts, which are recorded and

analysed on the last day of the programme. The percentage of water related answers increased over the six-month period. This could be due to the fact that saving water and or using it wisely is something anyone is faced with and can do on a daily basis. Qualitative data to support this result was some participant answers stating that they learned how to use a bucket shower (i.e. "Wal0032 - bucket shower to not waste water") and to use a cup while brushing their teeth, to take shorter showers and most answers given stated saving water. The retention of water was found to be not significant, this is a good indication and means that knowledge and or awareness of water was obtained during the NaDEET programme and still maintained or remembered after six months.

Waste was also found to be a high ranging theme. The percentage of waste related answers increased over the six-month period. Its overall retention was found to be not significant, which is a positive indication that knowledge or awareness about waste was observed. Qualitative data to support this finding were answers like pollution awareness, not wasting food (i.e. "KPS0012 - Not waste food"), no littering, proper waste management, reusing and recycling.

Energy was also found to be a high ranging theme. There was however a decrease observed in the energy related answers over the six-month period. The results for energy was significant for question 1, indicating low retention. Participants however provided answers indicating knowledge on solar power, solar cookers (i.e. "SJ0048 use solar oven to make bread") and switching off lights.

It was noted that ethics had increased in the post six survey and the fact that it increased could imply that NaDEET was interesting to the participants and that the programme raised their awareness about being a responsible custodian. This could be a result of teaching them about environmental problems and how to help in solving them. Biodiversity was also amongst the themes that influenced the participants, this could be a result of the dune walk and animal traps done with the participants, these are fun hands on activities, participants get to learn more about the desert ecosystem, they get to identify different species and also get to learn about different adaptations of desert animals and plants. Environmental education also increased in the post six survey, this could imply that participants gained new knowledge and environmental awareness was created. General skills were found to have increased over the six months, for question 2, this could indicate that participants are putting to use things like cleaning and cooking learned at NaDEET. Most participants retained more than one theme. This is a result of the broad spectrum of environmental topics covered during the five-day programme at NaDEET Centre.

There was a link found between environmental learning at NaDEET Centre and the implementation thereof once back home. The results for number of things remembered and no answers given was analysed. It was found that the number of things learned was very high compared to number of things not learned, for the post survey data. But, the number of answers not given increased over the six months. This indicates that more participants had less answers to report on six months after attending the programme, however a greater portion was learned. The top three environmental themes related to learning and implementation at home all increased. Water increase the most, while energy and waste only increased slightly.

In order to determine the influence of the ESD programme on male versus female participants a *paired t-test* was conducted. The results tabulated and analysed indicate for question 1, that females retained waste and energy

themed answers, but waste was significant, indicating no retention for the females. Males were found to have no significance in all three themes, resulting in information retained. For question 2, all themes were not significant for both females and males, this is a good indication, showing retention. More females than males attended the NaDEET programme. Females indicated a high number of answers for all themes, across the board. However, it was very surprising to find that males had retained information at a higher portion than females under the waste theme.

According to Andrew Dobson it is assumed that changes in the behaviour of individuals, institutions and organisations are a prerequisite for sustainable development (Dobson, A., 2007). In order to reach out to people and teach them about sustainable living, you will have to impact their perception. In a study done by Dobson, he found that changes in attitude leads to more secure changes in behaviour for the long run (Dobson, A., 2007).

A Masters level study was conducted in Namibia by Sirkka Tshiningayamwe, to look at the impacts of implementing environmental learning in the Namibian Biology curriculum. Sirkka motivates that environmental learning is the most important way to tackle environmental issues and that teaching provides the necessary skills and knowledge on how to deal with environmental issues (Tshiningayamwe, S., 2011).

