NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

## FACULTY OF HEALTH, APPLIED SCIENCE AND NATURAL RESOURCES

### DEPARTMENT AGRICULTURE AND NATURAL RESOURCES SCIENCES

| QUALIFICATION: BACHELOR OF NATURAL RESOURCE MANAGEMENT (NRM) | |
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| **QUALIFICATION CODE: 07BNRS** | **LEVEL:** 7 |
| **COURSE CODE**: EEE 621S | **COURSE NAME**: ENVIRONMENTAL EDUCATION AND EXTENSION |
| **DATE:** NOVEMBER 2022 | **SESSION:** |
| **DURATION:** 3 HOURS | **MARKS:** 125 |

| FIRST OPPORTUNITY EXAMINATION QUESTION PAPER | |
|---|---|
| **EXAMINER(S)** | Ms. S. Bethune |
| **MODERATOR:** | Mr. W. Diergaardt |

| INSTRUCTIONS |
|---|
| 1. Answer ALL the questions. Note choices<br>2. Read all questions carefully before answering.<br>3. Number the answers clearly.<br>4. Write clearly and neatly |

## PERMISSIBLE MATERIALS

1. Examination question paper
2. Answering book
3. An article *"Edulink teaching Namibia's far-flung teachers"*

**THIS QUESTION PAPER CONSISTS OF 5 PAGES** (Excluding this front page and 3-page article)

## QUESTION 1: CURRENT ENVIRONMENTAL ISSUES

1.1 Seventy percent of marine species are harvested faster than they can reproduce. (1)
What is the main reason why the African elephant is expected to be extinct soon?

A. Overfishing of orange roughy fish, *Hoplostethus atlanticus*
B. Overfishing of pilchards, *Sardinops ocellatus*
C. Overfishing of the Zambezi and Okavango fish
D. Illegal harvesting of whales?

1.2 Which of these facts about deforestation is not correct? (1)

A. Trees are cut down ten times faster than they can naturally regrow
B. Trees are harvested at twice the rate that they grow
C. Half of all plant growth is harvested by man each year
D. Clearing of forest for crops like soya and palm oil causes serious deforestation

1.3 How is climate change likely to change farming in Namibia? (1)

A. We will be able to convert desert areas into productive cropland
B. Because it will be warmer, we will be able to farm with more tropical fruits
C. Rain-fed crop farming will no longer be possible, cattle and livestock farming will both shift further north.
D. Winter rainfall in the south will increase, and rain-fed fruit farming will be possible.

1.4 Name either, one invasive cactus species that causes problems in Windhoek, **or** the invasive tree species, that outcompete our camelthorn trees alongside ephemeral rivers like the Klein Windhoek, Fish and Nossob rivers. (1)

1.5 The class presentation on light pollution called it the "darker side of light". (1)
Give one impact of this that is clearly happening in Namibia.

1.6 Currently trafficking in wildlife products is the fourth most serious international crime. Which mammal is currently the most trafficked animal worldwide? (1)

1.7 By how much does evaporation increase with $1^0$C increase in air temperature? (1)

1.8 Which city in Namibia is most vulnerable to sea-level rise? (1)

1.9 What do we mean by Habitat fragmentation? (1)

1.10 The Namibia Ocean Trust in Walvis Bay works to rescue entangled marine birds and (1)

1.11 What is the main cause of sea acidification, and which invertebrate phylum of marine animals is the most affected? (2)

1.12 Name three most important things that environmental education should aim to do. (3)

1.13 What do we mean by sustainable living? (1)

1.14 Give full name of the Namibian environmental education center that truly practices what they teach.

**[17]**

## QUESTION 2: PRESENTATIONS ON CURRENT ENVIRONMENTAL ISSUES

2.1 Choose **either A or B** (12)

A. Choose a secondary school in a part of Namibia where the issue that you dealt with in **your** presentation on a current environmental issue, is pertinent. Prepare **a 5-slide** presentation for **Grade 4** learners about the environmental issue **YOU** dealt with in class. Have an attractive title slide that also gives the name of the school you are visiting, a slide to clearly explain your environmental issue, then one to show where in Namibia it occurs and why it is a problem, Slide 4 should give a practical activity Grade 4 learners themselves can do to help them to do help solve the problem and, finally provide a clear take home message and picture they will remember