The above stated literature provided fully supports the aim of his research report. As reported by Andrew Dobson it is assumed that changes in the behaviour of individuals, institutions and organisations are a prerequisite for sustainable development (Dobson, A., 2007). This was also proven by the results found in the study done, as it was noted that participants mostly retained information about environmental topics, which was still found to be implemented at home after six months. As stated a study done by Sirkka motivates that environmental learning is the most important way to tackle environmental issues and that teaching provides the necessary skills and knowledge on how to deal with environmental issues (Tshiningayamwe, S., 2011). This supports the findings of this report, which indicates that the NaDEET Centre ESD programme impacted the lives of participants in a positive way and did provide them with awareness about environmental problems and gave them knowledge and taught them hands on ways of dealing with these problems.

9. Conclusion

The aim of this study was to determine if the NaDEET Centre EE/ESD programme had an influence on the lives of participants, over a period of six month. Three objectives were set in order to help to determine this. During the study many themes were identified, after a proper analyses the top three theme were determined. These themes were water, energy and waste. The ESD programme provided at NaDEET has been proved to have a great influence on the lives of people that attended it. All the objectives set for this study was proved and found to have positive results. The retention for the top three themes was found to be good, this indicates that knowledge was obtained. The link

between things learned and things implemented also had positive results, indicating that some participants do implement things learned once back home, the highest ranging theme here was water. A correlation between qualitative and quantitative data was also established through this study. Due to all the above it can be said that the programme offered at the NaDEET Centre has a positive and life changing impact on the lives of those whom attend it and thus in turn has a positive impact on the environment. It is also clear to say that education for sustainable development is crucial in the fight to preserve our planet

10. Recommendations

Should this study be replicated in the future, it is recommended that a shorter more concise survey be given to participants. The data capturing and processing was completed in time, but also proved challenging to complete. It is recommended that only one person be identified to do data capturing and recording, in order to avoid re-entering data. It is also recommended to always make sure to follow the rules set out for such a big study, this will help to avoid any misunderstandings.

Even though the data capturing for this study was done accurately, the results are however still open for further interpretation. The author was able to discuss the results obtained due to active involvement in sending and receiving of surveys and recording data for the schools that participated in the study. Much detail was acquired by the use of three objectives

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12. Acknowledgements

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Viktorija Keding: - Director of NaDEET, Swakopmund, Namibia

- For providing the idea of the research topic, for supporting the write-up of the research proposal and final report and for being part in designing the research, communicating with schools, sending out and collecting of the research data.

Samantha Lindgren: - PHD student at the University of Illinois, Urbana-Champaign, USA

- For allowing me to be part of her study and make use of the data collected.
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Damaris Braun: - Project Manager, NaDEET, Swakopmund; For support in data analyses and write-up.

13. Appendices

Appendix 1: Marked research proposal.

Dear Melba

This is a good proposal. Work a bit on the motivation for your study. And also, take careful note of my corrections to your referencing technique. You need to get up to date again with how to reference in-text and in the list.

Your mark is 8 10

Good luck!

Kind regards

Prof Snyman

Research Proposal

Retention of EE/ESD learning and attitudes over six months: The Case Study of NaDEET Centre, NamibRand Nature Reserve, Namibia

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Proposal date: 6 April 2020

Envisaged completion date: September 2020

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Statement of research problem

How does the NaDEET Centre EE/ESD programme impact the lives of learners, over a period of six months?

Background to research problem

Our planet is degrading daily, at a rapid rate, species are becoming extinct and resources are being depleted on a large scale. Therefore, the importance of living a sustainable lifestyle has become of utter importance (Tilbury, 2002), in order to preserve Earth and its resources for the future generations. Education for Sustainable Development (ESD) is seen as a crucial component of quality education and a vital enabler for sustainable development (UNESCO, 2019).

NaDEET therefore recognizes the need for teaching people about how to live sustainably and the importance of conserving their natural environment. The NaDEET Centre programme supports the Namibian curriculum for environmental education. NaDEET has spent most of its time on the development of hands-on / practical programmes to tackle the key areas in EE/ESD and Sustainable Development Goals (SDGs) number 4. Education; target 4.7. Education for Sustainable Development and Global Citizenship and 11. Sustainable Cities and Communities. **Do you have a reference (maybe report) for this paragraph?**

NaDEET Centre is located in the Namib Desert, this forms part of an ideal environment for teaching about sustainable living. NaDEET offers programmes to different school groups in Namibia, targeting upper primary and secondary school learners as well as teachers. Participants are taught about the connection between the natural and human environment (NaDEET, 2017). These programmes focus on teaching learners about energy, water, waste and biodiversity and how to live sustainably, as well as the threats to the environment (NaDEET, 2017). This in turn thus creates knowledge, awareness and skills, that can be applied to daily living. Hence, also adhering to the Sustainable Development Goals (SDGs) set by the UN.

You need to include your problem statement again – explain why you are doing this research.

Literature review

The lack of sustainable living is a major global problem, but for Namibians it is even more so as Namibia is a developing country. There are many threats that impede sustainable development in Namibia. Some of these include: poor planned development and rapid industrialization, poverty and inequality, limited water resources, land issues, biodiversity loss, population growth and settlement patterns, lack of human resources, poor governance, increasing competition for shared natural resources, adverse impacts of global atmospheric change and the need to improve access to existing knowledge and generate new knowledge (Tarr, 2000).

Environmental Education (EE) and Education for Sustainable Development (ESD), flow into each other. The Dictionary of Environment and Conservation defines Environmental Education (EE) to be “formal and informal activities that are designed to promote people’s understanding of, appreciation of, and care for the natural environment” (Park, 2011). Education for Sustainable Development (ESD) is known as education that inspires changes in knowledge, skills, values and attitudes to allow a more sustainable and just society for all. ESD aims to empower and train current and future generations to take care of their needs using a well-adjusted and united approach to the economic, social and environmental dimensions of sustainable development (Leicht, 2018). The concept of ESD was born from the need for education to address the increasing environmental challenges facing the planet and how to find possible solutions to minimize their impacts.

In 2002, during the “World Summit on Sustainable Development” that was held in Johannesburg, South Africa, it was decided that sustainable development is crucial for people, planet and prosperity (Michelsen, & Wells, 2017). Inspired by this, the “UN Decade on Education for Sustainable Development” was established in 2005 and this continued until 2014. The “UNESCO Global Action Programme on Education for Sustainable Development” was formulated and this was in effect until 2019 and is to be followed by “ESD2030” for a further ten years. The “Agenda 2030” containing the Sustainable Development Goals (SDG’s) were framed and adopted by 193-member states of the UN, Namibia being one of them. Today, ESD is arguably at the heart of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDG’s) (United Nations, 2015). The SDG’s identify that all countries must inspire action in the following key areas - people, planet, prosperity, peace and partnership - in order to achieve the global challenges that are crucial for the survival of humanity. Achieving these goals needs a profound alteration in the way we think and act, with education being the key element to achieving this (Garrard, 2017.).

Creating ecologically-minded individuals is of utter importance. At NaDEET Centre EE / ESD is implemented by having a one-week long camp. For that week participants are introduced to a culture that creates interactions with their environment, educators and fellow participants. Learners are allocated bucket showers and long-drop toilets to use and all water consumption is measured, all waste is recycled, food is prepared using solar equipment and recycled fire balls are made to be used in the fuel-efficient stoves. The learner-centered learning and hands-on

learning approach as well as the chance to spend time in the dunes and stargazing – provide a life changing experience for participants (Garrard, 2017).

According to Dobson (2007) it is assumed that changes in the behaviour of individuals, institutions and organisations are a prerequisite for sustainable development (Dobson, 2007). In order to reach out to people and teach them about sustainable living, you will have to impact their perception. In a study done by Dobson, he found that changes in attitude leads to more secure changes in behaviour for the long run (Dobson, 2007).

In 2016 a Bachelors level study was completed at NaDEET on the impact of EE / ESD in participants lives. The aim of the study was to “assess and evaluate the progress that environmental education has achieved towards Sustainable Development in Swakopmund over the past 20 years. To use the results to help organisations formulate new programmes /projects“ (Amutenya, , 2016). According to the results presented by this author: children, youth and young adults scored lower in awareness, knowledge and attitudes for environmental protection, compared to elders who received environmental education in the colonial era. Amutenya (2016) stated that although statistically no difference in levels of awareness, knowledge and attitudes was found, educating adults could influence the behaviour of children and youth.