B. Prepare a **5-slide** presentation for **Grade 8** learners at Oshakati combined school to explain how climate change is causing both extreme floods and droughts and to relate this clearly to the situation in north central Namibia. Include a title slide, two slides to clearly explain the physics that makes it possible for both floods and droughts to be more extreme in north central Namibia. Then conclude with a slide clearly showing what the leaners themselves can do to reduce the impacts of climate change and a final slide with a clear take home message.

2.2 Briefly discuss **five** scientifically evident climate changes that have been observed and measured in Namibia, that confirm that climate change is real. (5)

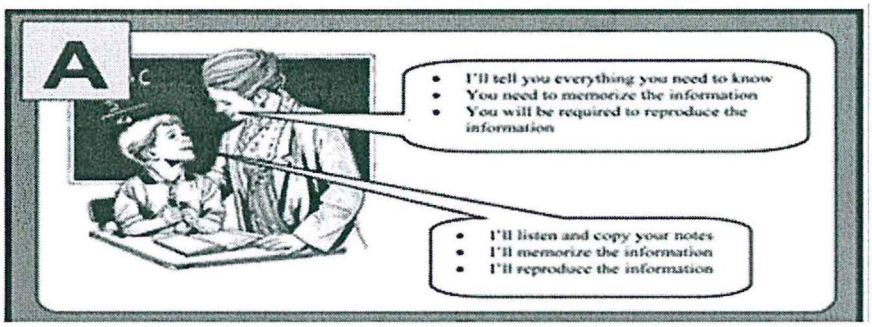
**[17]**

## QUESTION 3: TRENDS IN ENVIRONMENTAL EDUCATION

3.1 What do we mean by Education for Sustainable living? (2)

3.2 Name the Namibian Environmental Education facility that leads by example **and** say where its centers are located. (3)

3.3 Name and discuss the educational approach or theory illustrated in **A,** in terms of the role of the teacher, the environmental intention **and** give **2** methods teachers use when teaching like this. (5)




3.4 Which educational approach is used by the Giraffe Conservation Fund during their Environmental Education outings to Daan Viljoen Game Reserve? Use your own experience with the GCF EE team, to motivate your answer? (5)

3.5 Education for Sustainable Development (ESD) teaches us that taking Action is important to help improve the environment. What action did you as a class do to help control an invasive alien plant on our way to NaDEET. Be sure to give both the scientific and common name of the plant and explain what we did and why. (5)

**[20]**

## QUESTION 4: EFFECTIVE COMMUNICATION, CRITICAL THINKING AND BARRIERS

4.1 Your **posture or body language** is very important when giving a presentation. Describe **three** common mistakes that you must avoid **and** why. (6)

4.2 Recall the video, *"12 Angry Men"*, where the main character, the architect, Mr. MacArthur, has difficulty persuading the other jury members to critically assess the evidence. Name and discuss **five, Critical Thinking skills** that Mr McArthur has, **and motivate** how he uses each to gradually persuade the other jury members that 'reasonable doubt" exists. (10)

**[16]**

## QUESTION 5: ORAL AND WRITTEN COMMUNICATION

5.1 As an employee of IRDNC, you deal with Human/Lion conflicts in the Big 3 conservancies around the Palmwag concession area. An angry farmer from Ganamub village, who allowed his cattle to feed in the Hoanib River, has lost two calves to lions. He has come to talk to you about this at the Anabeb Conservancy office. Describe how you will handle this face-to-face interview. (7)

5.2 Read the article *"Edulink Teaching Namibia's far-flung Teachers"* published in the 2019 edition of *Conservation and the Environment in Namibia*.