A Masters level study was conducted in Namibia by Tshiningayamwe (2011), to look at the impacts of implementing environmental learning in the Namibian Biology curriculum. This author motivates that environmental learning is the most important way to tackle environmental issues and that teaching provides the necessary skills and knowledge on how to deal with environmental issues (Tshiningayamwe, , 2011).

I think you need to bring everything together here with your specific research question and motivation for the study. There should be no surprises to the reader in the objectives.

Research objectives

The aim of this study is to evaluate the impact of EE/ESD programmes conducted at NaDEET Centre on the lives of the participants over a period of six months.

- 1. To identify which theme had the greatest impact on learners' lives**
- 2. To determine if there is a correlation between environmental learning and implementation at home**
- 3. To determine the attitude of learners towards EE/ESD**

Research methodology

The evaluation of this research forms part of a greater research conducted by the Namib Desert Environmental Education Trust (NaDEET) and the University of Illinois Urbana-Champaign in the United States. They directed a study on children's attitudes and beliefs about the environment and sustainability change as a result of their time at NaDEET Centre.

Participants:

Schools that booked at the NaDEET Centre for 2019 were approached to take part of this research study. Their decision to participate in the study was completely voluntary and they had the right to stop anytime without penalty.

A total of sixteen (16) schools partook in the study. The schools were contacted via email or telephonically. Teachers that were participating were tasked with administering the surveys to the learners preparing to visit NaDEET Centre, as well as learners from one class in the grade below, to serve as a control group, during the school day on a prearranged schedule.

Surveys:

Surveys comprised of closed ended and open-ended questions. The surveys were given thrice to each learner that attended the NaDEET Centre and to the grade below.

Pre-surveys were sent approximately one month prior to their scheduled arrival at NaDEET. They were sent in a pre-paid Easy Pack via Nampost courier to the physical address of the school. Inside the Easy Pack were the pre-surveys, instructions to teachers and also a pre-paid Easy Pack, with NaDEET address already filled in on the form, for the teacher to use when sending back the completed surveys. In the letter of instruction, the teachers were asked to read the instructions out loud to the learners in English or translate it to them in their primary language / mother tongue.

Post-surveys were sent one week after participants attended the NaDEET Centre programme. After completing the surveys, they were sent back via Nampost courier.

Follow-up surveys were a shorter version of the pre-survey, plus five open-ended questions asking about their experience at the camp. After completing the surveys, they were also returned to NaDEET via Nampost courier.

Questions:

1. List 3 things that you learned at?
2. What did you learn at NaDEET that you are now doing at home?
3. If you could visit NaDEET Centre in the future, what would you like to do again?
4. What wouldn't you want to do again?
5. How would you explain NaDEET Centre to someone who has never been there?

- The first two questions of the open-ended questions were specifically used in this evaluation, because they best address the objectives of this study.

Data analysis:

This study will focus on the analysis of the data obtained with the above-mentioned surveys. The data for this study will be analysed by using Grounded Theory.

[Lindgren (2020) made use of a two-stage analysis. The first step was to conduct an “open” analysis of the transcripts without predefined codes in order to allow for variable discovery; In this step, themes and codes emerged. The second step was an analysis of each response used pre-defined codes, including those discovered in the previous step (Lindgren, 2020)].

Qualitative data sampling method will be used. The qualitative method will be used because it is known to answer questions about experience, meaning and perspective, most often from the viewpoint of the participant (Hammerberg, et al. 2016). An excel spread sheet was created for tracking and entering data.

Results from the post survey will be compared with the results from the follow-up survey, for each individual participant from the different schools. The following steps will be followed: Start with just one question; Have an idea of the types of responses expect and then read each response; take notes of reoccurring responses (e.g. many learners state that they now use a cup while brushing their teeth, started composting, reusing dish washing water to water gardens, etc.); Once an idea of the categories of responses are gathered, then go back through all of the responses and begin to code them; For example, one question asks learners to list 3 things that they learned at NaDEET Centre.