5.2.1 Then in your own words, critically assess the structure of the article: say what **attracts** the reader, what makes it **interesting** and **easy** to read, what that **message** is, and finally what the **benefits** of this teaching initiative are. (5)

5.2.2 Write the reference to the above article correctly in **APA Style** (2)

**[14]**

## QUESTION 6: EFFECTIVE MEETINGS

6.1 List five tasks of the Secretary at a meeting (5)

6.2 What are the Minutes of a meeting? (1)

6.3 What is the role of an extension worker at such committee meeting? (1)

**[7]**

## QUESTION 7: WORKING WITH COMMUNITY GROUPS

7.1 Relate the saying, "*Give a man a fish and he will eat for a day, teach him to fish and he will feed his family all his life*", to extension work (2)

7.2 You are working for the Sustainable Forestry Management Project in North-eastern Namibia and would like to encourage village women to conserve forest resources, like firewood by initiating a project to promote the use of solar dishes and ovens. How would you go about forming such a working group in the village? (6)

7.3 Based on your own group work in class, describe the most effective way to be seated for group work. You may draw a sketch to show this. (2)

**[10]**

## QUESTION 8: GROUP EXTENSION METHODS

Indicate which group extension method would be best suited to each situation and briefly explain why.

8.1 Conservancies near Waterberg have asked you, a researcher at CCF, about how they can combat bush encroachment while also getting an income from this. (2)

8.2 Farmers in the vicinity of the Etosha National Park, and MEFT rangers need to inspect park fences and address the issue of lions escaping from the park and killing livestock. (2)

8.3 Rhino poaching is becoming a serious threat in Namibia. NBC has invited, the Hon Pohamba P Shifeta, the Minister of Environment and Tourism, Dr Axel Hartmann, the chief Vet in Etosha National Park, the head of the anti-poaching unit at NamPol, and Dr Tendai Nzuma, Ecology lecturer at NUST, to explain the seriousness of this issue to the Namibian public. (2)

8.4 The Environmental Education centre at NaDEET lets the learners prepare their own food using solar dishes and ovens. They want to promote the use of solar cookers to the wives of the farm workers living on the farms around NamibRand, to stop the chopping down of the few trees in the ephemeral rivers on the edge of the desert. (2)

8.5 You are a lecturer and NUST lecturing on community-based natural resource management (CBNRM) and you want your second year students to see how the established conservancies such as #Khoadi //Hoas and Anabeb have successfully incorporated community-based tourism and joint-ventures in their activities. (2)

8.6 The National Herbarium wants to train NUST plant studies students how to collect, label and correctly mount plant specimens. (2)

8.7 Scientists from all over the world who are working on the impacts of Climate Change need to meet to discuss their latest findings. (2)

8.8 The Gobabeb Namib Research Centre is having an open day and needs an entertaining way to make the visitors more aware of the importance of floods and how water resources are shared by the trees, wildlife, cattle, and us along the river. (2)

**[16]**

**QUESTION 9: PARTICIPATORY RURAL APPRAISALS**

Decide which PRA method to use in each of the following scenarios **and** in each case **explain** what the method allows villagers to show or is used for.

9.1 Where the village gets its water supply and how it is used/shared within the village? (2)

9.2 How the water supply infrastructure has improved in the Cuvelai Basin every ten years since 1960? (2)

9.3 As the community campsite manager at Spitskopje you would like to know how rainfall, tourism, school holidays, game management and community activities in the Tsesib Conservancy varies throughout the year so that she can plan better? (2)

9.4 Working with the Purros community you want to assess, the value of different tree species along Hoarusib River and in the hills next to it, in terms of fodder, shade, firewood, perfume, and habitat for birds? (2)

**[8]**

**TOTAL MARKS 125**

NCE
Namibian Chamber of Environment

# CONSERVATION

## AND THE ENVIRONMENT IN NAMIBIA

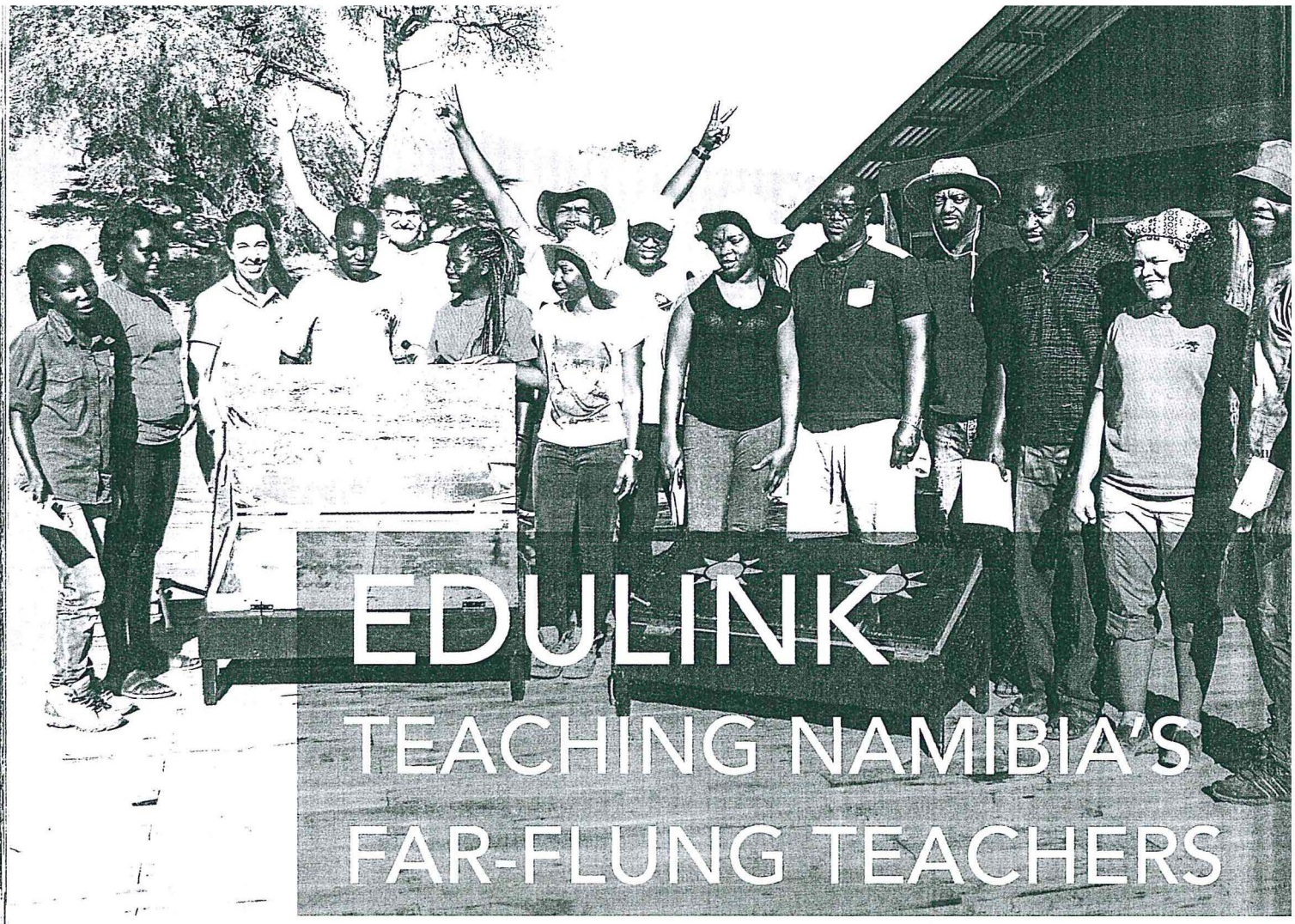
(1)

ARE NAMIBIA'S CARNIVORES AT RISK?