- I. The number of responses the participants gave for this question were recorded
- II. Each response was coded as being part of the 4 major themes of NaDEET's programme: water, waste, biodiversity and energy

- III. Then divide the responses into knowledge and or action (e.g. water knowledge (conserve water) / water action (using a cup while brushing teeth), etc.)

After this open a second spreadsheet to enter the data for question 2: What did you learn at NaDEET that you are now doing at home?

- Follow the same steps as per question 1

A paired t-test will be used to analyze the data in order to compare the data for the post survey and the follow-up survey over the six-month period. This test helps to compare the score of a learner between the two surveys.

How will you calculate correlation (see your objectives). If it is not by stats, change the wording in your objectives)

Significance and contribution of research

- To show the impact the programmes and activities taught at the NaDEET Centre, with regards to EE/ESD had on the lives of learners over a six-month period.
- To highlight possible areas where improvement of programmes could be done (i.e. develop new activities).

Ethical considerations

It was imperative to get the consent of the participants before starting and to protect their privacy during and after the research was done. It was important to inform them of the research method. They also had to know their rights and the importance of why the study was being done. Ethical considerations were also important to remember in order to be objective in the analysis and to have integrity when evaluating the data (David, , Resnik, 2015); Also, to address the concern of being careful and honest when working with the data and openness to at the end of the day present the results found. Did your organisation obtain some sort of ethics certificate or formal permission from authorities? If so, mention this.

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<https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm> [29 January 2020]
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14. Lindgren, S. (2020). *The Roles of Education for Sustainable Development and Namibian Youth in the Advancement of Sustainable Energy*. Unpublished dissertation.

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Samantha Lindgren: - PHD student at the University of Illinois, Urbana-Champaign, USA

- For allowing me to be part of her study and make use of the data collected.
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Pricilla Kuzeeko: - Finance and administrative officer, NaDEET, Swakopmund; For communicating with schools and for sending out and collecting data.

Pandu Haindongo: - For advice given about the write-up of this study.

Appendix 2: NaDEET post survey as completed by a learner.

First Name Kanyile or Curtis surname Abele Teacher Surname Mwala

Please mark one answer choice for each question.

1. What does your home do with rubbish? Check all that apply.
 It gets collected every week. We have our own rubbish pile outdoors
 We burn our rubbish outdoors We burn our rubbish for cooking fuel
 We take our rubbish to the dump. Other:

2. How worried are you about plastic and other rubbish?
 A lot A little Not at all

3. What do you do at home to save water?
the store water in bottles and close the taps

4. What does your family do with food scraps?
 It is rubbish Feed to our animals Compost Other:

5. How often do you help cook meals at home?
 Every day Several times a week
 Several times a month Rarely Never

6. How enjoyable do you find cooking meals? Circle one.
 😊 😐 😞

7. Circle all of the stoves that you have at your house.
  Open Fire  Fuel-Efficient Stove  Electric Stove  Gas Stove  Solar Oven  Parabolic Solar Cooker

8. Which type of stove does your family use the most?
 Open fire Fuel-Efficient Stove Solar Oven Parabolic Solar Cooker
 Electric Stove Gas Stove Solar Oven Solar Parabolic

9. Do you collect firewood for your family?
 Yes No

10. How often do you collect firewood?
 Every day Several times a week
 Several times a month Rarely Never

11. Do other people in your family collect firewood? If yes, who?
 Yes No
 Parent Brother Sister Uncle/Aunt Other

12. How enjoyable do you find collecting firewood? Circle one.
 😊 😐 😞

13. In your opinion what is the best cooking fuel?
 Wood LPG/Gas Charcoal Animal dung
 Electricity Solar Recycled material Other:

Post-Survey for NaDEET Learners

KPS 0001

For each statement below, mark one box to state how much you agree with the statement. There are no right or wrong answers.						
						