MINING AND THE ENVIRONMENT

HUMAN-WILDLIFE CONFLICT

THE SECRET LIVES OF WILD ANIMALS



# EDULINK

## TEACHING NAMIBIA'S FAR-FLUNG TEACHERS

by Holger Vollbrecht and Nathan Vyklicky

EduVentures Trust

Classrooms are key to teaching Namibia's nearly one million school-age children about conservation – yet Namibian teachers receive little training on environmental education. This new programme equips teachers with all-Namibian lessons to create a generation of environmental heroes, in every region of our vast country.

Early morning, Etosha National Park. You can smell the cool, humid tang of night in the savannah still hanging on the air. The twittering of red-eyed bulbuls wakes a group of francolins, who add their chatter to the breaking day. Vilho Absalom, a Ministry of Environment and Tourism warden at the Namutoni Environmental Education Centre, is already hard at work. He is setting up an outdoor workshop, which he usually leads as part of a three-day course for schoolchildren visiting the park. Today, though, is a little different. Instead of children, fellow environmental educators arrived the previous night, travelling from government institutions and non-profit organisations in every corner of the country. These specialist educators hail from places that represent all the landscapes of Namibia: Namib Desert, Waterberg, Kavango and Zambezi, Succulent Karoo and the Atlantic Coast. They are here to work on a new kind of nature education for the nation.

### Not all classrooms are five-star affairs

These specialists were invited by Corris Kaapehi and Maria Johannes of EduVentures, the National Museum of Namibia's education programme. Together, they form a new network which is collaborating to give Namibian teachers a new level of support nationwide. Corris describes what life can be like for the teachers they are trying to help: "In a remote school located in a village with only 150 people, their classroom is under a tree – you cannot even teach some of the practica stuff in the textbooks. For example, the books call for a microscope, but rural teachers have no access to this kind of equipment. So your classroom, after a while, becomes boring."

### Environmental education in Namibia: The story so Far

To be sure, excellent conservation curricula do exist. Following Namibia's independence, the Desert Research Foundation of Namibia created Enviroteach, focussing on outdoor activities for teachers. The Enviroteach Toolbox was recognised for its outstanding quality by the International Union for Conservation of Nature in their "Education and Sustainability: Responding to the Global Challenge" report. The challenge is getting these tools into the remote teachers' hands, and making sure they have sufficient training to use them once they

With guidance from the Ministry of Environment and Tourism warden, Vilho Absalom, educators gain hands-on experiences that help to sharpen their Education for Sustainable Development skills.

do. Environmental education remains profoundly neglected in rural Namibian schools.

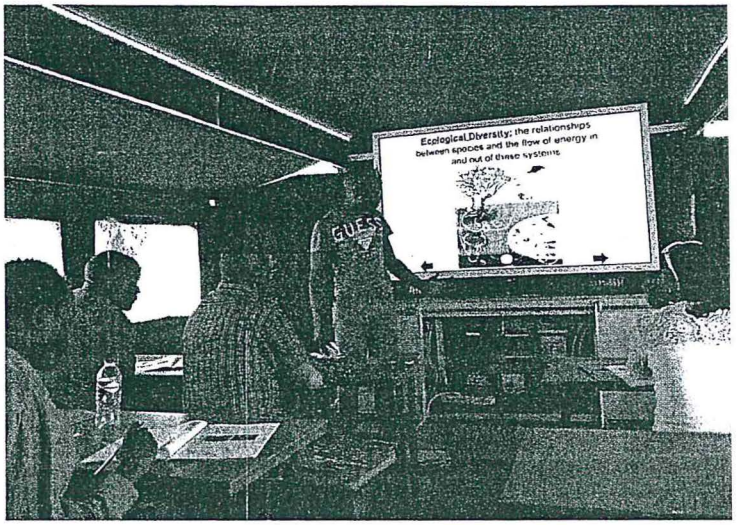
More recently, Namibians have been innovating to reach young people in new ways. In 2018 the Namib Desert Environmental Education Trust (NaDEET) won one of three international UNESCO-Japan Prizes for Education on Sustainable Development, for teaching immersive, hands-on sustainable living at their education centre in the NamibRand Nature Reserve. In another initiative the Think Namibia campaign hosts an online platform for young environmental activists and entrepreneurs. Since 2014, EduVentures has operated the Ombombo ("Butterfly") mobile classroom, a modified truck which travels to schools across the country, where it opens up into a fully equipped smart classroom that allows us to offer a five-day, mixed-method conservation programme with Internet, "bush cinema" and lab equipment.