		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Plants and animals have as much right as people to live.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	There are too many (or almost too many) people on earth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	People are clever enough to keep from ruining the earth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	People must still obey the laws of nature.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	When people mess with nature it has bad results.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Nature is strong enough to handle the bad effects of our modern lifestyle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	People are supposed to rule over the rest of nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	People are treating nature badly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	People will someday know enough about how nature works to be able to control it.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	If things don't change, we will have a big disaster in the environment soon.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Using a solar cooker can solve energy problems.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Using a solar cooker can reduce time spent on cooking.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Solar cooking costs less money than all other types of energy in Namibia.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Solar cookers can cook all types of food.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Solar cookers are durable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Solar cookers are accepted in my culture.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Solar cookers do not burn food.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Energy from the sun can be used for cooking.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	There is a water crisis in Namibia.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Having the opportunity to go to NaDEET Centre is important to me.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

First Name: Kanyile or Curtis
Surname: Abele

Teacher Surname: Mwala

Please tell us a bit about your experience at NaDEET Centre.

List 3 things that you learned at NaDEET Centre.

- * To save electricity
- * To save water
- * To recyrcle

What did you learn at NaDEET that you are now doing at home?

- * Saving water
- * Saving electricity
- * Not to throw papers on the ground

If you could visit NaDEET Centre in the future, what would you like to do again?

- * Dune boarding
- * Dune working
- * To see the teachers again

What wouldn't you want to do again?

- * Washing dishes
- #

How would you explain NaDEET Centre to someone who has never been there?

NaDEET is a place found in the Namib Desert and its the first Dark sky reserve in southern africa

Appendix 3. A snip of a few raw data entry's done by the author

ID Code	First Name	Last Name	Teacher	Type of School	NaDEET dates	Grade	Age	Gender	# Children	# Adults	NaDEET before?	When?	Family NaDEET?	Who?	Grow food?	Rubbish	Food Scraps	Electricity	In
SPC 0051	Pombili	Altueni	Callesen	2		8	13	0	2	2	2	0	2			1, 1, 3		1	1
SPC 0052	Shana	Arendorf	Callesen	2		8	13	0	2	1	2	0	2			2, 1, 6		2	1
SPC 0053	Garren	Backhaus	Callesen	2		8	13	1	2	1	2	0	1	3		2	1	1	1
SPC 0054	Damian	Beukes	Callesen	2		8	14	1	2	2	2	0	2			1	1	2	1
SPC 0055	Kiara	Bracht	Callesen	2		8	13	0	1	4	2	0	2			2, 1, 6		4	1
SPC 0056	Ashton	Derckson	Callesen	2		8	13	1	2	2	2	0	1	3		1	1	2	1
SPC 0057	JD	Gerber	Callesen	2		8	13	1	2	3	2	0	2			1	1, 1, 2, 3		1
SPC 0058	Jaime	Gillies	Callesen	2		8	13	0	4	1	2	0	1	3		1	1, 1, 2		1
SPC 0059	Hilkka	Haitengela	Callesen	2		8	12	0	3	2	2	0	2			1	1	2	1
SPC 0060	Daniel	Hahn	Callesen	2		8	13	1	2	2	2		2			2	1	1	1
SPC 0061	Ngetupe	Kaura	Callesen	2		8	14	1	3	2	2	0	1	2		1	1	3	1
SPC 0062	Kairiri	Katjiuogua	Callesen	2		8	13	0	3	4	2	0	1	2		2	1	2	1
SPC 0063	Mariana	Machado	Callesen	2		8	13	0	2	2	2	0	1	3		1	1	2	1
SPC 0064	Ramsay	McDonal	Callesen	2		8	13	1	1	2	2	0	2			2	1	2	1
SPC 0065	Wo-Rana	Moloi	Callesen	2		8	13	0	2	2	2	0	1	3		2	1	1	1
SPC 0066	Erica	Nande	Callesen	2		8	13	0	2	2	2	0	1	3		1	1	2	1
SPC 0067	Lucius	Oarum	Callesen	2		8	13	1	2	2	0	0	2	0		1	1	2	1
SPC 0068	Dylan	Openshaw	Callesen	2		8	14	1	3	2	2	0	2			1	1	2	1
SPC 0069	Carol	Saad	Callesen	2		8	14	0	3	2	2	0	1	3		1	1	2	1
SPC 0070	Naritunge	Shiimi	Callesen	2		8	14	0	1	3	2	0	0			2	1	1	1
SPC 0071	Mackenzie	Spath	Callesen	2		8	13	0	3	2	2	0	2			2	1, 1, 2		1

Appendix 4. Data tracking sheet

Pre and Post Learner Research 2019 with Samantha Lindgren Tracking of survey administration and data entry					Surveys returned			Surveys returned			Permission list		Surveys entered (date and initial)						NaDEET Open Questions			
Name of School/ Group	Fee per person per week	Grade	Programme dates	Pre & Post-Survey sent date	Pre- grade below	Pre- participants	Post- grade below	Post- participants	Post6- survey sent date	Post6- grade below	Post6- participant	Do we have it?	Scanned?	Pre- grade below	Pre- participants	Post- grade below	Post- participants	Post6- grade below	Post6- participant	Post- participants	Post6- participant	
1 St Pauls 1	N\$ 360.00	8	4-8 March	done	x	x	x	x	09-Oct-19	x	x			x	x	x	x	x	x			x
1 St Pauls 2	N\$ 360.00	8	11-15 March	done	x	x	x	x	09-Oct-19	x	x			x	x	x	x	x	x			x
3 Holy Cross-Cerwent			1-5 April	done																		
2 Khomasdal PS	Fully sponsored by Rotary Cluc WHK	7	15-19 April	done		x			14-Oct-19	x	x	x										x
3 Ruimte PS	N\$ 100.00	7	13-17 May	done	x	x	x	x	09-Oct-19	x	x	x		x	x	x	x	x	x			x
4 St Josephs PS	N\$ 240.00	6	20-24 May	done	x	x	x	x	09-Oct-19	x	x	x		x	x	x	x	x	x			x
5 Waldorf PS	N\$ 885.71	6	27-31 May	done	x	x	x	x	09-Oct-19	x	x	x		x	x	x	x	x	x			x
6 AA Denk Memorial	N\$ 168.75	6	3-7 June	done	x	x	x	x	09-Oct-19	x	x	x		x	x	x	x	x	x			x
7 Amazing Kids Private School	N\$ 360.00	6	17-21 June	done	x	x	x	x	14-Oct-19	x	x	x		x	x	x	x	x	x			x
8 Stampriet Primary School	N\$ -		24-28 June	01-Nov-19	x	x			01-Nov-19	x	x	x		x	x	x	x	x	x			x
9 N. Mutschuana PS	Food/Inkind Donation	7	8-12 July	done	x				14-Oct-19	x	x	x		x								x
10 Rev PA Schmidt	N\$ 150.00	6	15-19 July	done	x				14-Oct-19	x	x	x		x								x
11 JSoul PS	N\$ 200.00	7	12-16 August	done	x	x	x	x		x	x	x		x	x	x	x	x	x			x
12 Cimbebasia PS	N\$ 300.00	6	26-30 August	done	x	x	x	x		x	x	x		x	x	x	x	x	x			x
13 Danie Joubert CS 1	N\$ 450.00	7	9-13 September	done	x	x	x	x	17-Apr-20					x	x							
13 Danie Joubert CS 2	N\$ 450.00	7	16-20 September	done	x	x	x	x	17-Apr-20					x	x							x
44 GHPS-1	N\$ 360.00	6	30 Sep - 4 Oct	done	x		x	x						x								
44 GHPS-2	N\$ 360.00	6	7-10 October	done	x		x	x						x								
14 PSS	N\$ 360.00	6	14-18 October	09-Oct-19	x	x	x	x	17-Apr-20	x	x	x		x	x	x	x	x	x			x
15 Kahenge Combined School	Fully sponsored by Rossing Uranium	10	2-6 December	07-Nov-19	x	x	x							x	x							x