## Edulink connecting rural Namibian teachers

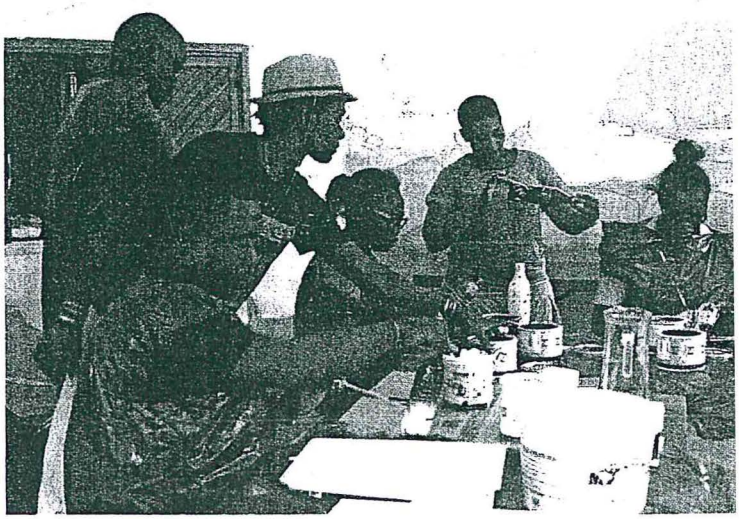
The EduVentures mobile classroom project struck an even deeper chord than expected. As one of the teachers said: "We want the same kind of education. Since I came here as a teacher, I have never really had an opportunity to revive my knowledge. I am isolated from all the other teachers – I am located here in the middle of nowhere." Corris at EduVentures responded to this and similar requests: "Why don't we set up a programme that targets the teachers? They spend the most time with the learners at school, and have the biggest influence."

The new EduLink project was thus born in 2018, with support from Solidaritätsdienst International (SODI) Berlin. Specialists from nine Environmental Education Centres across Namibia were strategically selected to serve all 14 regions of the country. They now form a network to tailor conservation curricula for their regions and share them with hundreds of teachers from various towns and villages. These centres were already teaching learners on field trips: Why not teach teachers as well, to take lessons and skills back to their classes? The network brainstormed the most pressing issues facing Namibia, and EduVentures helped develop teaching aids that reflected these. Not only does this strengthen bonds and learning among Namibia's distant Environmental Education Centres, it connects rural teachers to the best the system has to offer.

Through EduLink, teachers can arrive at a participating centre and experience – many for the first time – cutting-edge methods such as role-playing and arts-based education, smart boards and creative outdoor learning sessions using everyday materials. By playing themselves, the teachers learn how to use play with their learners; they return home with new ideas and practical ways to implement these ideas. Corris illustrates the process with one activity that the network developed: "In our 'bucket game' the teacher gets the learners to take buckets and collect different ecosystem components." He further explains, "The teachers take many informative booklets and handouts back with them, which they can refer to when they are back at their schools." Even more importantly, they are now linked to a group of teachers who have a common vision for educating young Namibians about their environment.




Teachers and conservancy members learn from Corris Kaapehi from EduVentures in the Ombombo mobile classroom during a 3-day pilot training session held in the George Mukoya and Muduva Nyangana Conservancies.



These teachers are learning from fine artist and educator, Hangula Werner, about arts-based environmental education that combines art and the environment in lessons that are interactive and fun. The workshop was hosted at the Okatjikona Centre in Waterberg National Park.